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Contents

Federal Register

Vol. 82, No. 8

Thursday, January 12, 2017

Agency for Healthcare Research and Quality
NOTICES
Requests for Information:
Healthcare Delivery Organizations, 3796–3797

Agriculture Department
See Forest Service

Bureau of Consumer Financial Protection
RULES
Civil Penalty Inflation Adjustments, 3601–3603

Census Bureau
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals:
Monthly Retail Surveys, 3717–3719

Centers for Medicare & Medicaid Services
PROPOSED RULES
Medicare Program:
Establishment of Special Payment Provisions and Requirements for Qualified Practitioners and Qualified Suppliers of Prosthetics and Custom Fabricated Orthotics, 3678–3694

Children and Families Administration
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals:
Health Profession Opportunity Grant Program, 3797–3798

Civil Rights Commission
NOTICES
Meetings:
Nevada State Advisory Committee, 3717
Virginia Advisory Committee, 3716–3717

Coast Guard
RULES
Security Zones:
Potomac River and Anacostia River, and Adjacent Waters; Washington, DC, 3625–3626

Commerce Department
See Census Bureau
See Economic Development Administration
See International Trade Administration
See National Oceanic and Atmospheric Administration
See Patent and Trademark Office
NOTICES
Privacy Act; Systems of Records, 3719–3724

Corporation for National and Community Service
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals, 3759

Defense Acquisition Regulations System
NOTICES
Early Engagement Opportunity:
Implementation of National Defense Authorization Act for FY 2017, 3759–3760

Defense Department
See Defense Acquisition Regulations System
See Navy Department
NOTICES
Meetings:
Board of Regents, Uniformed Services University of the Health Sciences, 3760

Economic Development Administration
NOTICES
Trade Adjustment Assistance Eligibility; Petitions, 3724–3725

Energy Department
See Energy Information Administration
See Federal Energy Regulatory Commission
NOTICES
Export and Import Liquefied Natural Gas; Authorizations:
Constellation Energy Services, Inc., et al., 3762–3764
Export Liquefied Natural Gas; Applications:
Driftwood LNG, LLC, 3760–3762

Energy Information Administration
NOTICES
CIPSEA Confidentiality Pledge Revision, 3764–3765

Environmental Protection Agency
RULES
Air Quality State Implementation Plans; Approvals and Promulgations:
Alabama; Infrastructure Requirements for the 2010 Sulfur Dioxide National Ambient Air Quality Standard, 3637–3639
Tennessee; Infrastructure Requirements for the 2010 NO2 NAAQS, 3639–3641
Chemical Substances When Manufactured or Processed as Nanoscale Materials:
TSCA Reporting and Recordkeeping Requirements, 3641–3655
Civil Monetary Penalty Inflation Adjustment Rule, 3633–3637
NOTICES
Meetings:
Children's Health Protection Advisory Committee, 3790–3791

Federal Aviation Administration
RULES
Hazardous Materials:
Amended Emergency Restriction/Prohibition Order, 3606–3609
Standard Instrument Approach Procedures, and Takeoff Minimums and Obstacle Departure Procedures:
Miscellaneous Amendments, 3603–3606
NOTICES
Environmental Assessments; Availability, etc.:
Issuing a License to LauncherOne, LLC for LauncherOne Launches at the Mojave Air and Space Port, Kern County, CA, 3841–3842

Federal Communications Commission
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals, 3791–3793

Federal Emergency Management Agency
PROPOSED RULES
Establishing a Deductible for Public Assistance Program, 4064–4097

Federal Energy Regulatory Commission
NOTICES
Combined Filings, 3766, 3789
Complaints:
Advanced Energy Management Alliance v. PJM Interconnection, L.L.C., 3790
Environmental Assessments; Availability, etc.:
Grand River Dam Authority, 3766–3788
Hydroelectric Applications:
PacifiCorp Energy, 3789–3790
Meetings:
Birch Power Co., 3766
Petitions for Waivers:
QEP Field Services, LLC, 3765–3766

Federal Maritime Commission
NOTICES
Agreements Filed, 3793

Federal Motor Carrier Safety Administration
NOTICES
Qualification of Drivers; Exemption Applications:
Diabetes, 3843–3845
Diabetes Mellitus, 3845–3851
Epilepsy and Seizure Disorders, 3842–3843

Federal Reserve System
NOTICES
Formations of, Acquisitions by, and Mergers of Bank Holding Companies, 3793–3794

Fish and Wildlife Service
NOTICES
Environmental Assessments; Availability, etc.:
Comprehensive Conservation Plan, Plum Tree Island National Wildlife Refuge, Poquoson, VA, 3800–3802

Food and Drug Administration
RULES
Microbiology Devices:
Reclassification of Influenza Virus Antigen Detection Test Systems Intended for Use Directly With Clinical Specimens, 3609–3619
NOTICES
Meetings:
Joint Meeting of the Ophthalmic Devices Panel of the Medical Devices Advisory Committee and the Risk Communication Advisory Committee, 3798–3799
Vaccines and Related Biological Products Advisory Committee, 3799

Foreign Claims Settlement Commission
NOTICES
Meetings; Sunshine Act, 3809

Forest Service
NOTICES
Meetings:
National Urban and Community Forestry Advisory Council, 3716

General Services Administration
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals:
Alliant2 Greenhouse Gas Disclosure, 3794–3796
USA.gov and All Related Subdomains, 3794

Government Accountability Office
NOTICES
Requests for Nominations:
Medicaid and CHIP Payment and Access Commission, 3796

Health and Human Services Department
See Agency for Healthcare Research and Quality
See Centers for Medicare & Medicaid Services
See Children and Families Administration
See Food and Drug Administration
See Inspector General Office, Health and Human Services Department
See National Institutes of Health
See Substance Abuse and Mental Health Services Administration

Homeland Security Department
See Coast Guard
See Federal Emergency Management Agency

Housing and Urban Development Department
RULES
Freedom of Information Act; Revisions, 3619–3623
Narrowing the Digital Divide Through Installation of Broadband Infrastructure in HUD-Funded New Construction and Substantial Rehabilitation of Multifamily Rental Housing; Correction, 3623

Inspector General Office, Health and Human Services Department
RULES
Health Care Programs:
Fraud and Abuse; Revisions to the Office of Inspector General's Exclusion Authorities, 4100–4118

Interior Department
See Fish and Wildlife Service
See National Park Service

International Trade Administration
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals:
Request for Duty-Free Entry of Scientific Instrument or Apparatus, 3725

Justice Department
See Foreign Claims Settlement Commission
NOTICES
Proposed Consent Decrees:
CERCLA, 3809

National Highway Traffic Safety Administration
PROPOSED RULES
Federal Motor Vehicle Safety Standards:
V2V Communications, 3854–4019

National Institutes of Health
NOTICES
Meetings:
National Institute of Allergy and Infectious Diseases, 3799–3800

National Oceanic and Atmospheric Administration
RULES
Fisheries of the Northeastern United States:
Northeast Multispecies Fishery; Georges Bank Cod Trimester Total Allowable Catch Area Closure and Possession Prohibition for the Common Pool Fishery, 3676
List of Fisheries for 2017, 3655–3676
PROPOSED RULES
Endangered and Threatened Species:
12-Month Finding on a Petition to List Giant and Reef Manta Rays as Threatened or Endangered Under the Endangered Species Act, 3694–3715
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals:
Alaska Region Crab Permits, 3726–3727
Endangered and Threatened Wildlife and Plants:
Alabama Shad; 12-Month Finding on Petition to List, 4022–4061
Meetings:
Council Coordination Committee, 3725–3726
Gulf of Mexico Fishery Management Council, 3737–3738
Permit Applications:
Marine Mammals; File Nos. 18059 and 19655, 3727
Special Use Permits:
Two New Categories Related to the Operation of Desalination Facilities Producing Potable Water for Consumption, 3751–3758
Takes of Marine Mammals Incidental to Specified Activities:
Rocky Intertidal Monitoring Surveys along the Oregon and California Coasts, 3727–3737
Takes of Marine Mammals:
Seabird and Shorebird Monitoring and Research at the Eastern Massachusetts National Wildlife Refuge Complex, MA, 3738–3751

National Park Service
RULES
Subsistence Collections:
Alaska, 3626–3633
NOTICES
Inventory Completions:
Department of Defense, Defense Health Agency, National Museum of Health and Medicine, Silver Spring, MD, 3804–3805
International Boundary and Water Commission, U.S. Section, El Paso, TX, and the Texas Archeological Research Laboratory, Austin, TX, 3802–3804
Metroparks of the Toledo Area, Toledo, OH, 3807–3809
Texas Archeological Research Laboratory, Austin, TX; Withdrawal, 3805
Repatriation of Cultural Items:
Arizona State Museum, University of Arizona, Tucson, AZ, 3805–3806
Denver Museum of Nature & Science, Denver, CO, 3806–3807

National Science Foundation
NOTICES
Antarctic Conservation Act Permit Applications, 3809–3810
Draft Smart Cities and Communities Federal Strategic Plan—Exploring Innovation Together, 3810–3811

Navy Department
RULES
International Regulations for Preventing Collisions at Sea; Certifications and Exemptions, 3623–3625

Nuclear Regulatory Commission
NOTICES
Environmental Assessments; Availability, etc.:
Department of the Army, U.S. Army Research, Development and Engineering Command, Armament Research, Development and Engineering Center, Picatinny Arsenal; Picatinny, NJ, 3816–3819
License Renewals:
Rhode Island Atomic Energy Commission, 3811–3812
University of Missouri—Columbia Research Reactor, 3814–3816
Permit Application:
Tennessee Valley Authority; Clinch River Nuclear Site, 3812–3814

Overseas Private Investment Corporation
NOTICES
Meetings; Sunshine Act, 3819–3820

Patent and Trademark Office
NOTICES
Continuation of the Accelerated Examination Program, 3758–3759

Personnel Management Office
PROPOSED RULES
Prevailing Rate Systems:
Redefinition of Certain Nonappropriated Fund Federal Wage System Wage Areas, 3677–3678
NOTICES
Excepted Service, 3820–3824

Securities and Exchange Commission
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals, 3837–3838
Self-Regulatory Organizations; Proposed Rule Changes:
Financial Industry Regulatory Authority, Inc., 3824–3825
ICE Clear Credit, LLC, 3831–3837
NASDAQ PHLX, LLC, 3826–3828
New York Stock Exchange, LLC, 3828–3831

Social Security Administration
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals, 3838–3840

State Department
PROPOSED RULES
Exchange Visitor Program—Summer Work Travel, 4120–4147
NOTICES
Designations as Global Terrorists:
Alexanda Amon Kotey, aka Alexanda Kotey, aka Allexanda Kotey, aka Alexander Kotey, aka Alexe Kotey, aka Alex Kotey, aka Abu Salih, aka Abu-Salih al-Baritani, 3841

Mustafa Mughniyeh, aka Mustafa Mughniyah, 3840–3841

Substance Abuse and Mental Health Services Administration

NOTICES
Meetings:
Advisory Committee for Women's Services, 3800

Transportation Department
See Federal Aviation Administration
See Federal Motor Carrier Safety Administration
See National Highway Traffic Safety Administration

Treasury Department
NOTICES
Agency Information Collection Activities; Proposals, Submissions, and Approvals, 3851–3852
Meetings:
Debt Management Advisory Committee, 3852

Separate Parts In This Issue

Part II
Transportation Department, National Highway Traffic Safety Administration, 3854–4019

Part III
Commerce Department, National Oceanic and Atmospheric Administration, 4022–4061

Part IV
Homeland Security Department, Federal Emergency Management Agency, 4064–4097

Part V
Health and Human Services Department, Inspector General Office, Health and Human Services Department, 4100–4118

Part VI
State Department, 4120–4147

Reader Aids
Consult the Reader Aids section at the end of this issue for phone numbers, online resources, finding aids, and notice of recently enacted public laws.

To subscribe to the Federal Register Table of Contents electronic mailing list, go to https://public.govdelivery.com/accounts/USGPOOFR/subscriber/new, enter your e-mail address, then follow the instructions to join, leave, or manage your subscription.

CFR PARTS AFFECTED IN THIS ISSUE

A cumulative list of the parts affected this month can be found in the Reader Aids section at the end of this issue.

5 CFR

Proposed Rules:

532 3677

12 CFR

1083 3601

14 CFR

Ch. I 3606

97 (2 documents) 3603, 3605

21 CFR

866 3609

22 CFR

Proposed Rules:

62 4120

24 CFR

15 3619

891 3623

32 CFR

706 3623

33 CFR

165 3625

36 CFR

13 3626

40 CFR

19 3633

52 (2 documents) 3637, 3639

704 3641

42 CFR

1000 4100

1001 4100

1002 4100

1006 4100

Proposed Rules:

424 3678

44 CFR

Proposed Rules:

206 4064

49 CFR

Proposed Rules:

571 3853

50 CFR

229 3655

648 3676

Proposed Rules:

223 3694

Rules and Regulations

Federal Register

Vol. 82, No. 8

Thursday, January 12, 2017

This section of the FEDERAL REGISTER contains regulatory documents having general applicability and legal effect, most of which are keyed to and codified in the Code of Federal Regulations, which is published under 50 titles pursuant to 44 U.S.C. 1510.

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BUREAU OF CONSUMER FINANCIAL PROTECTION

12 CFR Part 1083

Civil Penalty Inflation Adjustments

AGENCY: Bureau of Consumer Financial Protection.

ACTION: Final rule.

SUMMARY: The Bureau of Consumer Financial Protection (Bureau) is adjusting for inflation the maximum amount of each civil penalty within the Bureau's jurisdiction. These adjustments are required by the Federal Civil Penalties Inflation Adjustment Act of 1990 (the Inflation Adjustment Act), as amended by the Debt Collection Improvement Act of 1996 and further amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015. The inflation adjustments mandated by the Inflation Adjustment Act serve to maintain the deterrent effect of civil penalties and to promote compliance with the law.

DATES: This final rule is effective January 15, 2017.

FOR FURTHER INFORMATION CONTACT: Jaclyn Maier, Counsel, Office of Regulations, Consumer Financial Protection Bureau, 1700 G Street NW., Washington, DC 20552, at (202) 435–7700.

SUPPLEMENTARY INFORMATION:

I. Background

The Inflation Adjustment Act,[1] as amended by the Debt Collection Improvement Act of 1996 [2] and further amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015,[3] directs Federal agencies to adjust for inflation the civil penalty amounts within their jurisdiction not later than July 1, 2016, and then not later than January 15 every year thereafter.[4] 28 U.S.C. 2461 note. Each agency was required to make the 2016 one-time catch-up adjustments through an interim final rule published in the **Federal Register**. On June 14, 2016, the Bureau published its interim final rule to make the initial catch-up adjustments to civil penalties within the Bureau's jurisdiction.[5] The June 2016 interim final rule created a new part 1083 and in § 1083.1 established the inflation-adjusted maximum amounts for each civil penalty within the Bureau's jurisdiction.[6] The Inflation Adjustment Act also requires subsequent adjustments to be made annually, not later than January 15, and notwithstanding section 553 of the Administrative Procedure Act (APA).[7]

Specifically, Federal agencies are directed to adjust annually each civil penalty provided by law within the jurisdiction of the agency by the ''cost-of-living adjustment.'' [8] For annual adjustments after the initial catch up adjustments, the ''cost-of-living adjustment'' is defined as the percentage (if any) by which the Consumer Price Index for All Urban Consumers (CPI–U) for the month of October preceding the date of the adjustment, exceeds the CPI–U for October of the prior year.[9] The Director of the Office of Management and Budget (OMB) is required to issue guidance (OMB Guidance) to agencies on implementing the annual civil penalty inflation adjustments by December 15, 2016, and December 15 every subsequent year.[10] Pursuant to the Inflation Adjustment Act and OMB Guidance, agencies must apply the multiplier reflecting the ''cost-of-living adjustment'' to the current penalty amount and then round that amount to the nearest dollar to determine the annual adjustments.[11]

For the 2017 annual adjustment, the multiplier reflecting the ''cost-of-living adjustment'' is 1.01636.[12] Pursuant to the Inflation Adjustment Act and OMB Guidance, the Bureau multiplied each of its civil penalty amounts by the ''cost-of-living adjustment'' multiplier and rounded to the nearest dollar.[13]

The new penalty amounts that apply to civil penalties assessed after January 15, 2017 are as follows:

Law	Penalty description	Penalty amounts established under June 2016 interim final rule	OMB ''Cost-of-living adjustment'' multiplier	New penalty amount
Consumer Financial Protection Act, 12 U.S.C. 5565(c)(2)(A)	Tier 1 penalty	$5,437	1.01636	$5,526
Consumer Financial Protection Act, 12 U.S.C. 5565(c)(2)(B)	Tier 2 penalty	27,186	1.01636	27,631

[1] Public Law 101–410, 104 Stat. 890.

[2] Public Law 104–134, section 31001(s)(1), 110 Stat. 1321, 1321–373.

[3] Public Law 114–74, section 701, 129 Stat. 584, 599.

[4] Section 1301(a) of the Federal Reports Elimination Act of 1998, Public Law 105–362, 112 Stat. 3293, also amended the Inflation Adjustment Act by striking section 6, which contained annual reporting requirements, and redesignating section 7 as section 6, but did not alter the civil penalty adjustment requirements.

[5] 81 FR 38569 (June 14, 2016). Although the Bureau was not obligated to solicit comments for the interim final rule, the Bureau invited public comment and received none.

[6] *See* 12 CFR 1083.1.

[7] Inflation Adjustment Act section 4, *codified* at 28 U.S.C. 2461 note.

[8] Inflation Adjustment Act sections 4 and 5, *codified* at 28 U.S.C. 2461 note.

[9] Inflation Adjustment Act sections 3 and 5, *codified* at 28 U.S.C. 2461 note.

[10] Memorandum from Shaun Donovan, Director, Office of Management and Budget, to the Heads of Executive Departments and Agencies (Dec. 16, 2016), *https://www.whitehouse.gov/sites/default/files/omb/memoranda/2017/m-17-11_0.pdf.*

[11] Inflation Adjustment Act section 5, *codified* at 28 U.S.C. 2461 note; Memorandum from Shaun Donovan, Director, Office of Management and Budget, to the Heads of Executive Departments and Agencies (Dec. 16, 2016), *https://www.whitehouse.gov/sites/default/files/omb/memoranda/2017/m-17-11_0.pdf.*

[12] Memorandum from Shaun Donovan, Director, Office of Management and Budget, to the Heads of Executive Departments and Agencies (Dec. 16, 2016), *https://www.whitehouse.gov/sites/default/files/omb/memoranda/2017/m-17-11_0.pdf.* The multiplier reflecting the ''cost-of-living adjustment'' that OMB provides is rounded to five decimal places.

[13] In rounding to the nearest dollar, the Bureau has rounded down where the digit immediately following the decimal point is less than 5 and has rounded up where the digit immediately following the decimal point is 5 or greater.

Law	Penalty description	Penalty amounts established under June 2016 interim final rule	OMB "Cost-of-living adjustment" multiplier	New penalty amount
Consumer Financial Protection Act, 12 U.S.C. 5565(c)(2)(C)	Tier 3 penalty	1,087,450	1.01636	1,105,241
Interstate Land Sales Full Disclosure Act, 15 U.S.C. 1717a(a)(2).	Per violation	1,894	1.01636	1,925
Interstate Land Sales Full Disclosure Act, 15 U.S.C. 1717a(a)(2).	Annual cap	1,893,610	1.01636	1,924,589
Real Estate Settlement Procedures Act, 12 U.S.C. 2609(d)(1)	Per failure	89	1.01636	90
Real Estate Settlement Procedures Act, 12 U.S.C. 2609(d)(1)	Annual cap	178,156	1.01636	181,071
Real Estate Settlement Procedures Act, 12 U.S.C. 2609(d)(2)(A).	Per failure, where intentional	178	1.01636	181
SAFE Act, 12 U.S.C. 5113(d)(2)	Per violation	27,455	1.01636	27,904
Truth in Lending Act, 15 U.S.C. 1639e(k)(1)	First violation	10,875	1.01636	11,053
Truth in Lending Act, 15 U.S.C. 1639e(k)(2)	Subsequent violations	21,749	1.01636	22,105

II. Legal Authority

The Bureau issues this final rule under the Inflation Adjustment Act,[14] as amended by the Debt Collection Improvement Act of 1996 [15] and further amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015,[16] which requires the Bureau to adjust for inflation the civil penalties within its jurisdiction according to a statutorily prescribed formula.

III. Procedural Requirements

A. Administrative Procedure Act

Under the APA, notice and opportunity for public comment are not required if the Bureau finds that notice and public comment are impracticable, unnecessary, or contrary to the public interest.[17] Pursuant to this final rule, § 1083.1 is amended to update the civil penalty amounts. The 2017 adjustments to the civil penalty amounts are technical and non-discretionary, and they merely apply the statutory method for adjusting civil penalty amounts. These adjustments are required by the Inflation Adjustment Act. Moreover, the Inflation Adjustment Act directs agencies to adjust the civil penalties annually notwithstanding section 553 of the APA,[18] and OMB Guidance reaffirms that agencies need not complete a notice-and-comment process before making the annual adjustments for inflation.[19] For these reasons, the Bureau has determined that publishing a notice of proposed rulemaking and providing opportunity for public comment are unnecessary. Therefore, the amendment is adopted in final form.

Section 553(d) of the APA generally requires publication of a final rule not less than 30 days before its effective date, except (1) a substantive rule which grants or recognizes an exemption or relieves a restriction; (2) interpretive rules and statements of policy; or (3) as otherwise provided by the agency for good cause found and published with the rule.[20] At a minimum, the Bureau believes the annual adjustments to the civil penalty amounts in § 1083.1 fall under the third exception to section 553(d). The Bureau finds that there is good cause to make the amendments effective on January 15, 2017. The amendments to § 1083.1 in this final rule are technical and non-discretionary, and they merely apply the statutory method for adjusting civil penalty amounts and follow the statutory directive to make annual adjustments by January 15 of each year. Moreover, the Inflation Adjustment Act directs agencies to adjust the civil penalties annually notwithstanding section 553 of the APA,[21] and OMB Guidance reaffirms that agencies need not provide a delay in effective date for the annual adjustments for inflation.[22]

B. Regulatory Flexibility Act

Because no notice of proposed rulemaking is required, the Regulatory Flexibility Act does not require an initial or final regulatory flexibility analysis.[23]

C. Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1995,[24] the Bureau reviewed this final rule. No collections of information pursuant to the Paperwork Reduction Act are contained in the final rule.

List of Subjects in 12 CFR Part 1083

Administrative practice and procedure, Consumer protection, Penalties.

Authority and Issuance

■ For the reasons set forth above, the Bureau amends 12 CFR part 1083, as set forth below:

PART 1083—CIVIL PENALTY ADJUSTMENTS

■ 1. The authority citation for part 1083 continues to read as follows:

Authority: 12 U.S.C. 2609(d); 12 U.S.C. 5113(d)(2); 12 U.S.C. 5565(c); 15 U.S.C. 1639e(k); 15 U.S.C. 1717a(a); 28 U.S.C. 2461 note.

■ 2. Section 1083.1 is revised to read as follows:

§ 1083.1 Adjustments of civil penalty amounts.

(a) The maximum amount of each civil penalty within the jurisdiction of the Consumer Financial Protection Bureau to impose is adjusted in accordance with the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended by the Debt Collection Improvement Act of 1996 and further amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015, (28 U.S.C. 2461 note) as follows:

[14] Public Law 101–410, 104 Stat. 890.

[15] Public Law 104–134, section 31001(s)(1), 110 Stat. 1321, 1321–373.

[16] Public Law 114–74, section 701, 129 Stat. 584, 599.

[17] 5 U.S.C. 553(b)(B).

[18] Inflation Adjustment Act section 4, *codified* at 28 U.S.C. 2461 note.

[19] Memorandum from Shaun Donovan, Director, Office of Management and Budget, to the Heads of Executive Departments and Agencies (Dec. 16, 2016), *https://www.whitehouse.gov/sites/default/files/omb/memoranda/2017/m-17-11_0.pdf.*

[20] 5 U.S.C. 553(d).

[21] Inflation Adjustment Act section 4, *codified* at 28 U.S.C. 2461 note.

[22] Memorandum from Shaun Donovan, Director, Office of Management and Budget, to the Heads of Executive Departments and Agencies (Dec. 16, 2016), *https://www.whitehouse.gov/sites/default/files/omb/memoranda/2017/m-17-11_0.pdf.*

[23] 5 U.S.C. 603(a), 604(a).

[24] 44 U.S.C. 3506; 5 CFR 1320.

U.S. Code citation	Civil penalty description	Adjusted maximum civil penalty amount
12 U.S.C. 5565(c)(2)(A)	Tier 1 penalty	$5,526
12 U.S.C. 5565(c)(2)(B)	Tier 2 penalty	27,631
12 U.S.C. 5565(c)(2)(C)	Tier 3 penalty	1,105,241
15 U.S.C. 1717a(a)(2)	Per violation	1,925
15 U.S.C. 1717a(a)(2)	Annual cap	1,924,589
12 U.S.C. 2609(d)(1)	Per failure	90
12 U.S.C. 2609(d)(1)	Annual cap	181,071
12 U.S.C. 2609(d)(2)(A)	Per failure, where intentional	181
12 U.S.C. 5113(d)(2)	Per violation	27,904
15 U.S.C. 1639e(k)(1)	First violation	11,053
15 U.S.C. 1639e(k)(2)	Subsequent violations	22,105

(b) The adjustments in paragraph (a) of this section shall apply to civil penalties assessed after January 15, 2017, regardless of when the violation for which the penalty is assessed occurred.

Dated: January 4, 2017.

Richard Cordray,

Director, Bureau of Consumer Financial Protection.

[FR Doc. 2017–00521 Filed 1–9–17; 4:15 pm]

BILLING CODE 4810–AM–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 97

[Docket No. 31112; Amdt. No. 3727]

Standard Instrument Approach Procedures, and Takeoff Minimums and Obstacle Departure Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This rule establishes, amends, suspends, or removes Standard Instrument Approach Procedures (SIAPs) and associated Takeoff Minimums and Obstacle Departure Procedures (ODPs) for operations at certain airports. These regulatory actions are needed because of the adoption of new or revised criteria, or because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, adding new obstacles, or changing air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: This rule is effective January 12, 2017. The compliance date for each SIAP, associated Takeoff Minimums, and ODP is specified in the amendatory provisions.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the **Federal Register** as of January 12, 2017.

ADDRESSES: Availability of matters incorporated by reference in the amendment is as follows:

For Examination

1. U.S. Department of Transportation, Docket Ops-M30, 1200 New Jersey Avenue SE., West Bldg., Ground Floor, Washington, DC 20590–0001.
2. The FAA Air Traffic Organization Service Area in which the affected airport is located;
3. The office of Aeronautical Navigation Products, 6500 South MacArthur Blvd., Oklahoma City, OK 73169 or,
4. The National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

Availability

All SIAPs and Takeoff Minimums and ODPs are available online free of charge. Visit the National Flight Data Center at *nfdc.faa.gov* to register. Additionally, individual SIAP and Takeoff Minimums and ODP copies may be obtained from the FAA Air Traffic Organization Service Area in which the affected airport is located.

FOR FURTHER INFORMATION CONTACT: Thomas J. Nichols, Flight Procedure Standards Branch (AFS–420), Flight Technologies and Programs Divisions, Flight Standards Service, Federal Aviation Administration, Mike Monroney Aeronautical Center, 6500 South MacArthur Blvd., Oklahoma City, OK 73169 (Mail Address: P.O. Box 25082, Oklahoma City, OK 73125) Telephone: (405) 954–4164.

SUPPLEMENTARY INFORMATION: This rule amends Title 14 of the Code of Federal Regulations, Part 97 (14 CFR part 97), by establishing, amending, suspending, or removes SIAPS, Takeoff Minimums and/or ODPS. The complete regulatory description of each SIAP and its associated Takeoff Minimums or ODP for an identified airport is listed on FAA form documents which are incorporated by reference in this amendment under 5 U.S.C. 552(a), 1 CFR part 51, and 14 CFR part § 97.20. The applicable FAA forms are FAA Forms 8260–3, 8260–4, 8260–5, 8260–15A, and 8260–15B when required by an entry on 8260–15A.

The large number of SIAPs, Takeoff Minimums and ODPs, their complex nature, and the need for a special format make publication in the **Federal Register** expensive and impractical. Further, airmen do not use the regulatory text of the SIAPs, Takeoff Minimums or ODPs, but instead refer to their graphic depiction on charts printed by publishers of aeronautical materials. Thus, the advantages of incorporation by reference are realized and publication of the complete description of each SIAP, Takeoff Minimums and ODP listed on FAA form documents is unnecessary. This amendment provides the affected CFR sections and specifies the types of SIAPs, Takeoff Minimums and ODPs with their applicable effective dates. This amendment also identifies the airport and its location, the procedure, and the amendment number.

Availability and Summary of Material Incorporated by Reference

The material incorporated by reference is publicly available as listed in the **ADDRESSES** section.

The material incorporated by reference describes SIAPS, Takeoff Minimums and/or ODPS as identified in the amendatory language for part 97 of this final rule.

The Rule

This amendment to 14 CFR part 97 is effective upon publication of each separate SIAP, Takeoff Minimums and ODP as Amended in the transmittal. Some SIAP and Takeoff Minimums and textual ODP amendments may have been issued previously by the FAA in a Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts.

The circumstances that created the need for some SIAP and Takeoff Minimums and ODP amendments may require making them effective in less than 30 days. For the remaining SIAPs and Takeoff Minimums and ODPs, an effective date at least 30 days after publication is provided.

Further, the SIAPs and Takeoff Minimums and ODPs contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Procedures (TERPS). In developing these SIAPs and Takeoff Minimums and ODPs, the TERPS criteria were applied to the conditions existing or anticipated at the affected airports. Because of the close and immediate relationship between these SIAPs, Takeoff Minimums and ODPs, and safety in air commerce, I find that notice and public procedure under 5 U.S.C. 553(b) are impracticable and contrary to the public interest and, where applicable, under 5 U.S.C. 553(d), good cause exists for making some SIAPs effective in less than 30 days.

The FAA has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore—(1) is not a ''significant regulatory action'' under Executive Order 12866; (2) is not a ''significant rule'' under DOT Regulatory Policies and Procedures (44 FR 11034; February 26,1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. For the same reason, the FAA certifies that this amendment will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 97

Air traffic control, Airports, Incorporation by reference, Navigation (air).

Issued in Washington, DC, on December 16, 2016.

John S. Duncan,

Director, Flight Standards Service.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me, Title 14, Code of Federal Regulations, Part 97 (14 CFR part 97) is amended by establishing, amending, suspending, or removing Standard Instrument Approach Procedures and/or Takeoff Minimums and Obstacle Departure Procedures effective at 0901 UTC on the dates specified, as follows:

PART 97—STANDARD INSTRUMENT APPROACH PROCEDURES

■ 1. The authority citation for part 97 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40103, 40106, 40113, 40114, 40120, 44502, 44514, 44701, 44719, 44721–44722.

■ 2. Part 97 is amended to read as follows:

Effective 2 February 2017

Auburn, AL, Auburn University Rgnl, RNAV (GPS) RWY 11, Amdt 2A
Geneva, AL, Geneva Muni, RNAV (GPS) RWY 11, Orig–A
Geneva, AL, Geneva Muni, RNAV (GPS) RWY 29, Orig–A
Sebastian, FL, Sebastian Muni, RNAV (GPS) RWY 5, Orig–C
Sebastian, FL, Sebastian Muni, RNAV (GPS) RWY 23, Orig–C
Madison, GA, Madison Muni, RNAV (GPS) RWY 14, Orig–A
St Joseph, MO, Rosecrans Memorial, RADAR 1, Amdt 2
Medford, WI, Taylor County, NDB RWY 34, Amdt 7, CANCELED

Effective 2 March 2017

Healy, AK, Healy River, RNAV (GPS) RWY 15, Orig
Healy, AK, Healy River, RNAV (GPS)–A, Orig
Nondalton, AK, Nondalton, RNAV (GPS) RWY 2, Orig–A
Flippin, AR, Marion County Rgnl, RNAV (GPS) RWY 4, Amdt 1
Flippin, AR, Marion County Rgnl, RNAV (GPS) RWY 22, Amdt 1
Flippin, AR, Marion County Rgnl, Takeoff Minimums and Obstacle DP, Amdt 1
Flippin, AR, Marion County Rgnl, VOR–A, Amdt 15
Clifton/Morenci, AZ, Greenlee County, RNAV (GPS)–A, Orig–A
Stockton, CA, Stockton Metropolitan, ILS OR LOC RWY 29R, Amdt 21
Stockton, CA, Stockton Metropolitan, RNAV (GPS) RWY 11L, Amdt 1
Stockton, CA, Stockton Metropolitan, RNAV (GPS) RWY 29R, Amdt 1
Rota Island, CQ, Benjamin Taisacan Manglona Intl, NDB RWY 27, Amdt 4A
Rota Island, CQ, Benjamin Taisacan Manglona Intl, RNAV (GPS) RWY 27, Amdt 1A
Macon, GA, Macon Downtown, Takeoff Minimums and Obstacle DP, Amdt 8
Clarinda, IA, Schenck Field, NDB–A, Amdt 5B, CANCELED
Evansville, IN, Evansville Rgnl, ILS OR LOC RWY 4, Amdt 4
Evansville, IN, Evansville Rgnl, ILS OR LOC RWY 22, Amdt 23
Madison, IN, Madison Muni, RNAV (GPS) RWY 3, Amdt 1C
Fort Scott, KS, Fort Scott Muni, NDB RWY 18, Amdt 12, CANCELED
Larned, KS, Larned-Pawnee County, NDB RWY 17, Amdt 4A, CANCELED
Mayfield, KY, Mayfield Graves County, VOR/DME–A, Amdt 8A
Tompkinsville, KY, Tompkinsville-Monroe County, RNAV (GPS) RWY 4, Amdt 1C
Vivian, LA, Vivian, NDB RWY 9, Amdt 2B, CANCELED
Lansing, MI, Capital Region Intl, ILS OR LOC RWY 10R, Amdt 11A
Lansing, MI, Capital Region Intl, ILS OR LOC RWY 28L, Amdt 27B
Perryville, MO, Perryville Rgnl, RNAV (GPS) RWY 2, Orig–A
Perryville, MO, Perryville Rgnl, RNAV (GPS) RWY 20, Orig–A
Perryville, MO, Perryville Rgnl, Takeoff Minimums and Obstacle DP, Orig–A
Perryville, MO, Perryville Rgnl, VOR–A, Amdt 5A
Shelby, MT, Shelby, NDB RWY 23, Amdt 7A
Shelby, MT, Shelby, RNAV (GPS) RWY 5, Orig–B
Shelby, MT, Shelby, RNAV (GPS) RWY 23, Amdt 2B
Omaha, NE., Eppley Airfield, Takeoff Minimums and Obstacle DP, Amdt 6
Claremont, NH, Claremont Muni, NDB–A, Amdt 1B
Nashua, NH, Boire Field, RNAV (GPS) RWY 14, Amdt 1C
Ashland, OH, Ashland County, VOR–A, Amdt 9C
Batavia, OH, Clermont County, RNAV (GPS) RWY 4, Amdt 1C
Batavia, OH, Clermont County, RNAV (GPS) RWY 22, Amdt 1D
Batavia, OH, Clermont County, VOR–B, Amdt 7C
Pittsburgh, PA, Allegheny County, RNAV (GPS) RWY 10, Amdt 4C
Marion, SC, Marion County, NDB RWY 4, Amdt 5, CANCELED
Pageland, SC, Pageland, NDB RWY 24, Amdt 1
Pageland, SC, Pageland, Takeoff Minimums and Obstacle DP, Amdt 1
Dayton, TN, Mark Anton, NDB RWY 3, Amdt 2A
Littlefield, TX, Littlefield Muni, NDB RWY 1, Amdt 1A, CANCELED
Seminole, TX, Gaines County, NDB RWY 35, Amdt 1, CANCELED
Provo, UT, Provo Muni, ILS OR LOC RWY 13, Amdt 3

[FR Doc. 2017–00293 Filed 1–11–17; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 97

[Docket No. 31114; Amdt. No. 3729]

Standard Instrument Approach Procedures, and Takeoff Minimums and Obstacle Departure Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This rule establishes, amends, suspends, or removes Standard Instrument Approach Procedures (SIAPs) and associated Takeoff Minimums and Obstacle Departure Procedures (ODPs) for operations at certain airports. These regulatory actions are needed because of the adoption of new or revised criteria, or because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, adding new obstacles, or changing air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: This rule is effective January 12, 2017. The compliance date for each SIAP, associated Takeoff Minimums, and ODP is specified in the amendatory provisions.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the **Federal Register** as of January 12, 2017.

ADDRESSES: Availability of matters incorporated by reference in the amendment is as follows:

For Examination

1. U.S. Department of Transportation, Docket Ops–M30, 1200 New Jersey Avenue SE., West Bldg., Ground Floor, Washington, DC 20590–0001.

2. The FAA Air Traffic Organization Service Area in which the affected airport is located;

3. The office of Aeronautical Navigation Products, 6500 South MacArthur Blvd., Oklahoma City, OK 73169 or,

4. The National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

Availability

All SIAPs and Takeoff Minimums and ODPs are available online free of charge. Visit the National Flight Data Center at *nfdc.faa.gov* to register. Additionally, individual SIAP and Takeoff Minimums and ODP copies may be obtained from the FAA Air Traffic Organization Service Area in which the affected airport is located.

FOR FURTHER INFORMATION CONTACT: Thomas J. Nichols, Flight Procedure Standards Branch (AFS–420), Flight Technologies and Programs Divisions, Flight Standards Service, Federal Aviation Administration, Mike Monroney Aeronautical Center, 6500 South MacArthur Blvd., Oklahoma City, OK 73169 (Mail Address: P.O. Box 25082, Oklahoma City, OK 73125) Telephone: (405) 954–4164.

SUPPLEMENTARY INFORMATION: This rule amends Title 14 of the Code of Federal Regulations, Part 97 (14 CFR part 97), by establishing, amending, suspending, or removes SIAPS, Takeoff Minimums and/or ODPS. The complete regulatory description of each SIAP and its associated Takeoff Minimums or ODP for an identified airport is listed on FAA form documents which are incorporated by reference in this amendment under 5 U.S.C. 552(a), 1 CFR part 51, and 14 CFR part § 97.20. The applicable FAA forms are FAA Forms 8260–3, 8260–4, 8260–5, 8260–15A, and 8260–15B when required by an entry on 8260–15A.

The large number of SIAPs, Takeoff Minimums and ODPs, their complex nature, and the need for a special format make publication in the **Federal Register** expensive and impractical. Further, airmen do not use the regulatory text of the SIAPs, Takeoff Minimums or ODPs, but instead refer to their graphic depiction on charts printed by publishers of aeronautical materials. Thus, the advantages of incorporation by reference are realized and publication of the complete description of each SIAP, Takeoff Minimums and ODP listed on FAA form documents is unnecessary. This amendment provides the affected CFR sections and specifies the types of SIAPs, Takeoff Minimums and ODPs with their applicable effective dates. This amendment also identifies the airport and its location, the procedure, and the amendment number.

Availability and Summary of Material Incorporated by Reference

The material incorporated by reference is publicly available as listed in the **ADDRESSES** section.

The material incorporated by reference describes SIAPS, Takeoff Minimums and/or ODPS as identified in the amendatory language for part 97 of this final rule.

The Rule

This amendment to 14 CFR part 97 is effective upon publication of each separate SIAP, Takeoff Minimums and ODP as Amended in the transmittal. Some SIAP and Takeoff Minimums and textual ODP amendments may have been issued previously by the FAA in a Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts.

The circumstances that created the need for some SIAP and Takeoff Minimums and ODP amendments may require making them effective in less than 30 days. For the remaining SIAPs and Takeoff Minimums and ODPs, an effective date at least 30 days after publication is provided.

Further, the SIAPs and Takeoff Minimums and ODPs contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Procedures (TERPS). In developing these SIAPs and Takeoff Minimums and ODPs, the TERPS criteria were applied to the conditions existing or anticipated at the affected airports. Because of the close and immediate relationship between these SIAPs, Takeoff Minimums and ODPs, and safety in air commerce, I find that notice and public procedure under 5 U.S.C. 553(b) are impracticable and contrary to the public interest and, where applicable, under 5 U.S.C. 553(d), good cause exists for making some SIAPs effective in less than 30 days.

The FAA has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore—(1) is not a ''significant regulatory action'' under Executive Order 12866; (2) is not a ''significant rule'' under DOT Regulatory Policies and Procedures (44 FR 11034; February 26,1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. For the same reason, the FAA certifies that this amendment will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 97

Air traffic control, Airports, Incorporation by reference, Navigation (air).

Issued in Washington, DC, on December 30, 2016.

John S. Duncan,

Director, Flight Standards Service.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me, Title 14, Code of Federal Regulations, Part 97 (14 CFR part 97) is amended by establishing, amending, suspending, or removing Standard Instrument Approach Procedures and/or Takeoff Minimums and Obstacle Departure Procedures effective at 0901 UTC on the dates specified, as follows:

PART 97—STANDARD INSTRUMENT APPROACH PROCEDURES

■ 1. The authority citation for part 97 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40103, 40106, 40113, 40114, 40120, 44502, 44514, 44701, 44719, 44721–44722.

■ 2. Part 97 is amended to read as follows:

Effective 2 February 2017

Rutland, VT, Rutland-Southern Vermont Rgnl, RNAV (GPS) RWY 1, Amdt 1

Effective 2 March 2017

Birmingham, AL, Birmingham-Shuttlesworth Intl, LOC RWY 18, Amdt 2C
Birmingham, AL, Birmingham-Shuttlesworth Intl, RNAV (GPS) RWY 18, Amdt 1B
Gadsden, AL, Northeast Alabama Rgnl, ILS OR LOC RWY 24, Orig-B
Bullhead City, AZ, Laughlin/Bullhead Intl, RNAV (GPS) RWY 34, Amdt 3
Bullhead City, AZ, Laughlin/Bullhead Intl, Takeoff Minimums and Obstacle DP, Amdt 2
Bullhead City, AZ, Laughlin/Bullhead Intl, VOR RWY 34, Amdt 2
Fort Lauderdale, FL, Fort Lauderdale/Hollywood Intl, ILS OR LOC RWY 10R, Amdt 1
Fort Lauderdale, FL, Fort Lauderdale/Hollywood Intl, ILS OR LOC RWY 28L, Amdt 1
Fort Lauderdale, FL, Fort Lauderdale/Hollywood Intl, RNAV (GPS) RWY 10R, Amdt 1
Fort Lauderdale, FL, Fort Lauderdale/Hollywood Intl, RNAV (GPS) RWY 28L, Amdt 1
Albany, GA, Southwest Georgia Rgnl, RNAV (GPS) RWY 4, Amdt 1B
Lawrenceville, GA, Gwinnett County—Briscoe Field, ILS OR LOC RWY 25, Amdt 2C
Crawfordsville, IN, Crawfordsville Muni, RNAV (GPS) RWY 4, Amdt 1A
Indianapolis, IN, Indianapolis Downtown, COPTER RNAV (GPS) 291, Orig-A
Indianapolis, IN, Indianapolis Downtown, COPTER VOR/DME 287, Amdt 2A
Gaithersburg, MD, Montgomery County Airpark, RNAV (GPS)-A, Orig-B
Portland, ME, Portland Intl Jetport, ILS OR LOC RWY 11, ILS RWY 11 (SA CAT I), ILS RWY 11 (CAT II), ILS RWY 11 (CAT III), Amdt 4A
Jaffrey, NH, Jaffrey Airport-Silver Ranch, RNAV (GPS)-C, Orig-A
Buffalo, OK, Buffalo Muni, NDB–A, Amdt 3, CANCELED
Hazleton, PA, Hazleton Rgnl, LOC RWY 28, Amdt 8
Hazleton, PA, Hazleton Rgnl, VOR RWY 10, Amdt 11B, CANCELED
Hazleton, PA, Hazleton Rgnl, VOR RWY 28, Amdt 9B, CANCELED
Quakertown, PA, Quakertown, RNAV (GPS) RWY 11, Orig-B
Quakertown, PA, Quakertown, RNAV (GPS) RWY 29, Amdt 1B
Aberdeen, SD, Aberdeen Rgnl, RNAV (GPS) RWY 17, Orig
Aberdeen, SD, Aberdeen Rgnl, RNAV (GPS) RWY 35, Amdt 1
Aberdeen, SD, Aberdeen Rgnl, Takeoff Minimums and Obstacle DP, Amdt 1
Knoxville, TN, Mc Ghee Tyson, ILS OR LOC RWY 5L, Amdt 9A
Gladewater, TX, Gladewater Muni, RNAV (GPS) RWY 14, Orig-B
Gladewater, TX, Gladewater Muni, RNAV (GPS) RWY 32, Orig-B
Gladewater, TX, Gladewater Muni, VOR RWY 14, Amdt 3B
San Antonio, TX, San Antonio Intl, Takeoff Minimums and Obstacle DP, Amdt 1A

RESCINDED: On December 19, 2016 (81 FR 91698), the FAA published an Amendment in Docket No. 31107, Amdt No. 3723 to Part 97 of the Federal Aviation Regulations under section 97.33. The following entry for Suffolk, VA, effective January 5, 2017, is hereby rescinded in its entirety:

Suffolk, VA, Suffolk Executive, RNAV (GPS) RWY 22, Amdt 2

[FR Doc. 2017–00295 Filed 1–11–17; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Chapter I

[Docket No. FAA–2016–9288]

Hazardous Materials: Amended Emergency Restriction/Prohibition Order

AGENCY: Federal Aviation Administration (FAA), DOT

ACTION: Notice of amended emergency restriction/prohibition order.

SUMMARY: This document provides notice of the Amended Emergency Restriction/Prohibition Order No. FAA–2016–9288, issued by the Secretary of the Department of Transportation on January 9, 2017, and effective on January 10, 2017, to Samsung Galaxy Note 7 Users and air carriers. The Amended Emergency Restriction/Prohibition Order continues to prohibit persons from offering for air transportation or transporting via air any Samsung Galaxy Note 7 device on their person, in carry-on baggage, in checked baggage, or as cargo; requires individuals who inadvertently bring a Samsung Galaxy Note 7 device onto an aircraft immediately power off the device, not use or charge the device while aboard the aircraft, protect the device from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and keep the device on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight; requires air carriers to deny boarding to a passenger in possession of a Samsung Galaxy Note 7 device unless and until the passenger divests themselves and their baggage of the Samsung Galaxy Note 7 device; and requires that if an air carrier flight crew member identifies that a passenger is in possession of a Samsung Galaxy Note 7 device while the aircraft is in flight, the crew member must instruct the passenger to power off the device and not to use or charge the device onboard the aircraft and protect the device from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and keep the device on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight. The Amended Emergency Restriction/Prohibition Order only removes the requirement for air carriers to alert passengers to the prohibition against air transport of a Samsung Galaxy Note 7 device, in particular, immediately prior to boarding.

DATES: The Amended Emergency Restriction/Prohibition Order issued on January 9, 2017, by the Secretary of the Department of Transportation and provided in this document is effective on January 10, 2017.

FOR FURTHER INFORMATION CONTACT: Ryan Landers, Office of the Chief Counsel, Federal Aviation Administration, 1701 Columbia Ave., College Park, GA 30337; telephone: (404)–305–5200; email: *ryan.landers@faa.gov.*

SUPPLEMENTARY INFORMATION: The full text of the Amended Emergency Restriction/Prohibition Order No. FAA–2016–9288 issued January 9, 2017, is as follows:

The Emergency Restriction/Prohibition Order (Order) issued by the United States Department of Transportation (DOT) on October 14, 2016, is hereby amended to remove the requirement for air carriers to alert passengers to the prohibition against air

transport of a Samsung Galaxy Note 7 device, in particular, immediately prior to boarding. As discussed herein, DOT is removing this requirement due to the extensive efforts by Samsung and U.S. wireless providers to recall all Samsung Galaxy Note 7 devices and to make users aware the Samsung Galaxy Note 7 device is forbidden from transportation by air, as well as the deployment by major U.S. wireless providers of a software update that will ultimately render the phones inoperable as mobile devices. In addition, the hazardous materials regulations (HMR; 49 CFR parts 171–180) provide a systematic framework to protect the safe transportation of hazardous materials that includes procedures for notification, handling, and reporting of discrepancies and incidents at air passenger facilities and cargo facilities. All other requirements of the Order issued on October 14, 2016, remain in effect and are not impacted by this Amendment. The Order, as amended, reads in full as follows:

This Amended Emergency Restriction/Prohibition Order (Amended Order) is issued by the DOT pursuant to 49 U.S.C. 5121(d) and will be effective on January 9, 2017. This Amended Order is issued to all persons who transport or offer a Samsung Galaxy Note 7 device for air transportation in commerce within the United States. Individuals who own or possess a Samsung Galaxy Note 7 device may not transport the device on their person, in carry-on baggage, in checked baggage, nor offer the device for air cargo shipment. This prohibition includes all Samsung Galaxy Note 7 devices. Samsung Galaxy Note 7 devices are properly classified as lithium ion batteries contained in equipment, UN3481, Class 9 (49 CFR 172.101).

By this Amended Order, DOT is:

* Continuing to prohibit persons from transporting or offering for air transportation a Samsung Galaxy Note 7 device, by either carrying it on their person or in carry-on baggage when boarding an aircraft, placing the Samsung Galaxy Note 7 device in checked baggage, or shipping it via air as cargo;

* continuing to require air carriers to handle Samsung Galaxy Note 7 devices consistently with other forbidden hazardous materials under title 49 of the Code of Federal Regulations, and to deny boarding to a passenger in possession of a Samsung Galaxy Note 7 device unless and until the passenger divests themselves and their baggage, including carry-on and checked, of the Samsung Galaxy Note 7 device;

* continuing to require that persons who inadvertently bring a Samsung Galaxy Note 7 device onto an aircraft immediately power off the device, do not use or charge the device while aboard the aircraft, protect the device from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and keep the device on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight; and

* continuing to require that if an air carrier flight crew member identifies that a passenger is in possession of a Samsung Galaxy Note 7 device while the aircraft is in flight, the crew member must instruct the passenger to power off the device, do not use or charge the device while aboard the aircraft, protect the device from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and keep the device on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight.

Upon information derived from the Samsung Galaxy Note 7 device recall under Order issued September 15, 2016, recent incidents of a dangerous evolution of heat with Samsung Galaxy Note 7 replacement devices, Samsung's October 11, 2016, decision to stop manufacturing and selling Samsung Galaxy Note 7 devices due to the inability to identify the root cause of the incidents, and the U.S. Consumer Product Safety Commission (CPSC) recall of all Samsung Galaxy Note 7 devices issued October 13, 2016, the Secretary of Transportation (Secretary) has found an unsafe condition and that an unsafe practice exists and constitutes an imminent hazard to the safety of air transportation. For more detailed information, see ''Background/Basis for Order'' below.

Effective January 10, 2017, any Person Identified by This Amended Order

(1) Shall not transport, nor offer for transportation, via air a Samsung Galaxy Note 7 device. By virtue of the Order issued October 14, 2016, and the CPSC recalls, the Samsung Galaxy Note 7 devices are forbidden for transportation by air. For purposes of this Amended Order, transporting or offering for transportation includes bringing a Samsung Galaxy Note 7 device aboard an aircraft on your person (*e.g.,* in your pocket), bringing a Samsung Galaxy Note 7 device aboard an aircraft in carry-on baggage, offering a Samsung Galaxy Note 7 device in checked baggage, and offering a Samsung Galaxy Note 7 device for air cargo shipment (*e.g.,* FedEx or United Parcel Service).

(2) Shall ensure that a prohibited Samsung Galaxy Note 7 device inadvertently brought aboard an aircraft is immediately powered off, not used or charged while aboard the aircraft, protected from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and kept on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight.

Air Carrier Requirements

By virtue of the Order issued October 14, 2016, this Amended Order, and the CPSC recalls, the Samsung Galaxy Note 7 device is a forbidden hazardous material. In accordance with 49 CFR part 175, air carriers must not accept these devices for air transportation by knowingly permitting a passenger to board an aircraft with a Samsung Galaxy Note 7 device. Damaged or recalled lithium ion batteries, including those contained in equipment, are not permitted to be transported by air, and a Samsung Galaxy Note 7 device is categorized as ''forbidden.'' 49 CFR 173.21(c). Upon inquiry from a passenger, air carriers are required to make passengers aware of the continuing prohibition against the transportation of Samsung Galaxy Note 7 devices aboard aircraft on their person, in carry on or checked baggage, and in cargo. If an air carrier representative identifies that a passenger is in possession of a Samsung Galaxy Note 7 device prior to boarding the aircraft, the air carrier must deny boarding to the passenger unless and until the passenger divests themselves, including on their person and in checked and carry-on baggage, of the Samsung Galaxy Note 7 device. If an air carrier flight crew member identifies that a passenger is in possession of a Samsung Galaxy Note 7 device while the aircraft is in flight, the crew member must instruct the passenger to power off the device, not use or charge the device while aboard the aircraft, protect the device from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and keep the device on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight.

This Amended Order applies to all persons who transport Samsung Galaxy Note 7 devices, or offer them for transportation, by air in commerce (as defined by 49 U.S.C. 5102(1)) to, from, and within the United States, and their

officers, directors, employees, subcontractors, and agents. This Amended Order is effective January 10, 2017, and remains in effect unless rescinded in writing by the Secretary, or until it otherwise expires by operation of regulation and/or law.

Jurisdiction

The Secretary has the authority to regulate the transportation of lithium ion batteries contained in equipment in commerce. 49 U.S.C. 5103(b). The Secretary has designated lithium ion batteries contained in equipment, UN 3481, as a hazardous material subject to the requirements of the HMR. 49 U.S.C. 5103(a); 49 CFR 172.101. Persons who offer for transportation, or transport, lithium ion batteries contained in equipment by air in commerce to, from, and within the United States are a ''person,'' as defined by 49 U.S.C. 5102(9), in addition to being a ''person'' under 1 U.S.C. 1 and a ''person who offers'' as defined by 49 CFR 171.8. ''Commerce'' is as defined by 49 U.S.C. 5102(1) and 49 CFR 171.8, and ''transportation'' or ''transport'' are as defined by 49 U.S.C. 5102(13) and 49 CFR 171.8. Accordingly, persons who transport or offer for transportation lithium ion batteries contained in equipment in commerce, including by air, are subject to the authority and jurisdiction of the Secretary including the authority to impose emergency restrictions, prohibitions, recalls, or out-of-service orders, without notice or an opportunity for hearing, to the extent necessary to abate the imminent hazard. 49 U.S.C. 5121(d).

Background/Basis for Order

An imminent hazard, as defined by 49 U.S.C. 5102(5), constitutes the existence of a condition relating to hazardous materials that presents a substantial likelihood that death, serious illness, severe personal injury, or a substantial endangerment to health, property, or the environment may occur before the reasonably foreseeable completion date of a formal proceeding begun to lessen the risk that death, illness, injury or endangerment may occur.

A Samsung Galaxy Note 7 device may cause an ignition or a dangerous evolution of heat or become a fuel source for fire. Samsung and CPSC acknowledged this fact with the September 15, 2016 recall, Samsung's October 11, 2016 announcement that it was suspending the manufacture and sale of the Samsung Galaxy Note 7 device, and the October 13, 2016 Samsung and CPSC expanded recall covering all Samsung Galaxy Note 7 devices. Furthermore, persons have experienced incidents of dangerous evolution of heat with the recalled Samsung Galaxy Note 7 devices. Just one fire incident poses a high risk of death, serious illness, severe personal injury, and danger to property and the environment. This risk is magnified when the fire or evolution of heat occurs aboard an aircraft during flight. Therefore, each offering and transportation of a Samsung Galaxy Note 7 device constitutes an imminent hazard.

A. Samsung Galaxy Note 7 Recall and Incidents

On September 15, 2016, Samsung and the CPSC recalled certain Samsung Galaxy Note 7 devices sold prior to September 15, 2016. The recall was based on a finding that the lithium ion battery in a Samsung Galaxy Note 7 device ''can overheat and catch fire.'' Samsung offered either a refund or replacement Samsung Galaxy Note 7 device. Subsequently, there were reported incidents of the replacement Samsung Galaxy Note 7 devices overheating and/or catching fire. In a decision announced on October 11, 2016, Samsung stopped production and sale of Samsung Galaxy Note 7 devices. On October 13, 2016, Samsung and the CPSC expanded the recall to include all Samsung Galaxy Note 7 devices because they ''can overheat and catch fire.'' On December 9, 2016, Samsung reported that it would release a software update starting on December 19, 2016 that would prevent U.S. Samsung Galaxy Note 7 devices from charging and eliminate their ability to work as mobile devices.

B. DOT Actions To Mitigate the Safety Risk of Samsung Galaxy Note 7 Devices in Air Transportation

In the wake of Samsung Galaxy Note 7 device incidents, the Federal Aviation Administration (FAA) and Pipeline and Hazardous Materials Safety Administration (PHMSA) have taken a number of steps to mitigate the safety risk of Samsung Galaxy Note 7 devices in air transportation. On September 8, 2016, the FAA issued a statement strongly advising passengers not to turn on or charge a Samsung Galaxy Note 7 device aboard an aircraft, nor stow a Samsung Galaxy Note 7 device in any checked baggage. On September 15, 2016, PHMSA issued a Safety Advisory Notice to inform the public about the risks associated with transporting damaged, defective, or recalled lithium batteries or portable electronic devices, including the Samsung Galaxy Note 7 device recalled by the CPSC. The Safety Advisory Notice required that persons who wish to carry the recalled Samsung Galaxy Note 7 device aboard an aircraft must (1) turn off the device; (2) disconnect the device from charging equipment; (3) disable all applications that could inadvertently activate the phone; protect the power switch to prevent its unintentional activation; and (4) keep the device in carry-on baggage or on your person.

On September 16, 2016, the FAA issued general guidance to airlines about the rules for carrying recalled or defective lithium batteries and lithium battery-powered devices aboard an aircraft. Specifically, the FAA noted that (1) U.S. hazardous materials regulations prohibit air cargo shipments of recalled or defective lithium batteries and lithium battery-powered devices; (2) passengers may not turn on or charge the devices when they carry them aboard the aircraft; (3) passengers must protect the devices from accidental activation; and (4) passengers must not pack them in checked baggage. On September 16, 2016, the FAA issued a Safety Alert for Operators (SAFO), recommending the following action by air operators: (1) Ensure that operator personnel responsible for cargo processing know and understand that damaged or recalled lithium batteries—including those installed in equipment and devices—are forbidden on aircraft as air cargo; and (2) ensure that operator personnel responsible for passenger processing and cabin safety know and understand that damaged or recalled lithium batteries—including those installed in devices—may be restricted from carriage or use on the aircraft. On October 10, 2016, the FAA issued updated guidance on the Samsung Galaxy Note 7 device, urging passengers aboard an aircraft to power down and not use, charge, or stow in checked baggage, any Samsung Galaxy Note 7 device.

Notwithstanding the above DOT actions, and in light of continued risks identified by Samsung and CPSC associated with Samsung Galaxy Note 7 devices, on October 14, 2016, DOT issued the Order to forbid transport of Samsung Galaxy Note 7 devices by air transportation in commerce within the United States. The Order outlined remedial action required, which remains unchanged in this Amended Order except for the requirement for air carriers to alert passengers to the prohibition against air transport of the Samsung Galaxy Note 7 device, in particular, immediately prior to boarding. Since the issuance of the Order, DOT has determined that the remedial action of air carriers alerting passengers to the prohibition against air

transport of the Samsung Galaxy Note 7 device, in particular, immediately prior to boarding is no longer warranted, due to the extensive efforts by Samsung and U.S. wireless providers to recall all Samsung Galaxy Note 7 devices and to make users aware the Samsung Galaxy Note 7 device is forbidden from transportation by air. Moreover, on December 9, 2016, Samsung reported on its Web site that more than 93 percent of all recalled Samsung Galaxy Note 7 devices had been returned to Samsung and that it would release a software update starting on December 19, 2016 that would prevent U.S. Samsung Galaxy Note 7 devices from charging and eliminate their ability to work as mobile devices.[1] We understand that major U.S. wireless providers will push out this update on or before January 8, 2017. T Mobile reported that it would push the software update on December 27, 2016.[2] Verizon Wireless and AT&T both reported that they would push the software update on January 5, 2017,[3] and Sprint reported that it would push the update on January 8, 2017.[4] We think that these efforts to render U.S. Samsung Galaxy Note 7 devices inoperable, in addition to the ongoing recall and notification efforts, will decrease the likelihood that Samsung Galaxy Note 7 devices will be brought on board aircraft. In addition, the hazardous materials regulations (HMR; 49 CFR parts 171–180) provide a systematic framework to protect the safe transportation of hazardous materials that includes procedures for notification, handling, and reporting of discrepancies and incidents at air passenger facilities and cargo facilities.

Remedial Action

To eliminate or abate the imminent hazard:

(1) Persons covered by this Amended Order shall not transport, nor offer for transportation, via air any Samsung Galaxy Note 7 device.

(2) Air carriers are required to handle Samsung Galaxy Note 7 devices consistently with other forbidden hazardous materials under 49 CFR parts 173 and 175, and to deny boarding to a passenger in possession of a Samsung Galaxy Note 7 device unless and until the passenger divests themselves and carry-on or checked baggage of the Samsung Galaxy Note 7 device.

(3) Persons covered by this Amended Order who inadvertently bring a prohibited Samsung Galaxy Note 7 device aboard an aircraft must immediately power off the device, leave it powered off until no longer aboard the aircraft, not use or charge the device while aboard the aircraft, protect the device from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and keep the device on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight.

(4) When a flight crew member identifies that a passenger is in possession of a Samsung Galaxy Note 7 device while the aircraft is in flight, the crew member must instruct the passenger to power off the device, not use or charge the device while aboard the aircraft, protect the device from accidental activation, including disabling any features that may turn on the device, such as alarm clocks, and keep the device on their person and not in the overhead compartment, seat back pocket, nor in any carry-on baggage, for the duration of the flight.

Rescission of This Amended Order

This Amended Order remains in effect until the Secretary determines that an imminent hazard no longer exists or a change in applicable statute or federal regulation occurs that supersedes the requirements of this Amended Order, in which case the Secretary will issue a Rescission Order.

Failure To Comply

Any person failing to comply with this Amended Order is subject to civil penalties of up to $179,933 for each violation for each day they are found to be in violation (49 U.S.C. 5123). A person violating this Order may also be subject to criminal prosecution, which may result in fines under title 18, imprisonment of up to ten years, or both (49 U.S.C. 5124).

Right To Review

Pursuant to 49 U.S.C. 5121(d)(3) and in accordance with section 554 of the Administrative Procedure Act (APA), 5 U.S.C. 500 *et seq.*, a review of this action may be filed. Any petition seeking relief must be filed within 20 calendar days of the date of this order (49 U.S.C. 5121(d)(3)), and addressed to U.S. DOT Dockets, U.S. Department of Transportation, 1200 New Jersey Avenue SE., Room W12–140, Washington, DC 20590 (*http://Regulations.gov*). Furthermore, a petition for review must state the material facts at issue which the petitioner believes dispute the existence of an imminent hazard and must include all evidence and exhibits to be considered. The petition must also state the relief sought. Within 30 days from the date the petition for review is filed, the Secretary must approve or deny the relief in writing; or find that the imminent hazard continues to exist, and extend the original Emergency Order. In response to a petition for review, the Secretary may grant the requested relief in whole or in part; or may order other relief as justice may require (including the immediate assignment the case to the Office of Hearings for a formal hearing on the record).

Emergency Contact Official

If you have any questions concerning this Amended Emergency Restriction/Prohibition Order, you should call PHMSA Hazardous Materials Information Center at 1–800–467–4922 or email at *phmsa.hm-infocenter@dot.gov.*

Issued in Washington, DC, on January 9, 2017.

Reginald C. Govan,

Chief Counsel, Federal Aviation Administration.

[FR Doc. 2017–00555 Filed 1–9–17; 4:15 pm]

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[1] *https://news.samsung.com/us/2016/12/09/samsung-taking-bold-steps-to-increase-galaxy-note7-device-returns/; see also http://www.samsung.com/us/note7recall/.*

[2] *https://explore.t-mobile.com/samsung-galaxy-note7-recall.*

[3] *https://www.verizonwireless.com/support/samsung-galaxy-note7-recall-faqs/; https://www.att.com/esupport/article.html#!/wireless/KM1122948.*

[4] *https://support.sprint.com/support/article/FAQs-about-the-Samsung-Galaxy-Note7-recall/817d4190-b2e2-43c8-b549-97b3553d5c24.*

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

21 CFR Part 866

[Docket No. FDA–2014–N–0440]

Microbiology Devices; Reclassification of Influenza Virus Antigen Detection Test Systems Intended for Use Directly With Clinical Specimens

AGENCY: Food and Drug Administration, HHS.

ACTION: Final order.

SUMMARY: The Food and Drug Administration (FDA) is reclassifying antigen based rapid influenza virus antigen detection test systems intended to detect influenza virus directly from clinical specimens that are currently regulated as influenza virus serological reagents from class I into class II with special controls and into a new device classification regulation.

DATES: This order is effective February 13, 2017. See further discussion in section IV, ''Implementation Strategy.''

FOR FURTHER INFORMATION CONTACT: Stefanie Akselrod, Center for Devices and Radiological Health, Food and Drug Administration, 10903 New Hampshire Ave., Bldg. 66, Rm. 5438, Silver Spring, MD 20993–0002, 301–796–6188.

SUPPLEMENTARY INFORMATION:

I. Regulatory Authorities

The Federal Food, Drug, and Cosmetic Act (the FD&C Act), as amended by the Medical Device Amendments of 1976 (the 1976 amendments) (Pub. L. 94–295), the Safe Medical Devices Act of 1990 (Pub. L. 101–629), the Food and Drug Administration Modernization Act of 1997 (FDAMA) (Pub. L. 105–115), the Medical Device User Fee and Modernization Act of 2002 (Pub. L. 107–250), the Medical Devices Technical Corrections Act (Pub. L. 108–214), the Food and Drug Administration Amendments Act of 2007 (Pub. L. 110–85), and the Food and Drug Administration Safety and Innovation Act (FDASIA) (Pub. L. 112–144), among other amendments, established a comprehensive system for the regulation of medical devices intended for human use. Section 513 of the FD&C Act (21 U.S.C. 360c) established three categories (classes) of devices, reflecting the regulatory controls needed to provide reasonable assurance of their safety and effectiveness. The three categories of devices are class I (general controls), class II (special controls), and class III (premarket approval).

Under section 513(d) of the FD&C Act, devices that were in commercial distribution before the enactment of the 1976 amendments on May 28, 1976 (generally referred to as preamendments devices) are classified after FDA has: (1) Received a recommendation from a device classification panel (an FDA advisory committee); (2) published the panel's recommendation for comment, along with a proposed regulation classifying the device; and (3) published a final regulation classifying the device. FDA has classified most preamendments devices under these procedures.

Devices that were not in commercial distribution prior to May 28, 1976 (generally referred to as ''postamendments devices''), are automatically classified by section 513(f) of the FD&C Act into class III without any FDA rulemaking process. Those devices remain in class III and require premarket approval unless, and until, the device is reclassified into class I or II or FDA issues an order finding the device to be substantially equivalent, in accordance with section 513(i) of the FD&C Act, to a predicate device that does not require premarket approval.

Under section 513(i) of the FD&C Act, a device is substantially equivalent if it has the same intended use and technological characteristics as a predicate device, or has the same intended use as the predicate device and has different technological characteristics, but data demonstrate that the new device is as safe and effective as the predicate device and does not raise different questions of safety or effectiveness than the predicate device. The Agency determines whether new devices are substantially equivalent to predicate devices by means of premarket notification (510(k)) procedures in section 510(k) of the FD&C Act (21 U.S.C. 360(k)) and part 807 (21 CFR part 807).

FDAMA added section 510(m) to the FD&C Act. Section 510(m) of the FD&C Act provides that a class II device may be exempted from the premarket notification requirements under section 510(k) of the FD&C Act, if the Agency determines that premarket notification is not necessary to assure the safety and effectiveness of the device.

On July 9, 2012, FDASIA was enacted. Section 608(a) of FDASIA amended section 513(e) of the FD&C Act, changing the mechanism for reclassifying a device from rulemaking to an administrative order. Section 513(e) of the FD&C Act provides that FDA may, by administrative order, reclassify a device based upon ''new information.'' FDA can initiate a reclassification under section 513(e) of the FD&C Act or an interested person may petition FDA to reclassify an eligible device type. The term ''new information,'' as used in section 513(e) of the FD&C Act, includes information developed as a result of a reevaluation of the data before the Agency when the device was originally classified, as well as information not presented, not available, or not developed at that time. See, *e.g., Holland-Rantos Co.* v. *U.S. Dep't of Health, Educ., and Welfare,* 587 F.2d 1173, 1174 n.1 (D.C. Cir. 1978); *Upjohn* v. *Finch,* 422 F.2d 944 (6th Cir. 1970); *Bell* v. *Goddard,* 366 F.2d 177 (7th Cir. 1966).

Reevaluation of the data previously before the Agency is an appropriate basis for subsequent action where the reevaluation is made in light of newly available authority. See *Bell,* 366 F.2d at 181; *Ethicon, Inc.* v. *FDA,* 762 F. Supp. 382, 388–91 (D.D.C. 1991), or in light of changes in ''medical science'' (*Upjohn,* 422 F.2d at 951). Whether data before the Agency are old or new data, the ''new information'' to support reclassification under section 513(e) of the FD&C Act must be ''valid scientific evidence,'' as defined in section 513(a)(3) of the FD&C Act and 21 CFR 860.7(c)(2). See, *e.g., Gen. Med. Co.* v. *FDA,* 770 F.2d 214 (D.C. Cir. 1985); *Contact Lens Mfrs. Ass'n.* v. *FDA,* 766 F.2d 592 (D.C. Cir.), cert. denied, 474 U.S. 1062 (1986).

Section 513(e)(1) of the FD&C Act sets forth the process for issuing a final order for reclassifying a device under that section. Specifically, prior to the issuance of a final order reclassifying a device, the following must occur: (1) Publication of a proposed order in the **Federal Register**; (2) a meeting of a device classification panel described in section 513(b) of the FD&C Act; and (3) consideration of comments to a public docket. FDA published a proposed order to reclassify this device type in the **Federal Register** of May 22, 2014 (79 FR 29387). FDA has held a meeting of a device classification panel described in section 513(b) of the FD&C Act with respect to antigen based rapid influenza diagnostic test (RIDT) systems and has also received and considered comments on the proposed order, as discussed in section II. Therefore, FDA has met the requirements under section 513(e)(1) of the FD&C Act.

II. Public Comments in Response to the Proposed Order

On May 22, 2014, FDA published a proposed order to reclassify antigen based RIDTs intended to detect influenza virus antigen directly from clinical specimens that are currently regulated as influenza virus serological reagents under § 866.3330 (21 CFR 866.3330) from class I into class II with special controls and into a new device classification regulation (79 FR 29387).

The Agency received comments on the proposed order from several entities. Comments were received from device industry manufacturers, a consumer group, professional organizations, a health care organization, a device manufacturers association, and an individual consumer.

To make it easier to identify comments and our responses, the word ''Comment'' and a comment number appear in parentheses before each comment's description, and the word ''Response'' in parentheses precedes each response. Similar comments are grouped together under the same number. Specific issues raised by the comments and the Agency's responses follow.

A. General Comments

(Comment 1) Commenters expressed support for the proposed order to reclassify antigen based RIDTs from class I to class II with special controls, noting that there is evidence that the currently available antigen based RIDTs, which are widely used in non-clinical laboratory settings such as physician office laboratories, are performing poorly, resulting in many misdiagnosed cases of influenza. Commenters noted that a misdiagnosis of influenza may have serious consequences, including: Inappropriate use of antibiotics and failure to use antiviral therapy, which may be critical for some patients, following false negative results; the unnecessary or inappropriate prescribing of antiviral drugs following false positive results; ineffective infection control measures; and an overall increased public health burden, such as increased rate of hospitalization and return doctor visits. Several commenters expressed a concern regarding frequent antigenic changes in the circulating strains as the influenza virus evolves and agreed with the new requirement that manufacturers conduct annual analytical testing of circulating strains in an effort to monitor the performance of these tests over time. Overall, there was a general consensus among the commenters that the proposed special controls address and mitigate the risks to health.

(Response) FDA agrees that reclassification of antigen based RIDTs into class II as outlined in this order will help to improve the overall quality of testing for influenza. The new minimum performance requirements for these tests detecting influenza virus antigens are expected to lower the number of misdiagnosed influenza infections by increasing the number of devices that can reliably detect the influenza virus. In addition, the special controls requiring annual and emergency analytical reactivity testing provide a process for continued monitoring of the performance of antigen based RIDTs. As part of that process, the Centers for Disease Control and Prevention (CDC) and FDA will collaborate in efforts to ensure that there is an influenza virus analytical reactivity test panel available to all manufacturers of antigen based RIDTs for evaluation of the analytical reactivity of their assays with circulating viruses on an annual basis.

(Comment 2) One commenter noted that under the FD&C Act, as amended by FDASIA, FDA is able to reclassify a device via an ''order rather than rulemaking,'' but the commenter expressed a concern that FDA seems to consider holding a panel meeting after the issuance of a proposed order as ''discretionary rather than mandatory.'' The commenter urged FDA to hold panel meetings after the issuance of proposed reclassification orders in order to allow the panel to discuss the proposal after it has been issued. The commenter stated that holding a panel meeting following issuance of a proposed reclassification order is a critical element of the process reforms enacted by Congress. In addition, the commenter expressed a concern that the Agency has not obtained sufficient feedback from physicians who commonly use the rapid influenza tests in their practice. Therefore, the commenter suggested that FDA should convene another panel meeting and include these physicians to provide critical expertise and perspective on the overall evaluation of FDA's proposed plans on test reclassification, including the analytical reactivity testing protocol, specifications, and qualification of specimens.

(Response) The June 13, 2013, Microbiology Advisory Panel (''Panel'') meeting considered all relevant scientific issues associated with the proposed order for the antigen based RIDTs and recommended reclassifying these devices into class II (special controls). The Panel included six physicians and seven researchers who provided input that FDA considered for purposes of the proposed order, including the proposed special controls. Each of the Panel members is considered an authority on matters of influenza infection, treatment, epidemiology, and/or biology. Representatives from CDC and the Association of Public Health Laboratories presented extensive data on the use of the currently available antigen based RIDTs and the outcomes related to patients that support the conclusion that there has been poor performance of antigen based RIDTs in the medical practice. The Panel recommended the reclassification of antigen based RIDTs. FDA is not aware of any significant changes in benefits or risks relating to the antigen based RIDTs that have been identified since the June 13, 2013, Panel meeting. Stakeholders had an opportunity to provide feedback to the proposed order in their comments, and that feedback has been largely positive. The public comments are addressed here and are also available to view by request or on *https://www.regulations.gov.*

The process followed by FDA in reclassifying antigen based RIDTs is in accordance with the applicable statutory provisions, which were amended by FDASIA. Section 608 of FDASIA amended section 513(e) of the FD&C Act by changing the reclassification process from rulemaking to an administrative order process. The amendments to section 513(e) of the FD&C Act made by FDASIA require, in relevant part, that issuance of an administrative order reclassifying a device be preceded by a proposed order and a meeting of a device classification panel.

As amended, section 513(e) of the FD&C Act does not prescribe when these two events (the panel meeting and proposed order) must occur in relation to each other. Therefore, under this provision, the Agency may hold a panel meeting either before or after the issuance of a proposed reclassification order. This approach is consistent with the prior panel provision in section 513(e) of the FD&C Act, which provided for FDA, at its discretion, to secure a panel recommendation prior to the promulgation of a reclassification rule. Generally, for future reclassifications under section 513(e) of the FD&C Act for which a meeting of a device classification panel has not yet occurred, FDA expects a proposed reclassification order will be issued prior to the panel meeting required under section 513(e).

B. Transition Period

(Comment 3) While one commenter expressed agreement that the proposed 1 year timeframe should be sufficient for manufacturers to bring devices already on the market into compliance with the special controls, another commenter suggested that FDA consider providing additional transition time for the implementation of the final order. The commenter suggested that this would assist manufacturers who are working in good faith to meet the new requirements to prepare submissions in advance of the influenza season and would provide for product continuity among health care providers. The commenter did not identify why 1 year would be an insufficient period of transition time.

(Response) The Panel recommended and FDA made the determination that special controls, including the new minimum performance requirements, are needed, in addition to general controls, to provide reasonable assurance of safety and effectiveness for antigen based RIDTs. We, therefore, do not believe, given the risk that poor performance of antigen based RIDTs pose to public health, a delay in implementation of more than 1 year is appropriate. FDA also understands the need for a balanced approach that takes into account the time it will take for

manufacturers to come into compliance with the special controls and seeks to avoid disruption of access to these devices. With these considerations in mind, FDA believes that a period of 1 year from the publication date of this final order is appropriate for manufacturers to come into compliance with the special controls and for those manufacturers whose currently legally marketed devices do not meet the minimum performance criteria to prepare and submit a 510(k) for a new or significantly changed or modified device. Therefore, FDA does not intend to enforce compliance with the special controls with respect to currently legally marketed antigen based RIDT devices until 1 year after the date of publication of this final order. FDA believes this approach will help ensure the efficient and effective implementation of the final order.

C. Clinical Performance Standards and Comparator Methods

(Comment 4) One comment recommended a transition to one common reference method comparator: A molecular nucleic acid-based method. The reasons cited for this recommendation included: (1) A level playing field for all manufacturers and (2) better clarity for users, industry, and the Agency. Another comment raised concerns about the unreliability of the culture results due to non-standardized culture practices. In addition, a commenter cautioned that providing two minimum performance standards, one when compared to viral culture and another when compared to a nucleic acid-based method, may have unintended consequences: (1) Users may make false assumptions and choose a method based strictly on the presented estimates of sensitivity and specificity without noting the comparator reference method that was used to derive the performance measures and (2) manufacturers may elect to conduct the method comparison using both types of reference methods and submit the results in support of a 510(k) even if only one of the comparisons meets the minimum performance bar.

(Response) FDA appreciates the concern over the potential consequences of allowing for the two performance levels based on different comparator methods. The Agency carefully considered the public feedback as well as the implications of eliminating the viral culture comparator method as an acceptable comparator method used in the evaluation of clinical performance of antigen based RIDTs. Some important considerations were: (1) A lack of standardization of viral culture methods among various laboratories, (2) an increasing difficulty in procuring the services of a laboratory that is equipped to perform viral culture procedures, (3) the wide availability of FDA-cleared nucleic acid-based comparator methods among laboratories, (4) the demonstrated high sensitivity of the nucleic acid-based methods when compared to viral culture method (when properly performed) for the detection of the influenza viruses, and (5) the reliability of the viral culture method when performed properly.

In addition, we recognize that performance evaluation based on two different comparators where each detects a different analyte (viral culture methods detect viable virus particles while nucleic acid-based methods detect the viral ribonucleic acids) requires two sets of performance criteria resulting in performance measures that may not allow for direct comparison between some devices. However, viral culture method, when performed correctly, has been shown historically to be accurate and remains a valid reference method for the detection of influenza viruses. There are many influenza detecting devices currently on the market that have been evaluated based on comparison with viral culture comparator methods and met the performance criteria set forth in § 866.3328(b)(1)(ii) (21 CFR 866.3328). FDA has also stated expressly in the special controls that a viral culture comparator method used to demonstrate that a device meets the minimum performance criteria at § 866.3328(b)(1)(ii) must be correctly performed.

At this time, the only currently appropriate and FDA accepted comparator methods are: (1) An FDA-cleared nucleic acid-based test or (2) a correctly performed viral culture method. However, FDA recognizes that a comparator method at least as accurate as FDA-cleared nucleic acid-based tests in the detection of the influenza viruses may be established in the future. Based on that recognition and the available information, the final order clarifies that other comparator methods, if currently appropriate and FDA accepted, could be used to demonstrate that the performance criteria requirements in § 866.3328(b)(1)(i) have been met. Therefore, if FDA determines at some point in the future that another comparator method at least as accurate as FDA-cleared nucleic acid-based tests has been established as a currently appropriate comparator method, sponsors of premarket submissions for antigen based RIDTs would have the option of demonstrating that their devices meet the minimum performance criteria at § 866.3328(b)(1)(i) based on a comparison to that additional currently appropriate and FDA-accepted comparator method.

(Comment 5) Another commenter cautioned that the performance estimates shown in the package inserts for these tests may be biased due to the fact that the data have been generated under closely controlled clinical trial procedures that use optimal sample types, a time of sample collection post onset of symptoms, proper sample storage, and time to testing. Because these conditions are often not maintained in daily clinical use, the true performance of these assays in ''real life'' settings may be different.

(Response) FDA acknowledges that the performance data in the device labeling are estimates. All assays are subject to variation under real-life circumstances when the assays are used in clinical practice. However, FDA believes that premarket studies demonstrating performance for these devices should include a variety of testing sites representative of the settings in which the device will be used and that a sufficient number of clinical specimens should be tested to arrive at reasonable measures of confidence in the calculated performance estimates (*i.e.,* the lower bound of the two-sided 95 percent confidence interval (calculated by the Score method)), as outlined in the guidance document entitled ''Establishing the Performance Characteristics of In Vitro Diagnostic Devices for the Detection or Detection and Differentiation of Influenza Viruses'' (*http://www.fda.gov/RegulatoryInformation/Guidances/ucm079171.htm*) (''2011 Influenza Guidance document'').

(Comment 6) One commenter suggested that the proposed sensitivity criteria for influenza A for antigen based RIDTs, when using a molecular method as a comparator method, are less stringent than those recorded in the 2011 Influenza Guidance document. The commenter stated that it:

> [I]s not clear . . . why the Special Controls for comparison to a molecular method has become less stringent (sensitivity/PPA estimate for Influenza A reduced from a point estimate of 90 percent with a 95 percent CI lower bound of 80 percent, to a point estimate of 80 percent with a 95 percent CI lower bound of 70 percent) when the intention of a Special Controls document would presumably be thought to make comparative criteria tighter overall.

The commenter made a reference to the statement in section 9.B.iii, pages 26–27 of the 2011 Influenza Guidance

document (3d bullet), that states: ''Nucleic acid-based tests should demonstrate at least 90% sensitivity for each analyte and each specimen type with a lower bound of the two-sided 95% CI greater than 80%.'' The commenter also questioned whether this determination was discussed and used to scientifically justify the different criteria for sensitive molecular methods, including polymerase chain reaction, which detect inactive virus in the absence of viable viral particles in a sample, and for viral detection in general when using a molecular comparative method.

(Response) The quoted statement from the 2011 Influenza Guidance document refers to the performance of nucleic acid-based devices, while the performance criteria stated in the May 22, 2014, proposed order (79 FR 29387 at 29390) (Section VIII. Special Controls: . . . If the manufacturer chooses to compare the device to an appropriate molecular comparator method: The positive percent agreement for the device when testing for Influenza A and Influenza B must be at least at the 80 percent point estimate with a lower bound of the 95 percent confidence interval that is greater than or equal to 70 percent) refer to RIDTs based on antigen detection, which are historically known to have a more limited sensitivity due to the properties of the enzyme immunoassay (EIA) technology. The relevant citation pertaining to the performance of the rapid devices detecting influenza virus antigens may be found in section 9.B.iii, pages 26–27 (1st and 2d bullet) of the 2011 Influenza Guidance document, which states:

> For rapid devices detecting influenza A virus antigen, we recommend that you include a sufficient number of prospectively collected samples for each specimen type claimed to generate a sensitivity result with a lower bound of the two-sided 95% CI greater than 60%. . . . For rapid devices detecting influenza B virus antigen, we recommend that you include a sufficient number of samples for each claimed specimen type to generate a result for sensitivity with a lower bound of the two-sided 95% CI greater than 55%.

Nucleic acid-based assays that test for influenza are regulated under § 866.3980, *Respiratory viral panel multiplex nucleic acid assay,* and have been held to higher performance criteria than antigen based RIDTs because of their demonstrated ability to reach higher sensitivity for viral detection. By establishing special controls with minimum performance criteria for antigen based RIDTs, this final order raises the required minimum performance criteria for viral detection by the EIA based tests beyond the recommendations set forth in the 2011 Influenza Guidance Document. Nucleic acid-based tests continue to be subject to the document entitled ''Class II Special Controls Guidance: Respiratory Viral Panel Multiplex Nucleic Acid Assay'' (*http://www.fda.gov/Regulatory Information/Guidances/ucm180307.htm*), except when the device detects and differentiates Influenza A subtype H1 and subtype H3, in which case they are also subject to the document entitled ''Class II Special Controls Guidance Document: Testing for Detection and Differentiation of Influenza A Virus Subtypes Using Multiplex Nucleic Acid Assays'' (*http://www.fda.gov/downloads/medical devices/deviceregulationandguidance/guidancedocuments/ucm180310.pdf*).

(Comment 7) One commenter criticized FDA for providing no specifications for how to design a clinical performance study for antigen based RIDT systems in terms of the proportion of samples that should be presented for each age group. In addition, the comment suggested that the performance estimates of different devices presented in their package inserts may be biased due to the actual proportions of age groups in the study (*i.e.,* children vs. adults) and may not be truly reflective of the performance in the population overall. The commenter further suggested that the number of positive samples as well as sensitivity and specificity (or positive percent agreement (PPA)/negative percent agreement (NPA)) for each age group be presented in each device's Instructions for Use to ensure transparency.

(Response) FDA's current recommendations for appropriate study design can be found in the 2011 Influenza Guidance document, where section 9.B.ii mentions that there should be a representative number of positive samples (determined by the reference method) from each age group and [the data should be presented] stratified by age (*e.g.,* pediatric populations aged birth to 5 years, 6 to 21 years, . . . adults aged 22–59, and greater than 60 years old) in addition to the overall data summary table.

In addition, the 2011 Influenza Guidance document recommends diversifying the location of the selected clinical sites and the anticipated prevalence of influenza at the time of the study. Depending on the site selection, the age composition of the subjects will vary, but it is difficult to predict the different age groups at the outset of a study. FDA evaluates assay performance estimates stratified by age groups and determines whether the performance among different age groups is similar before making the final decision regarding 510(k) clearance. FDA encourages sponsors to use the pre-submission program to discuss the premarket submission strategy and study design for their specific devices. The pre-submission program is described in the guidance document titled ''Requests for Feedback on Medical Device Submissions: The Pre-Submission Program and Meetings with Food and Drug Administration Staff'' found on FDA's Web site at *http://www.fda.gov/downloads/medicaldevices/deviceregulationandguidance/guidance documents/ucm311176.pdf.*

(Comment 8) A commenter also suggested that the proposed special controls do not clearly state that data demonstrating that a device meets the clinical performance criteria be obtained using prospective, fresh samples and that this may be easily remedied by adding a statement in the final special controls document indicating that ''clinical performance studies should be carried out on fresh, prospective samples.''

(Response) The 2011 Influenza Guidance Document, in section 9.B.iii *Specimens,* on p. 27, states that: ''[w]e recommend that you assess the ability of your device to detect influenza viruses in fresh specimens collected from patients suspected of having an influenza infection who have been sequentially enrolled in the study (all-comers study)''. The guidance further states that ''[f]rozen archived specimens may be useful for analytical performance evaluations, but are not recommended for studies to calculate clinical sensitivity or specificity''.

As the incidence of influenza varies from year to year and also from region to region, testing of archived specimens may be acceptable where fresh positive specimens are difficult to obtain. Performance data obtained from testing retrospective archived samples are generally evaluated and presented separately from data obtained with prospectively collected specimens in the final device labeling.

(Comment 9) A further recommendation was made that the proposed special controls include explicit wording to clarify that clinical performance criteria must be met for each sample type claimed in the proposed labeling submitted for clearance.

(Response) FDA agrees with this recommendation. The proposed special controls have been modified to clarify that clinical performance criteria must be met for each specimen type claimed in the intended use of the device.

(Comment 10) One commenter asserted that the proposed acceptance criteria for devices choosing to use viral culture as a comparator have been determined using certain generalizations that can confound the data. Referring to the Executive Summary document prepared for the Panel meeting (Ref. 1), the commenter states that, for example, all sample types and age ranges were included in the overall presentation of sensitivity for various devices. The commenter objected that the performance criteria, as presented in the Executive Summary document, appear to have been subjectively defined. The commenter further suggested that the purpose of tables 1 and 2 in the Executive Summary was to imply that any device cleared prior to 2008 is assumed to have variable and unacceptable performance, and that the performance criteria for antigen based RIDTs were chosen specifically with the intention of removing those devices from use. Additionally, the commenter stated that the information, as presented in the publicly available Executive Summary, did not make it clear that the data were confounded and created an unfair marketing advantage for some manufacturers.

(Response) The summary data tables presented in the Executive Summary document submitted to the Panel in June 2013 were compiled to illustrate the range in clinical performance among the antigen based RIDTs available on the market in support of the reclassification effort and were not aimed to remove devices cleared before 2008 from the market, as the commenter suggests. The data for each assay presented in table 1 in the Executive Summary document were based on the information provided to FDA in support of the 510(k) submissions for those devices and included results from all prospectively collected samples during the clinical study conducted by the manufacturer, regardless of the specimen type or the age of the patient (Ref. 1). The information in this table shows a wide range of assay performances.

The data presented in table 2 in the Executive Summary document were intended to illustrate the even broader range in sensitivity of these assays as reported in the scientific literature and derived from postmarket studies conducted in the field. The data in table 2 were also based on combined results, regardless of sample type, patient age and even influenza virus type. Although the commenter may consider the data ''confounded,'' they were not meant to demonstrate statistical validity but rather to illustrate that some of the currently available antigen based RIDTs have clinically poor sensitivity even under the controlled conditions of a clinical study conducted in support of a regulatory submission. More importantly, the clinical performance of these assays in the field, as reported in peer reviewed publications, is considerably worse for some of these assays than was demonstrated in the studies submitted to FDA to support their clearance. Overall, the data contained in the two tables were intended to help illustrate the sensitivity of the antigen based RIDTs available on the market, taking into consideration the limitations of the available technology. The data presented in both tables in the Executive Summary document support that improved influenza detection devices are needed to benefit public health in detection, treatment, and infection control with regard to the influenza viruses.

(Comment 11) Some commenters inquired about the process for notifying manufacturers that their assays do not meet the new performance criteria and expressed concern that manufacturers should be allowed sufficient transition time to develop new or modified influenza detection devices and to submit new 510(k)s for those products.

(Response) A manufacturer will not be individually notified that its product does not comply with the new special controls; each manufacturer of an antigen based RIDT is responsible for compliance with these special controls, including the minimum performance criteria. If an antigen based RIDT device does not meet the new performance criteria set forth in this final order, the device may be considered adulterated under section 501(f)(1)(B) of the FD&C Act (21 U.S.C. 351(f)(1)(B)), and manufacturers must cease marketing of the device. However, as outlined in section IV, ''Implementation Strategy,'' FDA does not intend to enforce compliance with the special controls with respect to currently legally marketed antigen based RIDT devices until 1 year after the date of publication of this final order. A manufacturer may contact the Center for Devices and Radiological Health's (CDRH) Division of Microbiology Devices in the Office of In Vitro Diagnostics and Radiological Health (OIR) with any specific questions.

(Comment 12) One commenter inquired whether there will be an appeals mechanism for manufacturers and what specific steps would be available for manufacturers.

(Response) No new appeals mechanisms will be implemented for those manufacturers whose assays do not comply with the new special controls. However, there are processes available to outside stakeholders to request additional review of decisions or actions by the CDRH. For more information, see the FDA guidance document entitled ''Center for Devices and Radiological Health Appeals Processes—Guidance for Industry and Food and Drug Administration Staff'' (*http://www.fda.gov/Regulatory Information/Guidances/ucm284651.htm*).

D. Annual Analytical Reactivity Testing

1. Access to Strains

(Comment 13) Commenters expressed concerns about whether all manufacturers, regardless of their size or resources, will have equal access to the samples needed to conduct the annual analytical reactivity testing in compliance with the new special controls. One of the commenters noted that there may be challenges to specimen access for some manufacturers under the World Health Organization (WHO) Pandemic Influenza Preparedness (PIP) Framework as well as potential impact on accessing the influenza strains sourced by the WHO Global Influenza Surveillance and Response System (GISRS). The commenter asked if manufacturers required to perform the annual testing would need to participate in the PIP framework to access GISRS specimens. The commenter further stated that unless all companies are able to access specimens in a fair, timely and non-cost restrictive manner to comply with the new postmarket requirements, some innovators may be unable to continue to develop new influenza diagnostics.

(Response) CDC intends to make available an annual analytical reactivity test panel, which is an annual standardized seasonal influenza virus test panel, so that manufacturers can comply with the annual analytical reactivity testing requirement. If the annual strains are not available from CDC, FDA will identify an alternative source for obtaining the requisite strains. The selection of viruses in the CDC annual analytical reactivity test panels is expected to be largely based on the strains selected by WHO for the annual vaccine and will be distributed for annual analytical reactivity testing or analytical validation in support of new 510(k) submissions for antigen based RIDT devices. We expect that the panel will primarily consist of human viruses that circulated in the recent influenza seasons. FDA and CDC do not believe that manufacturers will need to enter

agreements under the PIP Framework to access influenza viral strains in the manner described in this final order for the sole purpose of conducting testing to comply with the special controls at § 866.3328(b)(3) and (4). The annual analytical reactivity test panel will be made available to manufacturers at the same time, including those that require it for the annual analytical reactivity testing as well as those who are developing new or modified influenza assays. CDC and FDA are committed to facilitating equal access for manufacturers to the annual analytical reactivity test panel and are prepared to consider any unforeseen circumstances in an equitable manner.

(Comment 14) Another commenter expressed a concern regarding whether the requisite strain(s) will be made available in sufficient time to allow manufacturers to conduct the studies and have the data available in the labeling or on the manufacturer's Web site within the timeframe specified for both annual and emergency analytical reactivity testing. The comment stated that for most manufacturers, the process of testing and making a change in labeling would take a minimum of 90 days from receipt of samples.

(Response) Under the new special controls, the results of the last 3 years of annual analytical reactivity testing conducted from the date that the device was given marketing authorization by FDA must be incorporated into the device's labeling in the manner discussed in § 866.3328(b)(3)(iii) by July 31 of each calendar year. CDC and FDA are committed to making available or designating an alternative source for the annual analytical reactivity test panel with sufficient time for all manufacturers to conduct the testing and include the results in their device's labeling within the required timeframe.

Similarly, in the case of emergency analytical reactivity testing, as described in the special controls at § 866.3328(b)(4), after CDC makes the viral samples available for testing, FDA will notify the manufacturers of the availability of the samples. The manufacturers will have 60 days to perform the testing of the viral samples and to incorporate the results into the device's labeling in the manner discussed in § 866.3328(b)(4)(ii). If a manufacturer is concerned about meeting these timelines due to time needed to amend device labeling that physically accompanies the device, the manufacturer may pursue the § 866.3328(b)(3)(iii)(B) and (b)(4)(ii)(B) alternatives, which allow manufacturers to provide the results as electronic labeling via the manufacturer's public Web site that can be reached via a hyperlink found in the device's label or in other labeling that physically accompanies the device. If a manufacturer chooses the option to post analytical reactivity testing results on its Web site, it would be subject to the requirements of section 502(f) of the FD&C Act (21 U.S.C. 352(f)) that provides that required labeling for prescription devices intended for use in health care facilities or by a health care professional and required labeling for in vitro diagnostic devices intended for use by health care professionals or in blood establishments may be made available solely by electronic means as long as the labeling complies with the law, and that the manufacturer affords users the opportunity to request the labeling in paper form, and that after a request, promptly provides the requested information without additional cost.

If a manufacturer provides the hyperlink to a public Web site at which annual analytical reactivity and emergency testing data may be viewed, generally no updates would be needed to the labeling that physically accompanies the device when meeting the annual analytical reactivity testing requirements under § 866.3328(b)(3) or the emergency analytical reactivity testing requirements under § 866.3328(b)(4). If annual or emergency analytical reactivity testing reveals that the device is unable to detect one or more strains, the manufacturer would need to include a limitation in the device labeling, as further discussed in our response to Comment 21.

2. Acquisition of the Annual Analytical Reactivity Test Panel and Reporting of Results

(Comment 15) Commenters expressed concern about the logistics of the implementation of the new requirement for the annual analytical reactivity testing. One commenter stated that a clear mechanism was not outlined in the proposed order for activities leading to the reporting of results.

(Response) The activities leading to the reporting of results will include acquisition of the annual analytical reactivity test panel and analytical reactivity testing following the standardized protocol included with the test panel, which will be a standardized protocol considered and determined by FDA to be acceptable and appropriate. Results must be reported by updating the device's labeling in accordance with § 866.3328(b)(3)(iii). As previously stated, CDC and FDA are committed to working with the manufacturers of the influenza tests to facilitate timely and equitable access to the influenza virus annual analytical reactivity test panel. CDC has developed a Web site (*http://www.cdc.gov/flu/dxfluviruspanel/index.htm*) where the manufacturers can affirm their need for the annual analytical reactivity test panel, referred to by CDC as the ''CDC Influenza Virus Panel,'' to comply with the annual analytical reactivity testing requirement. The CDC panel will be distributed along with certificates of analyses for the viruses and a standardized testing protocol, considered and determined by FDA to be acceptable and appropriate, instructing the user on handling and testing of the provided virus stocks in the test panel. There are currently no plans to post the analytical reactivity testing data generated by the manufacturers on the CDC Web site. For any questions related to the test procedure, manufacturers may contact CDC or FDA as specified in the information included with the influenza virus analytical reactivity test panel. CDC will serve as the contact for questions pertaining to viruses, and FDA will serve as the contact for all regulatory and reporting issues.

(Comment 16) Commenters expressed concern about the continued availability of the test panel from CDC due to the future potential for limited resources at CDC or FDA.

(Response) In a case where the influenza virus analytical reactivity test panel is not available from CDC due to unforeseen limitations in resources, an alternate source of influenza strains for use in conducting the annual analytical reactivity testing will be identified by FDA, in consultation with CDC. An example of an alternate source could be a commercial vendor that specializes in acquisition, authentication, production, and preservation of microorganisms.

(Comment 17) Commenters suggested that the industry should be engaged for feedback in the development of the standardized testing protocol.

(Response) A standardized protocol has been developed by CDC in consultation with FDA and will be provided to manufacturers with the annual analytical reactivity test panel. The protocol uses basic principles for working with virus stocks and is general enough to allow for use with various devices. For any questions related to the testing procedure, manufacturers can contact CDC or FDA. CDC will serve as the contact for questions pertaining to viruses, and FDA will serve as the contact for all regulatory and reporting issues.

(Comment 18) One commenter inquired whether the analytical reactivity testing could be conducted using a modified limit of detection

(LoD) protocol, where 60 replicates are tested over 3 dilutions with positivity rates between 80 and 99 percent followed by linear regression to calculate the specific concentration that corresponds to a positivity rate of 95 percent.

(Response) This approach is acceptable to use in the determination of a LoD of an antigen based RIDT assay. However, manufacturers must follow the protocol included with the influenza virus analytical reactivity test panel, which will be a standardized protocol considered and determined by FDA to be acceptable and appropriate. We believe the standardized protocol will be less burdensome than this commenter's proposal and will help ensure that the results generated allow for comparability between different devices, as all devices will have followed a common standardized testing protocol.

(Comment 19) One commenter asked whether interested manufacturers would have an option to have the testing conducted by an independent laboratory, such as a laboratory at a university.

(Response) Yes, a manufacturer may contract an outside laboratory to conduct the testing on its behalf.

(Comment 20) One commenter raised a concern that customers without access to a manufacturer's Web site may not be able to access the annual and/or emergency analytical reactivity testing information; therefore, the commenter suggested that an alternate method of contact should be provided in the product labeling.

(Response) All in vitro diagnostic devices are required by regulation to state on the label and in the product labeling the name and place of business of the manufacturer, packer, or distributor § 809.10(a)(8) and (b)(14) (21 CFR 809.10(a)(8) and (b)(14)), except where such information is not applicable, or as otherwise specified in a standard for a particular product class.

In addition, in accordance with § 866.3328(b)(3)(iii) the results of the annual analytical reactivity testing must either be in the § 809.10(b) compliant labeling that physically accompanies the device or be provided as electronic labeling via the manufacturer's public Web site that can be reached via a hyperlink prominently found in the device's label or in other labeling that physically accompanies the device. If the manufacturer chooses the Web site option, it would be subject to the requirements of section 502(f) of the FD&C Act, which provides that required labeling for prescription devices intended for use in health care facilities or by a health care professional and required labeling for in vitro diagnostic devices intended for use by health care professionals or in blood establishments may be made available solely by electronic means, as long as the labeling complies with the law, and that the manufacturer affords users the opportunity to request the labeling in paper form, and that after a request, promptly provides the requested information without additional cost. Therefore, a manufacturer is already required to provide an opportunity for a health care professional to request the annual analytical reactivity test results in paper form.

(Comment 21) One commenter raised a question about notifying the public when a test is non-reactive with any of the strains included in the influenza virus analytical reactivity test panel provided by CDC and whether the product labeling will be updated annually. In particular, the commenter questioned how labeling changes to reflect absence of reactivity would be communicated to users who have already purchased the test.

(Response) This final order requires that the results of the last 3 years of annual analytical reactivity testing conducted from the date that the device was given marketing authorization by FDA be included as part of the device's labeling by July 31 of each calendar year. Modification of the labeling solely to incorporate analytical reactivity testing results required under § 866.3328(b)(3)(iii) or (b)(4)(ii) can be made without an official submission to FDA. In a case where one or more strains are shown not to be detected by the device during annual analytical reactivity testing under § 866.3328(b)(3) or emergency analytical reactivity testing under § 866.3328(b)(4), the manufacturer will need to include a limitation in the device labeling regarding reactivity with the specific strain(s) that were not detected by the device. Without such a limitation, the device would not meet the labeling requirements of § 809.10(b).

(Comment 22) One commenter raised a question about whether there will be a guidance document issued on a yearly basis to interpret the results of the analytical reactivity testing for that year.

(Response) FDA does not intend to issue a guidance document on how to interpret the results of the analytical reactivity testing each year, as the result interpretations are stated in the CDC information sheet that will be distributed with the CDC annual analytical reactivity test panel. The annual analytical reactivity testing is intended to evaluate whether the assay detects each strain included in the annual analytical reactivity test panel; however, that testing does not provide direct information about how the assay performs when used with clinical specimens that are collected directly from patients. Any positive result obtained during analytical reactivity testing performed with the annual influenza virus analytical reactivity test panel, at any viral concentration/dilution, indicates that the assay is reactive with that virus; however, the minimal concentration of the virus that is needed for the detection (assay sensitivity) may vary. Since the difference in analytical reactivity does not necessarily translate into an appreciable difference in performance when testing clinical specimens, it is important to emphasize that the results should not be over-interpreted for clinical purposes.

(Comment 23) One commenter suggested further collaboration between the Agency and influenza test manufacturers in establishing the regulatory process for implementing the labeling change before a final ''Notice to Industry'' or other document is published. The commenter further recommended that FDA specify an interactive process, whereby individual manufacturers can seek guidance, particularly if they encounter issues that may impede timely publication of annual and emergency analytical reactivity testing data (*e.g.,* if the matrix used in the preparation of the virus strains in the test panel causes invalid results with a particular device).

(Response) Interactive communication with manufacturers is common practice among the reviewers and the managers in CDRH. Manufacturers are encouraged to contact CDRH's OIR with questions or about issues related to the new requirements. In addition, the CDRH pre-submission program is designed to allow sponsors the opportunity to obtain targeted FDA feedback in response to specific questions related to product development, including planned non-clinical evaluations, proposed clinical study protocols, or data requirements prior to making a submission to the Agency.

E. Timely Testing of Newly Emergent Strains

(Comment 24) Similar concerns to those surrounding the annual reactivity testing requirement were raised in regard to the emergency testing of emergent strains. In addition, one comment expressed support for specifying a timeline for reporting the results after the samples become available.

(Response) Section 866.3328(b)(4)(ii) requires that, in certain emergency or potential emergency situations involving an influenza viral strain, the results of analytical reactivity testing with the emerging virus(es) must be made available within 60 days from the date that FDA notifies antigen based RIDT manufacturers that characterized viral samples are available. The results of the influenza emergency analytical reactivity testing must be disclosed in a tabular format in a similar manner as the results of the annual analytical reactivity testing (*i.e.,* either by placing the table directly in the device's § 809.10(b) compliant labeling that physically accompanies the device in the section of the labeling devoted to analytical reactivity testing, or in a section of the device's label or in labeling that physically accompanies the device, by prominently providing a hyperlink to a part of the manufacturer's Web site where the analytical reactivity testing data can be found). As previously discussed, modification of the labeling solely to incorporate annual analytical reactivity testing results under § 866.3328(b)(3)(iii) or emergency analytical reactivity testing results under § 866.3328(b)(4)(ii) can be made without an official submission to FDA. In a case where one or more strains are shown not to be detected by the device during annual analytical reactivity testing under § 866.3328(b)(3) or emergency analytical reactivity testing under § 866.3328(b)(4), the manufacturer will need to include a limitation in the device labeling regarding reactivity with the specific strain(s) that were not detected by the device. Without such a limitation the device would not meet the labeling requirements of § 809.10(b).

FDA is also clarifying the special controls to be more precise regarding the situations in which emergency analytical reactivity testing is required. Under section 564(a)–(b) of the FD&C Act (21 U.S.C. 360bbb–3(a)–(b)), the Secretary of Health and Human Services (HHS) may authorize the introduction into interstate commerce of a drug, device, or biologic product intended for use in an actual or potential emergency (referred to as ''emergency use'') after making a declaration, under section 564(b)(1) of the FD&C Act, that circumstances exist justifying the authorization. Such a declaration must be based on one of the following actions listed at section 564(b)(1)(A)–(D) of the FD&C Act:

- A determination by the Secretary of Homeland Security that there is a domestic emergency, or a significant potential for a domestic emergency, involving a heightened risk of attack with a chemical, biological, radiological, or nuclear (CBRN) agent or agents;
- A determination by the Secretary of Defense that there is a military emergency, or a significant potential for a military emergency, involving a heightened risk to U.S. military forces of attack with a CBRN agent or agents;
- A determination by the Secretary of HHS that there is a public health emergency, or a significant potential for a public health emergency, that affects, or has a significant potential to affect, national security or the health and security of U.S. citizens living abroad, and that involves a CBRN agent or agents, or a disease or condition that may be attributable to such agent or agents; or
- The identification of a material threat, by the Secretary of Homeland Security under section 319F–2 of the Public Health Service (PHS) Act, that is sufficient to affect national security or the health and security of U.S. citizens living abroad.

If one of these four actions that can provide the basis for the Secretary of HHS to make a declaration under section 564(b)(1) of the FD&C Act occurs with respect to an influenza viral strain, then, after being notified that characterized viral samples are available from CDC, antigen based RIDT manufacturers must conduct analytical reactivity testing with those samples and make the results available in their device labeling within the timeframes set forth in § 866.3328(b)(4).

In addition, the Secretary of HHS may determine under section 319(a) of the PHS Act (42 U.S.C. 247d(a)) that a disease or disorder presents a public health emergency or that a public health emergency otherwise exists. In the event of such a determination under section 319(a) of the PHS Act with respect to an influenza viral strain, then, after being notified that characterized viral samples are available from CDC, antigen based RIDT manufacturers would also need to conduct analytical reactivity testing with those samples and make the results available in their device labeling within the timeframes set forth in § 866.3328(b)(4).

The final order also modifies the special controls to require that any emergency reactivity test results added to antigen based RIDT device labeling under § 866.3328(b)(4)(ii) remain in the labeling for a period of 3 years. Emerging influenza strains may still be circulating after the statutory actions described under section 564(b)(1)(A)–(D) of the FD&C Act and section 319(a) of the PHS Act have terminated. The change will align the period that emergency analytical reactivity test results must remain in device labeling with the requirement in § 866.3328(b)(3)(iii) that manufacturers provide the last 3 years of annual analytical reactivity testing in the device labeling. FDA believes that this makes the labeling requirements in the special controls more clear and consistent for industry.

As discussed previously, after reviewing the comments received along with the proposed order and the Panel's recommendations, FDA is making a few clarifications and modifications to the special controls for antigen based RIDTs. These include: (1) Clarifying that clinical performance criteria must be met for each specimen type claimed in the intended use of the device; (2) clarifying that manufacturers of future antigen based RIDT devices may use a currently appropriate and FDA accepted comparator method other than comparison to an FDA-cleared nucleic acid based-test or viral culture methods to demonstrate that those devices meet the clinical performance criteria, if such a comparator method is established; (3) clarifying that a manufacturer choosing to provide analytical reactivity testing results via its public Web site must prominently provide hyperlink to that Web site in the device's label or in other labeling that physically accompanies the device; (4) clarifying the circumstances in which emergency analytical reactivity testing is required under § 866.3328(b)(4); and (5) requiring results of such emergency analytical reactivity testing to remain in the device labeling for a period of 3 years.

III. The Final Order

Under section 513(e) of the FD&C Act, FDA is adopting its findings as published in the preamble to the proposed order, with the modifications discussed in section II of this final order. FDA is issuing this final order to reclassify antigen based rapid influenza virus antigen detection test systems intended to detect influenza virus antigen directly from clinical specimens that are currently regulated as influenza virus serological reagents under § 866.3330 from class I into class II with special controls and into a new device classification regulation for ''influenza virus antigen detection test systems.'' Currently, antigen based RIDTs are mostly found under product codes GNX and GNT. However, any antigen based rapid influenza virus antigen detection test system intended to detect influenza virus antigen directly from clinical specimens that is currently regulated as influenza virus serological reagents under § 866.3330 is subject to this

reclassification regardless of the product code to which it is currently assigned.

Section 510(m) of the FD&C Act provides that a class II device may be exempt from the premarket notification requirements under section 510(k) of the FD&C Act, if the Agency determines that premarket notification is not necessary to provide reasonable assurance of the safety and effectiveness of the device. For this device, FDA believes that premarket notification is necessary to provide reasonable assurance of safety and effectiveness. Therefore, this type of device is not exempt from premarket notification requirements.

In addition, FDA believes that special controls that: (1) Identify the minimum acceptable performance criteria; (2) require use of a currently appropriate and FDA accepted comparator method for establishing performance of new antigen based RIDTs; (3) require annual analytical reactivity testing of contemporary influenza strains; and (4) require analytical reactivity testing of newly emerging strains under certain situations involving an emergency or potential for an emergency, are necessary to provide reasonable assurance of safety and effectiveness of these devices.

IV. Implementation Strategy

The special controls identified in this final order are effective February 13, 2017.

- For antigen based RIDTs that have not been legally marketed prior to February 13, 2017, or that have been legally marketed but are required to submit a 510(k) under 21 CFR 807.81(a)(3) because the device is about to be significantly changed or modified, manufacturers must obtain 510(k) clearance, among other relevant requirements, and demonstrate compliance with the special controls included in this final order, before marketing their new or changed device. If a manufacturer markets such a device after February 13, 2017 without obtaining 510(k) clearance and demonstrating compliance with the special controls included in this final order, then FDA would consider taking action against such a manufacturer under its usual enforcement policies.
- For antigen based RIDTs that have been legally marketed prior to February 13, 2017, FDA does not intend to enforce compliance with the special controls until January 12, 2018. If a manufacturer markets such a device after January 12, 2018, and that device does not comply with the special controls, then FDA would consider taking action against such a manufacturer under its usual enforcement policies.

FDA believes that a period of 1 year from the publication date of this final order is appropriate for manufacturers to come into compliance with the special controls and for those manufacturers whose currently legally marketed devices do not meet the minimum performance criteria to prepare and submit a 510(k) for a new or significantly changed or modified device. FDA believes this approach will help ensure the efficient and effective implementation of the order.

V. Analysis of Environmental Impact

The Agency has determined under 21 CFR 25.34(b) that this reclassification action is of a type that does not individually or cumulatively have a significant effect on the human environment. Therefore, neither an environmental assessment nor an environmental impact statement is required.

VI. Paperwork Reduction Act of 1995

This administrative order establishes special controls that refer to previously approved collections of information found in other FDA regulations and guidance. These collections of information are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501–3520). The collections of information in part 807, subpart E, regarding premarket notification submissions have been approved under OMB control number 0910–0120; the collections of information in 21 CFR part 812 regarding investigational device exemptions have been approved under OMB control number 0910–0078; the collections of information in 21 CFR part 801 and § 809.10 have been approved under OMB control number 0910–0485; and the collections of information regarding pre-submissions have been approved under OMB control number 0910–0756.

VII. Codification of Orders

Prior to the amendments by FDASIA, section 513(e) of the FD&C Act provided for FDA to issue regulations to reclassify devices. Although section 513(e) of the FD&C Act, as amended, requires FDA to issue final orders rather than regulations, FDASIA also provides for FDA to revoke previously issued regulations by order. FDA will continue to codify classifications and reclassifications in the Code of Federal Regulations (CFR). Changes resulting from final orders will appear in the CFR as changes to codified classification determinations or as newly codified orders. Therefore, under section 513(e)(1)(A)(i) of the FD&C Act, as amended by FDASIA, in this final order, we are codifying the reclassification of antigen based RIDTs into class II (special controls).

VIII. Reference

The following reference is on display in the Division of Dockets Management (HFA–305), Food and Drug Administration, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852, and is available for viewing by interested persons between 9 a.m. and 4 p.m., Monday through Friday; it is also available electronically at *https://www.regulations.gov.* FDA has verified the Web site addresses, as of the date this document publishes in the **Federal Register**, but Web sites are subject to change over time.

1. Transcript and other meeting materials of FDA's Microbiology Devices Panel Meeting held on June 13, 2013, are available on FDA's Web site at: *http://www.fda.gov/AdvisoryCommittees/ucm351035.htm.*

List of Subjects in 21 CFR Part 866

Biologics, Laboratories, Medical devices.

Therefore, under the Federal Food, Drug, and Cosmetic Act and under authority delegated to the Commissioner of Food and Drugs, 21 CFR part 866 is amended as follows:

PART 866—IMMUNOLOGY AND MICROBIOLOGY DEVICES

■ 1. The authority citation for part 866 continues to read as follows:

Authority: 21 U.S.C. 351, 360, 360c, 360e, 360j, 371.

■ 2. Add § 866.3328 to subpart D to read as follows:

§ 866.3328 Influenza virus antigen detection test system.

(a) *Identification.* An influenza virus antigen detection test system is a device intended for the qualitative detection of influenza viral antigens directly from clinical specimens in patients with signs and symptoms of respiratory infection. The test aids in the diagnosis of influenza infection and provides epidemiological information on influenza. Due to the propensity of the virus to mutate, new strains emerge over time which may potentially affect the performance of these devices. Because influenza is highly contagious and may lead to an acute respiratory tract infection causing severe illness and even death, the accuracy of these

devices has serious public health implications.

(b) *Classification.* Class II (special controls). The special controls for this device are:

(1) The device's sensitivity and specificity performance characteristics or positive percent agreement and negative percent agreement, for each specimen type claimed in the intended use of the device, must meet one of the following two minimum clinical performance criteria:

(i) For devices evaluated as compared to an FDA-cleared nucleic acid based-test or other currently appropriate and FDA accepted comparator method other than correctly performed viral culture method:

(A) The positive percent agreement estimate for the device when testing for influenza A and influenza B must be at the point estimate of at least 80 percent with a lower bound of the 95 percent confidence interval that is greater than or equal to 70 percent.

(B) The negative percent agreement estimate for the device when testing for influenza A and influenza B must be at the point estimate of at least 95 percent with a lower bound of the 95 percent confidence interval that is greater than or equal to 90 percent.

(ii) For devices evaluated as compared to correctly performed viral culture method as the comparator method:

(A) The sensitivity estimate for the device when testing for influenza A must be at the point estimate of at least 90 percent with a lower bound of the 95 percent confidence interval that is greater than or equal to 80 percent. The sensitivity estimate for the device when testing for influenza B must be at the point estimate of at least 80 percent with a lower bound of the 95 percent confidence interval that is greater than or equal to 70 percent.

(B) The specificity estimate for the device when testing for influenza A and influenza B must be at the point estimate of at least 95 percent with a lower bound of the 95 percent confidence interval that is greater than or equal to 90 percent.

(2) When performing testing to demonstrate the device meets the requirements in paragraph (b)(1) of this section, a currently appropriate and FDA accepted comparator method must be used to establish assay performance in clinical studies.

(3) Annual analytical reactivity testing of the device must be performed with contemporary influenza strains. This annual analytical reactivity testing must meet the following criteria:

(i) The appropriate strains to be tested will be identified by FDA in consultation with the Centers for Disease Control and Prevention (CDC) and sourced from CDC or an FDA-designated source. If the annual strains are not available from CDC, FDA will identify an alternative source for obtaining the requisite strains.

(ii) The testing must be conducted according to a standardized protocol considered and determined by FDA to be acceptable and appropriate.

(iii) By July 31 of each calendar year, the results of the last 3 years of annual analytical reactivity testing must be included as part of the device's labeling. If a device has not been on the market long enough for 3 years of annual analytical reactivity testing to have been conducted since the device received marketing authorization from FDA, then the results of every annual analytical reactivity testing since the device received marketing authorization from FDA must be included. The results must be presented as part of the device's labeling in a tabular format, which includes the detailed information for each virus tested as described in the certificate of authentication, either by:

(A) Placing the results directly in the device's § 809.10(b) of this chapter compliant labeling that physically accompanies the device in a separate section of the labeling where the analytical reactivity testing data can be found; or

(B) In the device's label or in other labeling that physically accompanies the device, prominently providing a hyperlink to the manufacturer's public Web site where the analytical reactivity testing data can be found. The manufacturer's home page, as well as the primary part of the manufacturer's Web site that discusses the device, must provide a prominently placed hyperlink to the Web page containing this information and must allow unrestricted viewing access.

(4) If one of the actions listed at section 564(b)(1)(A)–(D) of the Federal Food, Drug, and Cosmetic Act occurs with respect to an influenza viral strain, or if the Secretary of Health and Human Services (HHS) determines, under section 319(a) of the Public Health Service Act, that a disease or disorder presents a public health emergency, or that a public health emergency otherwise exists, with respect to an influenza viral strain:

(i) Within 30 days from the date that FDA notifies manufacturers that characterized viral samples are available for test evaluation, the manufacturer must have testing performed on the device with those viral samples in accordance with a standardized protocol considered and determined by FDA to be acceptable and appropriate. The procedure and location of testing may depend on the nature of the emerging virus.

(ii) Within 60 days from the date that FDA notifies manufacturers that characterized viral samples are available for test evaluation and continuing until 3 years from that date, the results of the influenza emergency analytical reactivity testing, including the detailed information for the virus tested as described in the certificate of authentication, must be included as part of the device's labeling in a tabular format, either by:

(A) Placing the results directly in the device's § 809.10(b) of this chapter compliant labeling that physically accompanies the device in a separate section of the labeling where analytical reactivity testing data can be found, but separate from the annual analytical reactivity testing results; or

(B) In a section of the device's label or in other labeling that physically accompanies the device, prominently providing a hyperlink to the manufacturer's public Web site where the analytical reactivity testing data can be found. The manufacturer's home page, as well as the primary part of the manufacturer's Web site that discusses the device, must provide a prominently placed hyperlink to the Web page containing this information and must allow unrestricted viewing access.

Dated: January 4, 2017.

Leslie Kux,

Associate Commissioner for Policy.

[FR Doc. 2017–00199 Filed 1–11–17; 8:45 am]

BILLING CODE 4164–01–P

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

24 CFR Part 15

[Docket No. FR–5986–F–01]

RIN 2501–AD81

Revision of Freedom of Information Act Regulation

AGENCY: Office of the Secretary, HUD.

ACTION: Final rule.

SUMMARY: This final rule amends HUD's Freedom of Information Act (FOIA) regulation to implement the FOIA Improvement Act of 2016. The FOIA Improvement Act enacted a range of procedural issues, including requirements that agencies establish a minimum of 90 days for requesters to file an administrative appeal, and codifies the foreseeable harm standard.

In addition, this final rule revises a section of HUD's FOIA regulations to more accurately reflect statutory language.

DATES: *Effective Date:* February 13, 2017.

FOR FURTHER INFORMATION CONTACT: Helen Foster, Deputy Chief Administrative Officer, Office of Administration, Department of Housing and Urban Development, 451 7th Street SW., Room 10139, Washington, DC 20410–0500, telephone number 202–402–2671 (this is not a toll-free number). Hearing- or speech-impaired individuals may access this number via TTY by calling the toll-free Federal Relay Service at telephone number 1–800–877–8339.

SUPPLEMENTARY INFORMATION:

I. Background

On June 30, 2016, the President signed into law the FOIA Improvement Act of 2016 (2016 Act) (Pub. L. 114–185, 130 Stat. 538), which contains several substantive and procedural amendments to the Freedom of Information Act (FOIA). The 2016 Act addresses a range of procedural issues, including requirements that agencies establish a minimum of 90 days for requesters to file an administrative appeal, and that agencies provide dispute resolution services at various times throughout the FOIA process. The 2016 Act also codifies a ''foreseeable harm'' standard, amends Exemption 5 to the FOIA, creates a new Chief FOIA Officer Council within the Executive Branch, and adds two new elements to agency Annual FOIA Reports. The amendments apply to any request made after the date of enactment, which was June 30, 2016.

Section 3 of the 2016 Act requires agencies to review and issue updated regulations on procedures for the disclosure of records under the FOIA, in accordance with the amendments made by the 2016 Act, within 180 days of enactment. Accordingly, HUD revises its FOIA regulation to incorporate changes enacted by the 2016 Act.

II. Changes Made in This Final Rule

The following is an overview of the changes made in this final rule.

Section 15.101 Proactive Disclosures of Department Records

The 2016 Act requires agencies to ''make available for public inspection in an electronic format'' records that, because of their subject matter, the agency determines ''have become or are likely to become the subject of subsequent requests for substantially the same records,'' or that have been requested 3 or more times. In response, HUD is amending §§ 15.101(a) and 15.101(b)(7) to comply with this requirement. The revisions mirror the language from the 2016 Act.

The 2016 Act also adds agency reporting requirements for agencies' annual FOIA reports. The 2016 Act requires that a report covering the preceding fiscal year is to be submitted to the Attorney General of the United States and to the Director of the Office of Government Information Services (OGIS). The raw statistical data used in each report must be made available without charge, license, or registration requirement; in an aggregated, searchable format, and in a format that may be downloaded in bulk. Both the report and the raw statistical data used in the report must be made available for public inspection in an electronic format. In response to this requirement, HUD is adding § 15.101(b)(8) in conformance with these new reporting requirements.

Section 15.103 Timing of Responses to Requests

When a FOIA request involves ''unusual circumstances,'' agencies have long been required to provide written notice to the requester, and in those instances where an extension of time of more than ten working days is specified, agencies have been required to provide the requester with an opportunity to limit the scope of the request so that it can be processed more quickly or to arrange an alternative time to respond. The 2016 Act adds an additional requirement when unusual circumstances exist. Specifically, whenever agencies extend the time limits by more than ten additional working days, in the written notice to the requester they must notify the requester of their right to seek dispute resolution services from the OGIS. To address this requirement, HUD is revising § 15.103(c) to incorporate the change enacted by the 2016 Act.

HUD is also using this final rule to update several specific provisions of § 15.103 to more accurately reflect the statutory language in 5 U.S.C. 552(a)(6)(A)(i). First, HUD is revising § 15.103(a) to state that HUD will generally ''make a determination whether to comply with a FOIA request within 20 working days.'' Second, HUD is revising § 15.103(c), which addresses when HUD may extend the time periods for processing a FOIA request, to remove the sentence that limited extensions to 10 working days. HUD is removing this language as inconsistent with the plain reading of the statute, the logic of the rest of the language in § 15.103(c), and Department of Justice guidance. Finally, in accordance with 5 U.S.C. 552(a)(6)(B)(ii), HUD has updated § 15.103(c) to include the provision that HUD shall make available its FOIA Public Liaison, who shall assist in the resolution of any disputes between the requester and HUD.

Section 15.105 Responses to Requests

When an agency makes a determination regarding whether to comply with a FOIA request, the 2016 Act provides that the agency is required to immediately notify the requester of such determination and the reasons therefore, and also notify the requester that they have a right to seek assistance from the agency's FOIA Public Liaison. For adverse determinations, the 2016 Act requires that agencies afford the requester no less than 90 days from the date of the adverse determination on the request to file an appeal. In addition, the 2016 Act requires that agencies notify the requester that they may seek dispute resolution services from the FOIA Public Liaison or from OGIS.

Consistent with this requirement, HUD has revised § 15.105(d) to provide that, once HUD makes a determination regarding compliance within the time line provided in § 15.103(a), HUD will immediately notify the requester of such determination, the reasons therefore, and their right to seek assistance from the FOIA Public Liaison.

For adverse determinations, HUD has added § 15.105(d)(2)(iv) to provide that HUD will notify the requester of their right to file an appeal no less than 90 days after the date of receiving the adverse determination. Finally, § 15.105(d)(2)(v) has been added to provide that HUD will notify the requester of their right to seek dispute resolution services from the FOIA Public Liaison or from OGIS.

Section 15.106 Fees

The 2016 Act contains several new provisions regarding agencies' ability to assess search and duplication fees. First, the 2016 Act provides that an agency shall not assess any search fees, or in some cases, duplication fees, if the agency has failed to comply with any time limit described in § 15.103, with limited exceptions. Second, if an agency determines that unusual circumstances apply to the processing of a FOIA request, and the agency has provided timely written notice to the requester, then a delayed response time is excused for an additional ten days; if the agency fails to comply with the extended time limit, it may not charge search fees, or, in some cases, duplication fees, with limited exceptions. Third, the 2016 Act

provides an exception allowing agencies to charge search fees, or in some cases, duplication fees, if unusual circumstances apply, more than 5,000 pages are necessary to respond to the request, timely written notice has been made to the requester, and the agency has discussed with the requester via written mail, electronic mail, or telephone (or made not less than 3 good-faith attempts to do so) how the requester could effectively limit the scope of the request. Fourth, the 2016 Act maintains that if a court determines that ''exceptional circumstances'' exist, as defined in 5 U.S.C. 552(a)(6)(C), the agency's failure to comply with a time limit ''shall be excused for the length of time provided by the court order.''

In accordance with the first change, HUD is updating § 15.106(d) to provide that HUD will not assess search fees or, for requesters that are educational or noncommercial scientific institutions or representatives of the news media requesting records not sought for commercial use, duplication fees, if it fails to comply with the extended time limits as described in § 15.103. To comply with the second change, HUD is adding § 15.106(d)(5) to grant HUD an additional ten days when unusual circumstances apply and timely written notice has been provided to the requester and to terminate HUD's ability to assess search fees or duplication fees, as applicable, if HUD does not comply with the additional ten days. Regarding the third change, HUD is adding § 15.106(d)(6) to allow HUD to charge search fees when unusual circumstances apply and more than 5,000 pages are necessary to respond to the FOIA request. Regarding the fourth amendment, HUD is adding § 15.106(d)(7)(i) to excuse a failure to comply with any time limit if a court determines that exceptional circumstances exist; and § 15.106(d)(7)(ii), which provides the definition of ''exceptional circumstances'' as defined in 5 U.S.C. 552(a)(6)(C), has also been added for clarifying purposes.

Section 15.107 Documents Generally Protected From Disclosure

The 2016 Act requires that agencies withhold information under FOIA ''only if the agency reasonably foresees that disclosure would harm an interest protected by an exemption'' or if disclosure is prohibited by law. The 2016 Act further directs agencies to consider whether partial disclosure of information is possible whenever the agency determines that a full disclosure of a requested record is not possible, and to take reasonable steps necessary to segregate and release nonexempt information. The 2016 Act does not require disclosure of information that is otherwise prohibited from disclosure by law, or otherwise exempted from disclosure under Exemption 3.

Consistent with these changes, HUD is restructuring § 15.107 and adding paragraph (a) to provide that HUD shall withhold information only if it is reasonably foreseeable that disclosure would harm an interest protected by an exemption, or if disclosure is prohibited by law. Paragraph (a) also emphasizes that HUD will consider whether partial disclosure of information is possible if it determines that a full disclosure of a requested record is not possible, and that HUD will take reasonable steps necessary to segregate and release nonexempt information.

In addition, the 2016 Act sunsets the deliberative process privilege, as protected from disclosure under Exemption 5 of the FOIA. Specifically, the 2016 Act amends Exemption 5 to provide that the deliberative process privilege does not apply to records created 25 years or more before the date on which the records were requested. In accordance with the 2016 Act, HUD is revising § 15.107(b)(5) to state that the deliberative process privilege ''shall not apply to records created 25 years or more before the date on which the records were requested.''

III. Justification for Final Rulemaking

In general, HUD publishes a rule for public comment before issuing a rule for effect, in accordance with HUD's regulations on rulemaking at 24 CFR part 10. Part 10, however, provides in § 10.1 for exceptions from that general rule where HUD finds good cause to omit advance notice and public participation. The good cause requirement is satisfied when the prior public procedure is ''impracticable, unnecessary or contrary to the public interest.''

HUD finds that good cause exists to publish this rule for effect without first soliciting public comment because prior public comment is unnecessary. This final rule follows the statutory directive in Section 3 of the 2016 Act, which requires agencies to review and issue updated regulations on procedures for the disclosure of records under the FOIA, in accordance with the amendments made by the 2016 Act, within 180 days of enactment. The 2016 Act codifies a number of transparency and openness principles and enacts a number of procedural requirements, including requiring that agencies establish a minimum of 90 days for requesters to file an administrative appeal and that they provide dispute resolution services at various times throughout the FOIA process. This final rule reflects the changes required by the 2016 Act. Finally, the rule revises provisions § 15.103 to more accurately reflect the statutory language in 5 U.S.C. 552(a)(6)(A)(i).

IV. Findings and Certifications

Executive Order 12866 and Executive Order 13563

Executive Orders 12866 and 13563 direct agencies to assess all costs and benefits of available regulatory alternatives and, if the regulation is necessary, to select the regulatory approach that maximizes net benefits. Because this final rule incorporates changes enacted by the 2016 Act, this rule was determined to not be a significant regulatory action under section 3(f) of Executive Order 12866, Regulatory Planning and Review, and therefore was not reviewed by OMB.

Environmental Impact

This rule is categorically excluded from environmental review under the National Environmental Policy Act (42 U.S.C. 4321). The revision of the FOIA-related provisions of 24 CFR part 15 falls within the exclusion provided by 24 CFR 50.19(c)(1), in that it does not direct, provide for assistance or loan and mortgage insurance for, or otherwise govern or regulate, real property acquisition, disposition, leasing, rehabilitation, alteration, demolition, or new construction, or establish, revise, or provide for standards for construction or construction materials, manufactured housing, or occupancy.

Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) generally requires an agency to conduct a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This final rule establishes procedures by which HUD will respond to requests for information under FOIA. Costs assessed by HUD for search, review, and duplication required to process the information requested by a requester are limited by FOIA to direct costs and are not significant. Accordingly, the undersigned certifies that this rule will not have a significant economic impact on a substantial number of small entities.

Executive Order 13132, Federalism

Executive Order 13132 (entitled ''Federalism'') prohibits an agency from publishing any rule that has federalism implications if the rule either imposes substantial direct compliance costs on state and local governments and is not required by statute, or the rule preempts state law, unless the agency meets the consultation and funding requirements of section 6 of the Executive Order. This final rule does not have federalism implications and does not impose substantial direct compliance costs on state and local governments or preempt state law within the meaning of the Executive Order.

Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1531–1538) establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments, and on the private sector. This final rule does not impose any federal mandates on any state, local, or tribal governments, or on the private sector, within the meaning of the Unfunded Mandates Reform Act of 1995.

List of Subjects in 24 CFR Part 15

Classified information, Courts, Freedom of information, Government employees, Reporting and recordkeeping requirements.

For the reasons stated in the preamble, HUD amends 24 CFR part 15 as follows:

PART 15—PUBLIC ACCESS TO HUD RECORDS UNDER THE FREEDOM OF INFORMATION ACT AND TESTIMONY AND PRODUCTION OF INFORMATION BY HUD EMPLOYEES

■ 1. The authority for 24 CFR part 15 is revised to read as follows:

Authority: 42 U.S.C. 3535(d), 5 U.S.C. 552.

■ 2. Amend § 15.101 by removing in paragraph (a) ''and copying'' and adding in its place ''in an electronic format'', and by adding paragraphs (b)(7) and (b)(8), to read as follows:

§ 15.101 Proactive disclosures of departmental records.

* * * * *

(b) * * *

(7) Copies of all records, regardless of form or format that have been released to any person under § 15.105; and

(i) Because of the nature of their subject matter, the agency determines that the records have become or are likely to become the subject of subsequent requests for substantially the same records; or

(ii) Have been requested three or more times.

(8) Report for the preceding fiscal year submitted to the U.S. Attorney General and the Director of the Office of Government Information Services (OGIS) as required by 5 U.S.C. 552(e) and the raw statistical data used in each report. This report will be made available:

(i) Without charge, license, or registration requirement;

(ii) In an aggregated, searchable format; and

(iii) In a format that may be downloaded in bulk.

* * * * *

■ 3. In § 15.103, amend paragraph (a) by removing ''respond to'' and adding in its place ''make a determination whether to comply with'', and revise paragraph (c) introductory text, to read as follows:

§ 15.103 Timing of responses to requests.

* * * * *

(c) *Extension of time periods for processing a request.* In unusual circumstances, as defined in this paragraph, HUD may extend the time period for processing a FOIA request. In such circumstances, HUD will provide the requester with written notice setting forth the unusual circumstances for the extension and the date on which a determination is expected to be dispatched. If processing a request would require more than 10 working days beyond the general time limit established in paragraph (a) of this section, HUD will offer the requester an opportunity to limit the scope of the request so that HUD may process it within the extra 10-day working period or arrange an alternative time period within which the FOIA request will be processed. To aid the requester, HUD shall make available its FOIA Public Liaison, who shall assist in the resolution of any disputes between the requester and HUD, and notify the requester of the right of the requester to seek dispute resolution services from the Office of Government Information Services. For purposes of this section, unusual circumstances include:

* * * * *

§ 15.104 [Amended]

■ 4. Amend paragraph (b) by adding ''the'' between ''contacting'' and ''FOIA''.

■ 5. Amend § 15.105 as follows:

■ a. Add paragraph (d) introductory text;

■ b. In paragraph (d)(1) remove ''Once'' and replace it with ''If ''.

■ c. Redesignate paragraph (d)(2)(iv) as (d)(2)(vi); and

■ d. Add paragraphs (d)(2)(iv) and (v).

Revisions and additions to read as follows:

§ 15.105 Responses to requests.

* * * * *

(d) *Forms of response.* Once HUD makes a determination regarding whether to comply with a request pursuant to time limits established in § 15.103(a), HUD shall immediately notify the requester of such determination and the reasons therefor, and the requester's right to seek assistance from the FOIA Public Liaison.

* * * * *

(2) * * *

(iv) Notice of the right of the requester to appeal to the head of the agency, within a period determined by the head of the agency that is not less than 90 days after the date of such adverse determination; and

(v) Notice of the right of the requester to seek dispute resolution services from the FOIA Public Liaison of the agency or the Office of Government Information Services; and

* * * * *

■ 6. In § 15.106 revise paragraph (d)(1) and add paragraphs (d)(5), (6) and (7) to read as follows:

§ 15.106 Fees.

* * * * *

(d) *Restrictions on charging fees.* (1) No search fee will be charged for requests by educational institutions, noncommercial scientific institutions, or representatives of the news media. In addition, except as provided in paragraphs (d)(5), (d)(6), and (d)(7) of this section, HUD shall not assess any search fees (or, for requesters that are educational institutions, noncommercial scientific institutions or representatives of the news media requesting records not sought for commercial use, duplication fees) if HUD has failed to comply with any time limit described in § 15.103.

* * * * *

(5) If HUD determines that unusual circumstances apply and HUD provides timely written notice to the requester pursuant to requirements provided in § 15.103(c), a failure to comply with any time limit as described in § 15.103 is excused for an additional 10 days. If HUD fails to comply with the extended time limit, HUD may not assess any search fees (or for requesters that are educational or noncommercial scientific institutions or representatives of the news media requesting records not sought for commercial use, duplication fees).

(6) If unusual circumstances apply and more than 5000 pages are necessary to respond to the request, HUD may charge search fees or, for requesters that are educational or noncommercial scientific institutions or representatives of the news media requesting records not sought for commercial use, duplication fees, if timely written notice has been made to the requester pursuant to requirements provided in § 15.103(c) and HUD has discussed with the requester through written mail, electronic mail, or telephone (or made not less than 3 good-faith attempts to do so) how the requester could effectively limit the scope of the request as stipulated in § 15.103(c).

(7)(i) If a court has determined that exceptional circumstances exist, a failure to comply with any time limit as described in § 15.103 shall be excused for the length of time provided by the court order.

(ii) For purposes of this section, the term ''exceptional circumstances'' does not include a delay that results from a predictable workload of requests, unless HUD demonstrates reasonable progress in reducing its backlog of pending requests. However, refusal by the requester to reasonably modify the scope of a request or arrange an alternative time frame for processing a request (or a modified request) after HUD gives them an opportunity to do so shall be considered a factor in determining whether exceptional circumstances exist.

* * * * *

■ 7. Amend § 15.107 as follows:
■ a. Remove paragraph (b);
■ b. Redesignate the introductory text as new paragraph (b);
■ c. Revise paragraph (a);
■ d. Redesignate paragraphs (c) through (i) as (b)(1) through (b)(9), respectively, and
■ e. Revise redesignated paragraph (b)(5);

Revisions and addition to read as follows:

§ 15.107 Documents generally protected from disclosure.

(a) HUD shall withhold information only if HUD reasonably foresees that disclosure would harm an interest protected by an exemption as provided in paragraph (b) of this section, or disclosure is prohibited by law. HUD will consider whether partial disclosure of information is possible whenever HUD determines that a full disclosure of a requested record is not possible, and will take reasonable steps necessary to segregate and release nonexempt information. Nothing in this section requires disclosure of information that is otherwise prohibited from disclosure by law, or otherwise exempted from disclosure as provided in paragraph (b)(3) of this section.

* * * * *

(b) * * *

(5) *Certain interagency or intra-agency communications.* Exemption 5 (5 U.S.C. 552(b)(5)) protects interagency or intra-agency communications that are protected by legal privileges, such as the attorney-client privilege, attorney work-product privilege, or communications reflecting the agency's deliberative process. The deliberative process privilege shall not apply to records created 25 years or more before the date on which the records were requested.

* * * * *

Dated: December 27, 2016.

Nani A. Coloretti,

Deputy Secretary.

[FR Doc. 2017–00178 Filed 1–11–17; 8:45 am]

BILLING CODE 4210–67–P

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

24 CFR Part 891

[Docket No. FR 5890–C–03]

RIN 2501–AD75

Narrowing the Digital Divide Through Installation of Broadband Infrastructure in HUD-Funded New Construction and Substantial Rehabilitation of Multifamily Rental Housing; Correction

AGENCY: Office of General Counsel, HUD.

ACTION: Final rule; correction.

SUMMARY: On December 20, 2016, HUD published a final rule requiring the installation of broadband infrastructure at the time of new construction or substantial rehabilitation of multifamily rental housing that is funded or supported by HUD, the point at which such installation is generally easier and less costly than when undertaken as a stand-alone effort. This document corrects incorrect paragraph designations in one section of the regulatory text. The effective date for HUD's final rule of January 19, 2017 is unchanged.

DATES: Effective January 19, 2017.

FOR FURTHER INFORMATION CONTACT: With respect to this supplementary document, contact Ariel Periera, Associate General Counsel for Legislation and Regulations, Department of Housing and Urban Development, 451 7th Street SW., Room 10238, Washington, DC 20410; telephone number 202–708–1793 (this is not a toll-free number). Persons with hearing or speech impairments may access this number through TTY by calling the toll-free Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION: In the final rule FR Doc. 2016–30708, published in the **Federal Register** on December 20, 2016 (81 FR 92626), the following correction is made:

§ 891.20 [Corrected]

On page 92638, in the third column, in § 891.20, paragraphs (f)(a) through (c) are redesignated as paragraphs (f)(1) through (3).

Dated: January 4, 2017.

Aaron Santa Anna,

Assistant General Counsel for Regulations.

[FR Doc. 2017–00167 Filed 1–11–17; 8:45 am]

BILLING CODE 4210–67–P

DEPARTMENT OF DEFENSE

Department of the Navy

32 CFR Part 706

Certifications and Exemptions Under the International Regulations for Preventing Collisions at Sea, 1972

AGENCY: Department of the Navy, DoD.

ACTION: Final rule.

SUMMARY: The Department of the Navy (DoN) is amending its certifications and exemptions under the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS), to reflect that the Deputy Assistant Judge Advocate General (DAJAG) (Admiralty and Maritime Law) has determined that USS OMAHA (LCS 12) is a vessel of the Navy which, due to its special construction and purpose, cannot fully comply with certain provisions of the 72 COLREGS without interfering with its special function as a naval ship. The intended effect of this rule is to warn mariners in waters where 72 COLREGS apply.

DATES: This rule is effective January 12, 2017 and is applicable beginning December 12, 2016.

FOR FURTHER INFORMATION CONTACT: Commander Theron R. Korsak, JAGC, U.S. Navy, Admiralty Attorney, (Admiralty and Maritime Law), Office of the Judge Advocate General, Department of the Navy, 1322 Patterson Ave. SE., Suite 3000, Washington Navy Yard, DC 20374–5066, telephone number: 202–685–5040.

SUPPLEMENTARY INFORMATION: Pursuant to the authority granted in 33 U.S.C. 1605, the DoN amends 32 CFR part 706.

This amendment provides notice that the DAJAG (Admiralty and Maritime Law), under authority delegated by the Secretary of the Navy, has certified that USS OMAHA (LCS 12) is a vessel of the Navy which, due to its special construction and purpose, cannot fully comply with the following specific provisions of 72 COLREGS without interfering with its special function as a naval ship: Annex I paragraph 2 (a)(i), pertaining to the height of the forward masthead light above the hull; Annex I, paragraph 2(f)(i), pertaining to the placement of the masthead light or lights above and clear of all other lights and obstructions; Annex I, paragraph 3(a), pertaining to the location of the forward masthead light in the forward quarter of the ship, and the horizontal distance between the forward and after masthead light; Annex I, paragraph 3(c), pertaining to the task light's horizontal distance from the fore and aft centerline of the vessel in the athwartship direction. The DAJAG (Admiralty and Maritime Law) has also certified that the lights involved are located in closest possible compliance with the applicable 72 COLREGS requirements.

Moreover, it has been determined, in accordance with 32 CFR parts 296 and 701, that publication of this amendment for public comment prior to adoption is impracticable, unnecessary, and contrary to public interest since it is based on technical findings that the placement of lights on this vessel in a manner differently from that prescribed herein will adversely affect the vessel's ability to perform its military functions.

List of Subjects in 32 CFR Part 706

Marine safety, Navigation (water), Vessels.

For the reasons set forth in the preamble, the DoN amends part 706 of title 32 of the Code of Federal Regulations as follows:

PART 706—CERTIFICATIONS AND EXEMPTIONS UNDER THE INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA, 1972

■ 1. The authority citation for part 706 continues to read as follows:

Authority: 33 U.S.C. 1605.

■ 2. Section 706.2 is amended by:

■ a. In Table One, adding, in alpha numerical order, by vessel number, an entry for USS OMAHA (LCS 12);

■ b. In Table Four:

■ i. Under paragraph 15, adding, in alpha numerical order, by vessel number, an entry for USS OMAHA (LCS 12);

■ ii. Under paragraph 16, adding, in alpha numerical order, by vessel number, an entry for USS OMAHA (LCS 12); and

■ c. In Table Five, adding, in alpha numerical order, by vessel number, an entry for USS OMAHA (LCS 12).

§ 706.2 Certifications of the Secretary of the Navy under Executive Order 11964 and 33 U.S.C. 1605.

* * * * *

TABLE ONE

Vessel	Number	Distance in meters of forward masthead light below minimum required height. § 2(a)(i) Annex I
* * *	* * *	*
USS OMAHA	LCS 12	4.27
* * *	* * *	*

* * * * * 15. * * *

TABLE FOUR

Vessel	Number	Horizontal distances from the fore and aft centerline of the vessel in the athwartship direction
* * *	* * *	*
USS OMAHA	LCS 12	Upper—0.17 meters. Middle—1.3 meters. Lower—1.3 meters.

* * * * * 16. * * *

Vessel	Number	Obstruction angle relative ship's headings
* * *	* * *	*
USS OMAHA	LCS 12	72° thru 74°. 286° thru 288°.

Vessel	Number	Obstruction angle relative ship's headings
* * *	* * *	*

* * * * *

TABLE FIVE

Vessel	Number	Masthead lights not over all other lights and obstructions. Annex I, sec. 2(f)	Forward mast-head light not in forward quarter of ship. Annex I, sec. 3(a)	After mast-head light less than ½ ship's length aft of forward masthead light. Annex I, sec. 3(a)	Percentage horizontal separation attained
* *	*	*	*	*	*
USS OMAHA	LCS 12		X	X	17.3
* *	*	*	*	*	*

Approved: December 12, 2016.

A.S. Janin,

Captain, USN, JAGC, Deputy Assistant Judge Advocate, General (Admiralty and Maritime Law).

Dated: December 27, 2016.

A.M. Nichols,

Lieutenant Commander, Judge Advocate General's Corps, U.S. Navy, Federal Register Liaison Officer.

[FR Doc. 2016–31873 Filed 1–11–17; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

33 CFR Part 165

[Docket No. USCG–2016–0675]

RIN 1625–AA87

Security Zone; Potomac River and Anacostia River, and Adjacent Waters; Washington, DC

AGENCY: Coast Guard, DHS.

ACTION: Notice of enforcement of regulation.

SUMMARY: The Coast Guard will enforce a security zone along the Potomac River and Anacostia River, and adjacent waters at Washington, DC, for activities associated with the 58th Presidential Inauguration. The zone will be enforced on the days leading up to and through the cessation of activities associated with the 58th Presidential Inauguration taking place on January 20, 2017. This action is necessary to protect government officials, mitigate potential terrorist acts and incidents, and enhance public and maritime safety and security immediately before, during, and after these activities. During the enforcement period, entry into or remaining within the zone is prohibited unless authorized by the Captain of the Port or his designated representative.

DATES: The regulations in 33 CFR 165.508 will be enforced from 6 a.m. on January 15, 2017, through 6 a.m. on January 24, 2017, for the zone identified in 33 CFR 165.508(a)(6).

FOR FURTHER INFORMATION CONTACT: If you have questions about this notice of enforcement, call or email Mr. Ron Houck, U.S. Coast Guard Sector Maryland-National Capital Region (Waterways Management Division); telephone 410–576–2674, email *Ronald.L.Houck@uscg.mil.*

SUPPLEMENTARY INFORMATION: On December 1, 2016, the Coast Guard was notified by the event organizer that the anticipated dates for the activities associated with the 58th Presidential Inauguration are scheduled from January 15, 2017, to January 24, 2017. The Coast Guard will enforce regulations in 33 CFR 165.508 for the zone identified in paragraph (a)(6). This action is being taken to protect government officials, mitigate potential terrorist acts and incidents, and enhance public and maritime safety and security immediately before, during, and after this event.

Our regulations for Security Zone; Potomac River and Anacostia River, and adjacent waters; Washington, DC, § 165.508, specifies the location for this security zone as an area that includes all navigable waters described in paragraphs (a)(1) through (a)(3). This zone includes (1) Security Zone 1; all navigable waters of the Potomac River, from shoreline to shoreline, bounded to the north by the Francis Scott Key (US–29) Bridge, at mile 113, and bounded to the south by a line drawn from the Virginia shoreline at Ronald Reagan Washington National Airport, at 38°51′21.3″ N., 077°02′00.0″ W., eastward across the Potomac River to the District of Columbia shoreline at Hains Point at position 38°51′24.3″ N., 077°01′19.8″ W., including the waters of the Boundary Channel, Pentagon Lagoon, Georgetown Channel Tidal Basin, and Roaches Run. (2) Security Zone 2; all navigable waters of the Anacostia River, from shoreline to shoreline, bounded to the north by the John Philip Sousa (Pennsylvania Avenue) Bridge, at mile 2.9, and bounded to the south by a line drawn from the District of Columbia shoreline at Hains Point at position 38°51′24.3″ N., 077°01′19.8″ W., southward across the Anacostia River to the District of Columbia shoreline at Giesboro Point at position 38°50′52.4″ N., 077°01′10.9″ W., including the waters of the Washington Channel. (3) Security Zone 3 all navigable waters of the Potomac River, from shoreline to shoreline, bounded to the north by a line drawn from the Virginia shoreline at Ronald Reagan Washington National Airport, at 38°51′21.3″ N., 077°02′00.0″ W., eastward across the Potomac River to the District of Columbia shoreline at Hains Point at position 38°51′24.3″ N., 077°01′19.8″ W., thence southward across the Anacostia River to the District of Columbia shoreline at Giesboro Point at position 38°50′52.4″ N., 077°01′10.9″ W., and bounded to the south by the Woodrow Wilson Memorial (I–95/I–495) Bridge, at mile 103.8.

As specified in § 165.508 (b), during the enforcement period, entry into or remaining in the zone is prohibited

unless authorized by the Coast Guard Captain of the Port Maryland-National Capital Region. Public vessels and vessels already at berth at the time the security zone is implemented do not have to depart the security zone. All vessels underway within the security zone at the time it is implemented are to depart the zone at the time the security zone is implemented. To seek permission to transit the zone, the Captain of the Port Maryland-National Capital Region can be contacted at telephone number (410) 576–2693 or on Marine Band Radio, VHF–FM channel 16 (156.8 MHz). Coast Guard vessels enforcing this zone can be contacted on Marine Band Radio, VHF–FM channel 16 (156.8 MHz). The Coast Guard may be assisted by other Federal, state or local law enforcement agencies in enforcing this regulation. If the Captain of the Port or his designated on-scene patrol personnel determines the security zone need not be enforced for the full duration stated in this notice, a Broadcast Notice to Mariners may be used to suspend enforcement and grant general permission to enter the security zone.

This notice of enforcement is issued under authority of 33 CFR 165.508 and 5 U.S.C. 552(a). In addition to this notice of enforcement in the **Federal Register,** the Coast Guard will provide notification of this enforcement period via the Local Notice to Mariners and marine information broadcasts.

Dated: January 4, 2017.

Michael W. Batchelder,

Commander, U.S. Coast Guard, Acting Captain of the Port Maryland-National Capital Region.

[FR Doc. 2017–00251 Filed 1–11–17; 8:45 am]

BILLING CODE 9110–04–P

DEPARTMENT OF THE INTERIOR

National Park Service

36 CFR Part 13

[NPS–AKRO–22487; PPAKAKROZ5, PPMPRLE1Y.L00000]

RIN 1024–AE28

Alaska; Subsistence Collections

AGENCY: National Park Service, Interior.

ACTION: Final rule.

SUMMARY: The National Park Service amends it regulations for National Park System units in Alaska to allow qualified subsistence users to collect nonedible fish and wildlife parts and plants for creating handicrafts for barter and customary trade. The rule also clarifies that capturing, collecting or possessing living wildlife is generally prohibited and adopts restrictions on using human-produced foods to bait bears for subsistence uses.

DATES: This rule is effective February 13, 2017.

FOR FURTHER INFORMATION CONTACT: Andee Sears, Regional Law Enforcement Specialist, Alaska Regional Office, 240 West 5th Ave., Anchorage, AK 99501. Phone (907) 644–3410. Email: *AKR_Regulations@nps.gov*.

SUPPLEMENTARY INFORMATION:

Background

Proposed Rule and Public Comment Period

On January 13, 2016, the National Park Service (NPS) published the proposed rule in the **Federal Register** (81 FR 1592). The rule was open for public comment for 90 days, until April 12, 2016, to coincide with scheduled meetings of the NPS Subsistence Resource Commissions and Federal Subsistence Regional Advisory Councils. The NPS invited comments through the mail, hand delivery, and through the Federal eRulemaking Portal at *http://www.regulations.gov.* The NPS received 27 comments on the proposed rule during the public comment period. A summary of comments and NPS responses is provided below in the section entitled ''Summary of and Responses to Public Comments''. After considering the public comments and additional review, the NPS made some changes in the final rule from what was proposed. These changes are summarized below in the section entitled ''Changes from the Proposed Rule''.

Subsistence Uses Authorized by ANILCA

In 1980, Congress enacted the Alaska National Interest Lands Conservation Act (ANILCA) (16 U.S.C. 410hh–410hh–5; 3101–3233) to preserve various nationally significant areas in Alaska. One of the purposes of ANILCA is ''to provide the opportunity for rural residents engaged in a subsistence way of life to continue to do so.'' 16 U.S.C. 3101(c). The subsistence take of fish and wildlife on (federal) public lands is governed by Title VIII of ANILCA (16 U.S.C. 3111–3126).

Title II of ANILCA established new National Park System units, added to existing units, and specified in which units that subsistence uses shall be allowed. 16 U.S.C. 410hh–2. Subsistence uses by local rural residents in Alaska are authorized in all national preserves and in the Alagnak Wild River (managed as a national preserve), Aniakchak National Monument, Cape Krusenstern National Monument, Gates of the Arctic National Park, Kobuk Valley National Park, Lake Clark National Park, Wrangell-Saint Elias National Park, 16 U.S.C. 410hh–(1)–(4), (6)–(10); and the additions to Denali National Park, 16 U.S.C. 410hh–1(3)(a).

ANILCA defines ''subsistence uses'' as:

> [T]he customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade. 16 U.S.C. 3113

This definition reflects that the creation of hand-made crafts from nonedible natural materials has long been a part of the cultural, social, and economic practices of those living a subsistence way of life in Alaska. These individuals requested that the NPS allow this customary and traditional practice.

Consistency With NPS Regulations

NPS regulations for subsistence uses in park units in Alaska are found in 36 CFR part 13, subpart F—Subsistence. The regulations authorize local rural residents to take fish and to hunt and trap wildlife in specific park units for subsistence uses in compliance with state and federal law. 36 CFR 13.470 and 13.480. The Federal Subsistence Board (FSB) regulations governing the subsistence take of fish and wildlife on federal lands in Alaska are found at 50 CFR part 100. These part 100 regulations are limited to fish, wildlife and non-migratory birds. NPS regulations regarding the non-commercial subsistence use of timber and plant materials are located at 36 CFR 13.485. The non-commercial cutting of standing timber for firewood and house logs is authorized under 36 CFR 13.485(a) while the non-commercial gathering of plant materials such as fruits, berries, and mushrooms for subsistence uses without a permit is authorized by 36 CFR 13.485(b).

The NPS regulation at 36 CFR 13.420 defining the term ''barter'' is derived from the statutory definition of ''subsistence uses'' in section 803 of ANILCA (16 U.S.C. 3113). Barter means the exchange of fish or wildlife or their parts for other fish or game or their parts; or for other food or for nonedible items other than money if the exchange is of a limited and noncommercial

nature. The term ''customary trade'' is limited by definition to the exchange of furs for cash, and other activities designated for a particular NPS unit by special regulation. These definitions recognize the traditional cultural, social, and economic practices of non-cash exchange of subsistence resources among those living a ''genuine subsistence lifestyle'', and that trapping was an ''integral and longstanding part of the subsistence lifestyle in many regions in Alaska.'' See 1981 U.S. Fish and Wildlife Service interim regulations interpreting similar definitions of ''barter'' and ''customary trade'' (46 FR 31824, June 17, 1981).

Since the June 1981 rulemaking, two NPS units in Alaska where such customary trade was known to have occurred, Gates of the Arctic National Preserve and Kobuk Valley National Park, have promulgated special regulations that expand the definition of ''customary trade'' in those units to include the sale of handicrafts made from plant material taken by local rural residents of the park area. These special regulations do not require any written authorization from the superintendent. 36 CFR 13.1006 and 13.1504, respectively.

Except for these specific and limited authorizations for barter and customary trade of handicrafts in Gates of the Arctic National Preserve and Kobuk Valley National Park in Alaska, National Park System-wide regulations at 36 CFR 5.3 generally prohibit engaging in any business without authorization. This means that other forms of sale, barter, and trade that are customary and traditional uses of wild, renewable resources by rural Alaska residents are not allowed under current NPS regulations. In addition, National Park System-wide regulations at 36 CFR 2.1(a)(1) prohibit the collection of wildlife, plants, or parts thereof. There is a limited authorization for the hand-collection of fruits, berries, nuts, or unoccupied seashells for personal use or consumption, and a separate limited authorization for members of federally-recognized tribes to collect plants for traditional purposes under an agreement with the NPS, but the sale or commercial use of the products collected under these authorities is prohibited. 36 CFR 2.1(c) and (d).

Environmental Impact Analysis

The NPS prepared an Environmental Assessment (EA) to analyze the impacts of various alternatives that would address the collection of plant materials and nonedible animal parts to make handicrafts for barter and customary trade. On April 14, 2014, the Regional Director for the Alaska Region signed a Finding of No Significant Impact (FONSI) that selected a modified version of the preferred alternative (Alternative D) in the EA as the selected action. In the FONSI, the Regional Director determined that written authorization from the NPS would be required to collect both animal parts and plant materials for making handicrafts for barter and customary trade. On December 2, 2016, the NPS amended the FONSI to exempt plant materials from this requirement. The provisions in this rule about the capture, collection, or possession of live wildlife and restrictions on the types of bait that may be used to take bears for subsistence purposes were categorically excluded from further environmental analysis.

Final Rule

Summary of Final Rule

This rule implements the selected action identified in the amended FONSI and applies to all NPS units in Alaska where subsistence uses by local rural residents are authorized by ANILCA. The rule allows NPS-qualified local rural residents to collect and use the following items to make and sell handicrafts:

- Plant Materials; and
- nonedible animal parts (*e.g.,* antlers, horns, bones, teeth, claws, hooves, skins, hides, fur, hair, feathers, or quills) that are naturally shed or discarded, lawfully taken, or that remain on the landscape due to the natural mortality of an animal.

While ANILCA does not expressly address making and selling of handicrafts out of plant materials, the NPS concludes it falls within this definition, and that it is not otherwise prohibited. Making and selling handicrafts out of plant materials is clearly use of a wild renewable resource for barter or customary trade. The omission of plant materials from the statute's specific provision on handicraft articles does not indicate any intent to prohibit their use. That definition provides that fish and wildlife-based handicraft articles for subsistence purposes are only made from ''nonedible byproducts'' to avoid the take of fish and wildlife solely for the purpose of making handicrafts out of them. Plant materials fall within the definition's more general provision of wild, renewable resources and the making and selling of plant-based handicrafts is a customary and traditional use of wild, renewable resources for barter or customary trade.

Feathers may only be collected if such collection is not prohibited by the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, or other applicable law. Collection and use of bird feathers remains subject to any applicable federal and state laws.

Eligibility to collect plants or nonedible animal parts follows the same criteria for other subsistence uses in national parks, monuments and preserves. Collection of nonedible wildlife parts is limited to NPS-qualified subsistence users who are residents of communities or areas with a federally recognized customary and traditional use determination (as listed in 50 CFR part 100) for each species in the game management unit within the affected area. Thus, if an NPS qualified subsistence user can lawfully harvest the wildlife species in a particular area for subsistence uses, then they are allowed to collect nonliving, nonedible parts of that same species they encounter in the area. Eligible persons must have written authorization from the superintendent to collect nonedible animal parts. The sale of raw unworked materials or parts remains prohibited because of concern about overuse and commercialization of the resource. The rule also allows NPS-qualified subsistence users to collect nonedible animal parts and plants on behalf of another NPS-qualified subsistence user or for cultural or educational programs that are qualified under FSB regulations at 50 CFR 100.25(g). The rule provides superintendents with authority to set conditions, limits, and other restrictions on collection activities to protect resources and values.

The rule allows the collection of nonedible animal parts and plants and their inclusion in handicrafts to be sold or exchanged through barter or customary trade. The regulatory definition of ''barter'' is amended to include exchange of handicrafts for fish or game or their parts; or for other food or nonedible items other than money if the exchange is of a limited and noncommercial nature. The regulatory definition of ''customary trade'' is amended to include exchange of handicrafts for cash to support personal or family needs, so long as these exchanges do not constitute a significant commercial enterprise.

The rule adds a definition of ''handicraft'' that is taken from the current federal subsistence regulations at 50 CFR 100.25(a). This definition clarifies that a handicraft must result from the alteration or manipulation of the shape and appearance of natural materials to create something of greater

monetary or aesthetic value than the unaltered natural material alone.

Capture or Collection of Live Wildlife

In the proposed rule, the NPS stated that collecting or possessing living wildlife (including eggs and offspring) is prohibited in NPS units located in Alaska unless specifically authorized by federal statute or pursuant to (1) an NPS research specimen collection permit issued under 36 CFR 2.5; (2) federal subsistence regulations; or (3) special regulations for Glacier Bay National Park and Preserve. This proposal originated from public inquiries about the collection of live falcon chicks in national preserves that would be trained and then used for sport hunting.

The take of wildlife is generally prohibited on National Park System units. Although in Alaska hunting and trapping are allowed in national preserves in accordance with applicable federal and non-conflicting state laws and regulations, the NPS does not consider the capture or collection of live falcons to be hunting or trapping. The NPS concludes that the harvest of migratory birds (including their eggs) pursuant to the Migratory Bird Treaty Act and implementing regulations in 50 CFR part 92 is an appropriate ''subsistence use'' as defined in section 803 of ANILCA, 16 U.S.C. 3113. Similarly, the NPS concludes that the harvest of marine mammals in accordance with the Marine Mammal Protection Act and implementing regulations in 50 CFR part 18 by NPS-qualified subsistence users is also an appropriate ''subsistence use'' as defined by section 803 of ANILCA. Thus, in this final rule, the NPS clarifies the prior definition of ''subsistence uses'' to explicitly include harvest of migratory birds under the MBTA and the harvest of marine mammals under the MMPA by qualified individuals. Except for these subsistence uses, the final rule continues the previous prohibitions on collecting, capturing, or possessing living wildlife unless expressly authorized by federal statute or pursuant to a NPS research specimen collection permit. This rule does not affect the use of trained raptors for hunting activities where authorized by applicable federal and state law. It also does not affect the collection of gull eggs in Glacier Bay by the Huna Tlingit pursuant to Public Law 113–142, sec. 2, 128 Stat. 1749 (2014).

Use of Bait for Taking Bears Under Federal Subsistence Regulations

The NPS is adopting restrictions on the types of bait that may be used to take bears for subsistence uses under federal subsistence regulations in units of the National Park System in Alaska. Under this rule, bait is limited to (1) parts of legally taken native fish or wildlife that are not required to be salvaged; or (2) remains of native fish or wildlife that died of natural causes. The rule prohibits human-produced items such as dog food, grease, bread, and marshmallows, which are currently allowed and used to bait bears.

Baiting alters the natural behavior of bears by predictably attracting them to a specific location for harvest. The use of human-produced food as bait can result human food-conditioned bears that are more likely to be killed by agency personnel or the public in defense of life or property. Human food-conditioned bears are also more likely to cause human injury. Bait stations tend to be located in accessible areas due to the infrastructure (typically a 55 gallon drum) used for baiting, the quantity of bait used to engage in this activity, and the frequency it must be replenished. Because of the accessibility of these areas, they are typically used by multiple user groups, which contributes to the public safety concerns associated with baiting.[1]

The NPS recognizes that hunting black bears over bait has been authorized by the State since the 1980s. Taking brown or black bears over bait, however, is not a common activity in most NPS units in Alaska. The only NPS unit where taking bears over bait has traditionally occurred is Wrangell-St. Elias National Park and Preserve.[2] The final rule has been modified to give the superintendent of Wrangell-St. Elias National Park and Preserve the discretion to allow the use of human-produced food as bait pursuant to an annual permit. Permits would only be issued upon a written finding that such use is compatible with park purposes and values and that the permit applicant does not have reasonable access to natural materials that can be used as bait under this rule. Permits will identify specific baiting locations and will not be issued for areas where user conflicts are likely (*i.e.,* areas that receive higher visitation particularly by the nonhunting public). This provision is similar to practices at Kenai National Wildlife Refuge, where the FWS issues permits for bear baiting but only for certain areas. Permits will also help the NPS document the level of use and minimize user conflicts.

Summary of and Responses to Public Comments

A summary of public comments received on the proposed rule and NPS responses is provided below followed by a table that sets out changes we have made to the rule based on the analysis of the comments and other considerations.

General/Process

1. Comment: Some commenters asked the NPS to rescind or re-propose the rule without two of the proposed changes (the limit on types of bait that can be used to bait bears for subsistence uses and the prohibition on collecting live wildlife). The commenters stated that they were not properly notified of these changes because they are not related to subsistence collections, which was the title of the proposed rule, and were not included in the 2014 EA.

NPS Response: The NPS concludes the public was given sufficient notice for providing comments on all of the provisions in the proposed rule. In addition to publishing the proposed rule in the **Federal Register**, the NPS issued a press release and met with various interest groups and stakeholders during an extended 90-day comment period. Although the title of the proposed rule did not mention these other proposals, the summary on the first page of the proposed rule referred to these elements.

2. Comment: Some comments were received that said the proposed rule is inconsistent with ANILCA, which—according to the commenters—made Alaska NPS units ''open unless closed.'' Another commenter said the NPS does not have authority to permanently close areas to subsistence uses.

NPS Response: The commenters did not specify which section of ANILCA makes NPS units in Alaska open unless closed. NPS units are generally open to public uses unless they have been restricted or prohibited by law or regulation. The primary function of this rule is to authorize subsistence collection. This rule limits the type of bait that can be used for baiting bears, but it does not close any areas to taking fish or wildlife.

3. Comment: Some commenters stated that the proposed restrictions on bait and capturing live wildlife should have been considered by the FSB and the State of Alaska Board of Game prior to being proposed as an NPS regulation.

NPS Response: While the provisions on bait and collecting live wildlife

[1] More information about the impacts of bear baiting can be found in the September 2014 Environmental Assessment entitled ''Wildlife Harvest On National Park Preserves In Alaska'' (Wildlife EA) that can be found at *https://parkplanning.nps.gov/projectHome.cfm?projectID=49062* and then clicking ''Document List.''

[2] See Wildlife EA, pp. 11, 15.

could have been addressed by the FSB or the State, the NPS is implementing its responsibilities under ANILCA and the NPS Organic Act (54 U.S.C. 100101) using the well-established process for notice and comment rulemaking.

4. Comment: Some commenters stated there was insufficient consultation with Tribes, the State of Alaska, and the affected public. One commenter suggested the NPS should consult on the proposed rule in addition to the Environmental Assessment (EA) on subsistence collections. Another commenter suggested the NPS should consult with the State on the proposed baiting restriction since individuals are required to register bait stations with the State.

NPS Response: This rule was published for an extended comment period (90 days as opposed to 30 days) in order to coincide with scheduled meetings of the NPS Subsistence Resource Commissions and Federal Subsistence Regional Advisory Councils. NPS staff attended these meetings and gave presentations on the proposed rule. Following these presentations, several SRCs and RACs submitted formal written comments on the proposed rule. The NPS met with the State both during the comment period and after the comment period closed when the NPS was analyzing public comments and considering changes to the final rule. Specific issues addressed in those meetings included the proposed restrictions on bait for hunting bears and capturing falcon chicks, among other topics. The content of those discussions, along with written comments submitted by the State and others, helped inform this final rule. Consultation with Tribes, Native corporations, and others is addressed in the compliance section of this rule.

Customary Trade

5. Comment: One commenter suggested retaining the reference to park-specific special regulations in the definition of customary trade. The existing definition states that the NPS can designate other activities as ''customary trade'' by promulgating a special regulation for a particular park unit.

NPS Response: The proposed change does not result in a substantive change to the regulations. Removing the reference to park-specific regulations in the definition of customary trade does not affect the ability of parks to establish such regulations in the future if found to be necessary.

6. Comment: Several commenters responded to the NPS's request for feedback on how the agency could better explain the phrase ''significant commercial enterprise'' in the definition of ''customary trade''. Some commenters suggested the phrase was vague, while others stated that further defining this term was unnecessary. Some commenters suggested that ''significant commercial enterprise'' should not be based on the value of the handicrafts, which reflects the skill and time involved in their creation, but instead should be based upon the venue and quantity of sales (*e.g.,* mass production and selling to a larger distributor for resale) or the use of paid employees in their production.

NPS Response: The NPS agrees that the value of the handicraft does not necessarily determine whether the sale of that handicraft is a ''significant commercial enterprise.'' While quantity of sales is related to the level of commercial activity, the NPS concludes that the venue where the item is sold is not relevant. The NPS also concludes that prohibiting the use of paid employees helps to ensure that handicraft production under these regulations is not a ''significant commercial enterprise.'' This is also consistent with an existing NPS regulation in Alaska (36 CFR 13.42(c)) that prohibits the use of employees in trapping activities in national preserves. The final rule has been modified to prohibit the use of paid employees—except by qualified educational or cultural programs—to collect plant materials and animal parts.

7. Comment: The NPS requested comment on how the term ''substantially greater monetary and aesthetic value'' could be further explained to provide more clarity to the public about what qualifies as a handicraft. Some commenters said this term was vague while others said no further clarification or definition was necessary. Other commenters suggested the NPS adopt the definition found in federal subsistence regulations.

NPS Response: The NPS finds it is in the best interest of the public to be consistent with federal subsistence regulations to the extent possible. The NPS has modified the definition of ''handicraft'' in the rule to refer to the definition used in federal subsistence regulations (50 CFR 100.25(a)). As a result, any modifications made by the FSB to this definition in the future will be automatically adopted in NPS regulation. If the FSB clarifies the term ''substantially greater monetary and aesthetic value'' in the definition of ''handicraft'', that change will be adopted in NPS regulation without additional rulemaking by the NPS. The NPS definition of handicraft differs in two ways from the FSB definition. First, the NPS definition includes plants. Plants are not included in the definition in 50 CFR part 100 because the FSB does not have authority to regulate subsistence use of plants. Second, the NPS definition of handicraft specifically excludes trophy or European mounts of horns or antlers. Both state and federal subsistence regulations specifically prohibit the sale of trophies or mounts of horns or antlers. See 5 AAC 92.200, 50 CFR 100.25(j)(10).

Subsistence Collections

8. Comment: One commenter stated that subsistence collections should be limited to Alaska Natives.

NPS Response: ANILCA provides for subsistence uses by rural residents of Alaska regardless of ethnicity. Limiting subsistence collections to Alaska Natives is inconsistent with ANILCA.

9. Comment: Several commenters objected to the requirement that subsistence users obtain written authorization for collecting animal parts and plants for the creation and sale of handicrafts.

NPS Response: The preferred alternative in the EA would require individuals to obtain a permit in order to collect plants or animal parts for the making and sale of handicrafts. In the FONSI, however, the NPS decided to require written authorization for all items except for plant materials gathered in Kobuk Valley National Park and Gates of the Arctic National Park and Preserve where existing special regulations allow this activity without written authorization. Because colleting plants for subsistence uses is already authorized by NPS regulations, the NPS has decided to let the superintendent determine whether to require written authorization for collecting plants for making handicrafts for customary trade. Because the final rule does not require written authorization for this activity, the special regulations for Kobuk Valley and Gates of the Arctic are no longer necessary and are removed.

10. Comment: Some commenters recommended the NPS issue written permission for the collection of plants and animal parts on a community-wide basis as opposed to issuing individual permits to each qualified subsistence user.

NPS Response: The written authorizations could take many forms, and they need not always be permits issued to individual subsistence users. Alternatives include written authorizations to resident zone communities or to entire resident zones, or annual authorizations documented in park compendia. Park superintendents

will work with SRCs and, as appropriate, RACs, tribes and ANCSA corporations to determine the most appropriate type of written authorization for individual NPS units.

11. Comment: Some commenters said that requiring a permit or written authorization for subsistence uses was a closure. Other commenters stated that a permit requirement is burdensome and not justified in the absence of biological concerns.

NPS Response: Requiring a permit or otherwise putting conditions on an activity is not a closure. The NPS concludes that the incremental burden placed upon subsistence users to be required to obtain written authorization to collect animal parts is an appropriate and prudent mechanism for regulating the commercial use of these resources.

12. Comment: Some commenters stated that collected materials are sometimes exchanged before they reach an artist and are made into handicrafts, adding that it is too restrictive to say that materials must be modified before they can be exchanged. The commenters suggested that exchange of unworked material should be allowed to supply materials for elders to produce handicrafts and for qualified cultural and educational programs.

NPS Response: In the EA on subsistence collections, the NPS recognized that the person collecting the materials would not always be the person who uses them to make handicrafts. The final rule has been modified to clarify that permits may be issued to allow an NPS-qualified subsistence user to gather plants or animal parts for making handicrafts on behalf of another NPS-qualified subsistence user or for qualified cultural and educational programs.

Baiting Bears

13. Comment: Some commenters stated that the proposed limits on the types of bait that may be used to take bears under federal subsistence regulations would essentially eliminate the opportunity for hunters to harvest bears over bait in the spring. This is because hunters may not have access to the types of baits that would be allowed in the spring, such as parts and remains of fish and wildlife.

NPS Response: As discussed above, the NPS has made an allowance for other types of bait in certain circumstances in Wrangell-St. Elias National Park and Preserve. This is the only NPS unit where bear baiting traditionally occurred. The final rule allows for NPS qualified subsistence users who do not have reasonable access to natural bait to apply for a permit to use other types of bait. The NPS will issue this permit for specific locations in the park unit upon a finding that using other types of bait is compatible with park purposes and values (*e.g.* will not result in user conflicts, particularly in areas that receive higher visitation by the nonhunting public).

14. Comment: Some commenters stated that using natural bait will attract more brown bears than black bears and that hunters could end up baiting brown bears even if that was not their intent.

NPS Response: The NPS expects that natural bait will attract both brown and black bears, just as human-produced foods attract both species as well as other wildlife. The use of natural bait will help avoid conditioning brown and black bears to human-produced foods which can lead to more frequent interactions between humans and bears.

15. Comment: Some commenters stated that natural bait, such as a gut pile or furbearer carcasses, would be more difficult to clean up at the end of the baiting season than human-produced foods that are commonly used to bait bears, such as dog food or popcorn.

NPS Response: Federal subsistence regulations require that bait station sites be cleaned up when hunting is completed, including removing any litter, containers, chains, and other equipment used to set bait. The natural materials allowed by the rule—such as parts and remains of fish and wildlife—are not litter or equipment and thus would not be covered by this requirement.

16. Comment: Some commenters stated that inconsistent regulations about the types of bait that can be used will increase the possibility for confusion.

NPS Response: NPS acknowledges that this rule results in differences between the materials that can be used to harvest bears over bait under NPS-specific subsistence regulations and generally applicable federal subsistence regulations. In order to avoid the potential for confusion, the NPS will engage in outreach to local user groups, post information online, and make information available at park headquarters to inform local hunters of the rules that apply on NPS lands.

17. Comment: Some commenters stated that there is no biological data or other evidence demonstrating that baiting bears has the same effects as feeding wildlife, such as habituating bears to human foods or causing nuisance bear behavior.

NPS Response: Like feeding wildlife, baiting typically uses human or pet food to alter the natural behavior of bears to predictably attract them to a specific location for harvest. Food-conditioned bears are more likely to be killed by agency personnel or the public in defense of life or property. Food-conditioned bears are also believed more likely to cause human injury.[3]

Capture or Collection of Live Wildlife

18. Comment: Two commenters addressed subsistence harvest of migratory birds and their eggs, noting that the collection of eggs is allowed under the Migratory Bird Treaty Act (MBTA) and that the harvest of migratory birds and their eggs is a customary and traditional practice.

NPS Response: ANILCA authorized the harvest of fish and wildlife for subsistence uses in specific NPS units under Title VIII of ANILCA and pursuant to federal regulations applicable to NPS units. National preserves in Alaska are open to the harvest of fish and of wildlife for sport hunting and trapping under State of Alaska regulations. The FSB generally regulates subsistence harvest of fish and wildlife. It does not regulate the harvest of migratory birds for subsistence uses in Alaska which is provided for by law under the MBTA and implementing regulations at 50 CFR part 92. The NPS concludes that ANILCA's broad definition of subsistence uses authorizes NPS-qualified rural residents to harvest migratory birds, including eggs, in NPS units where subsistence is authorized in accordance with the MBTA and the migratory bird subsistence regulations at 50 CFR part 92. Collecting live wildlife, such as falcon chicks to raise and train for hunting, remains prohibited in NPS areas in accordance with national or Alaska-specific NPS regulations. 36 CFR 2.2(a)(2) or 13.35.

In considering this comment, the NPS notes that a similar issue exists with respect to harvest of marine mammals by Alaska Natives under the Marine Mammal Protection Act (MMPA). The NPS concludes that ANILCA's definition of subsistence uses includes the harvest of marine mammals by Alaskan Natives who are NPS-qualified rural residents in park areas where the take of marine mammals is authorized in accordance with the Alaska Native exemption in the Marine Mammal Protection Act and the marine mammal regulations at 50 CFR 18.23 and 18.26. The NPS has modified the definition of subsistence uses to reflect that NPS-qualified subsistence users who are eligible to harvest under the MBTA and the MMPA can do so in NPS areas open to subsistence uses.

[3] See Wildlife EA.

Changes From the Proposed Rule

After taking the public comments into consideration and after additional review, the NPS made the following substantive changes from the proposed rule:

§ 13.420	Modified the definition of ''animal parts'' to clarify that this also includes parts of fish.
§ 13.420	Modified the definition of ''handicraft'' to adopt the definition under federal subsistence regulations in 50 CFR part 100.
§ 13.420	Modified the definition of ''subsistence uses'' to include the harvest of migratory birds under the MBTA and marine mammals under the MMPA.
§ 13.482	Included a provision to allow an NPS-qualified subsistence user to designate another NPS-qualified subsistence user to collect, on their behalf, animal parts from nonliving wildlife for making handicrafts in accordance with a permit from the superintendent. Removed the reference to nonconflicting State regulations regarding use of bear claws because federal subsistence regulations address this activity. Added a prohibition on the use of paid employees.
§ 13.485(b)	Removed the requirement for a written authorization to collect plants to make handicrafts for customary trade or barter. Added a prohibition on the use of paid employees.
§ 13.485(d)	Included a provision to allow an NPS-qualified subsistence user to designate another NPS-qualified subsistence user to collect, on their behalf, plants for making handicrafts in accordance with a permit from the superintendent.
§ 13.1902(d)	Included a provision to allow the superintendent of Wrangell-St. Elias National Park and Preserve to issue a permit to use human-produced food as bait upon a finding that such use is compatible with the park purposes and values and that the permit applicant has no reasonable access to natural bait.

Compliance With Other Laws, Executive Orders, and Department Policy

Regulatory Planning and Review (Executive Order 12866)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of Executive Order 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. Executive Order 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act

This rule will not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). This certification is based on the cost-benefit and regulatory flexibility analyses found in the reports entitled ''Regulatory Flexibility Threshold Analysis: Special Regulations for National Park Areas in Alaska'' and ''Preliminary Cost/Benefit Analysis: Special Regulations for National Park Service Areas in Alaska'' which can be viewed online at *http://parkplanning.nps.gov/akro* by clicking the link ''Subsistence Uses of Horns, Antlers, Bones and Plants'' and then clicking ''Document List.''

Small Business Regulatory Enforcement Fairness Act (SBREFA)

This rule is not a major rule under 5 U.S.C. 804(2), the SBREFA. This rule:

a. Does not have an annual effect on the economy of $100 million or more.

b. Will not cause a major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions

c. Does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S. based enterprises to compete with foreign-based enterprises.

Unfunded Mandates Reform Act

This rule does not impose an unfunded mandate on State, local, or tribal governments or the private sector of more than $100 million per year. The rule does not have a significant or unique effect on State, local or tribal governments or the private sector. A statement containing the information required by the Unfunded Mandates Reform Act (2 U.S.C. 1531 *et seq.*) is not required.

Takings (Executive Order 12630)

This rule does not effect a taking of private property or otherwise have taking implications under Executive Order 12630. A takings implication assessment is not required.

Federalism (Executive Order 13132)

Under the criteria in section 1 of Executive Order 13132, this rule does not have sufficient federalism implications to warrant the preparation of a Federalism summary impact statement. The proposed rule is limited in effect to federal lands managed by the NPS in Alaska and would not have a substantial direct effect on state and local government in Alaska. A Federalism summary impact statement is not required.

Civil Justice Reform (Executive Order 12988)

This rule complies with the requirements of Executive Order 12988. Specifically, this rule:

(a) Meets the criteria of section 3(a) requiring that all regulations be reviewed to eliminate errors and ambiguity and be written to minimize litigation; and

(b) Meets the criteria of section 3(b)(2) requiring that all regulations be written in clear language and contain clear legal standards.

Consultation With Tribes (E.O. 13175 and Department Policy) and ANCSA Corporations

The Department of the Interior strives to strengthen its government-to-government relationship with federally recognized Tribes through a commitment to consultation with Tribes and recognition of self-governance and Tribal sovereignty. We have evaluated this rule under the criteria in Executive Order 13175 and under the Department's tribal consultation policy and Alaska Native Claims Settlement Act (ANCSA) Corporations consultation policy. Tribes were notified of the proposal regarding the subsistence collections provisions early in the process of developing the regulation. Because the provision on taking live wildlife is not a new prohibition, it will not have a substantial direct effect on federally recognized Tribes or ANCSA Corporation lands, water areas, or

resources. The NPS concludes that the types of bait local rural residents can use for hunting bears will not have a substantial direct effect on federally recognized Tribes or ANCSA Corporation lands, water areas, or resources. This is based on previous consultation with Tribes on proposed restrictions related to taking wildlife, the limited nature of the restriction (hunting bears, including over bait, remains authorized), and the infrequent basis that local rural residents take bears over bait on NPS lands (records show three bears taken over bait by local rural residents between 1992–2010). Most of this limited activity has occurred in Wrangell-St. Elias National Park and Preserve. Tribes associated with Wrangell-St. Elias National Park and Preserve where invited to consult on the proposed bait restriction; no Tribes requested consultation.

Paperwork Reduction Act (44 U.S.C. 3501 et seq.)

This final rule does not contain any new collections of information that require approval by Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995. Information collection requirements associated with the requirement for the Superintendent's written authorization to collect nonedible animal parts and for the designated gatherer permit are covered under OMB Control Number 1024–0026 (expires 12/31/2016 and in accordance with 5 CFR 1320.10, the agency may continue to conduct or sponsor this collection of information while the submission is pending at OMB). We estimate the annual burden associated with this information collection to be 2.5 hours per year. Information collection requirements associated with FSB customary and traditional use determinations have been approved under OMB Control Number 1018–0075 (expires 06/30/2019). We may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

This rule does not constitute a major Federal action significantly affecting the quality of the human environment. A detailed statement under the National Environmental Policy Act of 1969 (NEPA) is not required because we reached the FONSI. The EA and amended FONSI are available online at *http://parkplanning.nps.gov/akro* by clicking the link ''Subsistence Uses of Horns, Antlers, Bones and Plants'' and then clicking ''Document List.'' The other parts of this rule (collection/capture of live wildlife, bear baiting under federal subsistence regulations) are excluded from the requirement to prepare a detailed statement because they fall within the categorical exclusion covering modifications to existing regulations for NPS-administered areas that do not (a) increase public use to the extent of compromising the nature and character of the area or cause physical damage to it; (b) introduce non-compatible uses that might compromise the nature and characteristics of the area or cause physical damage to it; (c) conflict with adjacent ownerships or land uses; or (d) cause a nuisance to adjacent owners or occupants. (For further information see Section 3.3 of Director's Order #12 Handbook). We have also determined that the rule does not involve any of the extraordinary circumstances listed in 43 CFR 46.215 that would require further analysis under NEPA.

Effects on the Energy Supply (Executive Order 13211)

This rule is not a significant energy action under the definition in Executive Order 13211. A Statement of Energy Effects is not required.

Drafting Information

The primary authors of this regulation are Mary McBurney and Andee Sears of the Alaska Regional Office, National Park Service; Barbara Cellarius of Wrangell-St. Elias National Park and Preserve, National Park Service; and Jay Calhoun and Russel J. Wilson of the Division of Regulations, Washington Support Office, National Park Service.

List of Subjects in 36 CFR Part 13

Alaska, National parks, Reporting and recordkeeping requirements.

In consideration of the foregoing, the National Park Service amends 36 CFR part 13 as set forth below:

PART 13—NATIONAL PARK SYSTEM UNITS IN ALASKA

■ 1. The authority citation for part 13 continues to read as follows:

Authority: 16 U.S.C. 3124; 54 U.S.C. 100101, 100751, 320102; Sec. 13.1204 also issued under Sec. 1035, Public Law 104–333, 110 Stat. 4240.

■ 2. Amend § 13.42 by adding paragraph (j) to read as follows:

§ 13.42 Taking of wildlife in national preserves.

* * * * *

(j) Collecting, capturing, or possessing living wildlife is prohibited unless expressly authorized by federal statute or pursuant to § 2.5 of this chapter. A falconry permit or other permit issued by the State of Alaska does not provide the required authorization. These collecting activities are not hunting or trapping activities and therefore are not allowed in national preserves under paragraph (a) of this section. This regulation does not prohibit the use of trained raptors for hunting activities where authorized by applicable federal and state law.

■ 3. Amend § 13.420 by:

■ a. Adding introductory text and the definitions of ''Animal parts'' and ''Handicraft'' in alphabetical order; and

■ b. Revising the definition of ''Subsistence uses.''

The additions and revision read as follows:

§ 13.420 Definitions.

The following definitions apply to this part:

Animal parts. As used in this part, this term means nonedible antlers, horns, bones, teeth, claws, hooves, skins, hides, fur, hair, feathers, or quills that:

(1) Are obtained from lawfully hunted or trapped fish or wildlife;

(2) Have been shed or discarded as a result of natural life-cycle events; or

(3) Remain on the landscape as a result of the natural mortality of fish or wildlife.

Handicraft. As used in the part, this term has the same meaning as used in federal subsistence regulations (50 CFR part 100) except that:

(1) The term also includes products made from plant materials; and

(2) The term does not include a trophy or European mount of horns or antlers.

* * * * *

Subsistence uses. As used in this part, this term means the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraftsout of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter or sharing for personal or family consumption; and for customary trade pursuant to Title VIII of ANILCA. Harvest of migratory birds pursuant to the Migratory Bird Treaty Act (and implementing regulations at 50 CFR part 92) and marine mammals pursuant to the Marine Mammal Protection Act Act (and implmenting regulations at 50 CFR 18.23 and 18.26) by qualified individuals is a subsistence use in

accordance with this subpart. For the purposes of this subpart, the terms—

(1) ''Family'' means all persons related by blood, marriage, or adoption, or any person living within the household on a permanent basis; and

(2) ''Barter'' means the exchange of handicrafts or fish or wildlife or their parts taken for subsistence uses—

(i) For other fish or game or their parts; or

(ii) For other food or for nonedible items other than money if the exchange is of a limited and noncommercial nature; and

(3) ''Customary trade'' means the exchange of handicrafts or furs for cash to support personal or family needs; and does not include trade which constitutes a significant commercial enterprise.

■ 4. Amend § 13.480 by:

■ a. Designating the undesignated paragraph as paragraph (a).

■ b. Adding paragraph (b).

The addition reads as follows:

§ 13.480 Subsistence hunting and trapping.

* * * * *

(b)(1) The following types of bait may be used to take bears for subsistence uses:

(i) Parts of legally taken native fish or wildlife that are not required to be salvaged; or

(ii) Remains of native fish or wildlife that died of natural causes.

(2) The use of any other type of bait to take bears for subsistence uses is prohibited except under the terms and conditions of a permit issued under paragraph (d) of § 13.1902.

■ 5. Add § 13.482 to read as follows:

§ 13.482 Subsistence collection and use of animal parts.

(a) Local rural residents may collect animal parts (excluding parts of threatened or endangered species) for subsistence uses in park areas where subsistence uses are authorized, provided that:

(1) The resident's primary permanent residence is in an area or community with a federally recognized customary and traditional use determination for the species in the game management unit where the collecting occurs (50 CFR part 100); and

(2) The resident has written authorization from the superintendent issued under § 1.6 of this chapter that identifies specific areas where this activity is allowed.

(3)(i) If you are a NPS-qualified subsistence user (recipient), you may designate another NPS-qualified subsistence user to collect animal parts on your behalf in accordance with this section for the following purposes:

(A) Making handicrafts for personal use, customary trade, or barter; or

(B) Making handicrafts for qualified educational or cultural programs.

(ii) The designated collector must obtain a permit from the superintendent. The designated collector may not charge the recipient for his/her services or for the collected items.

(4) The use of paid employees to collect animal parts is prohibited. This prohibition does not apply to qualified educational or cultural programs that collect animal parts to create handicrafts, provided that the resulting handicrafts are not exchanged through barter or customary trade.

(b) The superintendent may establish conditions, limits, and other restrictions on collection activities. Areas open to collections will be identified on a map posted on the park Web site and available at the park visitor center or park headquarters. Violating a condition, limit, or restriction is prohibited.

■ 6. Amend § 13.485 by:

■ a. Revising paragraph (b);

■ b. Redesignating paragraph (c) as paragraph (f); and

■ c. Adding paragraphs (c), (d), and (e).

The revision and additions read as follows:

§ 13.485 Subsistence use of timber and plant material.

* * * * *

(b) The gathering by local rural residents of fruits, berries, mushrooms, and other plant materials for subsistence uses, and the gathering of dead or downed timber for firewood for noncommercial subsistence uses, shall be allowed without a permit in park areas where subsistence uses are allowed.

(c) The gathering by local rural residents of plant materials to make handicrafts for customary trade or barter is authorized in park areas where subsistence uses are allowed in accordance with terms and conditions established by the superintendent and posted on the park Web site. The use of paid employees to collect plant materials is prohibited. This prohibition does not apply to qualified educational or cultural programs that collect plant materials to create handicrafts, provided that the resulting handicrafts are not exchanged through barter or customary trade.

(d)(1) If you are a NPS-qualified subsistence (recipient), you may designate another NPS-qualified subsistence user to collect plants on your behalf in accordance with this section for the following purposes:

(i) Making handicrafts for personal use, customary trade, or barter; or

(ii) Making handicrafts for qualified educational or cultural programs.

(2) The designated collector must obtain a permit from the superintendent. The designated collector may not charge the recipient for his/her services or for the collected items.

(e) The superintendent may establish conditions, limits, and other restrictions on gathering activities. Violating a condition, limit, or restriction is prohibited.

* * * * *

■ 7. Amend § 13.1902 by adding paragraph (d) to read as follows:

§ 13.1902 Subsistence.

* * * * *

(d) *Use of bait for taking bears.* (1) The superintendent may issue individual, annual permits allowing the use of human-produced food items as bait for taking bears upon a finding that:

(i) Such use is compatible with the purposes and values for which the area was established (*e.g.* does not create a user conflict); and

(ii) The permit applicant does not have reasonable access to natural bait that may be used under § 13.480(b)(1).

(2) Permits will identify specific locations within the park area where the bait station may be established and will not include areas where the use of such materials could create a user conflict.

Dated: December 29, 2016.

Michael Bean,

Principal Deputy Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 2016–32045 Filed 1–11–17; 8:45 am]

BILLING CODE 4312–52–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 19

[FRL–9958–06–OECA]

Civil Monetary Penalty Inflation Adjustment Rule

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is promulgating this final rule to adjust the level of statutory civil monetary penalty amounts under the statutes EPA administers. This action is mandated by the Federal Civil Penalties Inflation Adjustment Act of 1990, as

amended through the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (''the 2015 Act''). The 2015 Act prescribes a formula for annually adjusting statutory civil penalties to reflect inflation, maintain the deterrent effect of statutory civil penalties, and promote compliance with the law. The rule does not necessarily revise the penalty amounts that EPA chooses to seek pursuant to its civil penalty policies in a particular case. EPA's civil penalty policies, which guide enforcement personnel in how to exercise EPA's statutory penalty authorities, take into account a number of fact-specific considerations, *e.g.,* the seriousness of the violation, the violator's good faith efforts to comply, any economic benefit gained by the violator as a result of its noncompliance, and a violator's ability to pay.

DATES: This final rule is effective on January 15, 2017.

FOR FURTHER INFORMATION CONTACT: David Smith-Watts, Office of Civil Enforcement, Office of Enforcement and Compliance Assurance, Mail Code 2241A, Environmental Protection Agency, 1200 Pennsylvania Avenue NW., Washington, DC 20460, telephone number: (202) 564–4083; *smith-watts.david@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. Background

Since 1990, Federal agencies have been required to issue regulations adjusting for inflation the statutory civil penalties [1] that can be imposed under the laws administered by that agency. The Federal Civil Penalties Inflation Adjustment Act of 1990, as amended by the Debt Collection Improvement Act of 1996 (DCIA), required agencies to review their statutory civil penalties every 4 years, and to adjust the statutory civil penalty amounts for inflation if the increase met the DCIA's adjustment methodology. In accordance with the DCIA, EPA reviewed and, as appropriate, adjusted the civil penalty levels under each of the statutes the agency implements in 1996 (61 FR 69360), 2004 (69 FR 7121), 2008 (73 FR 75340), and 2013 (78 FR 66643).

The 2015 Act [2] requires agencies to: (1) Adjust the level of statutory civil penalties with an initial ''catch-up'' adjustment through an interim final rulemaking; and (2) beginning January 15, 2017, make subsequent annual adjustments for inflation. The purpose of the 2015 Act is to maintain the deterrent effect of civil penalties by translating originally enacted statutory civil penalty amounts to today's dollars and rounding statutory civil penalties to the nearest dollar.

As required by the 2015 Act, EPA issued a catch up rule on July 1, 2016, which was effective August 1, 2016 (81 FR 43091). This rule implements the annual penalty inflation adjustments mandated by the 2015 Act. Beginning in 2017, Section 4 of the 2015 Act requires each federal agency to publish annual adjustments to all civil penalties under the laws implemented by that agency. These annual adjustments are required to be published by January 15 of each year. The 2015 Act describes the method for calculating the adjustments. Each statutory maximum civil monetary penalty is multiplied by the cost-of-living adjustment, which is the percentage by which the Consumer Price Index for all Urban Consumers (CPI–U) for the month of October 2016 exceeds the CPI–U for the month of October 2015.

With this rule, the new statutory maximum (or minimum [3]) penalty levels listed in Table 2 to 40 CFR 19.4 will apply to all statutory civil penalties assessed on or after January 15, 2017, for violations that occurred after November 2, 2015, when the 2015 Act was enacted. The statutory civil penalty levels, as codified at Table 1 to 40 CFR 19.4, will continue to apply to: (1) Violations that occurred on or before November 2, 2015, and (2) violations that occurred after November 2, 2015, where the penalty assessment was made prior to August 1, 2016.

The formula for determining the cost-of-living or inflation adjustment to statutory civil penalties consists of the following steps:

Step 1: The cost-of-living adjustment multiplier for 2017, based on the CPI–U of October 2016, is 1.01636.[4] Multiply 1.01636 by the current penalty amount. This is the raw adjusted penalty value.

Step 2: Round the raw adjusted penalty value. Section 5 of the 2015 Act states that any adjustment shall be rounded to the nearest multiple of $1. The result is the final penalty value for the year.

II. The 2015 Act Requires Federal Agencies To Publish Annual Penalty Inflation Adjustments Notwithstanding Section 553 of the Administrative Procedures Act

Section 4 of the 2015 Act directs federal agencies to publish annual adjustments no later than January 15, 2017. In accordance with section 553 of the Administrative Procedures Act (APA), most rules are subject to notice and comment and are effective no earlier than 30 days after publication in the **Federal Register**. However, Section 4(b)(2) of the 2015 Act provides that each agency shall make the annual inflation adjustments ''notwithstanding section 553'' of the APA. According to OMB guidance issued to Federal agencies on the implementation of the 2017 annual adjustment,[5] the phrase ''notwithstanding section 553'' means that ''the public procedure the APA generally provides—notice, an opportunity for comment, and a delay in effective date—is not required for agencies to issue regulations implementing the annual adjustment.'' Consistent with the language of the 2015 Act and OMB's implementation guidance, this rule is not subject to notice and an opportunity for public comment and will be effective immediately upon publication.

III. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

Under Executive Order 12866, OMB determined this final rule to be a ''non-significant'' regulatory action and, therefore, it did not undergo interagency review.[6]

[1] The Federal Civil Penalties Inflation Adjustment Act of 1990, Public Law 101–410, 28 U.S.C. 2461 note, defines ''civil monetary penalty'' as ''any penalty, fine, or other sanction that—(A)(i) is for a specific monetary amount as provided by Federal law; or (ii) has a maximum amount provided for by Federal law; and (B) is assessed or enforced by an agency pursuant to Federal law; and (C) is assessed or enforced pursuant to an administrative proceeding or a civil action in the Federal courts.''

[2] The Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (Section 701 of Pub. L. 114–74) was signed into law on Nov. 2, 2015, and further amended the Federal Civil Penalties Inflation Adjustment Act of 1990.

[3] Under Section 3(2)(A) of the 2015 Act, ''civil monetary penalty'' means ''a specific monetary amount as provided by Federal law''; or ''has a maximum amount provided for by Federal law.'' EPA-administered statutes generally refer to statutory maximum penalties, with the following exceptions: Section 311(b)(7)(D) of the Clean Water Act, 33 U.S.C. 1321(b)(7)(D), refers to a minimum penalty of ''not less than $100,000 . . .''; Section 104B(d)(1) of the Marine Protection, Research, and Sanctuaries Act, 33 U.S.C. 1414b(d)(1), refers to an exact penalty of $600 ''[f]or each dry ton (or equivalent) of sewage sludge or industrial waste dumped or transported by the person in violation of this subsection in calendar year 1992. . .''; and Section 325(d)(1) of the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11045(d)(1), refers to an exact civil penalty of $25,000 for each frivolous trade secret claim.

[4] Office of Management and Budget Memorandum, *Implementation of the 2017 annual adjustment pursuant to the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015* (OMB Memorandum M–17–11) at p. 1 (December 16, 2016).

[5] *See* OMB Memorandum M–17–11 at p. 3.

[6] *See* OMB Memorandum M–17–11 at p. 3.

B. Paperwork Reduction Act (PRA)

This action does not impose an information collection burden under the PRA. This rule merely increases the level of statutory civil penalties that could be imposed in the context of a Federal civil administrative enforcement action or civil judicial case for violations of EPA-administered statutes and their implementing regulations.

C. Regulatory Flexibility Act (RFA)

This action is not subject to the RFA. The RFA applies only to rules subject to notice and comment rulemaking requirements under the APA, 5 U.S.C. 553, or any other statute. Because the 2015 Act directs Federal agencies to publish this rule notwithstanding section 553 of the APA, this rule is not subject to notice and comment requirements or the RFA.

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This action is required by the 2015 Act, without the exercise of any policy discretion by EPA. This action also imposes no enforceable duty on any state, local or tribal governments or the private sector. Because the calculation of any increase is formula-driven pursuant to the 2015 Act, EPA has no policy discretion to vary the amount of the adjustment.

E. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have a substantial direct effect on the states, or on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175. This rule merely reconciles the real value of current statutory civil penalty levels to reflect and keep pace with the levels originally set by Congress when the statutes were enacted. The calculation of the increases is formula-driven and prescribed by statute, and EPA has no discretion to vary the amount of the adjustment to reflect any views or suggestions provided by commenters. Accordingly, this rule will not have a substantial direct effect on tribal governments, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that EPA has reason to believe may disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

The rule does not involve technical standards.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action is not subject to Executive Order 12898 (59 FR 7629, February 16, 1994) because it does not establish an environmental health or safety standard. Rather, this action is mandated by the 2015 Act, which prescribes a formula for adjusting statutory civil penalties on an annual basis to reflect inflation.

K. Congressional Review Act (CRA)

This action is subject to the CRA, and EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. The CRA allows the issuing agency to make a rule effective sooner than otherwise provided by the CRA if the agency finds that notice and comment rulemaking procedures are impracticable, unnecessary or contrary to the public interest (5 U.S.C. 808(2)). The 2015 Act directs Federal agencies to publish their annual penalty inflation adjustments ''notwithstanding section 553 [of the APA].'' Because OMB has instructed Federal agencies that this provision means that ''notice, an opportunity for comment, and a delay in the effective date'' are not required for agencies to issue regulations implementing the annual adjustment,[7] EPA finds that the APA's notice and comment rulemaking procedures are impracticable, unnecessary or contrary to the public interest.

List of Subjects in 40 CFR Part 19

Environmental protection, Administrative practice and procedure, Penalties.

Dated: January 3, 2017.

Gina McCarthy,

Administrator.

For the reasons set out in the preamble, EPA amends title 40, chapter I, part 19 of the Code of Federal Regulations as follows:

PART 19—ADJUSTMENT OF CIVIL MONETARY PENALTIES FOR INFLATION

■ 1. The authority citation for part 19 continues to read as follows:

Authority: Pub. L. 101–410, Oct. 5, 1990, 104 Stat. 890, as amended by Pub. L. 104–134, title III, sec. 31001(s)(1), Apr. 26, 1996, 110 Stat. 1321–373; Pub. L. 105–362, title XIII, sec. 1301(a), Nov. 10, 1998, 112 Stat. 3293; Pub. L. 114–74, title VII, sec. 701(b), Nov. 2, 2015, 129 Stat. 599.

■ 2. Revise § 19.2 to read as follows:

§ 19.2 Effective date.

The penalty levels in the last column of Table 1 to § 19.4 apply to all violations which occurred after December 6, 2013 through November 2, 2015, and to violations occurring after November 2, 2015, where penalties are assessed before August 1, 2016. The statutory civil penalty levels set forth in the fourth column of Table 2 to § 19.4 apply to all violations which occur after November 2, 2015, where the penalties are assessed on or after August 1, 2016 and before January 15, 2017. The statutory civil penalty levels set forth in the last column of Table 2 to § 19.4 apply to all violations which occur after November 2, 2015, where the penalties are assessed on or after January 15, 2017.

■ 3. Amend § 19.4 by revising the introductory text and Table 2 to read as follows:

§ 19.4 Statutory civil penalties, as adjusted for inflation, and tables.

Table 1 to § 19.4 sets out the statutory civil penalty provisions of statutes administered by EPA, with the original statutory civil penalty levels, as enacted, and the operative statutory civil penalty levels, as adjusted for inflation, for violations occurring on or before

[7] *See* OMB Memorandum M–17–11 at p. 3.

November 2, 2015, and for violations occurring after November 2, 2015, where penalties are assessed before August 1, 2016. Table 2 sets out the statutory civil penalty provisions of statutes administered by EPA, with the third column displaying the original statutory civil penalty levels, as enacted. The fourth column of Table 2 displays the operative statutory civil penalty levels where penalties are assessed on or after August 1, 2016 but before January 15, 2017, for violations that occurred after November 2, 2015; the last column displays the operative statutory civil penalty levels where penalties are assessed on or after January 15, 2017, for violations that occurred after November 2, 2015.

* * * * *

TABLE 2 OF SECTION 19.4—CIVIL MONETARY PENALTY INFLATION ADJUSTMENTS

U.S. Code citation	Environmental statute	Statutory civil penalties, as enacted	Statutory civil penalties for violations that occurred after November 2, 2015 and assessed on or after August 1, 2016 but before January 15, 2017	Statutory civil penalties for violations that occurred after November 2, 2015 and assessed on or after January 15, 2017
7 U.S.C. 136*l*.(a)(1)	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).	$5,000	$18,750	$19,057
7 U.S.C. 136*l*.(a)(2) [1]	FIFRA	$1,000/$500/$1,000	$2,750/$1,772/$2,750	$2,795/$1,801/$2,795
15 U.S.C. 2615(a)(1)	Toxic Substances Control Act (TSCA)	$25,000	$37,500	$38,114
15 U.S.C. 2647(a)	TSCA	$5,000	$10,781	$10,957
15 U.S.C. 2647(g)	TSCA	$5,000	$8,908	$9,054
31 U.S.C. 3802(a)(1)	Program Fraud Civil Remedies Act (PFCRA).	$5,000	$10,781	$10,957
31 U.S.C. 3802(a)(2)	PFCRA	$5,000	$10,781	$10,957
33 U.S.C. 1319(d)	Clean Water Act (CWA)	$25,000	$51,570	$52,414
33 U.S.C. 1319(g)(2)(A)	CWA	$10,000/$25,000	$20,628/$51,570	$20,965/$52,414
33 U.S.C. 1319(g)(2)(B)	CWA	$10,000/$125,000	$20,628/$257,848	$20,965/$262,066
33 U.S.C. 1321(b)(6)(B)(i)	CWA	$10,000/$25,000	$17,816/$44,539	$18,107/$45,268
33 U.S.C. 1321(b)(6)(B)(ii)	CWA	$10,000/$125,000	$17,816/$222,695	$18,107/$226,338
33 U.S.C. 1321(b)(7)(A)	CWA	$25,000/$1,000	$44,539/$1,782	$45,268/$1,811
33 U.S.C. 1321(b)(7)(B)	CWA	$25,000	$44,539	$45,268
33 U.S.C. 1321(b)(7)(C)	CWA	$25,000	$44,539	$45,268
33 U.S.C. 1321(b)(7)(D)	CWA	$100,000/$3,000	$178,156/$5,345	$181,071/$5,432
33 U.S.C. 1414b(d)(1)	Marine Protection, Research, and Sanctuaries Act (MPRSA).	$600	$1,187	$1,206
33 U.S.C. 1415(a)	MPRSA	$50,000/$125,000	$187,500/$247,336	$190,568/$251,382
33 U.S.C. 1901 note (*see* 1409(a)(2)(A))	Certain Alaskan Cruise Ship Operations (CACSO).	$10,000/$25,000	$13,669/$34,172	$13,893/$34,731
33 U.S.C. 1901 note (*see* 1409(a)(2)(B))	CACSO	$10,000/$125,000	$13,669/$170,861	$13,893/$173,656
33 U.S.C. 1901 note (*see* 1409(b)(1))	CACSO	$25,000	$34,172	$34,731
33 U.S.C. 1908(b)(1)	Act To Prevent Pollution From Ships (APPS).	$25,000	$70,117	$71,264
33 U.S.C. 1908(b)(2)	APPS	$5,000	$14,023	$14,252
42 U.S.C. 300g–3(b)	Safe Drinking Water Act (SDWA)	$25,000	$53,907	$54,789
42 U.S.C. 300g–3(g)(3)(A)	SDWA	$25,000	$53,907	$54,789
42 U.S.C. 300g–3(g)(3)(B)	SDWA	$5,000/$25,000	$10,781/$37,561	$10,957/$38,175
42 U.S.C. 300g–3(g)(3)(C)	SDWA	$25,000	$37,561	$38,175
42 U.S.C. 300h–2(b)(1)	SDWA	$25,000	$53,907	$54,789
42 U.S.C. 300h–2(c)(1)	SDWA	$10,000/$125,000	$21,563/$269,535	$21,916/$273,945
42 U.S.C. 300h–2(c)(2)	SDWA	$5,000/$125,000	$10,781/$269,535	$10,957/$273,945
42 U.S.C. 300h–3(c)	SDWA	$5,000/$10,000	$18,750/$40,000	$19,057/$40,654
42 U.S.C. 300i(b)	SDWA	$15,000	$22,537	$22,906
42 U.S.C. 300i–1(c)	SDWA	$100,000/$1,000,000	$131,185/$1,311,850	$133,331/$1,333,312
42 U.S.C. 300j(e)(2)	SDWA	$2,500	$9,375	$9,528
42 U.S.C. 300j–4(c)	SDWA	$25,000	$53,907	$54,789
42 U.S.C. 300j–6(b)(2)	SDWA	$25,000	$37,561	$38,175
42 U.S.C. 300j–23(d)	SDWA	$5,000/$50,000	$9,893/$98,935	$10,055/$100,554
42 U.S.C. 4852d(b)(5)	Residential Lead–Based Paint Hazard Reduction Act of 1992.	$10,000	$16,773	$17,047
42 U.S.C. 4910(a)(2)	Noise Control Act of 1972	$10,000	$35,445	$36,025
42 U.S.C. 6928(a)(3)	Resource Conservation and Recovery Act (RCRA).	$25,000	$93,750	$95,284
42 U.S.C. 6928(c)	RCRA	$25,000	$56,467	$57,391
42 U.S.C. 6928(g)	RCRA	$25,000	$70,117	$71,264
42 U.S.C. 6928(h)(2)	RCRA	$25,000	$56,467	$57,391
42 U.S.C. 6934(e)	RCRA	$5,000	$14,023	$14,252
42 U.S.C. 6973(b)	RCRA	$5,000	$14,023	$14,252
42 U.S.C. 6991e(a)(3)	RCRA	$25,000	$56,467	$57,391
42 U.S.C. 6991e(d)(1)	RCRA	$10,000	$22,587	$22,957
42 U.S.C. 6991e(d)(2)	RCRA	$10,000	$22,587	$22,957
42 U.S.C. 7413(b)	Clean Air Act (CAA)	$25,000	$93,750	$95,284
42 U.S.C. 7413(d)(1)	CAA	$25,000/$200,000	$44,539/$356,312	$45,268/$362,141
42 U.S.C. 7413(d)(3)	CAA	$5,000	$8,908	$9,054
42 U.S.C. 7524(a)	CAA	$25,000/$2,500	$44,539/$4,454	$45,268/$4,527
42 U.S.C. 7524(c)(1)	CAA	$200,000	$356,312	$362,141
42 U.S.C. 7545(d)(1)	CAA	$25,000	$44,539	$45,268
42 U.S.C. 9604(e)(5)(B)	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).	$25,000	$53,907	$54,789
42 U.S.C. 9606(b)(1)	CERCLA	$25,000	$53,907	$54,789
42 U.S.C. 9609(a)(1)	CERCLA	$25,000	$53,907	$54,789

TABLE 2 OF SECTION 19.4—CIVIL MONETARY PENALTY INFLATION ADJUSTMENTS—Continued

U.S. Code citation	Environmental statute	Statutory civil penalties, as enacted	Statutory civil penalties for violations that occurred after November 2, 2015 and assessed on or after August 1, 2016 but before January 15, 2017	Statutory civil penalties for violations that occurred after November 2, 2015 and assessed on or after January 15, 2017
42 U.S.C. 9609(b)	CERCLA	$25,000/$75,000	$53,907/$161,721	$54,789/$164,367
42 U.S.C. 9609(c)	CERCLA	$25,000/$75,000	$53,907/$161,721	$54,789/$164,367
42 U.S.C. 11045(a)	Emergency Planning and Community Right-To-Know Act (EPCRA).	$25,000	$53,907	$54,789
42 U.S.C. 11045(b)(1)(A)	EPCRA	$25,000	$53,907	$54,789
42 U.S.C. 11045(b)(2)	EPCRA	$25,000/$75,000	$53,907/$161,721	$54,789/$164,367
42 U.S.C. 11045(b)(3)	EPCRA	$25,000/$75,000	$53,907/$161,721	$54,789/$164,367
42 U.S.C. 11045(c)(1)	EPCRA	$25,000	$53,907	$54,789
42 U.S.C. 11045(c)(2)	EPCRA	$10,000	$21,563	$21,916
42 U.S.C. 11045(d)(1)	EPCRA	$25,000	$53,907	$54,789
42 U.S.C. 14304(a)(1)	Mercury-Containing and Rechargeable Battery Management Act (Battery Act).	$10,000	$15,025	$15,271
42 U.S.C. 14304(g)	Battery Act	$10,000	$15,025	$15,271

[1] Note that 7 U.S.C. 136*l*.(a)(2) contains three separate statutory maximum civil penalty provisions. The first mention of $1,000 and the $500 statutory maximum civil penalty amount were originally enacted in 1978 (Pub. L. 95–396), and the second mention of $1,000 was enacted in 1972 (Pub. L. 92–516).

[FR Doc. 2017–00160 Filed 1–11–17; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R04–OAR–2014–0431; FRL–9957–93–Region 4]

Approval and Promulgation of Implementation Plans; Alabama; Infrastructure Requirements or the 2010 Sulfur Dioxide National Ambient Air Quality Standard

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is taking final action to approve in part and disapprove in part portions of the April 23, 2013, State Implementation Plan (SIP) submission, submitted by the State of Alabama, through the Alabama Department of Environmental Management (ADEM), for inclusion into the Alabama SIP. This final action pertains to the infrastructure requirements of the Clean Air Act (CAA or Act) for the 2010 1-hour sulfur dioxide (SO_2) national ambient air quality standard (NAAQS). The CAA requires that each state adopt and submit a SIP for the implementation, maintenance and enforcement of each NAAQS promulgated by EPA, which is commonly referred to as an ''infrastructure SIP submission.'' ADEM certified that the Alabama SIP contains provisions that ensure the 2010 1-hour SO_2 NAAQS is implemented, enforced, and maintained in Alabama. EPA has determined that portions of Alabama's infrastructure SIP submission, provided to EPA on April 23, 2013, satisfy certain required infrastructure elements for the 2010 1-hour SO_2 NAAQS.

DATES: This rule will be effective February 13, 2017.

ADDRESSES: EPA has established a docket for this action under Docket Identification No. EPA–R04–OAR–2014–0431. All documents in the docket are listed on the *www.regulations.gov* Web site. Although listed in the index, some information is not publicly available, *i.e.,* Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically through *www.regulations.gov* or in hard copy at the Air Regulatory Management Section, Air Planning and Implementation Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street SW., Atlanta, Georgia 30303–8960. EPA requests that if at all possible, you contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office's official hours of business are Monday through Friday, 8:30 a.m. to 4:30 p.m., excluding federal holidays.

FOR FURTHER INFORMATION CONTACT: Michele Notarianni, Air Regulatory Management Section, Air Planning and Implementation Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street, SW., Atlanta, Georgia 30303–8960. Ms. Notarianni can be reached via electronic mail at *notarianni.michele@epa.gov* or via telephone at (404) 562–9031.

SUPPLEMENTARY INFORMATION:

I. Background and Overview

On June 2, 2010 (75 FR 35520, June 22, 2010), EPA revised the primary SO_2 NAAQS to an hourly standard of 75 parts per billion (ppb) based on a 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. Pursuant to section 110(a)(1) of the CAA, states are required to submit SIPs meeting the applicable requirements of section 110(a)(2) within three years after promulgation of a new or revised NAAQS or within such shorter period as EPA may prescribe. Section 110(a)(2) requires states to address basic SIP elements such as requirements for monitoring, basic program requirements and legal authority that are designed to assure attainment and maintenance of the NAAQS. States were required to submit such SIPs for the 2010 1-hour SO_2 NAAQS to EPA no later than June 2, 2013.

EPA is taking final action to approve Alabama's April 23, 2013, submission that addresses the infrastructure requirements of CAA sections 110(a)(1) and 110(a)(2) for the 2010 1-hour SO_2 NAAQS, with the exception of interstate transport provisions pertaining to visibility protection requirements of section 110(a)(2)(D)(i)(II) (prong 4) and the state board requirements of section 110(a)(2)(E)(ii). With respect to the visibility protection requirements of section 110(a)(2)(D)(i)(II) (prong 4), EPA is not finalizing any action at this time regarding this requirement. With respect to Alabama's infrastructure SIP submission related to section 110(a)(2)(E)(ii) requirements respecting

the section 128 state board requirements, EPA is finalizing a disapproval of this element of Alabama's submission in this rulemaking.

In a proposed rulemaking published on July 14, 2016, EPA proposed to approve in part and disapprove in part Alabama's 2010 1-hour SO_2 NAAQS infrastructure SIP submission submitted on April 23, 2013. *See* 81 FR 45428. The details of Alabama's submission and the rationale for EPA's actions are explained in the proposed rulemaking. Comments on the proposed rulemaking were due on or before August 15, 2016. EPA received adverse comments on the proposed action.

II. Response to Comments

EPA received two sets of comments, one of which was incomplete and therefore could not be addressed, on the July 14, 2016, proposed rulemaking on Alabama's 2010 1-hour SO_2 NAAQS infrastructure SIP submission. A summary of the complete comment and EPA's response is provided below. A full set of these comments is provided in the docket for today's final rulemaking action.

Comment: The Commenter stated that EPA must disapprove element 110(a)(2)(C) unless Alabama's SIP provides that no new minor source or minor modification of a major source can cause or contribute to a violation of any NAAQS.

Response: EPA agrees that section 110(a)(2)(C) and the minor new source regulations at 40 CFR 51.160 through 51.164 require SIPs to includes procedures to prevent the construction of new minor sources and minor modifications of major sources if the new or modified source will interfere with attainment or maintenance of a NAAQS. EPA explained its approach to reviewing the minor source element of 110(a)(2)(C) in its proposed rulemaking for this action: ''Thus, EPA evaluates whether the state has an EPA-approved minor NSR program and whether the program addresses the pollutants relevant to that NAAQS. In the context of acting on an infrastructure SIP submission, however, EPA does not think it is necessary to conduct a review of each and every provision of a state's existing minor source program (*i.e.,* already in the existing SIP) for compliance with the requirements of the CAA and EPA's regulations that pertain to such programs.'' *See* 81 FR 45431–45432 (July 14, 2016). In its 2010 1-hour SO_2 NAAQS infrastructure SIP submission, Alabama certified that its SIP contains provisions to address the 110(a)(2)(C) requirements regarding new minor sources and modifications, and, as noted in EPA's proposed rulemaking, the following SIP-approved rules address the minor source element of section 110(a)(2)(C): ADEM Admin. Code r. 335–3–14-.01 *General Provisions,* 335–3–14-.02 *Permit Procedure,* and 335–3–14-.03—*Standards for Granting Permits.* These SIP-approved rules address NAAQS pollutants including SO_2. While the Commenter did not specifically object to any aspect of Alabama's SIP submission with respect section 110(a)(2)(C), EPA notes that Alabama's SIP addresses this non-interference component for the minor new source/minor modification permitting element. Specifically relevant to this comment, these SIP-approved rules include provisions to prohibit the issuance of construction permits if the source at issue would result in a violation of any air quality standard. *See* ADEM Admin. Code r. 335–3–14–.03(1)(g).

III. Final Action

With the exception of interstate transport provisions pertaining to visibility protection requirements of section 110(a)(2)(D)(i)(II) (prong 4), and the state board requirements of section 110(a)(2)(E)(ii), EPA is taking final action to approve Alabama's infrastructure submission submitted on April 23, 2013, for the 2010 1-hour SO_2 NAAQS for the above described infrastructure SIP requirements. EPA is taking final action to approve Alabama's infrastructure SIP submission for the 2010 1-hour SO_2 NAAQS because the submission is consistent with section 110 of the CAA. EPA is finalizing disapproval of section 110(a)(2)(E)(ii) of Alabama's infrastructure submission because the State's implementation plan does not contain provisions to comply with section 128 of the Act, and thus Alabama's April 23, 2013, infrastructure SIP submission does not meet the requirements of the Act.

Under section 179(a) of the CAA, final disapproval of a submittal that addresses a requirement of a CAA Part D Plan, or is required in response to a finding of substantial inadequacy as described in CAA section 110(k)(5) (SIP call), starts a sanctions clock. The portion of section 110(a)(2)(E)(ii) provisions (the provisions disapproved in today's notice) were not submitted to meet requirements for Part D or a SIP call, and therefore, no sanctions will be triggered. However, that final action will trigger the requirement under section 110(c) that EPA promulgate a Federal Implementation Plan (FIP) no later than two years from the date of this disapproval unless the State corrects the deficiency, and EPA approves the plan or plan revision before EPA promulgates such FIP.

IV. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. *See* 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the CAA. Accordingly, this action merely approves state law as meeting federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this action:

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the CAA; and
- does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

The SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian

country, the rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), nor will it impose substantial direct costs on tribal governments or preempt tribal law.

The Congressional Review Act, 5 U.S.C. 801 *et seq.,* as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this action and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register.** A major rule cannot take effect until 60 days after it is published in the **Federal Register.** This action is not a ''major rule'' as defined by 5 U.S.C. 804(2).

Under section 307(b)(1) of the CAA, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by March 13, 2017. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this action for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. *See* section 307(b)(2).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Reporting and recordkeeping requirements, Volatile organic compounds.

Dated: December 20, 2016.

Heather McTeer Toney,

Regional Administrator, Region 4.

40 CFR part 52 is amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

■ 1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

Subpart B—Alabama

■ 2. Section 52.50(e) is amended by adding a new entry ''110(a)(1) and (2) Infrastructure Requirements for the 2010 1-hour SO_2 National Ambient Air Quality Standard'' at the end of the table to read as follows:

§ 52.50 Identification of plan.

* * * * *

(e) * * *

EPA-APPROVED ALABAMA NON-REGULATORY PROVISIONS

Name of nonregulatory SIP provision	Applicable geographic or nonattainment area	State submittal date/effective date	EPA approval date	Explanation
*	*	*	*	*
110(a)(1) and (2) Infrastructure Requirements for the 2010 1-hour SO_2 NAAQS.	Alabama	4/23/2013	1/12/2017, [Insert **Federal Register** page citation].	With the exception of interstate transport requirements of section 110(a)(2)(D)(i)(II) (prong 4), and the state board requirements of section 110(a)(2)(E)(ii).

■ 3. Section 52.53 is amended by adding paragraph (d) to read as follows:

§ 52.53 Approval status.

* * * * *

(d) *Disapproval.* Submittal from the State of Alabama, through the Alabama Department of Environmental Management (ADEM) on April 23, 2013, to address the Clean Air Act section 110(a)(2)(E)(ii) for the 2010 1-hour sulfur dioxide (SO_2) National Ambient Air Quality Standards (NAAQS) concerning state board requirements. EPA is disapproving section 110(a)(2)(E)(ii) of ADEM's submittal because the Alabama SIP lacks provisions respecting state boards per section 128 of the CAA for the 2010 1-hour SO_2 NAAQS.

[FR Doc. 2017–00159 Filed 1–11–17; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA–R04–OAR–2015–0252; FRL–9957–90–Region 4]

Air Plan Approval; TN Infrastructure Requirements for the 2010 NO_2 NAAQS

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is taking final action on portions of the State Implementation Plan (SIP) submission, submitted by the State of Tennessee, through the Tennessee Department of Environment and Conservation (TDEC), on March 13, 2014, to demonstrate that the State meets the infrastructure requirements of the Clean Air Act (CAA or Act) for the 2010 nitrogen dioxide (NO_2) national ambient air quality standard (NAAQS). The CAA requires that each state adopt and submit a SIP for the implementation, maintenance and enforcement of each NAAQS promulgated by EPA, which is commonly referred to as an ''infrastructure'' SIP submission. TDEC certified that the Tennessee SIP contains provisions that ensure the 2010 NO_2 NAAQS is implemented, enforced, and maintained in Tennessee. EPA has determined that portions of Tennessee's infrastructure SIP submission, provided to EPA on March 13, 2014, satisfies the certain required infrastructure elements for the 2010 NO_2 NAAQS.

DATES: This rule will be effective February 13, 2017.

ADDRESSES: EPA has established a docket for this action under Docket Identification No. EPA–R04–OAR–2015–0252. All documents in the docket are listed on the *www.regulations.gov* Web site. Although listed in the index, some information is not publicly available, *i.e.,* Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly

available only in hard copy form. Publicly available docket materials are available either electronically through *www.regulations.gov* or in hard copy at the Air Regulatory Management Section, Air Planning and Implementation Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street SW., Atlanta, Georgia 30303–8960. EPA requests that if at all possible, you contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office's official hours of business are Monday through Friday 8:30 a.m. to 4:30 p.m., excluding federal holidays.

FOR FURTHER INFORMATION CONTACT: Richard Wong, Air Regulatory Management Section, Air Planning and Implementation Branch, Air, Pesticides and Toxics Management Division, U.S. Environmental Protection Agency, Region 4, 61 Forsyth Street SW., Atlanta, Georgia 30303–8960. Mr. Wong can be reached via electronic mail at wong.richard@epa.gov or via telephone at (404) 562–8726.

SUPPLEMENTARY INFORMATION:

I. Background and Overview

On February 9, 2010 (75 FR 6474), EPA published a new 1-hour primary NAAQS for NO_2 at a level of 100 parts per billion (ppb), based on a 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations. Pursuant to section 110(a)(1) of the CAA, states are required to submit SIPs meeting the requirements of section 110(a)(2) within three years after promulgation of a new or revised NAAQS or within such shorter period as EPA may prescribe. Section 110(a)(2) requires states to address basic SIP requirements, including emissions inventories, monitoring, and modeling to assure attainment and maintenance of the NAAQS. States were required to submit such SIPs for the 2010 1-hour NO_2 NAAQS to EPA no later than January 22, 2013.

In a proposed rulemaking published on July 14, 2016, EPA proposed to approve Tennessee's infrastructure SIP submission for the applicable requirements of the 2010 1-hour NO_2 NAAQS, with the exception of the PSD permitting requirements for major sources of sections 110(a)(2)(C), prong 3 of D(i), and (J), and the interstate transport provisions of prongs 1, 2, and 4 of section 110(a)(2)(D)(i). On March 18, 2015, EPA approved Tennessee's March 13, 2014, infrastructure SIP submission regarding the PSD permitting requirements for major sources of sections 110(a)(2)(C), prong 3 of D(i), and (J) for the 2010 1-hour NO_2 NAAQS. *See* 80 FR 14019. Therefore, EPA is not taking any action today pertaining to these requirements. With respect to the interstate transport requirements of section 110(a)(2)(D)(i)(I) (prongs 1 and 2), EPA does not yet have a submission before the Agency for action. Additionally, EPA will address prong 4 element of Tennessee's March 13, 2014, SIP submission for the 2010 1-hour NO_2 NAAQS through a separate rulemaking. The details of Tennessee's submission and the rationale for EPA's action are explained in the proposed rulemaking.

II. Response to Comment

Comments on the proposed rulemaking were due on or before July 28, 2016. EPA received one comment, which is summarized below, on the proposed action.

Comment: The Commenter stated that EPA must disapprove element 110(a)(2)(C) unless Tennessee's SIP provides that no new minor source or minor modification of a major source can cause or contribute to a violation of any NAAQS.

Response: EPA agrees that section 110(a)(2)(C) and the minor new source regulations at 40 CFR 51.160 through 51.164 require SIPs to includes procedures to prevent the construction of new minor sources and minor modifications of major sources if the new or modified source will interfere with attainment or maintenance of a NAAQS. EPA explained its approach to reviewing the minor source element of 110(a)(2)(C) in its proposed rulemaking for this action: ''EPA evaluates whether the state has an EPA-approved minor new source review program and whether the program addresses the pollutants relevant to that NAAQS. In the context of acting on an infrastructure SIP submission, however, EPA does not think it is necessary to conduct a review of each and every provision of a state's existing minor source program (*i.e.,* already in the existing SIP) for compliance with the requirements of the CAA and EPA's regulations that pertain to such programs.'' *See* 81 FR 45441 (July 14, 2016). In its 2010 1-hour NO_2 NAAQS infrastructure SIP submission, Tennessee certified that its SIP contains provisions to address the 110(a)(2)(C) requirements regarding new minor sources and modifications, and, as noted in EPA's proposed rulemaking, the following SIP-approved rules address the minor source element of section 110(a)(2)(C): Tennessee Air Pollution Control Regulations 1200–03–09–.01, *Construction Permits,* and 1200–03–09–.03, *General Provisions.* These SIP-approved rules address NAAQS pollutants including NO_2. While the Commenter did not specifically object to any aspect of Tennessee's SIP submission with respect section 110(a)(2)(C), EPA notes that Tennessee's SIP addresses this non-interference component for the minor new source/minor modification permitting element. Specifically relevant to this comment, these SIP-approved rules include provisions to prohibit the issuance of construction permits if the source at issue would result in a violation of any air quality standard. *See* Regulation 1200–03–09–.01(1)(e).

III. Final Action

With the exception of the preconstruction PSD permitting requirements for major sources of section 110(a)(2)(C), prong 3 of (D)(i), and (J), and the interstate transport provisions pertaining to visibility of prong 4 of section 110(a)(2)(D)(i), EPA is taking final action to approve that Tennessee's March 13, 2014, SIP submission for the 2010 1-hour NO_2 NAAQS because the submission is consistent with section 110 of the CAA.

IV. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. *See* 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the CAA. Accordingly, this action merely approves state law as meeting federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this action:

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described

in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4);

• does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);

• is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);

• is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);

• is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the CAA; and

• does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

The SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), nor will it impose substantial direct costs on tribal governments or preempt tribal law.

The Congressional Review Act, 5 U.S.C. 801 *et seq.,* as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this action and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register.** A major rule cannot take effect until 60 days after it is published in the **Federal Register.** This action is not a ''major rule'' as defined by 5 U.S.C. 804(2).

Under section 307(b)(1) of the CAA, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by March 13, 2017. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this action for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed, and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. *See* section 307(b)(2).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Reporting and recordkeeping requirements, Volatile organic compounds.

Dated: December 20, 2016.

Heather McTeer Toney,

Regional Administrator, Region 4.

For the reasons stated in the preamble, 40 CFR part 52 is amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

■ 1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

Subpart RR—Tennessee

■ 2. Section 52.2220(e) is amended by adding a new entry ''110(a)(1) and (2) Infrastructure Requirements for the 2010 1-hour NO_2 NAAQS'' at the end of the table to read as follows:

§ 52.2220 Identification of plan.

* * * * *

(e) * * *

EPA-APPROVED TENNESSEE NON-REGULATORY PROVISIONS

Name of nonregulatory SIP provision	Applicable geographic or nonattainment area	State effective date	EPA approval date	Explanation
*	*	*	*	* * *
110(a)(1) and (2) Infrastructure Requirements for the 2010 1-hour NO_2 NAAQS.	Tennessee	03/13/2014	1/12/2017, [Insert citation of publication].	With the exception of sections: 110(a)(2)(C) and (J) concerning PSD permitting requirements and; 110(a)(2)(D)(i) (prongs 1 through 4) concerning interstate transport requirements.

[FR Doc. 2017–00161 Filed 1–11–17; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 704

[EPA–HQ–OPPT–2010–0572; FRL–9957–81]

RIN 2070–AJ54

Chemical Substances When Manufactured or Processed as Nanoscale Materials; TSCA Reporting and Recordkeeping Requirements

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA is establishing reporting and recordkeeping requirements for certain chemical substances when they are manufactured or processed at the nanoscale as described in this rule. Specifically, EPA is requiring persons that manufacture (defined by statute to include import) or process, or intend to manufacture or process these chemical substances to electronically report to EPA certain information, which includes insofar as known to or reasonably ascertainable by the person making the report, the specific chemical identity, production volume, methods of manufacture and processing, exposure

and release information, and existing information concerning environmental and health effects. This rule involves one-time reporting for existing discrete forms of certain nanoscale materials, and a standing one-time reporting requirement for new discrete forms of certain nanoscale materials before those new forms are manufactured or processed.

DATES: This final rule is effective May 12, 2017.

ADDRESSES: The docket for this action, identified by docket identification (ID) number EPA–HQ–OPPT–2010–0572, is available electronically at *http://www.regulations.gov* or in person at the Office of Pollution Prevention and Toxics Docket (OPPT Docket), Environmental Protection Agency Docket Center (EPA/DC), West William Jefferson Clinton Bldg., Rm. 3334, 1301 Constitution Ave. NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the OPPT Docket is (202) 566–0280. Please review the visitor instructions and additional information about the docket available at *http://www.epa.gov/dockets.*

FOR FURTHER INFORMATION CONTACT:

For technical information contact: Jim Alwood, Chemical Control Division (7405M), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 1200 Pennsylvania Ave. NW., Washington, DC 20460–0001; telephone number: (202) 564–8974; email address: *alwood.jim@epa.gov.*

For general information contact: The TSCA-Hotline, ABVI-Goodwill, 422 South Clinton Ave., Rochester, NY 14620; telephone number: (202) 554–1404; email address: *TSCA-Hotline@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. Executive Summary

A. Who does this action apply to?

You may be potentially affected by this action if you manufacture or process or intend to manufacture or process nanoscale forms (forms with particle sizes of 1–100 nm) of certain chemical substances as defined in section 3 of TSCA. You are not manufacturing or processing a TSCA chemical substance when you are manufacturing or processing a chemical for use as, *e.g.,* a pesticide (as defined in the Federal Insecticide, Fungicide, and Rodenticide Act), food, food additive, drug, cosmetic or device (as such terms are defined in section 201 of the Federal Food, Drug, and Cosmetic Act). However, persons that manufacture or process, or intend to manufacture or process these chemical substances as part of articles, as impurities, or in small quantities solely for research and development will not be subject to this action. In addition, the discussion in Unit III. describes in more detail which chemical substances will and will not be subject to reporting under the rule. You may also consult 40 CFR 704.3 and 704.5, as well as the regulatory text in this document, for further information on the applicability of these and other exemptions to this rule.

The following list of North American Industrial Classification System (NAICS) codes is not intended to be exhaustive, but rather provides a guide to help readers determine whether this document may apply to them:

- Chemical Manufacturing or Processing (NAICS codes 325).
- Synthetic Dye and Pigment Manufacturing (NAICS code 325130).
- Other Basic Inorganic Chemical Manufacturing (NAICS code 325180).
- Rolled Steel Shape Manufacturing (NAICS code 331221).
- Semiconductor and Related Device Manufacturing (NAICS code 334413).
- Carbon and Graphite Product Manufacturing (NAICS code 335991).
- Home Furnishing Merchant Wholesalers (NAICS code 423220).
- Roofing, Sliding, and Insulation Material Merchant Wholesalers (NAICS code 423330).
- Metal Service Centers and Other Metal Merchant Wholesalers (NAICS code 423510).

B. What action is the Agency taking?

On April 6, 2015 (80 FR 18330; FRL–9920–90) (Ref. 1), EPA proposed reporting and recordkeeping requirements for persons that manufacture (including import) or process certain chemical substances as described in the proposed rule. EPA received numerous public comments and conducted a public meeting on June 11, 2015 to obtain additional public input. This final rule is based on that proposal and the consideration of the public comments received.

This TSCA section 8(a) rule requires one-time reporting of certain information, including specific chemical identity, production volume, methods of manufacture and processing, use, exposure and release information, and available health and safety information; as well as keeping records of this information for 3 years. EPA is finalizing the proposed requirements with changes to the definition of a reportable chemical substance, including a definition of unique and novel properties and a numerical value to replace the proposed term of trace amounts. There are also additional exemptions to reporting for certain biological materials, while zinc oxide and nanoclays are no longer exempt from reporting. The definition of a small manufacturer or processor exempt from reporting requirements has been changed. These changes, the reasons for the changes, and other clarifications are discussed in more detail in Unit III. EPA has also prepared a detailed response to public comments document (Ref. 2) that is available in the docket. EPA's responses to some of those comments are summarized in Unit III.

C. Why is the Agency taking this action?

These reporting and recordkeeping requirements will assist EPA in its continuing evaluation of chemical substances manufactured at the nanoscale, informed by available scientific, technical and economic evidence. As with current new chemical reviews of chemical substances manufactured at the nanoscale, each nanoscale material derived from substances on the TSCA inventory would be evaluated on a case-by-case basis without a presumption of either harm or safety. Any evaluation will be based on the specific nanoscale material's own properties and those of any structural analogs.

As indicated in the proposed rule, the requirements of the rule are not based on an assumption that nanoscale materials as a class, or specific uses of nanoscale materials, necessarily give rise to or are likely to cause harm to people or the environment. Rather, any information gathered under this rule will facilitate EPA's determination of whether further action, including additional information collection, is needed for that specific nanoscale material. Consistent with the President's memorandums for Executive Agencies regarding Principles for Regulation and Oversight of Emerging Technologies and U.S. Decision-Making Concerning Regulation and Oversight of Applications of Nanotechnology and Nanomaterials (Ref. 3), this rule will facilitate assessment of risks and risk management, examination of the benefits and costs of further measures, and making future decisions based on available scientific evidence.

In addition, EPA will not publish an inventory of chemical substances manufactured at the nanoscale based on the information that will be collected pursuant to the rule. EPA will make non-confidential information reported

under the rule available in ChemView (see *http://www.epa.gov/chemview/*).

D. What is the Agency's authority for taking this action?

As described in more detail in Unit II.A. of the proposed rule, the Toxic Substances Control Act as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act (TSCA), 15 U.S.C. 2601 *et seq.,* provides EPA with authority to require reporting, recordkeeping and testing, and impose restrictions relating to chemical substances and/or mixtures. The Government Paperwork Elimination Act (GPEA), 44 U.S.C. 3504, provides that, when practicable, Federal organizations use electronic forms, electronic filings, and electronic signatures to conduct official business with the public.

EPA is issuing this rule under TSCA section 8(a), 15 U.S.C. 2607(a), in compliance with the requirements of section 8(a)(5). Under TSCA section 8(a)(5)(A) EPA is to the extent feasible: (A) Not require reporting which is unnecessary or duplicative; (B) minimize the cost of compliance with this section and the rules issued thereunder on small manufacturers and processors; and (C) apply any reporting obligations to those persons likely to have information relevant to the effective implementation of TSCA. As noted in the response to comments several elements of this rule address duplicative reporting such as the exemption for chemical substances that are nanoscale materials that have already been reported under section 5 of TSCA and for the exemption for information already submitted under the Nanoscale Materials Stewardship Program. The response also explains why this rule does not duplicate chemical data reporting (CDR) under 40 CFR part 711. EPA's economic analysis demonstrated that this rule would not have a significant adverse economic impact on a substantial number of small entities. The rationale supporting this conclusion is summarized in Unit V.C. of this rule and is presented in the small entity impact analysis that EPA prepared for this action as part of the Agency's economic analysis in the public docket for this rule. This rule focuses on manufacturers and processors of chemical substances as nanoscale materials with unique and novel properties which are the persons likely to have relevant information on nanoscale materials in commerce.

E. What are the estimated incremental impacts of this action?

EPA has evaluated the potential costs of this reporting and recordkeeping requirement for manufacturers and processors. This analysis (Ref. 4), which is available in the docket, is briefly summarized here.

Industry is conservatively estimated to incur a burden of approximately 360,000 hours in the first year and 40,100 hours in subsequent years, with costs of approximately $27.79 million and $3.09 million, respectively (see Chapter 3 in Ref. 4), while the Agency is expected to use approximately 16,300 hours in the first year and 1,800 hours in subsequent years, with costs of approximately $1.34 million and $0.15 million respectively (see Chapter 4 in Ref. 4). Discounted over a 10-year period at three and seven percent, total annualized social costs are estimated to be approximately $5.71 million and $6.26 million, respectively. (Ref. 4).

II. Overview of the Final Rule

EPA is describing in this unit the reporting and recordkeeping requirements for manufacturers and processors of certain chemical substances pursuant to TSCA section 8(a). A processor is someone who prepares a chemical substance or mixture after its manufacture for distribution in commerce. Processor activities include a variety of activities. Some examples of processing of a chemical substance are developing or modifying formulations for additional processing or use in commercial applications, incorporating a chemical substance into articles, and using the chemical substance to form other chemical substances.

A. What chemical substances are reportable under this rule?

1. Reportable chemical substances. This rule applies to chemical substances, as defined in section 3 of TSCA, that are solids at 25 °C and standard atmospheric pressure; that are manufactured or processed in a form where any particles, including aggregates and agglomerates, are in the size range of 1–100 nanometers (nm) in at least one dimension; and that are manufactured or processed to exhibit one or more unique and novel properties. This rule does not apply to chemical substances manufactured or processed in forms that contain less than 1% by weight of any particles, including aggregates and agglomerates, in the size range of 1–100 nm. These parameters are for purposes of identifying chemical substances that are subject to the rule and do not establish a definition of nanoscale material.

EPA added a definition of unique and novel properties in the definitions section of the regulatory text (See 704.20(a)). Unique and novel properties means any size-dependent properties that vary from those associated with other forms or sizes of the same chemical substance, and such properties are a reason that the chemical substance is manufactured or processed in that form or size. A reportable chemical substance is not just a substance containing particles in the size range of 1–100 nm; it must also demonstrate a size-dependent property different from properties at sizes greater than 100 nm and is a reason the chemical is manufactured or processed in that form or size. Chemical substances manufactured or processed at the nanoscale that contain incidental amounts of particles in the size range of 1–100 nm are not reportable chemical substances. EPA used ''trace amounts'' in the proposed rule to define this concept. However, based on the public comments to better define trace amounts including several comments to establish a numerical value, EPA is now using a numerical value of less than 1% of particles from 1–100 nm by weight to define those chemical substances that are not reportable.

i. Discrete forms. Manufacturers and processors of multiple nanoscale forms of the same chemical substance will, in some cases, need to report separately for each discrete form of the reportable chemical substance. Reporting of these discrete forms are not the same as new chemical reporting under TSCA section 5. The rule distinguishes between discrete forms in three different ways. The first is based on a combination of three factors: (1) A change in process to effect a change in size, a change in properties of the chemical substances manufactured at the nanoscale, or both; (2) a change in mean particle size greater than 7 times the standard deviation of the measured values (±7 times the standard deviation); and (3) the change in at least one of the following properties, zeta potential, specific surface area, dispersion stability, or surface reactivity, is greater than 7 times the standard deviation of the measured values (±7 times the standard deviation).

For example, if the specific surface area of one discrete form was measured to be 50 m^2/g with a standard deviation of ±5 m^2/g, then a change resulting in a new average specific surface area of 85 m^2/g would result in a discrete form of a reportable chemical substance, if factors 1 and 2 were also met. While testing is not required, if performing the test EPA recommends using the same test medium and method when measuring the change in these properties, as even minor changes in the

medium and methods can result in large differences in the measured results. EPA's intent for these reporting requirements is to focus reporting on chemical substances on the TSCA inventory that are intentionally manufactured at the nanoscale.

It is the combination of the above three factors, rather than simply size, which distinguishes between different forms of a chemical substance manufactured at the nanoscale, so that unintended variation in size range between production batches does not trigger separate reporting for each batch. The rule does not rely solely on process changes because there may be process changes that are not intended to change the material produced, but rather are intended to improve the efficiency of the process or to use a less expensive reactant. EPA is focusing on the properties of *zeta* potential, specific surface area, dispersion stability, and surface reactivity because these properties are of particular interest in health and safety evaluation. Other properties of chemical substances manufactured at the nanoscale (*e.g.,* the wavelength at which light is emitted) may be important for how that form of the chemical substance functions but are less likely to be relevant to hazard, fate, exposure, or risk. The combination of the above three factors provides a clear and transparent way to distinguish among discrete forms of chemical substances manufactured at the nanoscale for purposes of TSCA section 8(a) reporting.

For the purposes of this rule, specific surface area is the ratio of the surface area of the nanoscale material to its mass (m^2/kg), or the area of the surface of the nanoscale material divided by volume (m^2/m^3). This is an important factor because chemical reactions take place at the surface of the material. Thus, the higher the surface area, the greater the chemical reactivity, which is an important consideration for human health toxicity and environmental toxicity assessments.

Zeta potential is the electrostatic potential near the particle surface. It can be measured using various methods. See the International Organization for Standardization (ISO) ISO/TR 13014:2012 ''Guidance on Physicochemical Characterization for Manufactured Nano-objects Submitted for Toxicological Testing'' (Ref. 5) and the description of zeta potential by Colloidal Dynamics (Ref. 6) for examples. It is typically measured by electrophoresis. This is also an important factor as it measures chemical reactivity at the particle surface.

Dispersion stability is the ability of a dispersion to resist changes in properties over time and can be defined in terms of the change in one or more physical properties over a given time period. See ISO/TR 13097:2013 ''Guidelines for characterization of dispersion stability'' (Ref. 7) as an example. Changes in dispersion stability affect physical properties that in turn can affect the environmental fate and hazard properties of a chemical substance.

Surface reactivity is the degree to which the nanoscale material will react with biological systems. The surface reactivity of the form of a chemical substance is dependent upon factors such as redox potential, which is a measure of the tendency of a chemical species to lose or acquire electrons, and photocatalytic activity, including the potential to generate free radicals. Reactive oxygen species and free radicals are important in considering toxicity for these materials.

The second way of distinguishing a discrete nanoscale form of a particular chemical substance is by morphology or shape. Examples include spheres, rods, ellipsoids, cylinders, needles, wires, fibers, cages, hollow shells, trees, flowers, rings, tori, cones, and sheets. The third way is that forms of a reportable chemical substance that are coated with different chemical substances would be considered discrete forms for each chemical coating.

ii. Chemical mixtures. Chemical substances that are manufactured or processed in a nanoscale form for the purposes of being sold to others for use as a component of a mixture, encapsulated material, or composite are subject to reporting. Chemical substances at the nanoscale that are manufactured but are then incorporated into mixtures, encapsulated materials or composites by that manufacturer do not require separate reporting for their incorporation. However, the person reporting as to the chemical substance must report the information required as to each step of its manufacture, processing and use to the extent it is known or reasonably ascertainable.

2. Substances excluded from reporting. EPA is excluding from the requirements of this rule certain biological materials including DNA, RNA, proteins, enzymes, lipids, carbohydrates, peptides, liposomes, antibodies, viruses, and microorganisms.

EPA is excluding chemical substances which dissociate completely in water to form ions with a size of less than 1 nm. This exclusion does not apply to chemical substances manufactured at the nanoscale that release ions but do not dissociate in water to form those ions. Chemical substances that dissociate completely in water to form ions with a size of less than 1 nm do not exhibit new size-dependent properties because the same properties would manifest in the dissociated form regardless of whether the substance is at the nanoscale before dissociation. Manufacturing or processing such substances are therefore not subject to the reporting requirements of the rule.

EPA is excluding chemical substances formed at the nanoscale as part of a film on a surface. See the explanation in Unit III. for the changes from the proposed rule and the detailed response to comments in the docket for EPA's explanation and reasoning.

3. General exemptions to TSCA Section 8(a) reporting. The general exemptions to TSCA section 8(a) reporting at 40 CFR 704.5 are applicable to this rule. These include, among other exemptions, the exemption for research and development (R&D) under which a person who manufactures or processes a chemical substance only in small quantities for research and development is exempt from the reporting requirements of this rule. Examples of R&D activity are the analysis of the chemical or physical characteristics, the performance, or the production characteristics of a chemical substance. It can include production of a chemical substance for use by others in their R&D activities. R&D activity generally includes specific monitored tests undertaken as part of a planned program of activity.

There is also an exemption from reporting for TSCA section 8(a) rules for small manufacturers and processors. For purposes of this rule EPA is defining and exempting any small manufacturer or processor as a company that has sales of less than $11 million per year.

4. Other exceptions to reporting. The rule does not require manufacturers or processors to report certain information that has already been submitted to EPA. A person who submitted a notice under TSCA section 5 to EPA for a reportable chemical substance on or after January 1, 2005 is not required to report regarding the same substance under this rule, except where the person manufactured or processed a new discrete form of the reportable chemical substance. In addition, any person who has already reported part of or all of the information that is required under this rule for EPA's Nanoscale Materials Stewardship Program (NMSP) would not need to report that information again under this rule. If, however,

information required by this rule was not reported under the NMSP (including information for each discrete form of a reportable chemical substance), then reporting of that information would be required under this rule. The purpose of these exemptions is to avoid duplicative reporting. For example, new chemical notices under TSCA section 5 that have been reviewed by EPA as nanoscale materials are not subject to reporting for the discrete form of a reportable chemical substance that was submitted and reviewed.

B. When will reporting be required?

Persons who manufacture or process a discrete form of a reportable chemical substance at any time during the three years prior to the final effective date of this rule must report to EPA one year after the final effective date of the rule. There is also a standing one-time reporting requirement for persons who intend to manufacture or process a discrete form of a reportable chemical substance on or after the effective date of the rule. These persons must report to EPA at least 135 days before manufacture or processing of that discrete form except where the person has not formed an intent to manufacture or process a discrete form of a reportable chemical substance 135 days before such manufacturing or processing, in which case the information must be filed within 30 days of the formation of such an intent. For example, if a person forms the intent on July 1 to manufacture a reportable chemical substance and intends to commence manufacture of the substance in less than 135 days, that person must report the required information as to the chemical substance no more than 30 days after forming the intent, which would be July 31.

C. What information must be reported?

This rule requires one-time reporting of certain information, including specific chemical identity, actual or anticipated production volume, methods of manufacture and processing, use, exposure and release information, and available health and safety information.

EPA developed a form (Ref. 8) for reporting information including specific chemical identity, material characterization, physical chemical properties, production volume, use, methods of manufacturing and processing, exposure and release information, and existing information concerning environmental and health effects. Any person required to report under this rule must supply the information identified in the form to the extent it is known to or reasonably ascertainable by them. EPA intends to issue guidance for the final rule within six months of issuing the rule including guidance on the reasonably ascertainable standard, consolidating submissions and generic chemical names.

D. How will information be submitted to EPA?

The rule requires electronic reporting similar to the requirements established in 2013 for submitting other information under TSCA (see 704.20(e)). Submitters will use EPA's CDX, the Agency's electronic reporting portal, for all reporting under this rule. In 2013, EPA finalized a rule to require electronic reporting of certain information submitted to the Agency under TSCA sections 4, 5, 8(a) and 8(d). (Ref. 9) The final rule follows two previous rules requiring similar electronic reporting of information submitted to EPA for TSCA Chemical Data Reporting and for Pre-Manufacture Notices. EPA expects that electronic reporting will save time, improve data quality and increase efficiencies for both the submitters and the Agency.

EPA developed the Chemical Information Submission System (CISS) for use in submitting data for TSCA sections 4, 8(a), and 8(d) electronically to the Agency. The web reporting tool is available for use with Windows, iOS, Linux, and UNIX based computers, using ''Extensible Markup Language'' (XML) specifications for efficient data transmission across the Internet. CISS, a web-based reporting tool, provides user-friendly navigation, works with CDX to secure online communication, creates a completed document in Portable Document Format (PDF) for review prior to submission, and enables data, reports, and other information to be submitted easily as PDF attachments, or by other electronic standards, such as XML.

EPA is requiring submitters to follow the same submission procedures used for other TSCA submissions, *i.e.,* to register with EPA's CDX (if not already registered) and use CISS to prepare a data file for submission. Registration enables CDX to authenticate identity and verify authorization. To submit electronically to EPA via CDX, individuals must first register with that system at *http://cdx.epa.gov/epa_home.asp.* To register in CDX, the CDX registrant (also referred to as ''Electronic Signature Holder'' or ''Public/Private Key Holder'') agrees to the Terms and Conditions, provides information about the submitter and organization, selects a user name and password, and follows the procedures outlined in the guidance document for CDX available at *http://www.epa.gov/cdr/tools/CDX_Registration_Guide_v0_02.pdf.*

Users who have previously registered with CDX for other TSCA submissions, Chemical Data Reporting, or the Toxics Release Inventory TRI–ME web reporting flow, can add the ''Submission for Chemical Safety and Pesticide Program (CSPP)'' CDX flow to their current registration, and use the CISS web-based reporting tool.

All submitters must use CISS to prepare their submissions. CISS guides users through the process of creating an electronic submission. Once a user completes the relevant data fields, attaches appropriate PDF files, or other file types, such as XML files, and completes metadata information, CISS validates the submission by performing a basic error check and makes sure all the required fields and attachments are provided and complete. Further instructions on submitting and instructions for uploading PDF attachments or other file types, such as XML, and completing metadata information are available through CISS reporting guidance.

CISS allows the user to choose ''Print,'' ''Save,'' or ''Transmit through CDX.'' When ''Transmit through CDX'' is selected, the user is asked to provide the user name and password that was created during the CDX registration process. CISS then encrypts the file and submits it via CDX. The user will log in to the application and check the status of their submissions. Upon successful receipt of the submission by EPA, the status of the submissions will be flagged as ''Completed.'' The CDX inbox is currently used to notify the users of any correspondence related to user registration. Information on accessing the CDX user inbox is provided in the guidance document for CDX at *http://www.epa.gov/cdr/tools/CDX_Registration_Guide_v0_02.pdf.* To access CISS go to *https://cdx.epa.gov/ssl/CSPP/PrimaryAuthorizedOfficial/Home.aspx* and follow the appropriate links and for further instructions to go *http://www.epa.gov/oppt/chemtest/ereporting/index.html.* Procedures for reporting chemical substances under this rule are similar.

Any person submitting a reporting form could claim any of the information on the form as CBI. Any information which is claimed as confidential will be disclosed by EPA only to the extent and by the means of the procedures set forth in 40 CFR part 2.

D. Confidentiality and the Recent Revisions to TSCA

The Frank R. Lautenberg Chemical Safety for the 21st Century Act was signed into law on June 22, 2016, and became immediately effective. This final rule contains one minor change to reflect the new statutory requirements for asserting confidentiality claims. Section 14(c)(1)(B) of the law now requires a supporting statement for confidentiality claims. This statement is similar to the certification currently required in 40 CFR 704.7, which is cross-referenced in the proposed rule. In this final rule, EPA is substituting the wording of the section 14(c)(1)(B) statement for the wording of the certification in § 704.7(d) so as to eliminate any possibility of doubt that the certification meets the statutory requirements. While this change was not discussed in the proposed rule, EPA finds there is good cause to make this change without notice and comment. Notice and comment are unnecessary because the new statement is required by statute, and the new language is sufficiently similar to that in the § 704.7(d) certification that EPA anticipates no significant effect of the change on companies reporting under the rule or on the public in general.

The law also requires that a generic chemical identity be provided when companies claim a specific chemical identity as confidential. No conforming change is necessary for this rule, because companies reporting under this rule will be claiming chemical identities as confidential only when there is already a generic identity on the confidential portion of the TSCA Chemical Substances Inventory. CISS will automatically populate the submission with the generic chemical name associated with the Inventory listing. This process provides the greatest degree of structural specificity that is practicable to afford at the current time. EPA will develop guidance regarding generic names as required by TSCA, and will determine appropriate procedures regarding their use and submission.

III. Summary of Response to Comments Including Changes and Clarifications From the Proposed Rule

This unit summarizes EPA's responses to comments for several general areas of comments from multiple stakeholders, and where responses are particularly relevant to the requirements of the final rule. EPA also discusses any changes to and clarifications from the proposed rule. A separate document that summarizes the comments relevant to the proposal and EPA's responses to those comments has been prepared and is available in the docket for this rulemaking (Ref. 2).

Comment 1: Several commenters stated that TSCA applies to chemical substances, not different physical forms or different particle sizes of chemical substances, and that discrete forms or discrete physical forms are not ''chemical substances'' subject to reporting under section 8(a) of TSCA.

Response: TSCA section 8(a) authorizes EPA to promulgate rules for submission of such reports as the Agency ''may reasonably require.'' EPA believes that the information from this reporting will help EPA to determine whether chemical substances manufactured and processed at the nanoscale may exhibit behavior relevant to health and safety that is different from that of non-nanoscale forms of chemical substances. EPA thus has the authority to require reporting pertaining to different forms of chemical substances.

Comment 2: Several commenters stated that the proposed information requests are outside those allowed by section 8(a) of TSCA. Commenters specifically identified material characterization including particle size and morphology, methods of manufacture, weight percent of impurities, environmental release information, general population, consumer exposure, risk management practices, and engineering controls. One commenter wanted EPA to explain more clearly the basis of authority for requesting information that does not fall within the scope of the clear statutory authority of TSCA section 8(a).

Response: Section 8(a) gives EPA broad authority to collect information that the Administrator may reasonably require. Section 8(a)(1) authorizes EPA to require reporting of such information with respect to chemical substances as the Administrator may reasonably require. Although it contains limitations with respect to requirements to report with mixtures and to chemical substances manufactured in small quantities for experimentation, those limitations are not relevant to the requirements imposed by this rulemaking. Section 8(a)(2) is best interpreted as listing examples of the kinds of information EPA can require reporting on under section 8(a)(1), not as limiting EPA's authority. If Congress had intended to impose limitations on the kinds of information EPA can collect under section 8(a)(1), it would have added them to the limitations it included in section 8(a)(1). EPA has always interpreted section 8(a) in this fashion, see 58 FR 63134 (November 30, 1993)—an interpretation that is supported by the legislative history of section 8(a), H.R. Conf. Rep. 94–1679, at 80 (1976); S. Rep. No. 94–698, at 22 (1976), H.R. Rep. No. 94–1341, at 42 (1976). Further, the information required under the rule is consistent with the examples of information discussed in section 8(a)(2). For example, requiring weight percent of impurities is analogous to byproducts, material characterization including particle size and morphology is analogous to molecular structure of chemical substances manufactured and processed at the nanoscale, environmental release falls under methods of disposal, while methods of manufacture, risk management practices, engineering controls, general population and consumer exposure fall under estimates of individuals who would be exposed.

Comment 3: Several commenters noted that processors do not know about the particle size and other characteristics of formulations they process or use and should not be required to report.

Response: Reporting of information under TSCA section 8(a) is required only to the extent the information is known or reasonably ascertainable, and includes information that the Administrator may reasonably require. This standard applies both to the extent of an entity's obligation to determine whether it is required to report, and to the extent of information any entity is required to report. If processors do not know about specific physical properties of chemical substances, they must still take reasonable measures to ascertain the information that would determine whether they are subject to the rule. If processors do not know about specific properties such as particle size and other properties that would allow them to know if they are processing a chemical substance subject to the rule, it would be within the reasonably ascertainable standard to ask their suppliers for information that would enable the processor to determine whether the supplier is selling them a nanoscale material subject to reporting and if so provide them with what reportable information they have. Their supplier is not required to provide any additional information to the processor but might provide other supporting information, for example, whether their supplier has reported or intends to report the chemical substance under this rule. If the supplier provides information indicating that the substance is not reportable or if the processor lacks any other means of

reasonably ascertaining whether the substance is reportable, the processor does not need to perform tests to determine whether the substance is reportable. Information developed in the normal course of business or that the processor chooses to develop must also be used. The processor may want to document the steps they took to determine if reporting was required. Companies that purchase formulations but do not change or modify those formulations and only use them are not considered processors and are not required to report.

If the information provided by the supplier indicates that reporting is required, the processor is required to report information that is known or reasonably ascertainable, which may include information obtained from the supplier. This would include situations where the processor may not know the exact chemical identity or some of its physical properties.

The obligations imposed by the reasonably ascertainable standard are discussed more fully in the Chemical Data Reporting final rule, 76 FR 50816, 50829 (August 16, 2011).

Comment 4: Several commenters also asked EPA if manufacturers and processors are only required to report available or reasonably ascertainable information, does this mean they need to develop information to comply with the rule. Other commenters asked EPA to clarify if manufacturers and processors need to develop information to comply with the rule.

Response: Manufacturers and processors are not required to conduct testing or develop new information under this rule. However, they are required to report information that is known or reasonably ascertainable.

Comment 5: Many commenters stated the proposal gives too much discretion to interpret compliance obligations. Commenters suggested clarifying the definition of unique and novel properties, adopting an alternative, or not using it at all. One commenter noted that if the requirement that reportable chemicals exhibit unique and novel attributes due to particle size is removed from the definition, the rule would not differentiate genuinely new nanoscale materials from traditional legacy products in commerce. Several commenters stated there should be some differentiation between genuinely new nanoscale materials in commerce and traditional products. Two commenters supported the proposed definition while one commenter supported a definition of 1–100 nm and unique or novel characteristics.

Response: Based on these comments, EPA agrees that what is a reportable chemical substance should be better defined and clarified. EPA is finalizing the rule with further explanation of ''unique and novel properties'' as described in the National Nanotechnology Initiative's definition. Some nanostructured materials are stronger or have different magnetic properties compared to other forms or sizes of the same material. Others are better at conducting heat or electricity. See *http://www.nano.gov.* They may become more chemically reactive or reflect light better or change color as their size or structure is altered. A property is novel when it is different from the properties associated with other forms or sizes of the same chemical substance. As also noted on *http://www.nano.gov,* when particle sizes of solid matter in the visible scale are compared to what can be seen in a regular optical microscope, there is little difference in the properties of the particles. But when particles are created with dimensions of about 1–100 nm, the materials' properties can change significantly from those at larger scales. See also comment 11 and the response for further clarification on what is considered a reportable chemical substance.

For purposes of this rule, EPA is defining unique and novel properties to include an element of intent, meaning that those properties are the reason why the chemical substance is manufactured in that form or size. The rule includes a definition of unique and novel properties in the definitions section of the regulatory text (See § 704.20(a)). Unique and novel properties means any size-dependent properties that vary from those associated with other forms or sizes of the same chemical substance, and such properties are a reason that the chemical substance is manufactured or processed in that form or size. In order to be reportable it's not sufficient that a chemical substance contains particles in the size range of 1–100 nm; it must also have a size-dependent property different from properties at sizes greater than 100 nm and those properties are a reason that the chemical substance is manufactured or processed in that form or size. Intentionally manufacturing or processing nanoscale gold so that it exhibits a red or purple color instead of a yellow color would create a unique or novel optical property seen at the nanoscale. Such a change would likely result in changes of other properties, such as specific surface area which can result in different health and safety impacts. Unique and novel properties which impact performance generally cannot be isolated from concurrent changes in properties that impact biological systems. For example, see the discussion in Unit II.B. of the proposed rule of the range of biological impacts of nanoscale materials. EPA is exempting certain biological materials, in part, because they do not exhibit different size-dependent properties in the size range of 1–100 nm.

Other chemical substances, including as an example some chemicals that commenters proposed that EPA exempt from reporting, such as pigments, polymers, and polymer dispersions, could be manufactured in nanoscale forms that both exhibit unique and novel properties and in forms that do not. In the concept paper for the NMSP (Ref. 10), EPA stated that many polymers or oligomers, particularly linear or planar polymers, should not be reported even though they have dimensions in the nanoscale. Those polymers did not demonstrate size-dependent properties. The paper did note that when conditions of polymerization or post-reaction processing create free particles that fit the general description of ''engineered nanoscale material'' those chemical substances should be reported under the NMSP. Please also refer to the comment and response to comment 12 in the response to comments document regarding the difference between enhanced and novel properties.

Comment 6: Several commenters suggested alternative definitions of trace amounts stating that the term in the proposed rule is not definitive and gives too much discretion to interpret compliance obligations. The commenters suggested including a numerical value to define trace amount. Most commenters did not suggest a specific value, although one commenter noted the original definition of the Agency's draft proposed rule submitted to OMB would have required reporting for those substances containing ≥10% particles in the range of 1–100 nm while another commenter suggested using a numerical value of less than 10% of particles as trace amount that would not be considered to be a reportable chemical substance. Commenters asked EPA to clarify if particle size was to be determined by weight, volume, or count. One commenter stated that EPA should not use weight based criteria to determine particle size as that measurement is sometimes skewed by the inclusion of very large particles. Several other commenters suggested using weight based criteria to identify particle size but did not give any reasons why.

Response: Chemical substances manufactured or processed at the nanoscale that contain incidental amounts of particles in the size range of 1–100 nm are not reportable chemical substances. EPA used trace amounts in the proposed rule to define this concept. However, based on the public comments to more clearly define trace amounts including several comments to establish a numerical cutoff, EPA is instead using a numerical value of less than 1% of particles from 1–100 nm by weight to more clearly define those chemical substances that would not be reportable. EPA has chosen this number because it is the percentage cut-off used in OSHA's hazard communication standard for all chemicals substances that are not OSHA carcinogens (for which there is a 0.1% cut-off) (Ref. 11). This 1% cut-off is a level that industry has used to identify chemicals in safety data sheets (and previously in material safety data sheets.) Industry is already using this cut-off to identify at least some nanoscale chemical substances, *e.g.,* carbon nanotubes in mixtures. EPA is using the weight based method for measuring particles even though that measurement is sometimes altered by the presence of very large particles because it is the most widely used method, and more data will therefore be available. The final rule does not require reporting for any chemical substance where less than 1% percent of the particle size distribution by weight is less than 100 nm.

Changes to the Definition of a Reportable Chemical Substance in the Final Rule. EPA has added a definition of unique and novel properties in the definitions section of the regulatory text (See 704.20(a)). Unique and novel properties means any size-dependent property that vary from other properties associated with other forms or sizes of the same chemical substance, and such properties are the reason that the chemical substance is manufactured or processed in that form or size. A reportable chemical substance is not just a substance containing particles in the size range of 1–100 nm; it must also have a size-dependent property different from properties at sizes greater than 100 nm. The final rule no longer states that a reportable chemical substance does not include a chemical substance that only has trace amounts of primary particles, aggregates, or agglomerates in the size range of 1–100 nm, such that the chemical substance does not exhibit the unique and novel characteristics or properties because of particle size. The final rule now states that a reportable chemical substance does not include a chemical substance that is manufactured or processed in a form where less than 1% of any particles, including aggregates and agglomerates, measured by weight are in the size range of 1–100 nm.

Comment 7: A variety of commenters stated that EPA should add additional exemptions for biological materials such as enzymes, lipids, carbohydrates, peptides, polypeptides, nucleotides, liposomes, antibodies, viruses, virus-like particles, viral based products, organelles, and microorganisms. The commenters stated that the additional biological materials should be exempted for the same reason EPA proposed to exempt DNA, RNA, and proteins, that the additional biological materials did not exhibit properties as a function of their size range.

Response: Because they meet the same criteria that EPA identified in the proposed rule, EPA is adding an exemption for enzymes, lipids, carbohydrates, peptides, liposomes, antibodies, viruses, and microorganisms in the final rule. The properties of all the exempted biological materials, which can be in the nanoscale, are not a function of the size range per se but rather of the precise nucleotide sequence (in the case of DNA and RNA), shape, and complex biological structures (living cells).

Comment 8: Several commenters identified additional possible exemptions for organic and inorganic pigments and dyes; polymers including polymer dispersions; and chemical substances used in adhesives, coatings and sealants and chemical substances when they are embedded in a polymer matrix or incorporated into a formulated product such as adhesives, cement, ink, coatings, glass, paint, plastic and rubber because they are well understood or characterized and present low risk and low potential for exposure. Commenters suggested that EPA include an exemption for polymers and polymer dispersions to be consistent with the polymer exemption under section 5 of TSCA. Commenters also noted TSCA section 5 regulations such as SNURs which exempted requirements for carbon nanotubes, silica, and pigments when incorporated into polymer matrices.

Response: A reportable chemical substance is not just a substance containing particles in the size range of 1–100 nm; it must also have a size-dependent property different from properties at sizes greater than 100 nm. The chemical substances or activities identified by commenters could be manufactured in nanoscale forms that both exhibit unique and novel properties and in forms that do not. If a chemical substance does not exhibit unique and novel properties, then no reporting would be required. EPA lacks information demonstrating minimal risk and exposure for nanoscale forms of the chemical substances or activities that commenters proposed for exemption. The polymer exemption under TSCA section 5 is not based on any consideration of the potential for impacts from polymers with size dependent properties and does not include all polymers. Most of the activities described by commenters for exemption would only require reporting for a reportable chemical substance before it is incorporated into a formulated product or polymer matrix. Reporting would not be required by persons who use the formulated product or polymer matrix. EPA is not including an exemption for these chemical substances and activities because doing so would exempt some of the nanoscale materials in commerce for which EPA is collecting information on health and safety effects which would allow EPA to better assess and manage risks of nanoscale materials.

Comment 9: Several commenters proposed limited or no reporting for nanoscale materials such as carbon black, silica, titanium dioxide, nanosilver, and nanocellulose, based on the proposed exemption for nanoclays and zinc oxide. The commenters asked EPA to better define the criteria it used to exempt nanoclays and zinc oxide as well-characterized so that the criteria could be applied to these chemical substances. One commenter noted that available information for commercial forms of nanocellulose demonstrate low hazard and risk. Several commenters also described the hazards and exposures of these chemical substances as well-characterized. Several commenters stated that EPA should not exempt zinc oxide and nanoclays as EPA had not identified and made available the data that demonstrated why they are well-characterized.

Response: EPA has decided to not exempt nanoclays and zinc oxide from reporting. When considering the comments to exempt other chemical substances based on its proposed exemption for zinc oxide and nanoclays, EPA realized that it had given too much weight to the available information on zinc oxide and nanoclays. While there is some available information on these chemical substances, EPA does not consider the available information sufficient to extrapolate to all other forms of these chemical substances to exclude information collection under TSCA. Further, this limited information

is not a sufficient basis to create a broader exemption by analogy for other chemical substances. Thus, even for chemical substances manufactured as nanoscale materials that could be described as a group as well-characterized or demonstrating low hazard based on data not relating to nanoscale forms in particular, EPA lacks information on how much and what type of specific nanoscale materials are in commerce and what kind of information is available to assess the properties that can impact health and safety and thus potential risks of those nanoscale materials. The chemical substances that commenters and EPA stated were well characterized could be manufactured in nanoscale forms that both exhibit unique and novel properties and in forms that do not. EPA is not exempting from reporting any of the chemical substances proposed by commenters, including zinc oxide and nanoclays because doing so would exempt some of the nanoscale materials in commerce for which EPA is collecting information on health and safety effects which would allow EPA to better assess and manage risks of nanoscale materials. The type of information described by the commenter regarding nanocellulose is the type of information on health and safety effects which would allow EPA to better assess and manage risks of nanoscale materials.

Changes to Chemical Substances That are Exempt from the Final Rule: EPA added exemptions for enzymes, lipids, carbohydrates, peptides, liposomes, antibodies, viruses, microorganisms in the final rule. EPA did not add any other exemptions to the final rule. EPA did not include the proposed exemptions for nanoclays and zinc oxide in the final rule.

Comment 10: Several commenters stated that EPA cannot require information that violates the language under TSCA section 8(a) prohibiting ''any reporting which is unnecessary or duplicative.'' Commenters stated that requiring reporting of some of the information already reported to the NMSP would be duplicative, especially the large amount of health and safety information submitted for broad classes of chemical substances such as silica and carbon black. Commenters also asked EPA to explain why the proposed reporting requirements do not duplicate reporting required under CDR.

Response: The reporting required by this rule does not duplicate reporting EPA would receive under other TSCA regulations. Chemical data reporting (CDR) under 40 CFR part 711 does not require manufacturers to distinguish reporting for different forms of chemical substances including nanoscale materials. This rule also exempts reporting for chemical substances that are nanoscale materials that have already been reported under section 5 of TSCA since 2005 except for new discrete forms. As noted in the interim report on the NMSP (Ref. 12), EPA received limited reporting on nanoscale materials in commerce. The reporting for nanoscale materials such as silica and carbon black gave an overview of the entire industry but not information on individual nanoscale materials. A company reporting a silica or carbon black-based nanoscale material does not have to resubmit the information submitted under the NMSP. However, any reporting of silica or carbon black nanoscale materials would need to include any health and safety information that company possesses for the specific nanoscale material it is reporting. As already noted, CDR reporting does not distinguish between different nanoscale forms of chemical substances. Several commenters stated that EPA needs more information on nanoscale materials in commerce. In the full response to comments document, EPA addresses more specific comments about information required by the rule.

Comment 11: There were numerous comments to not include the 135 day reporting requirement for new discrete forms. This requirement was characterized by several commenters as de facto new chemical reporting. Commenters also asked EPA to clarify if persons subject to the rule had to wait until the 135 day period was completed before commencing manufacture or processing. The 135 day reporting requirement was supported by several commenters because it provides the Agency with more time to identify potential concerns and initiate appropriate action to address them.

Response: EPA did not intend to create de facto new chemical reporting for new discrete forms of nanoscale materials, because the 135-day period is not a formal review-period that prohibits manufacture before the end of the 135-day period. Rather, based on EPA's experience with the Premanufacture Notice (PMN) program, EPA believes that in most cases companies have the requisite intent to manufacture or process at least 135 days before manufacturing or processing will begin, and the rule requires reporting based upon this presumed intent. However, if a company does not form the requisite intent 135 days ahead of time, the company must report within 30 days of the formation of such an intent. Moreover, if a company desires to begin manufacture or processing less than 135 days after the submission for this rule is made, the company is free to do so. There is no obligation upon the company to wait 135 days after reporting to manufacture or process. EPA is revising the language in 704.20(f)(2) to clarify that the rule does not prevent manufacturing before the 135-day period has passed. If the company changes its schedule or does not form the intent until a later time, it may wish to document supporting facts.

Further, the comments made EPA realize that the regulatory text as written in the proposal created a result unintended by the Agency (and not commented upon): Because (1) the default period of 135 days is greater than the advance of periods required for various section 5 submissions, and (2) the reporting exemption for section 5 submissions in 704.20(c)(2) of the proposal would apply only where the company *had already filed a section 5 submission,* a company proposing to manufacture a discrete form of a reportable substance for which a section 5 submission had not been filed might conceivably be required to first file a section 8(a) report, followed by a section 5 submission. In such cases EPA only needs the section 5 submission and exercise whatever section 5 authority might be necessary in a specific case, rather than imposing an additional burden of requiring a duplicative section 8(a) submission. Therefore EPA is adding a new subcategory of non-reportable chemical substances to 704.20(c)(1), for chemical substances that are not on the TSCA Inventory at the time reporting would otherwise be required, to clarify the Agency's original intent in the NPRM. If a reportable chemical substance is not on the TSCA Inventory a manufacturer only needs to submit a new chemical notification under section 5 of TSCA.

Changes to the 135-day Reporting Requirement for Discrete Forms of a Reportable Chemical Substance: EPA has added language to 40 CFR part 704.20(f)(2): ''except where the person has not formed an intent to manufacture or process that discrete form at least 135 days before commencing such manufacture or processing, in which case the information must be filed within 30 days of the formation of such an intent.'' The language makes clear what companies must do if they do form an intent to manufacture or process a discrete form of a reportable chemical substance less than 135 days ahead of manufacture or processing.

Changes to Chemical Substances That Are Not Reportable: EPA has added language to 704.20(c)(1), exempting

chemical substances that are not on the TSCA Inventory from reporting.

Comment 12: There is not standardized testing for the physical properties in the proposed rule identified for manufacturers and processors to determine if they qualify for the rule. EPA should identify test methods to be used to comply with the rule. Many processors will not know to test for these properties. EPA cannot require this testing until validated protocols are developed.

Response: Testing or developing new information is not required by the rule. Only known or reasonably ascertainable information needs to be reported. Companies are only required to report on known or reasonably ascertainable information. See the response to comment 3 for guidance as to situations in which a company does not know about the physical properties identified in the regulation. In the proposed rule, EPA supplied examples of testing guidelines that could be used for these types of properties should the company desire to do such testing.

Comment 13: Several commenters supported the $4 million dollar small business exemption. One commenter wanted an even smaller dollar amount so that more small businesses would be required to report. Other commenters supported just using the dollar amount but stated it should be increased to $9.5 million dollars to account for inflation since 1988 when the current small business amount of $4 million was established.

Response: Based on these comments and updated economic information, EPA is changing the definition of small business in the final rule to include any company with sales of $11 million dollars or less. In suggesting EPA change the value to $9.5 million, the commenter assumed the original $4 million was promulgated in 1988. However, the $4 million was initially promulgated in 1984 (49 FR 45425) with a base year of 1983. Therefore, it is appropriate to inflate the $4 million from $1983 to $2015. When accounting for inflation since 1983, EPA calculated the figure to be $11 million dollars.

In proposing this definition, EPA provided notice and comment on the criteria for small manufacturers and processors subject to this rule, and consulted with the Small Business Administration (SBA) in accordance with TSCA section 8(a)(3)(B). EPA's change to this definition is consistent with both public comments and the feedback we received from SBA.

EPA recognizes that recent amendments to TSCA include a new and separate obligation under amended TSCA section 8(a)(3)(C), which requires EPA, after consultation with the SBA, to review the adequacy of the standards for determining the manufacturers and processors which qualify as small manufacturers and processors for purposes of TSCA sections 8(a)(1) and 8(a)(3). TSCA furthermore requires that (after consulting with the SBA and providing public notice and an opportunity for comment) EPA make a determination as to whether revision of the standards is warranted. In the **Federal Register** of December 15, 2016 (81 FR 90840) (FRL–9956–03), EPA sought public comment on whether a revision of the current size standard definitions is warranted at this time; announced EPA's initiation of the required consultation with the SBA, and provided its preliminary determination that revision to the currently codified size standards for TSCA section 8(a) is indeed warranted. As part of this effort, EPA will review the adequacy of the standards for small manufacturers and processors in existing TSCA section 8(a) rules, including this one. Any changes resulting from the assessment will undergo consultation with SBA and will be proposed for notice and comment as required by TSCA section 8(a)(3)(C).

Changes to the Definition of a Small Manufacturer or Processor Exempt from the Reporting Requirements of the Rule: The final rule retains a small business exemption based only on sales, but a small manufacturer or processor will be defined as any company with sales of less than $11 million per year.

Comment 14: Several commenters asked EPA to clarify the objects and collections of objects to which the 1–100 nm measurement applies. In other words, does that mean any form with particles 1–100 nm or does that include aggregates and agglomerates greater than 100 nm but based on primary particles less than 100 nm?

Response: Chemical substances required to be reported would include any form with particles 1–100 nm but would not include aggregates or agglomerates greater than 100 nm even if they contain primary particles less than 100 nm. EPA has modified the description of particles that would be subject to reporting in the definition of reportable chemical substance to better reflect this understanding. The language in the reportable chemical substance definition now reads, ''where any particles, including aggregates and agglomerates, are in the size range of 1–100 nm''

Comment 15: Several commenters suggested that EPA should better define particle. One commenter stated ''The word 'particle' is not a term with specific meaning. It is critical that EPA is clear about the definition of 'particle' so that companies understand what materials require reporting. For example, does the term 'particle' include solid objects that contain internal crystalline domains at the nanoscale? Does it include dispersions, suspensions, or aerosols? A definition of 'particle' would provide an important starting point for determining whether a material is subject to reporting. It should take into account the ability of a 'particle' to move freely in its environment.''

Response: EPA will use the definition of particle from ISO, which is a ''minute piece of matter with defined physical boundaries.'' The notes to the ISO definition should be used as guidance in applying this definition. **Note 1:** A physical boundary can also be described as an interface. **Note 2:** A particle can move as a unit. EPA is using this definition because there is international agreement on the definition; the definition addresses the commenter's questions about the ability of a particle to move in the environment and whether ''particle'' includes dispersions, suspensions, or aerosols.

Changes to the Final Rule to Clarify the Types of Particles to be Measured: EPA has added a definition of particle and modified the language in the definition of reportable chemical substance for the types of particles that will be measured.

Comment 16: Several commenters stated that the shape criteria for identifying reportable chemical substances are too vague and unworkable. The commenters asked what the criteria are to discern one shape from another. For example one commenter stated ''For morphology, how would manufacturers and processors distinguish between the different morphologies identified in the proposed regulatory text: What definitions would distinguish for example a rod from an ellipsoid, needle, wire, and/or fiber as these shapes could be considered on a continuum? Another commenter stated ''It is unclear how different the shapes of two forms would have to be in order to trigger the discrete forms requirement.''

Response: As noted in the proposed rule the different morphology could be any change in the shape of particles. Different morphology does not include random shape changes or natural variation in shapes of particles that are not definitive and that, as commenters have noted, occur in a continuum. Some nanoscale materials are engineered to give all the particles a certain morphology or shape. The change in

shape needs to be a specifically engineered change in the shape of particles of a nanoscale material, to effect a change and form a unique and novel property for a chemical substance in the particle size range of 1–100 nm.

Comment 17: Several commenters objected to imposing the same reporting requirements on both processors and manufacturers stating that some processors will not be aware of information known to manufacturers such as for example chemical identity, physical-chemical properties, byproducts, impurities, health effects data, and general population exposure. In addition, the commenters speculated that processors may report uses and processes already reported by the manufacturer. The commenters felt the reporting requirements place impractical or burdensome obligations on processors without collecting information that would serve the intended purposes of the rule when manufacturers were in the best position to report information required by the rule. Commenters suggested limiting reporting to only manufacturers or limiting the information to be reported by processors.

Response: Processors are only required to submit information that is known or reasonably ascertainable. In addition, processors may have access to pertinent information that manufacturers do not have access to. Processors can often describe in greater detail how the nanoscale material is processed and used and any characteristics that change because of processing. Details on the processing and use of nanoscale forms of chemical substances with unique or novel properties will give EPA a better understanding regarding how to assess those chemical substances and whether any further actions are warranted under TSCA.

Comment 18: Several commenters stated that EPA should exempt naturally occurring or mined nanoscale materials. One commenter noted that CDR regulations exempt naturally occurring chemical substances as described at 40 CFR 710.4(b). Several commenters also stated naturally occurring nanoscale materials should be exempt from reporting as they do not meet the criteria of the definition of ''manufactured or processed.'' Another commenter suggested limiting reporting to engineered nanomaterials as they are ''generated for a specific function'' or ''deliberately manipulated.''

Response: EPA did not exempt naturally occurring materials or limit reporting to chemical substances engineered at the nanoscale because some of these chemical substances meet the criteria of a reportable chemical substance and some of them do not. These chemical substances must be reported only if they meet the definition of containing particles in the size range of 1–100 nanometers and a size-dependent property different from properties at sizes greater than 100 nanometers. EPA expects that reportable chemical substances would usually be the result of processing of naturally occurring or mined materials by manufacturers and processors

Comment 19: A commenter stated that EPA should add an explicit exemption for nanoscale substances that are unintentionally generated during manufacturing and processing. Another commenter asked EPA to clarify if it matters if a nanoscale substance is intentionally added versus accidentally formed.

Response: If a nanoscale chemical substance is unintentionally generated or added and not intended to be part of the commercially manufactured or processed chemical substance, it may be considered a byproduct or impurity and would be exempt under 40 CFR 704.5(b) or (c). If a nanoscale chemical substance is unintentionally formed but is considered to be part of the function of the commercial product, it would be a reportable chemical substance. A chemical substance which is intentionally produced but is in total or in part unintentionally produced at the nanoscale is not an impurity or a byproduct. There are examples where a chemical substance is intentionally produced, but unintentionally produced at the nanoscale, and the manufacturer knows that it contributes to the function of their product. In those cases, where a company knows about its functionality, the chemical substance is still subject to TSCA reporting requirements. See, for example, EPA's PMN regulations at 40 CFR 720.30(h)(2), which exempts from reporting a byproduct not used for commercial purposes, but retains the reporting requirement if the byproduct is used for commercial purposes. The rule does not require a company to determine the functionality of every impurity or byproduct. A company is required to report that chemical substance when it knows the chemical substance has commercial functionality.

Other Changes to the Final Rule: EPA made other changes to the rule. See the Response to Comments Document (Ref. 2) for further details. EPA has modified the definition of zeta potential to address public comments that zeta potential was not accurately defined in the proposed rule. Because ''chemical substances manufactured at the nanoscale as part of a film on a surface'' did not adequately describe the films on a surface exemption that was proposed, EPA changed the wording of the exemption to state ''chemical substances formed at the nanoscale as part of a film on a surface.''

Changes to the Reporting Form: EPA made the following changes to the reporting form. See the Response to Comments Document (Ref. 2) for further explanation. EPA removed the requirement for an overview of the life cycle in Section C of the reporting form, as that information duplicates information already identified in other parts of the form. Because not all enhanced properties are unique or novel properties, EPA replaced the word enhanced with novel in section C.5. of the reporting form. EPA added language to the form instructions that ''You may want to consult with your customers or suppliers about the confidentiality of any information you report about them on this form'' in response to comments that manufacturers or processors may not accurately identify confidential information obtained from suppliers or customers. In order to help facilitate continued work on sharing available information and to inform future alignment on activities pertaining to nanoscale materials, EPA included the option on the reporting form to share information with Environment and Climate Change Canada and Health Canada per one commenter's request to provide the option of sharing CBI.

IV. References

The following is a listing of the documents that are specifically referenced in this document. The docket includes these documents and other information considered by EPA, including documents that are referenced within the documents that are included in the docket, even if the referenced document is not physically located in the docket. For assistance in locating these other documents, please consult the technical person listed under **FOR FURTHER INFORMATION CONTACT**.

1. EPA. Chemical Substances When Manufactured or Processed as Nanoscale Materials; TSCA Reporting and Recordkeeping Requirements; Proposed Rule. **Federal Register** April 6, 2015 (80 FR 18330) (FRL–9920–90).

2. 2016. EPA. Response to Comments to the Proposed Rule, Chemical Substances When Manufactured or Processed as Nanoscale Materials; TSCA Reporting and Recordkeeping Requirements; RIN 2070–AJ54. Docket # EPA–HQ–OPPT–2010–0572.

3. 2011. Executive Office of the President. Policy Principles for the U.S. Decision-Making Concerning Regulation and Oversight

of Applications of Nanotechnology and Nanomaterials. *https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/nanotechnology-regulation-and-oversight-principles.pdf,* and Principles for Regulation and Oversight of Emerging Technologies at *https://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Principles-for-Regulation-and-Oversight-of-Emerging-Technologies-new.pdf.*

4. 2016. EPA. Economic Analysis for the TSCA Section 8(a) Reporting Requirements for Certain Nanoscale Materials (RIN 2070–AJ54). December 2016.

5. 2012. International Organization for Standardization (ISO). Nanotechnologies—Guidance on Physicochemical Characterization for Manufactured Nano-objects Submitted for Toxicological Testing. ISO/TR (Technical Report) ISO/TR 13014:2012.

6. 1999. Colloidal Dynamics. The Zeta Potential. *http://www.colloidal-dynamics.com/docs/CDElTut1.pdf.*

7. 2013. ISO/TR. Guidelines for Characterization of Dispersion Stability. ISO/TR 13097:2013.

8. 2016. EPA. Information Submission Form. TSCA section 8(a) Information Reporting for Nanoscale Materials. EPA Form No. 7710–[tbd]; EPA ICR No. 2517.02; OMB Control No. 2070—NEW.

9. 2013. EPA. Electronic Reporting Under the Toxic Substances Control Act; Final Rule. **Federal Register** (78 FR 72818, December 4, 2013) (FRL 9394–6).

10. 2007. EPA. Nanoscale Materials Stewardship Program—Concept Paper.

11. OSHA. OSHA Hazard Communication Standard; 29 CFR part 1910.1200, *https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10099.*

12. 2009. EPA. Interim Report on the Nanoscale Materials Stewardship Program.

13. 2015. EPA. Chemical-Specific Rules, Toxic Substances Control Act Section 8(a). OMB control No. 2070–0067 (EPA ICR No. 1198.10).

14. 2015. EPA. Addendum to an Existing EPA ICR Entitled: Chemical-Specific Rules, Toxic Substances Control Act Section 8(a). EPA ICR No. 2157.02; OMB Control No. 2070—[new].

V. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *http://www2.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is a significant regulatory action that was submitted to the Office of Management and Budget (OMB) for review under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011), and any changes made in response to OMB recommendations are documented in the docket. EPA prepared an economic analysis for this action (Ref. 4), which is available in the docket and discussed in Unit I.E.

B. Paperwork Reduction Act (PRA)

The information collection activities in 40 CFR part 704 related to TSCA section 8(a) reporting rules are approved by OMB under the PRA and assigned OMB control No. 2070–0067 (EPA ICR No. 1198) (Ref. 13). Because this rule revises those information collection activities and the related collection instrument, additional approval by OMB is required. As such, EPA has prepared an addendum to the currently approved ICR; the addendum is identified under EPA ICR No. 2517.02 (OMB Control No. 2070—[new]) (Ref. 14). The ICR document provides the estimated burden and costs for the information collection activities contained in this final rule. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here. The information collection requirements are not enforceable until OMB approves them.

Respondents/affected entities: Chemical manufacturers (including importers) and processors.

Respondent's obligation to respond: Mandatory.

Estimated number of respondents: 2,681.

Frequency of response: Variable.

Total estimated burden: 146,855 hours (average per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated burden cost: $11.33 million (per year), includes $0 annualized capital or operation and maintenance costs.

Change in approved burden: The total burden in OMB's inventory for the existing, approved ICR (275 hours), will be increased by 146,855 hours, for a new total burden of 147,130 hours. If an entity were to submit a report to the Agency, the annual burden is estimated to average 164 hours per response. Burden is defined in 5 CFR 1320.3(b). As presented in the economic analyses and the ICR addenda, EPA estimates that the TSCA section 8(a) rule will create a total incremental industry burden of 440,566 hours over three years.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA regulations in 40 CFR are listed in 40 CFR part 9. When OMB approves this ICR, the Agency will announce that approval in the **Federal Register** and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved information collection activities contained in this final rule.

C. Regulatory Flexibility Act (RFA)

I certify under section 605(b) of the RFA, 5 U.S.C. 601 *et seq.,* that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The small entities subject to the requirements of this action are small businesses, small governmental jurisdictions and small non-profits. A small business exemption exists under TSCA section 8(a) reporting rules, at 40 CFR 704.5(f). For this action, EPA is modifying the exemption. EPA analyzed potential small business impacts from this rule using both the SBA employee size standards and the TSCA sales-based definition of small business. The Agency has determined that up to 411 small businesses may be impacted and evaluated the number that may incur costs at below 1% and 3%, and above 3% of sales. EPA estimates that all 411 small businesses identified will incur costs below 1% of sales, which EPA has determined is not a significant adverse economic impact on a substantial number of small entities. Details of this analysis are presented in the small entity impact analysis that EPA prepared for this action as part of the Agency's economic analysis that is in the public docket for this rule (Ref. 4).

D. Unfunded Mandates Reform Act (UMRA)

This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. Based on EPA's experience with proposing and finalizing rules under TSCA section 8(a), State, local and Tribal governments have not been impacted by these rulemakings, and EPA does not have any reason to believe that any State, local or Tribal government will be impacted by this rulemaking. In addition, this action will not result in annual expenditures of $100 million or more for the private sector.

E. Executive Order 13132: Federalism

This action does not have federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999), because it will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have tribal implications as specified in Executive Order 13175 (65 FR 67249, November 9, 2000), because it will not have any effect on tribal governments, on the relationship between the Federal government and the Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes. Thus, Executive Order 13175 does not apply to this action.

G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 (62 FR 19885, April 23, 1997) as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of ''covered regulatory action'' in section 2–202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health or safety risk. Nevertheless, the information obtained by the reporting required by this rule will be used to inform the Agency's decision-making process regarding chemical substances to which children may be disproportionately exposed. This information will also assist the Agency and others in determining whether the chemical substances addressed in this rule present potential risks, allowing the Agency and others to take appropriate action to investigate and mitigate those risks.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a ''significant energy action'' as defined in Executive Order 13211 (66 FR 28355, May 22, 2001), because it is not likely to have a significant adverse effect on energy supply, distribution, or use.

I. National Technology Transfer and Advancement Act (NTTAA)

This action does not involve any technical standards, and is therefore not subject to considerations under NTTAA section 12(d), 15 U.S.C. 272 note.

J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

This action will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). This action does not affect the level of protection provided to human health or the environment. The information collected under this rule will, however, assist EPA and others in determining the potential hazards and risks associated with various chemicals manufactured processed, and used at the nanoscale. Although not directly impacting environmental justice-related concerns, this information will enable the Agency to better assess and protect human health and the environment, including in low-income and minority communities.

K. Congressional Review Act (CRA)

This action is subject to the CRA, 5 U.S.C. 801 *et seq.,* and EPA will submit a rule report to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2).

List of Subjects in 40 CFR Part 704

Environmental protection, Chemicals, Hazardous materials, Recordkeeping, and Reporting requirements.

Dated: December 29, 2016.

Louise P. Wise,

Acting Assistant Administrator, Office of Chemical Safety and Pollution Prevention.

Therefore, 40 CFR chapter I is amended as follows:

PART 704—REPORTING AND RECORDKEEPING REQUIREMENTS

■ 1. The authority citation for part 704 continues to read as follows:

Authority: 15 U.S.C. 2607(a).

■ 2. Add § 704.20 to Subpart B, to read as follows:

§ 704.20 Chemical substances manufactured or processed at the nanoscale.

(a) Definitions. For purposes of this section the terms below are defined as follows:

An *agglomerate* is a collection of weakly bound particles or aggregates or mixtures of the two where the resulting external surface area is similar to the sum of the surface areas of the individual components.

An *aggregate* is a particle comprising strongly bonded or fused particles where the resulting external surface area may be significantly smaller than the sum of calculated surface areas of the individual components.

Central Data Exchange or *CDX* means EPA's centralized electronic submission receiving system.

CISS tool means the Chemical Information Submission System, EPA's electronic, web-based reporting tool for the completion and submission of data, reports, and other information, or its successors.

Discrete form of a reportable chemical substance differs from another form of the same reportable chemical substance in one or more of the following 3 characteristics: (i) The change in the reportable chemical substance is due to all of the following:

(A) There is a change in process to effect a change in size, a change in one or more of the properties of the reportable chemical substances identified in paragraph (i)(C) of this definition, or both;

(B) There is a size variation in the mean particle size that is greater than 7 times the standard deviation of the mean particle size (+/− 7 times the standard deviation); and

(C) There is a change in at least one of the following properties: Zeta potential, specific surface area, dispersion stability, or surface reactivity, that is greater than 7 times the standard deviation of the measured value (+/− 7 times the standard deviation).

(ii) The reportable chemical substance has a different morphology. Examples of morphologies include but are not limited to sphere, rod, ellipsoid, cylinder, needle, wire, fiber, cage, hollow shell, tree, flower, ring, torus, cone, and sheet.

(iii) A reportable chemical substance that is coated with another chemical substance or mixture at the end of manufacturing or processing has a coating that consists of a different chemical substance or mixture.

Nanoscale Materials Stewardship Program was a program conducted by EPA from January 2008 to December 2009 under which some nanoscale material manufacturers and processors voluntarily provided EPA available information on engineered nanoscale materials that were manufactured, processed or used.

Particle is a minute piece of matter with defined physical boundaries.

Primary particles are particles or droplets that form during manufacture of a *chemical* substance before aggregation or agglomerization occurs.

Reportable chemical substance is a chemical substance as defined in section 3 of TSCA that is solid at 25 °C and standard atmospheric pressure, that is manufactured or processed in a form where any particles, including aggregates and agglomerates, are in the size range of 1–100 nm in at least one dimension, and that is manufactured or processed to exhibit unique and novel properties because of its size. A reportable chemical substance does not include a chemical substance that is manufactured or processed in a form where less than 1% of any particles, including aggregates, and agglomerates, measured by weight are in the size range of 1–100 nm.

Small manufacturer or processor means any manufacturer or processor whose total annual sales, when combined with those of its parent company (if any), are less than $11 million. The definition of *small manufacturer* in section 704.3 of this title does not apply to reporting under this section (40 CFR 704.20).

Specific surface area means the ratio of the area of the surface of the reportable chemical substance to its mass or volume. Specific surface area by mass is the ratio of the area of the surface of a nanoscale material divided by the mass (m^2/kg) and the specific surface area by volume is the area of the surface of the reportable chemical substance divided by its volume m^2/m^3.

Surface reactivity means the reactivity at the surface of a reportable chemical substance. It is dependent upon factors such as redox potential, which is a measure of the tendency of a substance to lose or acquire electrons, photocatalytic activity, including the potential to generate free radicals.

Unique and novel properties means any size-dependent properties that vary from those associated with other forms or sizes of the same chemical substance, and such properties are a reason that the chemical substance is manufactured or processed in that form or size.

Zeta potential is the electrostatic potential near the particle surface.

(b) Persons who must report. (1) Persons who can reasonably ascertain that they are manufacturers and processors of a discrete form of a reportable chemical substance during the three years prior to the final effective date of the rule must report except as provided in paragraph (c) of this section.

(2) Persons who can reasonably ascertain that they propose to manufacture or process a discrete form of a reportable chemical substance after the final effective date of the rule which was not reported under paragraph (b)(1) of this section must report except as provided in paragraph (c) of this section.

(c) When reporting is not required. (1) The following chemical substances are not subject to reporting under this section:

(i) Chemical substances formed at the nanoscale as part of a film on a surface.

(ii) DNA.

(iii) RNA.

(iv) Proteins.

(v) Enzymes.

(vi) Lipids.

(vii) Carbohydrates.

(viii) Peptides.

(ix) Liposomes.

(x) Antibodies.

(xi) Viruses.

(xii) Microorganisms.

(xiii) Chemical substances which dissociate completely in water to form ions that are smaller than 1 nanometer.

(xiv) Chemical substances that are not on the TSCA Chemical Substance Inventory at the time reporting would otherwise be required under this section.

(2) Persons who submitted a notice under 40 CFR parts 720, 721, or 723 for a reportable chemical substance on or after January 1, 2005 are not required to submit a report for the reportable chemical substance submitted except where the person manufactures or processes a discrete form of the reportable chemical substance.

(3) Section 704.5(a) through (e) apply to reporting under this section. Small manufacturers and processors as defined in paragraph (a) of this section are exempt from reporting under this section.

(4) Persons who submitted some or all of the required information for a reportable chemical substance as part of the Nanoscale Materials Stewardship Program are not required to report the information previously submitted except where the person manufactures or processes a discrete form of the reportable chemical substance.

(d) What information to report. The following information must be reported for each discrete form of a reportable chemical substance to the extent that it is known to or reasonably ascertainable by the person reporting:

(1) The common or trade name, the specific chemical identity including the correct Chemical Abstracts (CA) Index Name and available Chemical Abstracts Service (CAS) Registry Number, and the molecular structure of each chemical substance or mixture. Information must be reported as specified in § 720.45.

(2) Material characteristics including particle size, morphology, and surface modifications.

(3) Physical/chemical properties.

(4) The maximum weight percentage of impurities and byproducts resulting from the manufacture, processing, use, or disposal of each chemical substance.

(5)(i) Persons described in paragraph (b)(1) of this section must report the annual production volume for the previous three years before the effective date of the final rule and an estimate of the maximum production volume for any consecutive 12-month period during the next two years of production after the final effective date of this rule.

(ii) Persons described in paragraph (b)(2) of this section must report the estimated maximum 12 month production volume and the estimated maximum production volume for any consecutive 12 month period during the first three years of production.

(iii) Estimates for paragraphs (d)(5)(i) and (ii) of this section must be on 100% chemical basis of the discrete form of the solid nanoscale material.

(6) Use information describing the category of each use by function and application, estimates of the amount manufactured or processed for each category of use, and estimates of the percentage in the formulation for each use.

(7) Detailed information on methods of manufacturing or processing.

(8) Exposure information with estimates of the number of individuals exposed in their places of employment, descriptions and duration of the occupational tasks that cause such exposure, descriptions and estimates of any general population or consumer exposures.

(9) Release information with estimates of the amounts released, descriptions and duration of the activities that cause such releases, and whether releases are directly to the environment or to control technology.

(10) Risk management practices describing protective equipment for individuals, engineering controls, control technologies used, any hazard warning statement, label, safety data sheet, customer training, or other information which is provided to any person who is reasonably likely to be exposed to this substance regarding protective equipment or practices for the safe handing, transport, use, or disposal of the substance.

(11) Existing information concerning the environmental and health effects.

(e) How to report. You must use CDX and the CISS tool to complete and submit the information required under this part to EPA electronically.

(1) *Reporting form.* You must complete EPA Form No. 7710–xx, TSCA

§ 8(a) Reporting for Nanoscale Materials: Information Submission Form.

(2) *Electronic submission.* You must submit the required information to EPA electronically via CDX and using the CISS tool.

(i) To access the CDX portal, go to *https://cdx.epa.gov.*

(ii) The CISS tool is accessible in CDX.

(f) When to report. (1) Persons specified in paragraph (b)(1) of this section must report the information specified in paragraph (d) of this section within one year after the final effective date of the rule.

(2) Persons specified in paragraph (b)(2) of this section must report the information specified in paragraph (d) of this section at least 135 days before commencing manufacture or processing of a discrete form of the reportable chemical substance, except where the person has not formed an intent to manufacture or process that discrete form at least 135 days before commencing such manufacture or processing, in which case the information must be filed within 30 days of the formation of such an intent.

(g) Recordkeeping. Any person subject to the reporting requirements of this section is subject to the recordkeeping requirements in § 704.11(a) and (b).

(h) Confidential business information. (1) Persons submitting a notice under this rule are subject to the requirements for confidential business information claims in § 704.7(a) through (c).

(2) In submitting a claim of confidentiality, a person attests to the truth of the following four statements concerning all information which is claimed confidential:

(i) My company has taken measures to protect the confidentiality of the information,

(ii) I have determined that the information is not required to be disclosed or otherwise made available to the public under any other Federal law.

(iii) I have a reasonable basis to conclude that disclosure of the information is likely to cause substantial harm to the competitive position of the person.

(iv) I have a reasonable basis to believe that the information is not readily discoverable through reverse engineering.

[FR Doc. 2017–00052 Filed 1–11–17; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 229

[Docket No. 160219129–6999–02]

RIN 0648–BF78

List of Fisheries for 2017

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: The National Marine Fisheries Service (NMFS) publishes its final List of Fisheries (LOF) for 2017, as required by the Marine Mammal Protection Act (MMPA). The LOF for 2017 reflects new information on interactions between commercial fisheries and marine mammals. NMFS must classify each commercial fishery on the LOF into one of three categories under the MMPA based upon the level of mortality and serious injury of marine mammals that occurs incidental to each fishery. The classification of a fishery on the LOF determines whether participants in that fishery are subject to certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan (TRP) requirements.

DATES: The effective date of this final rule is February 13, 2017.

ADDRESSES: Chief, Marine Mammal and Sea Turtle Conservation Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Silver Spring, MD 20910.

FOR FURTHER INFORMATION CONTACT: Lisa White, Office of Protected Resources, 301–427–8494; Allison Rosner, Greater Atlantic Region, 978–281–9328; Jessica Powell, Southeast Region, 727–824–5312; Penny Ruvelas, West Coast Region (CA), 562–980–4197; Lynne Barre, West Coast Region (WA/OR), 206–526–4745; Suzie Teerlink, Alaska Region, 907–586–7240; Dawn Golden, Pacific Islands Region, 808–725–5000. Individuals who use a telecommunications device for the hearing impaired may call the Federal Information Relay Service at 1–800–877–8339 between 8 a.m. and 4 p.m. Eastern time, Monday through Friday, excluding Federal holidays.

SUPPLEMENTARY INFORMATION:

What is the List of Fisheries?

Section 118 of the MMPA requires NMFS to place all U.S. commercial fisheries into one of three categories based on the level of incidental mortality and serious injury of marine mammals occurring in each fishery (16 U.S.C. 1387(c)(1)). The classification of a fishery on the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. NMFS must reexamine the LOF annually, considering new information in the Marine Mammal Stock Assessment Reports (SARs) and other relevant sources, and publish in the **Federal Register** any necessary changes to the LOF after notice and opportunity for public comment (16 U.S.C. 1387 (c)(1)(C)).

How does NMFS determine in which category a fishery is placed?

The definitions for the fishery classification criteria can be found in the implementing regulations for section 118 of the MMPA (50 CFR 229.2). The criteria are also summarized here.

Fishery Classification Criteria

The fishery classification criteria consist of a two-tiered, stock-specific approach that first addresses the total impact of all fisheries on each marine mammal stock and then addresses the impact of individual fisheries on each stock. This approach is based on consideration of the rate, in numbers of animals per year, of incidental mortalities and serious injuries of marine mammals due to commercial fishing operations relative to the potential biological removal (PBR) level for each marine mammal stock. The MMPA (16 U.S.C. 1362(20)) defines the PBR level as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. This definition can also be found in the implementing regulations for section 118 of the MMPA (50 CFR 229.2).

Tier 1: Tier 1 considers the cumulative fishery mortality and serious injury for a particular stock. If the total annual mortality and serious injury of a marine mammal stock, across all fisheries, is less than or equal to 10 percent of the PBR level of the stock, all fisheries interacting with the stock will be placed in Category III (unless those fisheries interact with other stock(s) in which total annual mortality and serious injury is greater than 10 percent of PBR). Otherwise, these fisheries are subject to the next tier (Tier 2) of analysis to determine their classification.

Tier 2: Tier 2 considers fishery-specific mortality and serious injury for a particular stock.

Category I: Annual mortality and serious injury of a stock in a given fishery is greater than or equal to 50 percent of the PBR level (*i.e.,* frequent incidental mortality and serious injury of marine mammals).

Category II: Annual mortality and serious injury of a stock in a given fishery is greater than 1 percent and less than 50 percent of the PBR level (*i.e.,* occasional incidental mortality and serious injury of marine mammals).

Category III: Annual mortality and serious injury of a stock in a given fishery is less than or equal to 1 percent of the PBR level (*i.e.,* a remote likelihood of or no known incidental mortality and serious injury of marine mammals).

Additional details regarding how the categories were determined are provided in the preamble to the final rule implementing section 118 of the MMPA (60 FR 45086; August 30, 1995).

Because fisheries are classified on a per-stock basis, a fishery may qualify as one category for one marine mammal stock and another category for a different marine mammal stock. A fishery is typically classified on the LOF at its highest level of classification (*e.g.,* a fishery qualifying for Category III for one marine mammal stock and for Category II for another marine mammal stock will be listed under Category II). Stocks driving a fishery's classification are denoted with a superscript ''1'' in Tables 1 and 2.

Other Criteria That May Be Considered

The tier analysis requires a minimum amount of data, and NMFS does not have sufficient data to perform a tier analysis on certain fisheries. Therefore, NMFS has classified certain fisheries by analogy to other Category I or II fisheries that use similar fishing techniques or gear that are known to cause mortality or serious injury of marine mammals, or according to factors discussed in the final LOF for 1996 (60 FR 67063; December 28, 1995) and listed in the regulatory definition of a Category II fishery: ''In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, NMFS will determine whether the incidental mortality or serious injury is 'frequent,' 'occasional,' or 'remote' by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area, or at the discretion of the Assistant Administrator for Fisheries'' (50 CFR 229.2).

Further, eligible commercial fisheries not specifically identified on the LOF are deemed to be Category II fisheries until the next LOF is published (50 CFR 229.2).

How does NMFS determine which species or stocks are included as incidentally killed or injured in a fishery?

The LOF includes a list of marine mammal species and/or stocks incidentally killed or injured in each commercial fishery. The list of species and/or stocks incidentally killed or injured includes ''serious'' and ''non-serious'' documented injuries as described later in the List of Species and/or Stocks Incidentally Killed or Injured in the Pacific Ocean and the Atlantic Ocean, Gulf of Mexico, and Caribbean sections. To determine which species or stocks are included as incidentally killed or injured in a fishery, NMFS annually reviews the information presented in the current SARs and injury determination reports. The SARs are based upon the best available scientific information and provide the most current and inclusive information on each stock's PBR level and level of interaction with commercial fishing operations. The best available scientific information used in the SARs reviewed for the 2017 LOF generally summarizes data from 2009–2013. NMFS also reviews other sources of new information, including injury determination reports, bycatch estimation reports, observer data, logbook data, stranding data, disentanglement network data, fisher self-reports (*i.e.,* MMPA reports), and anecdotal reports from that time period. In some cases, more recent information may be available and used in the LOF, but in an effort to be consistent with the most recent SARs and across the LOF, NMFS typically restricts the analysis to data within the five-year time period summarized in the current SAR.

For fisheries with observer coverage, species or stocks are generally removed from the list of marine mammal species and/or stocks incidentally killed or injured if no interactions are documented in the five-year timeframe summarized in that year's LOF. For fisheries with no observer coverage and for observed fisheries with evidence indicating that undocumented interactions may be occurring (*e.g.,* fishery has low observer coverage and stranding network data include evidence of fisheries interaction that cannot be attributed to a specific fishery) species and stocks may be retained for longer than five years. For these fisheries, NMFS will review the other sources of information listed above and use its discretion to decide when it is appropriate to remove a species or stock.

Where does NMFS obtain information on the level of observer coverage in a fishery on the LOF?

The best available information on the level of observer coverage and the spatial and temporal distribution of observed marine mammal interactions is presented in the SARs. Data obtained from the observer program and observer coverage levels are important tools in estimating the level of marine mammal mortality and serious injury in commercial fishing operations. Starting with the 2005 SARs, each SAR includes an appendix with detailed descriptions of each Category I and II fishery on the LOF, including the observer coverage in those fisheries. The SARs generally do not provide detailed information on observer coverage in Category III fisheries because, under the MMPA, Category III fisheries are generally not required to accommodate observers aboard vessels due to the remote likelihood of mortality and serious injury of marine mammals. Fishery information presented in the SARs' appendices and other resources referenced during the tier analysis may include: Level of observer coverage; target species; levels of fishing effort; spatial and temporal distribution of fishing effort; characteristics of fishing gear and operations; management and regulations; and interactions with marine mammals. Copies of the SARs are available on the NMFS Office of Protected Resources Web site at: *http://www.nmfs.noaa.gov/pr/sars/.* Information on observer coverage levels in Category I, II, and III fisheries can be found in the fishery fact sheets on the NMFS Office of Protected Resources' Web site: *http://www.nmfs.noaa.gov/pr/interactions/fisheries/lof.html.* Additional information on observer programs in commercial fisheries can be found on the NMFS National Observer Program's Web site: *http://www.st.nmfs.gov/observer-home/.*

How do I find out if a specific fishery is in Category I, II, or III?

This rule includes three tables that list all U.S. commercial fisheries by LOF Category. Table 1 lists all of the commercial fisheries in the Pacific Ocean (including Alaska); Table 2 lists all of the commercial fisheries in the Atlantic Ocean, Gulf of Mexico, and

Caribbean; and Table 3 lists all U.S.-authorized commercial fisheries on the high seas. A fourth table, Table 4, lists all commercial fisheries managed under applicable TRPs or take reduction teams (TRTs).

Are high seas fisheries included on the LOF?

Beginning with the 2009 LOF, NMFS includes high seas fisheries in Table 3 of the LOF, along with the number of valid High Seas Fishing Compliance Act (HSFCA) permits in each fishery. As of 2004, NMFS issues HSFCA permits only for high seas fisheries analyzed in accordance with the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA). The authorized high seas fisheries are broad in scope and encompass multiple specific fisheries identified by gear type. For the purposes of the LOF, the high seas fisheries are subdivided based on gear type (*e.g.,* trawl, longline, purse seine, gillnet, troll, etc.) to provide more detail on composition of effort within these fisheries. Many fisheries operate in both U.S. waters and on the high seas, creating some overlap between the fisheries listed in Tables 1 and 2 and those in Table 3. In these cases, the high seas component of the fishery is not considered a separate fishery, but an extension of a fishery operating within U.S. waters (listed in Table 1 or 2). NMFS designates those fisheries in Tables 1, 2, and 3 by a ''*'' after the fishery's name. The number of HSFCA permits listed in Table 3 for the high seas components of these fisheries operating in U.S. waters does not necessarily represent additional effort that is not accounted for in Tables 1 and 2. Many vessels/participants holding HSFCA permits also fish within U.S. waters and are included in the number of vessels and participants operating within those fisheries in Tables 1 and 2.

HSFCA permits are valid for five years, during which time Fishery Management Plans (FMPs) can change. Therefore, some vessels/participants may possess valid HSFCA permits without the ability to fish under the permit because it was issued for a gear type that is no longer authorized under the most current FMP. For this reason, the number of HSFCA permits displayed in Table 3 is likely higher than the actual U.S. fishing effort on the high seas. For more information on how NMFS classifies high seas fisheries on the LOF, see the preamble text in the final 2009 LOF (73 FR 73032; December 1, 2008). Additional information about HSFCA permits can be found at: *http://www.nmfs.noaa.gov/ia/permits/highseas.html.*

Where can I find specific information on fisheries listed on the LOF?

Starting with the 2010 LOF, NMFS developed summary documents, or fishery fact sheets, for each Category I and II fishery on the LOF. These fishery fact sheets provide the full history of each Category I and II fishery, including: When the fishery was added to the LOF; the basis for the fishery's initial classification; classification changes to the fishery; changes to the list of species and/or stocks incidentally killed or injured in the fishery; fishery gear and methods used; observer coverage levels; fishery management and regulation; and applicable TRPs or TRTs, if any. These fishery fact sheets are updated after each final LOF and can be found under ''How Do I Find Out if a Specific Fishery is in Category I, II, or III?'' on the NMFS Office of Protected Resources' Web site: *http://www.nmfs.noaa.gov/pr/interactions/fisheries/lof.html,* linked to the ''List of Fisheries by Year'' table. NMFS is developing similar fishery fact sheets for each Category III fishery on the LOF. However, due to the large number of Category III fisheries on the LOF and the lack of accessible and detailed information on many of these fisheries, the development of these fishery fact sheets is taking significant time to complete. NMFS began posting Category III fishery fact sheets online with the LOF for 2016.

Am I required to register under the MMPA?

Owners of vessels or gear engaging in a Category I or II fishery are required under the MMPA (16 U.S.C. 1387(c)(2)), as described in 50 CFR 229.4, to register with NMFS and obtain a marine mammal authorization to lawfully take non-endangered and non-threatened marine mammals incidental to commercial fishing operations. Owners of vessels or gear engaged in a Category III fishery are not required to register with NMFS or obtain a marine mammal authorization.

How do I register and receive my Marine Mammal Authorization Program (MMAP) authorization certificate?

NMFS has integrated the MMPA registration process, implemented through the Marine Mammal Authorization Program (MMAP), with existing state and Federal fishery license, registration, or permit systems for Category I and II fisheries on the LOF. Participants in these fisheries are automatically registered under the MMAP and are not required to submit registration or renewal materials. In the Pacific Islands, West Coast, and Alaska regions, NMFS will issue vessel or gear owners an authorization certificate via U.S. mail or with their state or Federal license or permit at the time of issuance or renewal. In the West Coast Region, authorization certificates may be obtained from the Web site *http://www.westcoast.fisheries.noaa.gov/protected_species/marine_mammals/fisheries_interactions.html.* In the Alaska Region, authorization certificates may be obtained from the Web site *https://alaskafisheries.noaa.gov/pr/mmapregistration.* In the Greater Atlantic Region, NMFS will issue vessel or gear owners an authorization certificate via U.S. mail automatically at the beginning of each calendar year. Certificates may also be obtained by visiting the Greater Atlantic Regional Office Web site *http://www.greateratlantic.fisheries.noaa.gov/Protected/mmp/mmap/.* In the Southeast Region, NMFS will issue vessel or gear owners notification of registry and vessel or gear owners may receive their authorization certificate by contacting the Southeast Regional Office at 727–209–5952 or by visiting the Southeast Regional Office Web site *http://sero.nmfs.noaa.gov/protected_resources/marine_mammal_authorization_program/* and following the instructions for printing the certificate.

The authorization certificate, or a copy, must be on board the vessel while it is operating in a Category I or II fishery, or for non-vessel fisheries, in the possession of the person in charge of the fishing operation (50 CFR 229.4(e)). Although efforts are made to limit the issuance of authorization certificates to only those vessel or gear owners that participate in Category I or II fisheries, not all state and Federal license or permit systems distinguish between fisheries as classified by the LOF. Therefore, some vessel or gear owners in Category III fisheries may receive authorization certificates even though they are not required for Category III fisheries. Individuals fishing in Category I and II fisheries for which no state or Federal license or permit is required must register with NMFS by contacting their appropriate Regional Office (see **ADDRESSES**).

How do I renew my registration under the MMAP?

In Alaska regional and Greater Atlantic regional fisheries, registrations of vessel or gear owners are automatically renewed and participants should receive an authorization certificate by January 1 of each new year. In Pacific Islands regional

fisheries, vessel or gear owners receive an authorization certificate by January 1 for state fisheries and with their permit renewal for Federal fisheries. In West Coast regional fisheries, vessel or gear owners receive authorization either with each renewed state fishing license in Washington and Oregon, with their permit renewal for Federal fisheries, the timing of which varies based on target species, or via U.S. mail. Vessel or gear owners who participate in fisheries in these regions and have not received authorization certificates by January 1 or with renewed fishing licenses must contact the appropriate NMFS Regional Office (see **FOR FURTHER INFORMATION CONTACT**).

In Southeast regional fisheries, vessel or gear owners' registrations are automatically renewed and participants will receive a letter in the mail by January 1 instructing them to contact the Southeast Regional Office to have an authorization certificate mailed to them or to visit the Southeast Regional Office Web site *http://sero.nmfs.noaa.gov/protected_resources/marine_mammal_authorization_program/* to print their own certificate.

Am I required to submit reports when I kill or injure a marine mammal during the course of commercial fishing operations?

In accordance with the MMPA (16 U.S.C. 1387(e)) and 50 CFR 229.6, any vessel owner or operator, or gear owner or operator (in the case of non-vessel fisheries), participating in a fishery listed on the LOF must report to NMFS all incidental mortalities and injuries of marine mammals that occur during commercial fishing operations, regardless of the category in which the fishery is placed (I, II, or III) within 48 hours of the end of the fishing trip or, in the case of non-vessel fisheries, fishing activity. ''Injury'' is defined in 50 CFR 229.2 as a wound or other physical harm. In addition, any animal that ingests fishing gear or any animal that is released with fishing gear entangling, trailing, or perforating any part of the body is considered injured, regardless of the presence of any wound or other evidence of injury, and must be reported.

Mortality/injury reporting forms and instructions for submitting forms to NMFS can be found at: *http://www.nmfs.noaa.gov/pr/interactions/mmap/#form* or by contacting the appropriate regional office (see **FOR FURTHER INFORMATION CONTACT**). Forms may be submitted via any of the following means: (1) Online using the electronic form; (2) emailed as an attachment to *nmfs.mireport@noaa.gov;* (3) faxed to the NMFS Office of Protected Resources at 301–713–0376; or (4) mailed to the NMFS Office of Protected Resources (mailing address is provided on the postage-paid form that can be printed from the web address listed above). Reporting requirements and procedures can be found in 50 CFR 229.6.

Am I required to take an observer aboard my vessel?

Individuals participating in a Category I or II fishery are required to accommodate an observer aboard their vessel(s) upon request from NMFS. MMPA section 118 states that the Secretary is not required to place an observer on a vessel if the facilities for quartering an observer or performing observer functions are so inadequate or unsafe that the health or safety of the observer or the safe operation of the vessel would be jeopardized; thereby authorizing the exemption of vessels too small to accommodate an observer from this requirement. However, U.S. Atlantic Ocean, Caribbean, or Gulf of Mexico large pelagics longline vessels operating in special areas designated by the Pelagic Longline Take Reduction Plan implementing regulations (50 CFR 229.36(d)) will not be exempted from observer requirements, regardless of their size. Observer requirements can be found in 50 CFR 229.7.

Am I required to comply with Any marine mammal TRP regulations?

Table 4 in this rule provides a list of fisheries affected by TRPs and TRTs. TRP regulations can be found at 50 CFR 229.30 through 229.37. A description of each TRT and copies of each TRP can be found at: *http://www.nmfs.noaa.gov/pr/interactions/trt/teams.html.* It is the responsibility of fishery participants to comply with applicable take reduction regulations.

Where can I find more information about the LOF and the MMAP?

Information regarding the LOF and the MMAP, including: Registration procedures and forms; current and past LOFs; descriptions of each Category I and II fishery; and some Category III fisheries; observer requirements; and marine mammal mortality/injury reporting forms and submittal procedures; may be obtained at: *http://www.nmfs.noaa.gov/pr/interactions/fisheries/lof.html,* or from any NMFS Regional Office at the addresses listed below:

NMFS, Greater Atlantic Regional Fisheries Office, 55 Great Republic Drive, Gloucester, MA 01930–2298, Attn: Allison Rosner;

NMFS, Southeast Region, 263 13th Avenue South, St. Petersburg, FL 33701, Attn: Jessica Powell;

NMFS, West Coast Region, Seattle Office, 7600 Sand Point Way NE., Seattle, WA 98115, Attn: Lynne Barre, Protected Resources Division;

NMFS, West Coast Region, Long Beach Office, 501 W. Ocean Blvd., Suite 4200, Long Beach, CA 90802–4213, Attn: Penny Ruvelas;

NMFS, Alaska Region, Protected Resources, P.O. Box 22668, 709 West 9th Street, Juneau, AK 99802, Attn: Suzie Teerlink; or

NMFS, Pacific Islands Regional Office, Protected Resources Division, 1845 Wasp Blvd., Building 176, Honolulu, HI 96818, Attn: Dawn Golden.

Sources of Information Reviewed for the 2017 LOF

NMFS reviewed the marine mammal incidental mortality and serious injury information presented in the SARs for all fisheries to determine whether changes in fishery classification are warranted. The SARs are based on the best scientific information available at the time of preparation, including the level of mortality and serious injury of marine mammals that occurs incidental to commercial fishery operations and the PBR levels of marine mammal stocks. The information contained in the SARs is reviewed by regional Scientific Review Groups (SRGs) representing Alaska, the Pacific (including Hawaii), and the U.S. Atlantic, Gulf of Mexico, and Caribbean. The SRGs were created by the MMPA to review the science that informs the SARs, and to advise NMFS on marine mammal population status, trends, and stock structure, uncertainties in the science, research needs, and other issues.

NMFS also reviewed other sources of new information, including marine mammal stranding data, observer program data, fisher self-reports through the MMAP, reports to the SRGs, conference papers, FMPs, and ESA documents.

The LOF for 2017 was based on, among other things, stranding data; fisher self-reports; and SARs, primarily the 2015 SARs, which are based on data from 2009–2013 and the draft 2016 SARs, which cover 2010–2014. The SARs referenced in this LOF include: 2014 (80 FR 50599; August 20, 2015), 2015 (81 FR 38676; June 14, 2016), and draft 2016 (81 FR 70097; October 11, 2016). The SARs are available at: *http://www.nmfs.noaa.gov/pr/sars/.*

Comments and Responses

NMFS received four comment letters on the proposed LOF for 2017 (81 FR 54019; August 15, 2016). Comments were received from the Alaska Commercial Fisheries Entry Commission (CFEC), Alaska Trollers Association (ATA), Center for Biological Diversity (CBD), and West Coast Fisheries Consultants, LLC (WCFC).

Comments on Commercial Fisheries in the Pacific Ocean

Comment 1: CBD recommends NMFS add Guadalupe fur seals to the list of species and/or stocks incidentally killed or injured in the Hawaii shallow-set longline fishery based on 2015 documented interactions.

Response: The 2017 LOF is based on information on marine mammals and fisheries from the 2015 SARs and draft 2016 SARs. The recently observed Guadalupe fur seal interaction from 2015 has not yet been included in the SARs and has not yet been evaluated as part of the tier analysis for this fishery. This species will be included in a future LOF, as appropriate.

Comment 2: CBD recommends that NMFS add Guadalupe fur seals to the list of species and/or stocks incidentally killed or injured in the CA drift gillnet and the gillnet fisheries that operate from Tillamook County, Oregon, to Jefferson County, Washington, such as the WA Willapa Bay drift gillnet, WA/OR lower Columbia River drift gillnet, and the WA Grays Harbor salmon drift gillnet based on seven documented interactions from 2010–2014.

Response: As described in the 2016 Sources of human-related injury and mortality for U.S. Pacific West Coast marine mammal stocks, 2010–2014, there have been 16 records of deaths and/or serious injuries to Guadalupe fur seals from stranding data from 2010–2014 (Carretta *et al.,* 2016a). These strandings included entanglement in marine debris and gillnet of unknown origin, and shootings. The available data, including observer information from the CA drift gillnet fishery and the draft 2016 SAR, have been reviewed and the source(s) of those entanglements could not be determined; thus we have not made any changes to the LOF based on this information.

Comment 3: CBD concurs with NMFS that the CA spiny lobster fishery should be classified as Category II and recommends NMFS list humpback whale, CA/OR/WA stock, as a species/stock driving classification.

Response: NMFS agrees that the Category II reclassification of the CA spiny lobster fishery is warranted. In the proposed 2010 LOF (74 FR 27739; June 11, 2009), NMFS proposed to add humpback whale, CA/OR/WA stock, to the species or stocks incidentally killed or injured in the CA spiny lobster fishery and to reclassify the fishery as Category II due to a 2007 report of a humpback whale entanglement that had been attributed to the fishery. However, during public comment on the proposed 2010 LOF, NMFS received information from the California Department of Fish and Game (the agency that reported the entanglement) that the report of the gear type and fishery was not considered reliable. Further, the entanglement was observed in July and the CA spiny lobster fishery occurs October through March. Based upon these public comments, NMFS did not add humpback to the species or stock incidentally killed or injured in the CA spiny lobster fishery and did not reclassify it in the final 2010 LOF (73 FR 73032; December 1, 2008). The original 2007 entanglement report, attributing the entanglement to the spiny lobster fishery, was used in the SAR for the 2013 humpback whale, CA/OR/WA stock and includes a mortality/serious injury of humpback whale in this fishery. The entanglement information in the SAR was not updated following public comment on the 2010 LOF. Based upon NMFS' review of this entanglement and input from the reporting agency during the 2010 LOF process, we are not using this humpback whale entanglement to recategorize the CA spiny lobster fishery. NMFS agrees that the new distinct population segment listings may change the way we identify the humpback whale stock along the U.S. West Coast. However, at this time we continue to use the CA/OR/WA stock of humpbacks, and associated PBR, as described in the MMPA for the LOF.

Comment 4: CBD recommends NMFS add harbor seals to the list of species and/or stocks incidentally killed or injured in the CA spiny lobster fishery based on a 2010 documented injury.

Response: NMFS disagrees with this recommendation. We reviewed all sources of human-related injury and mortality of harbor seals from 2010 through 2014 and there were no interactions with pot/trap gear. Although the record for this specific incident does indicate that a piece of lobster trap gear was attached to the line on the animal, lobster trap was not indicated as the cause of the interaction, the interaction type was a hook and line fishery. Entanglement in hook and line, not pot/trap, gear is consistent with other documented interactions with harbor seals.

Comment 5: WCFC recommends NMFS classify CA spiny lobster as Category III. WCFC believes the 2008 bottlenose dolphin injury, which is driving the classification of this fishery, did not warrant serious injury designation. WCFC notes that there have been no documented interactions with bottlenose dolphins in the most recent five-year period.

Response: The commenter's first point is outside the scope of the LOF. Serious injury determinations are made by NMFS consistent with the current Guidelines for Assessing Marine Mammal Stocks (GAMMS) and the 2012 policy on assessing serious injury. The commenter should make any comments on injury determinations during the annual comment period for the relevant stock's SAR change. On the commenter's second point, there are no observers in the CA spiny lobster fishery. The interaction with the common bottlenose dolphin was based upon a stranding report and disentanglement effort. In 2015, there was an entanglement of a humpback whale in spiny lobster gear. This incident was not used in making our recommendations for the 2017 LOF because it was outside the 5-year data period (2009–2013) we relied upon. When the 2015 entanglement is included in the SAR and accounted for on the LOF, the entanglement will keep the spiny lobster trap fishery in Category II.

Comment 6: CBD recommends NMFS reclassify the Gulf of Alaska sablefish longline fishery as a Category II fishery and add the western U.S. stock of Steller sea lions to the list of species incidentally killed or injured in the fishery. CBD stated their proposed reclassification should be based on the total annual mortality and serious injury of this stock due to fisheries (31), which is more than 10 percent of the PBR (297). Therefore, the fishery should be listed as Category II. In addition, CBD reiterates its 2016 comment (81 FR 40874; June 23, 2016) about incidental take of sperm whales in the sablefish longline fishery. Four sperm whales were observed seriously injured incidental to the Gulf of Alaska sablefish longline fishery (two each observed in 2012 and 2013). However, NMFS did not provide extrapolated estimates of sperm whale mortality and serious injury. Nonetheless, using the extrapolation applied in 2012 for the mortality of western U.S. stock of Steller sea lions in this fishery would result in an estimated 11 sperm whales seriously injured in 2012. Observer coverage in 2013 (13 percent) was slightly less than in 2012 (14 percent), which according to

CBD means that a conservative estimate of sperm whales seriously injured in 2013 would likely be approximately 11. CBD expressed concern that PBR is said to be unknown for this stock of sperm whales in the stock assessment report. CBD noted the response to their 2016 comment said that NMFS would ''conduct a full evaluation of this stock and this fishery pursuant to the LOF'' and predicted that it would be done ''for the next annual LOF, likely the 2017 LOF.'' CBD requests NMFS now consider the information.

Response: The single observed Steller sea lion mortality in 2012 referenced in this comment is extrapolated and averaged over five years to account for inter-annual variability in the 5-year window being considered for the 2017 LOF (2009–2013). Therefore, the 5-year average annual mortality and serious injury estimate for the western U.S. stock of Steller sea lions specific to the Gulf of Alaska sablefish longline is 1.1 (CV = 0.91). Please refer to the preamble supplementary information of this Rule for clarification on the complete process under which commercial fisheries are annually categorized for the LOF. In short, the LOF analysis is conducted in a two-tier process. The Tier 1 analysis assesses potential impacts to a particular marine mammal stock from all fisheries. NMFS compares the average annual mortality and serious injury estimates across fisheries to that stock's PBR. If the average annual mortality and serious injury estimate is greater than 10 percent of the PBR, NMFS considers the contribution of individual fisheries in the Tier 2 analysis. The Tier 2 analysis then compares mortality and serious injury by individual fisheries to that marine mammal stock's PBR and places the fishery in the appropriate LOF Category in accordance with established thresholds for Category I to III.

The Tier 1 analysis of the western U.S. stock of Steller sea lions indicates the annual mortality and serious injury estimate from all fisheries (31) is greater than 10 percent of the PBR (297). Therefore, fisheries that interact with this stock are subject to a Tier 2 analysis. The Tier 2 analysis for the Gulf of Alaska sablefish longline with an average annual mortality and serious injury of 1.1 western U.S. Steller sea lions (0.37 percent of PBR) results in the fishery being placed in Category III, as it is below the Category II threshold of 1 percent of PBR.

In regards to sperm whales, since the close of the proposed 2017 LOF comment period, NMFS published the draft 2016 SARs (81 FR 70097; October 11, 2016). The sperm whale SAR now includes an average annual mortality and serious injury estimate (2.2). NMFS will consider this new estimate and evaluate the fishery for the 2018 LOF when the 2016 SAR should be final.

Comment 7: CFEC and ATA recommend NMFS leave the AK miscellaneous finfish handline/hand troll and mechanical jig fishery classified as Category III. The commenters note that there is no documentation to link the vessel to a commercial fishing trip and that the vessel was at anchor in safe harbor and not involved in the act of commercial fishing.

Response: NMFS reviewed the available reports and data surrounding this incident. The vessel's crew identified themselves as Pacific cod jig fishermen, but it appears that this vessel did not land any Pacific cod fished by jig during the year that the incident took place (2013). Further, this vessel had only 7 reported landings in 2013, all in the Pacific cod pot fishery. However, these landings occurred outside the time frame of the incident. Specifically, the vessel landed Pacific cod (using pot gear) two weeks prior to the incident and not again until five months after the incident. Therefore, the interaction will not be assigned to the AK miscellaneous finfish handline/hand troll and mechanical jig fishery. This fishery will not be reclassified as Category II and will remain in Category III in the 2017 LOF Final Rule.

Comment 8: CFEC and ATA recommend NMFS consider re-characterizing the fisheries grouped together in the AK miscellaneous finfish handline/hand troll and mechanical jig fishery.

Response: NMFS agrees that AK miscellaneous finfish handline/hand troll and mechanical jig is currently grouped to include gear and fishing techniques too diverse to effectively evaluate potential risk to marine mammals. NMFS will review the characteristics of these fisheries and will propose a more appropriate characterization in the 2018 LOF.

Comments on Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean

Comment 9: CBD recommends NMFS add humpback whales to the list of species and/or stocks incidentally killed or injured in the Southeastern U.S. Atlantic shark gillnet fishery based on a 2012 injury.

Response: The 2012 gillnet entanglement of the humpback whale occurred in the Mid-Atlantic Gillnet Fishery (Waring *et al.,* 2015). The humpback whale, Gulf of Maine stock is currently listed as a ''marine mammal species and/or stock incidentally killed or injured'' in the Mid-Atlantic gillnet fishery in the LOF.

Summary of Changes From the Proposed Rule

NMFS retains AK miscellaneous finfish handline/hand troll and mechanical jig fishery as Category III and does not reclassify the fishery to Category II as proposed.

Summary of Changes to the LOF for 2017

The following summarizes changes to the LOF for 2017, including the classification of fisheries, fisheries listed, the estimated number of vessels/persons in a particular fishery, and the species and/or stocks that are incidentally killed or injured in a particular fishery. NMFS re-classifies one fishery in the LOF for 2017. Additionally, NMFS adds one fishery to the LOF. NMFS is aware a new fishery, AK Gulf of Alaska sablefish pot, will be starting in 2017 and will characterize this fishery on the 2018 LOF. NMFS makes changes to the estimated number of vessels/persons and list of species and/or stocks killed or injured in certain fisheries. The classifications and definitions of U.S. commercial fisheries for 2017 are identical to those provided in the LOF for 2016 with the changes discussed below. State and regional abbreviations used in the following paragraphs include: AK (Alaska), BSAI (Bering Sea and Aleutian Islands), CA (California), DE (Delaware), FL (Florida), GMX (Gulf of Mexico), HI (Hawaii), MA (Massachusetts), ME (Maine), NC (North Carolina), NY (New York), OR (Oregon), RI (Rhode Island), SC (South Carolina), VA (Virginia), WA (Washington), and WNA (Western North Atlantic).

Commercial Fisheries in the Pacific Ocean

Classification of Fisheries

NMFS reclassifies the CA spiny lobster fishery from Category III to Category II. NMFS makes an administrative correction to list this fishery under Category II in Table 1. In the proposed rule, the fishery was mistakenly left as Category III.

Number of Vessels/Persons

NMFS updates the estimated number of vessels/persons in the Pacific Ocean (Table 1) as follows:

Category	Fishery	Number of vessels/persons (2016 LOF)	Number of vessels/persons (2017 LOF)
I	HI deep-set longline	135	139
II	HI shallow-set longline	15	20
II	American Samoa longline	22	20
III	American Samoa bottomfish handline	17	24

List of Species and/or Stocks Incidentally Killed or Injured in the Pacific Ocean

NMFS adds the Hawaii stock of pygmy killer whale and removes the Hawaii pelagic stock of pantropical spotted dolphin on the list of stocks incidentally killed or injured in the Category I Hawaii deep-set longline fishery.

NMFS adds the Hawaii stock of rough-toothed dolphin and removes the Hawaii stock of *Kogia spp.* on the list of stocks killed or injured in the Category II Hawaii shallow-set longline fishery.

NMFS adds the Northeast Pacific stock of fin whale to the list of stocks killed or injured in the AK miscellaneous finfish handline/hand troll and mechanical jig fishery.

NMFS adds the CA/OR/WA stock of short-finned pilot whale to the list of stocks incidentally killed or injured in the CA thresher shark/swordfish drift gillnet (≥14 in mesh) fishery.

Commercial Fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean

Addition of Fisheries

NMFS adds the Northeast and Mid-Atlantic fyke net fishery to the list of Category III fisheries.

Number of Vessels/Persons

NMFS updates the estimated number of vessels/persons in the Atlantic Ocean, Gulf of Mexico, and Caribbean (Table 2) as follows:

Category	Fishery	Number of vessels/persons (2016 LOF)	Number of vessels/persons (2017 LOF)
I	Mid-Atlantic Gillnet	4063	3950
II	Chesapeake Bay Inshore Gillnet	272	248
II	Gulf of Mexico Gillnet	724	248
II	NC Inshore Gillnet	1323	2850
II	Northeast Anchored Gillnet	995	852
II	Northeast Drift Gillnet	1567	1036
II	Southeast Atlantic Gillnet	357	273
II	Mid-Atlantic Mid-water Trawl	507	382
II	Mid-Atlantic Bottom Trawl	994	785
II	Northeast Bottom Trawl	3132	2238
II	Southeastern U.S. Atlantic, Gulf of Mexico Stone Crab Trap/Pot	1282	1384
II	Atlantic Mixed Species Trap/Pot	3284	3436
II	Atlantic Blue Crab Trap/Pot	8557	7714
II	Mid-Atlantic Haul Beach Seine	243	359
II	NC Long Haul Seine	372	30
II	NC Roe Mullet Stop Net	13	1
II	VA Pound Net	47	26

List of Species and/or Stocks Incidentally Killed or Injured in the Atlantic Ocean, Gulf of Mexico, and Caribbean

NMFS removes the Western North Atlantic stock of harbor seal from the list of species incidentally killed or injured in the Category I Northeast/Mid-Atlantic American lobster trap/pot fishery.

NMFS removes Risso's dolphin, Western North Atlantic stock, and adds the Western North Atlantic stocks of harbor seal and gray seal to the list of species incidentally killed or injured in the Category II Mid-Atlantic Mid-water trawl fishery.

NMFS adds the Canadian East coast stock of minke whale to the list of species incidentally killed or injured in the Category II Northeast midwater trawl fishery.

NMFS removes the Canadian East coast stock of minke whale from the list of species incidentally killed or injured in the Category II Northeast bottom trawl fishery.

NMFS removes the Western North Atlantic stock of short-finned pilot whale from the list of species incidentally killed or injured in the Category II Northeast sink gillnet fishery.

NMFS removes the following stocks from the list of species incidentally killed or injured in the Category I Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics longline fishery: Western North Atlantic stock of Atlantic spotted dolphin, Gulf of Mexico stock of Gervais beaked whale, Gulf of Mexico oceanic stock of killer whale, Western North Atlantic stock of Pantropical spotted dolphin, and Gulf of Mexico oceanic stock of sperm whale.

NMFS adds unknown stock (likely Northern migratory coastal or Southern migratory coastal) of bottlenose dolphin to the list of stocks incidentally killed or injured in the Category II Chesapeake Bay inshore gillnet fishery.

NMFS adds the Mississippi Sound, Lake Borgne, Bay Boudreau stock of bottlenose dolphin to the list of stocks incidentally killed or injured in the Category II Gulf of Mexico menhaden purse seine fishery.

NMFS adds the Florida Keys stock of bottlenose dolphin to the list of stocks incidentally killed or injured in the Category III Florida spiny lobster trap/pot fishery.

NMFS adds the Barataria Bay stock and the Mississippi Sound, Lake Borgne, Bay Boudreau stock of bottlenose dolphin to the list of stocks incidentally killed or injured in the Category III Gulf of Mexico blue crab trap/pot fishery.

Commercial Fisheries on the High Seas

Number of Vessels/Persons

NMFS updates the estimated number of vessels/persons on the High Seas (Table 3) as follows:

Category	Fishery	Number of vessels/persons (2016 LOF)	Number of vessels/persons (2017 LOF)
I	Western Pacific pelagic longline (HI deep-set component)	135	139
II	Atlantic highly migratory species drift gillnet	1	0
II	South Pacific tuna purse seine	39	38
II	South Pacific albacore troll longline	15	10
II	South Pacific tuna longline	8	2
II	Western Pacific pelagic longline (HI shallow-set component)	15	20
II	Pacific highly migratory species handline/pole and line	50	46
II	South Pacific albacore troll handline/pole and line	9	7
II	Western Pacific pelagic handline/pole and line	5	2
II	South Pacific albacore troll troll	38	30
II	South Pacific tuna troll	5	4
II	Western Pacific pelagic troll	21	17
III	Pacific highly migratory species longline	126	114
III	Pacific highly migratory species purse seine	8	6
III	Pacific highly migratory species troll	243	187

List of Species and/or Stocks Incidentally Killed or Injured on the High Seas

NMFS adds the Hawaii stock of pygmy killer whale and removes the Hawaii pelagic stock of pantropical spotted dolphin on the list of stocks incidentally killed or injured in the Category I Western Pacific pelagic longline (HI deep-set component) fishery.

NMFS adds the Hawaii stock of rough-toothed dolphin and removes the Hawaii stock of *Kogia spp.* on the list of stocks killed or injured in the Category II Western Pacific pelagic longline (HI shallow-set component) fishery.

NMFS adds the CA breeding stock of northern elephant seal to the list of stocks killed or injured in the Category II Western Pacific pelagic longline (HI shallow-set component) fishery.

List of Fisheries

The following tables set forth the list of U.S. commercial fisheries according to their classification under section 118 of the MMPA. Table 1 lists commercial fisheries in the Pacific Ocean (including Alaska), Table 2 lists commercial fisheries in the Atlantic Ocean, Gulf of Mexico, and Caribbean, Table 3 lists commercial fisheries on the high seas, and Table 4 lists fisheries affected by TRPs or TRTs.

In Tables 1 and 2, the estimated number of vessels or persons participating in fisheries operating within U.S. waters is expressed in terms of the number of active participants in the fishery, when possible. If this information is not available, the estimated number of vessels or persons licensed for a particular fishery is provided. If no recent information is available on the number of participants, vessels, or persons licensed in a fishery, then the number from the most recent LOF is used for the estimated number of vessels or persons in the fishery. NMFS acknowledges that, in some cases, these estimates may be inflations of actual effort. For example, the State of Hawaii does not issue fishery-specific licenses, and the number of participants reported in the LOF represents the number of commercial marine license holders who reported using a particular fishing gear type/method at least once in a given year, without considering how many times the gear was used. For these fisheries, effort by a single participant is counted the same whether the fisher used the gear only once or every day. In the Mid-Atlantic and New England fisheries, the numbers represent the potential effort for each fishery, given the multiple gear types for which several state permits may allow. Changes made to Mid-Atlantic and New England fishery participants will not affect observer coverage or bycatch estimates, as observer coverage and bycatch estimates are based on vessel trip reports and landings data. Tables 1 and 2 serve to provide a description of the fishery's potential effort (state and Federal). If NMFS is able to extract more accurate information on the gear types used by state permit holders in the future, the numbers will be updated to reflect this change. For additional information on fishing effort in fisheries found on Table 1 or 2, contact the relevant regional office (contact information included above in **SUPPLEMENTARY INFORMATION**).

For high seas fisheries, Table 3 lists the number of valid HSFCA permits currently held. Although this likely overestimates the number of active participants in many of these fisheries, the number of valid HSFCA permits is the most reliable data on the potential effort in high seas fisheries at this time. As noted previously in this rule, the number of HSFCA permits listed in Table 3 for the high seas components of fisheries that also operate within U.S. waters, does not necessarily represent additional effort that is not accounted for in Tables 1 and 2. Many vessels holding HSFCA permits also fish within U.S. waters and are included in the number of vessels and participants operating within those fisheries in Tables 1 and 2.

Tables 1, 2, and 3 also list the marine mammal species and/or stocks incidentally killed or injured (seriously or non-seriously) in each fishery based on SARs, injury determination reports, bycatch estimation reports, observer data, logbook data, stranding data, disentanglement network data, fisher self-reports (*i.e.,* MMPA reports), and anecdotal reports. The best available scientific information included in these reports is based on data through 2012. This list includes all species and/or stocks known to be killed or injured in a given fishery but also includes species and/or stocks for which there are anecdotal records of a mortality or injury. Additionally, species identified by logbook entries, stranding data, or

fishermen self-reports (*i.e.,* MMPA reports) may not be verified. In Tables 1 and 2, NMFS has designated those species/stocks driving a fishery's classification (*i.e.,* the fishery is classified based on mortalities and serious injuries of a marine mammal stock that are greater than or equal to 50 percent (Category I), or greater than 1 percent and less than 50 percent (Category II), of a stock's PBR) by a ''[1]'' after the stock's name.

In Tables 1 and 2, there are several fisheries classified as Category II that have no recent documented mortalities or serious injuries of marine mammals, or fisheries that did not result in a mortality or serious injury rate greater than 1 percent of a stock's PBR level based on known interactions. NMFS has classified these fisheries by analogy to other Category I or II fisheries that use similar fishing techniques or gear that are known to cause mortality or serious injury of marine mammals, as discussed in the final LOF for 1996 (60 FR 67063; December 28, 1995), and according to factors listed in the definition of a ''Category II fishery'' in 50 CFR 229.2 (*i.e.,* fishing techniques, gear types, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area). NMFS has designated those fisheries listed by analogy in Tables 1 and 2 by a ''[2]'' after the fishery's name.

There are several fisheries in Tables 1, 2, and 3 in which a portion of the fishing vessels cross the exclusive economic zone (EEZ) boundary and therefore operate both within U.S. waters and on the high seas. These fisheries, though listed separately between Table 1 or 2 and Table 3, are considered the same fisheries on either side of the EEZ boundary. NMFS has designated those fisheries in each table by a ''*'' after the fishery's name.

TABLE 1—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE PACIFIC OCEAN

Fishery description	Estimated number of vessels/ persons	Marine mammal species and/or stocks incidentally killed or injured
CATEGORY I		
LONGLINE/SET LINE FISHERIES:		
HI deep-set longline * ∧	139	Bottlenose dolphin, HI Pelagic. False killer whale, MHI Insular.[1] False killer whale, HI Pelagic.[1] False killer whale, NWHI. Pygmy killer whale, HI. Risso's dolphin, HI. Short-finned pilot whale, HI. Sperm whale, HI. Striped dolphin, HI.
GILLNET FISHERIES:		
CA thresher shark/swordfish drift gillnet (≥14 in mesh) *	18	Bottlenose dolphin, CA/OR/WA offshore. California sea lion, U.S. Humpback whale, CA/OR/WA. Long-beaked common dolphin, CA. Minke whale, CA/OR/WA. Northern elephant seal, CA breeding. Northern right-whale dolphin, CA/OR/WA. Pacific white-sided dolphin, CA/OR/WA. Risso's dolphin, CA/OR/WA. Short-beaked common dolphin, CA/OR/WA. Short-finned pilot whale, CA/OR/WA. Sperm Whale, CA/OR/WA.[1]
CATEGORY II		
GILLNET FISHERIES:		
CA halibut/white seabass and other species set gillnet (≤3.5 in mesh).	50	California sea lion, U.S. Harbor seal, CA. Humpback whale, CA/OR/WA.[1] Long-beaked common dolphin, CA. Northern elephant seal, CA breeding. Sea otter, CA. Short-beaked common dolphin, CA/OR/WA.
CA yellowtail, barracuda, and white seabass drift gillnet (mesh size ≥3.5 in and <14 in)[2].	30	California sea lion, U.S. Long-beaked common dolphin, CA. Short-beaked common dolphin, CA/OR/WA.
AK Bristol Bay salmon drift gillnet[2]	1,862	Beluga whale, Bristol Bay. Gray whale, Eastern North Pacific. Harbor seal, Bering Sea. Northern fur seal, Eastern Pacific. Pacific white-sided dolphin, North Pacific. Spotted seal, AK. Steller sea lion, Western U.S.

TABLE 1—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE PACIFIC OCEAN—Continued

Fishery description	Estimated number of vessels/ persons	Marine mammal species and/or stocks incidentally killed or injured
AK Bristol Bay salmon set gillnet [2]	979	Beluga whale, Bristol Bay. Gray whale, Eastern North Pacific. Harbor seal, Bering Sea. Northern fur seal, Eastern Pacific. Spotted seal, AK.
AK Kodiak salmon set gillnet	188	Harbor porpoise, GOA.[1] Harbor seal, GOA. Sea otter, Southwest AK. Steller sea lion, Western U.S.
AK Cook Inlet salmon set gillnet	736	Beluga whale, Cook Inlet. Dall's porpoise, AK. Harbor porpoise, GOA. Harbor seal, GOA. Humpback whale, Central North Pacific.[1] Sea otter, South central AK. Steller sea lion, Western U.S.
AK Cook Inlet salmon drift gillnet	569	Beluga whale, Cook Inlet. Dall's porpoise, AK. Harbor porpoise, GOA.[1] Harbor seal, GOA. Steller sea lion, Western U.S.
AK Peninsula/Aleutian Islands salmon drift gillnet [2]	162	Dall's porpoise, AK Harbor porpoise, GOA. Harbor seal, GOA. Northern fur seal, Eastern Pacific.
AK Peninsula/Aleutian Islands salmon set gillnet [2]	113	Harbor porpoise, Bering Sea. Northern sea otter, Southwest AK. Steller sea lion, Western U.S.
AK Prince William Sound salmon drift gillnet	537	Dall's porpoise, AK. Harbor porpoise, GOA.[1] Harbor seal, GOA. Northern fur seal, Eastern Pacific. Pacific white-sided dolphin, North Pacific Sea otter, South central AK. Steller sea lion, Western U.S.[1]
AK Southeast salmon drift gillnet	474	Dall's porpoise, AK. Harbor porpoise, Southeast AK. Harbor seal, Southeast AK. Humpback whale, Central North Pacific.[1] Pacific white-sided dolphin, North Pacific. Steller sea lion, Eastern U.S.
AK yakutat salmon set gillnet [2]	168	Gray whale, Eastern North Pacific. Harbor Porpoise, Southeastern AK. Harbor seal, Southeast AK. Humpback whale, Central North Pacific (Southeast AK).
WA Puget Sound Region salmon drift gillnet (includes all inland waters south of U.S.-Canada border and eastward of the Bonilla-Tatoosh line-Treaty Indian fishing is excluded).	210	Dall's porpoise, CA/OR/WA. Harbor porpoise, inland WA.[1] Harbor seal, WA inland.
TRAWL FISHERIES:		
AK Bering Sea, Aleutian Islands flatfish trawl	32	Bearded seal, AK. Gray whale, Eastern North Pacific. Harbor porpoise, Bering Sea. Harbor seal, Bering Sea. Humpback whale, Western North Pacific.[1] Killer whale, AK resident.[1] Killer whale, GOA, AI, BS transient.[1] Northern fur seal, Eastern Pacific. Ringed seal, AK. Ribbon seal, AK. Spotted seal, AK. Steller sea lion, Western U.S.[1] Walrus, AK.

TABLE 1—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE PACIFIC OCEAN—Continued

Fishery description	Estimated number of vessels/ persons	Marine mammal species and/or stocks incidentally killed or injured
AK Bering Sea, Aleutian Islands pollock trawl	102	Bearded Seal, AK. Dall's porpoise, AK. Harbor seal, AK. Humpback whale, Central North Pacific. Humpback whale, Western North Pacific. Northern fur seal, Eastern Pacific. Ribbon seal, AK. Ringed seal, AK. Spotted seal, AK. Steller sea lion, Western U.S.[1]
AK Bering Sea, Aleutian Islands rockfish trawl	17	Killer whale, ENP AK resident.[1] Killer whale, GOA, AI, BS transient.[1]
POT, RING NET, AND TRAP FISHERIES:		
CA spiny lobster	194	Bottlenose dolphin, CA/OR/WA offshore. Humpback whale, CA/OR/WA. Gray whale, Eastern North Pacific.
CA spot prawn pot	25	Gray whale, Eastern North Pacific. Humpback whale, CA/OR/WA.[1]
CA Dungeness crab pot	570	Gray whale, Eastern North Pacific. Humpback whale, CA/OR/WA.[1]
OR Dungeness crab pot	433	Gray whale, Eastern North Pacific. Humpback whale, CA/OR/WA.[1]
WA/OR/CA sablefish pot	309	Humpback whale, CA/OR/WA.[1]
WA coastal Dungeness crab pot	228	Gray whale, Eastern North Pacific. Humpback whale, CA/OR/WA.[1]
LONGLINE/SET LINE FISHERIES:		
AK Bering Sea, Aleutian Islands Pacific cod longline	45	Dall's Porpoise, AK. Killer whale, GOA, BSAI transient.[1] Northern fur seal, Eastern Pacific. Ringed seal, AK.
HI shallow-set longline * ^	20	Blainville's beaked whale, HI. Bottlenose dolphin, HI Pelagic. False killer whale, HI Pelagic.[1] Humpback whale, Central North Pacific. Risso's dolphin, HI. Rough-toothed dolphin, HI. Short-finned pilot whale, HI. Striped dolphin, HI.
American Samoa longline[2]	22	Bottlenose dolphin, unknown. Cuvier's beaked whale, unknown. False killer whale, American Samoa. Rough-toothed dolphin, American Samoa. Short-finned pilot whale, unknown.
HI shortline[2]	9	None documented.
CATEGORY III		
GILLNET FISHERIES:		
AK Kuskokwim, Yukon, Norton Sound, Kotzebue salmon gillnet.	1,778	Harbor porpoise, Bering Sea.
AK miscellaneous finfish set gillnet	54	Steller sea lion, Western U.S.
AK Prince William Sound salmon set gillnet	29	Harbor seal, GOA. Sea otter, South central AK. Steller sea lion, Western U.S.
AK roe herring and food/bait herring gillnet	920	None documented.
CA set gillnet (mesh size <3.5 in)	296	None documented.
HI inshore gillnet	36	Bottlenose dolphin, HI. Spinner dolphin, HI.
WA Grays Harbor salmon drift gillnet (excluding treaty Tribal fishing).	24	Harbor seal, OR/WA coast.
WA/OR Mainstem Columbia River eulchon gillnet	15	None documented.
WA/OR lower Columbia River (includes tributaries) drift gillnet.	110	California sea lion, U.S. Harbor seal, OR/WA coast.
WA Willapa Bay drift gillnet	82	Harbor seal, OR/WA coast. Northern elephant seal, CA breeding.
MISCELLANEOUS NET FISHERIES:		
AK Cook Inlet salmon purse seine	83	Humpback whale, Central North Pacific.
AK Kodiak salmon purse seine	376	Humpback whale, Central North Pacific.
AK Southeast salmon purse seine	315	None documented in the most recent five years of data.
AK Metlakatla salmon purse seine	10	None documented.

TABLE 1—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE PACIFIC OCEAN—Continued

Fishery description	Estimated number of vessels/ persons	Marine mammal species and/or stocks incidentally killed or injured
AK miscellaneous finfish beach seine	2	None documented.
AK miscellaneous finfish purse seine	2	None documented.
AK octopus/squid purse seine	0	None documented.
AK roe herring and food/bait herring beach seine	10	None documented.
AK roe herring and food/bait herring purse seine	356	None documented.
AK salmon beach seine	31	None documented.
AK salmon purse seine (excluding salmon purse seine fisheries listed elsewhere).	936	Harbor seal, GOA. Harbor seal, Prince William Sound.
WA/OR sardine purse seine	42	None documented.
CA anchovy, mackerel, sardine purse seine	65	California sea lion, U.S. Harbor seal, CA.
CA squid purse seine	80	Long-beaked common dolphin, CA Short-beaked common dolphin, CA/OR/WA.
CA tuna purse seine *	10	None documented.
WA/OR Lower Columbia River salmon seine	10	None documented.
WA/OR herring, smelt, squid purse seine or lampara	130	None documented.
WA salmon purse seine	75	None documented.
WA salmon reef net	11	None documented.
HI lift net	17	None documented.
HI inshore purse seine	<3	None documented.
HI throw net, cast net	23	None documented.
HI seine net	24	None documented.
DIP NET FISHERIES:		
CA squid dip net	115	None documented.
MARINE AQUACULTURE FISHERIES:		
CA marine shellfish aquaculture	unknown	None documented.
CA salmon enhancement rearing pen	>1	None documented.
CA white seabass enhancement net pens	13	California sea lion, U.S.
HI offshore pen culture	2	None documented.
WA salmon net pens	14	California sea lion, U.S. Harbor seal, WA inland waters.
WA/OR shellfish aquaculture	23	None documented.
TROLL FISHERIES:		
WA/OR/CA albacore surface hook and line/troll	705	None documented.
CA halibut hook and line/handline	unknown	None documented.
CA white seabass hook and line/handline	unknown	None documented.
AK salmon troll	1,908	Steller sea lion, Eastern U.S. Steller sea lion, Western U.S.
American Samoa tuna troll	13	None documented.
CA/OR/WA salmon troll	4,300	None documented.
HI troll	2,117	Pantropical spotted dolphin, HI.
HI rod and reel	322	None documented.
Commonwealth of the Northern Mariana Islands tuna troll.	40	None documented.
Guam tuna troll	432	None documented.
LONGLINE/SET LINE FISHERIES:		
AK Bering Sea, Aleutian Islands rockfish longline	3	None documented.
AK Bering Sea, Aleutian Islands Greenland turbot longline.	4	Killer whale, AK resident.
AK Bering Sea, Aleutian Islands sablefish longline	22	None documented.
AK Gulf of Alaska halibut longline	855	None documented.
AK Gulf of Alaska Pacific. cod longline	92	Steller sea lion, Western U.S.
AK Gulf of Alaska rockfish longline	25	None documented.
AK Gulf of Alaska sablefish longline	295	Sperm whale, North Pacific.
AK halibut longline/set line (state and Federal waters)	2,197	None documented in the most recent five years of data.
AK octopus/squid longline	3	None documented.
AK state-managed waters longline/setline (including sablefish, rockfish, lingcod, and miscellaneous finfish).	464	None documented.
WA/OR/CA groundfish, bottomfish longline/set line	367	Bottlenose dolphin, CA/OR/WA offshore.
WA/OR Pacific. halibut longline	350	None documented.
CA pelagic longline	1	None documented in the most recent five years of data.
HI kaka line	15	None documented.
HI vertical line	3	None documented.
TRAWL FISHERIES:		
AK Bering Sea, Aleutian Islands Atka mackerel trawl	13	Ribbon seal, AK. Steller sea lion, Western U.S.
AK Bering Sea, Aleutian Islands Pacific cod trawl	72	Ringed seal, AK. Steller sea lion, Western U.S.
AK Gulf of Alaska flatfish trawl	36	Northern elephant seal, North Pacific.
AK Gulf of Alaska Pacific. cod trawl	55	Steller sea lion, Western U.S.

TABLE 1—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE PACIFIC OCEAN—Continued

Fishery description	Estimated number of vessels/ persons	Marine mammal species and/or stocks incidentally killed or injured
AK Gulf of Alaska pollock trawl	67	Dall's porpoise, AK. Fin whale, Northeast Pacific. Northern elephant seal, North Pacific. Steller sea lion, Western U.S.
AK Gulf of Alaska rockfish trawl	43	None documented.
AK food/bait herring trawl	4	None documented.
AK miscellaneous finfish otter/beam trawl	282	None documented.
AK shrimp otter trawl and beam trawl (statewide and Cook Inlet).	38	None documented.
AK state-managed waters of Cook Inlet, Kachemak Bay, Prince William Sound, Southeast AK groundfish trawl.	2	None documented.
CA halibut bottom trawl	47	California sea lion, U.S. Harbor porpoise, unknown. Harbor seal, unknown. Northern elephant seal, CA breeding. Steller sea lion, unknown.
CA sea cucumber trawl	16	None documented.
WA/OR/CA shrimp trawl	300	None documented.
WA/OR/CA groundfish trawl	160–180	California sea lion, U.S. Dall's porpoise, CA/OR/WA. Harbor seal, OR/WA coast. Northern fur seal, Eastern Pacific. Pacific. white-sided dolphin, CA/OR/WA. Steller sea lion, Eastern U.S.
POT, RING NET, AND TRAP FISHERIES:		
AK statewide miscellaneous finfish pot	4	None documented.
AK Aleutian Islands sablefish pot	4	None documented.
AK Bering Sea, Aleutian Islands Pacific cod pot	59	None documented.
AK Bering Sea, Aleutian Islands crab pot	540	Gray whale, Eastern North Pacific.
AK Bering Sea sablefish pot	2	None documented.
AK Gulf of Alaska crab pot	381	None documented.
AK Gulf of Alaska Pacific cod pot	128	Harbor seal, GOA.
AK Southeast Alaska crab pot	41	Humpback whale, Central North Pacific (Southeast AK).
AK Southeast Alaska shrimp pot	269	Humpback whale, Central North Pacific (Southeast AK).
AK shrimp pot, except Southeast	236	None documented.
AK octopus/squid pot	26	None documented.
AK snail pot	1	None documented.
CA/OR coonstripe shrimp pot	36	Gray whale, Eastern North Pacific. Harbor seal, CA.
CA rock crab pot	124	Gray whale, Eastern North Pacific. Harbor seal, CA.
WA/OR/CA hagfish pot	54	None documented.
WA/OR shrimp pot/trap	254	None documented.
WA Puget Sound Dungeness crab pot/trap	249	None documented.
HI crab trap	5	Humpback whale, Central North Pacific.
HI fish trap	9	None documented.
HI lobster trap	<3	None documented in recent years.
HI shrimp trap	10	None documented.
HI crab net	4	None documented.
HI Kona crab loop net	33	None documented.
HOOK-AND-LINE, HANDLINE, AND JIG FISHERIES:		
AK miscellaneous finfish handline/hand troll and mechanical jig.	456	Fin whale, Northeast Pacific.
AK North Pacific. halibut handline/hand troll and mechanical jig.	180	None documented.
AK octopus/squid handline	7	None documented.
American Samoa bottomfish	24	None documented.
Commonwealth of the Northern Mariana Islands bottomfish.	28	None documented.
Guam bottomfish	>300	None documented.
HI aku boat, pole, and line	<3	None documented.
HI bottomfish handline	578	None documented in recent years.
HI inshore handline	357	None documented.
HI pelagic handline	534	None documented.
WA groundfish, bottomfish jig	679	None documented.
Western Pacific. squid jig	0	None documented.
HARPOON FISHERIES:		
CA swordfish harpoon	6	None documented.
POUND NET/WEIR FISHERIES:		

TABLE 1—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE PACIFIC OCEAN—Continued

Fishery description	Estimated number of vessels/ persons	Marine mammal species and/or stocks incidentally killed or injured
AK herring spawn on kelp pound net	409	None documented.
AK Southeast herring roe/food/bait pound net	2	None documented.
HI bullpen trap	3	None documented.
BAIT PENS:		
WA/OR/CA bait pens	13	California sea lion, U.S.
DREDGE FISHERIES:		
Alaska scallop dredge	108 (5 AK)	None documented.
DIVE, HAND/MECHANICAL COLLECTION FISHERIES:		
AK abalone	0	None documented.
AK clam	130	None documented.
AK Dungeness crab	2	None documented.
AK herring spawn on kelp	339	None documented.
AK urchin and other fish/shellfish	398	None documented.
HI black coral diving	<3	None documented.
HI fish pond	5	None documented.
HI handpick	46	None documented.
HI lobster diving	19	None documented.
HI spearfishing	163	None documented.
WA/CA kelp	4	None documented.
WA/OR bait shrimp, clam hand, dive, or mechanical collection.	201	None documented.
OR/CA sea urchin, sea cucumber hand, dive, or mechanical collection.	10	None documented.
COMMERCIAL PASSENGER FISHING VESSEL (CHARTER BOAT) FISHERIES:		
AK/WA/OR/CA commercial passenger fishing vessel	>7,000 (2,702 AK)	Killer whale, unknown. Steller sea lion, Eastern U.S. Steller sea lion, Western U.S.
LIVE FINFISH/SHELLFISH FISHERIES:		
CA nearshore finfish live trap/hook-and-line	93	None documented.
HI aquarium collecting	90	None documented.

List of Abbreviations and Symbols Used in Table 1: AI—Aleutian Islands; AK—Alaska; BS—Bering Sea; CA—California; ENP—Eastern North Pacific.; GOA—Gulf of Alaska; HI—Hawaii; MHI—Main Hawaiian Islands; OR—Oregon; WA—Washington; [1] Fishery classified based on mortalities and serious injuries of this stock, which are greater than or equal to 50 percent (Category I) or greater than 1 percent and less than 50 percent (Category II) of the stock's PBR; [2] Fishery classified by analogy; * Fishery has an associated high seas component listed in Table 3; ^ The list of marine mammal species and/or stocks killed or injured in this fishery is identical to the list of species and/or stocks killed or injured in high seas component of the fishery, minus species and/or stocks that have geographic ranges exclusively on the high seas. The species and/or stocks are found, and the fishery remains the same, on both sides of the EEZ boundary. Therefore, the EEZ components of these fisheries pose the same risk to marine mammals as the components operating on the high seas.

TABLE 2—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE ATLANTIC OCEAN, GULF OF MEXICO, AND CARIBBEAN

Fishery description	Estimated number of vessels/persons	Marine mammal species and/or stocks incidentally killed or injured
CATEGORY I		
GILLNET FISHERIES:		
Mid-Atlantic gillnet	3,950	Bottlenose dolphin, Northern Migratory coastal.[1] Bottlenose dolphin, Southern Migratory coastal.[1] Bottlenose dolphin, Northern NC estuarine system.[1] Bottlenose dolphin, Southern NC estuarine system.[1] Bottlenose dolphin, WNA offshore. Common dolphin, WNA. Gray seal, WNA. Harbor porpoise, GME/BF. Harbor seal, WNA. Harp seal, WNA. Humpback whale, Gulf of Maine. Minke whale, Canadian east coast.

TABLE 2—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE ATLANTIC OCEAN, GULF OF MEXICO, AND CARIBBEAN—Continued

Fishery description	Estimated number of vessels/persons	Marine mammal species and/or stocks incidentally killed or injured
Northeast sink gillnet	4,332	Bottlenose dolphin, WNA offshore. Common dolphin, WNA. Fin whale, WNA. Gray seal, WNA. Harbor porpoise, GME/BF.[1] Harbor seal, WNA. Harp seal, WNA. Hooded seal, WNA. Humpback whale, Gulf of Maine. Long-finned pilot whale, WNA. Minke whale, Canadian east coast. North Atlantic right whale, WNA. Risso's dolphin, WNA. White-sided dolphin, WNA.
TRAP/POT FISHERIES:		
Northeast/Mid-Atlantic American lobster trap/pot	10,163	Humpback whale, Gulf of Maine. Minke whale, Canadian east coast. North Atlantic right whale, WNA.[1]
LONGLINE FISHERIES:		
Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics longline*.	234	Atlantic spotted dolphin, GMX continental and oceanic. Bottlenose dolphin, Northern GMX oceanic. Bottlenose dolphin, WNA offshore. Common dolphin, WNA. Cuvier's beaked whale, WNA. False killer whale, WNA. Harbor porpoise, GME, BF. Kogia *spp.* (Pygmy or dwarf sperm whale), WNA. Long-finned pilot whale, WNA.[1] Mesoplodon beaked whale, WNA. Minke whale, Canadian East coast. Pantropical spotted dolphin, Northern GMX. Pygmy sperm whale, GMX. Risso's dolphin, Northern GMX. Risso's dolphin, WNA. Short-finned pilot whale, Northern GMX. Short-finned pilot whale, WNA.[1]
CATEGORY II		
GILLNET FISHERIES:		
Chesapeake Bay inshore gillnet[2]	248	Bottlenose dolphin, unknown (Northern migratory coastal or Southern migratory coastal).
Gulf of Mexico gillnet[2]	248	Bottlenose dolphin, GMX bay, sound, and estuarine. Bottlenose dolphin, Northern GMX coastal. Bottlenose dolphin, Western GMX coastal.
NC inshore gillnet	2,850	Bottlenose dolphin, Northern NC estuarine system.[1] Bottlenose dolphin, Southern NC estuarine system.[1]
Northeast anchored float gillnet[2]	852	Harbor seal, WNA. Humpback whale, Gulf of Maine. White-sided dolphin, WNA.
Northeast drift gillnet[2]	1,036	None documented.
Southeast Atlantic gillnet[2]	273	Bottlenose dolphin, Central FL coastal. Bottlenose dolphin, Northern FL coastal. Bottlenose dolphin, SC/GA coastal. Bottlenose dolphin, Southern migratory coastal.
Southeastern U.S. Atlantic shark gillnet	30	Bottlenose dolphin, unknown (Central FL, Northern FL, SC/GA coastal, or Southern migratory coastal). North Atlantic right whale, WNA.
TRAWL FISHERIES:		
Mid-Atlantic mid-water trawl (including pair trawl)	382	Gray seal, WNA. Harbor seal, WNA. White-sided dolphin, WNA.[1]
Mid-Atlantic bottom trawl	785	Bottlenose dolphin, WNA offshore. Common dolphin, WNA.[1] Gray seal, WNA. Harbor seal, WNA. Risso's dolphin, WNA.[1]

TABLE 2—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE ATLANTIC OCEAN, GULF OF MEXICO, AND CARIBBEAN—Continued

Fishery description	Estimated number of vessels/persons	Marine mammal species and/or stocks incidentally killed or injured
Northeast mid-water trawl (including pair trawl)	1,087	Common dolphin, WNA. Gray seal, WNA. Harbor seal, WNA. Long-finned pilot whale, WNA.[1] Minke whale, Canadian East Coast.
Northeast bottom trawl	2,238	Bottlenose dolphin, WNA offshore. Common dolphin, WNA. Gray seal, WNA. Harbor porpoise, GME/BF. Harbor seal, WNA. Harp seal, WNA. Long-finned pilot whale, WNA. Risso's dolphin, WNA. White-sided dolphin, WNA.[1]
Southeastern U.S. Atlantic, Gulf of Mexico shrimp trawl	4,950	Atlantic spotted dolphin, GMX continental and oceanic. Bottlenose dolphin, Charleston estuarine system. Bottlenose dolphin, Eastern GMX coastal.[1] Bottlenose dolphin, GMX bay, sound, estuarine.[1] Bottlenose dolphin, GMX continental shelf. Bottlenose dolphin, Northern GMX coastal. Bottlenose dolphin, SC/GA coastal.[1] Bottlenose dolphin, Southern migratory coastal. Bottlenose dolphin, Western GMX coastal.[1] West Indian manatee, Florida.
TRAP/POT FISHERIES:		
Southeastern U.S. Atlantic, Gulf of Mexico stone crab trap/pot[2].	1,384	Bottlenose dolphin, Biscayne Bay estuarine. Bottlenose dolphin, Central FL coastal. Bottlenose dolphin, Eastern GMX coastal. Bottlenose dolphin, FL Bay. Bottlenose dolphin, GMX bay, sound, estuarine (FL west coast portion). Bottlenose dolphin, Indian River Lagoon estuarine system. Bottlenose dolphin, Jacksonville estuarine system. Bottlenose dolphin, Northern GMX coastal.
Atlantic mixed species trap/pot[2]	3,436	Fin whale, WNA. Humpback whale, Gulf of Maine.
Atlantic blue crab trap/pot	7,714	Bottlenose dolphin, Central FL coastal. Bottlenose dolphin, Central GA estuarine system. Bottlenose dolphin, Charleston estuarine system.[1] Bottlenose dolphin, Indian River Lagoon estuarine system. Bottlenose dolphin, Jacksonville estuarine system. Bottlenose dolphin, Northern FL coastal.[1] Bottlenose dolphin, Northern GA/Southern SC estuarine system. Bottlenose dolphin, Northern Migratory coastal. Bottlenose dolphin, Northern NC estuarine system.[1] Bottlenose dolphin, Northern SC estuarine system. Bottlenose dolphin, SC/GA coastal. Bottlenose dolphin, Southern GA estuarine system. Bottlenose dolphin, Southern Migratory coastal. Bottlenose dolphin, Southern NC estuarine system. West Indian manatee, FL.
PURSE SEINE FISHERIES:		
Gulf of Mexico menhaden purse seine	40–42	Bottlenose dolphin, GMX bay, sound, estuarine. Bottlenose dolphin, Mississippi Sound, Lake Borgne, Bay Boudreau. Bottlenose dolphin, Northern GMX coastal.[1] Bottlenose dolphin, Western GMX coastal.[1]
Mid-Atlantic menhaden purse seine[2]	19	Bottlenose dolphin, Northern Migratory coastal. Bottlenose dolphin, Southern Migratory coastal.
HAUL/BEACH SEINE FISHERIES:		
Mid-Atlantic haul/beach seine	359	Bottlenose dolphin, Northern Migratory coastal.[1] Bottlenose dolphin, Northern NC estuarine system.[1] Bottlenose dolphin, Southern Migratory coastal.[1]
NC long haul seine	30	Bottlenose dolphin, Northern NC estuarine system.[1] Bottlenose dolphin, Southern NC estuarine system.
STOP NET FISHERIES:		

TABLE 2—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE ATLANTIC OCEAN, GULF OF MEXICO, AND CARIBBEAN—Continued

Fishery description	Estimated number of vessels/persons	Marine mammal species and/or stocks incidentally killed or injured
NC roe mullet stop net	1	Bottlenose dolphin, Northern NC estuarine system. Bottlenose dolphin, unknown (Southern migratory coastal or Southern NC estuarine system).
POUND NET FISHERIES:		
VA pound net	26	Bottlenose dolphin, Northern migratory coastal. Bottlenose dolphin, Northern NC estuarine system. Bottlenose dolphin, Southern Migratory coastal.[1]
CATEGORY III		
GILLNET FISHERIES:		
Caribbean gillnet	>991	None documented in the most recent five years of data.
DE River inshore gillnet	unknown	None documented in the most recent five years of data.
Long Island Sound inshore gillnet	unknown	None documented in the most recent five years of data.
RI, southern MA (to Monomoy Island), and NY Bight (Raritan and Lower NY Bays) inshore gillnet.	unknown	None documented in the most recent five years of data.
Southeast Atlantic inshore gillnet	unknown	Bottlenose dolphin, Northern SC estuarine system.
TRAWL FISHERIES:		
Atlantic shellfish bottom trawl	>58	None documented.
Gulf of Mexico butterfish trawl	2	Bottlenose dolphin, Northern GMX oceanic. Bottlenose dolphin, Northern GMX continental shelf.
Gulf of Mexico mixed species trawl	20	None documented.
GA cannonball jellyfish trawl	1	Bottlenose dolphin, SC/GA coastal.
MARINE AQUACULTURE FISHERIES:		
Finfish aquaculture	48	Harbor seal, WNA.
Shellfish aquaculture	unknown	None documented.
PURSE SEINE FISHERIES:		
Gulf of Maine Atlantic herring purse seine	>7	Harbor seal, WNA. Gray seal, WNA.
Gulf of Maine menhaden purse seine	>2	None documented.
FL West Coast sardine purse seine	10	Bottlenose dolphin, Eastern GMX coastal.
U.S. Atlantic tuna purse seine*	5	Long-finned pilot whale, WNA. Short-finned pilot whale, WNA.
LONGLINE/HOOK-AND-LINE FISHERIES:		
Northeast/Mid-Atlantic bottom longline/hook-and-line	>1,207	None documented.
Gulf of Maine, U.S. Mid-Atlantic tuna, shark swordfish hook-and-line/harpoon.	428	Bottlenose dolphin, WNA offshore. Humpback whale, Gulf of Maine.
Southeastern U.S. Atlantic, Gulf of Mexico, and Caribbean snapper-grouper and other reef fish bottom longline/hook-and-line.	>5,000	Bottlenose dolphin, GMX continental shelf.
Southeastern U.S. Atlantic, Gulf of Mexico shark bottom longline/hook-and-line.	<125	Bottlenose dolphin, Eastern GMX coastal. Bottlenose dolphin, Northern GMX continental shelf.
Southeastern U.S. Atlantic, Gulf of Mexico, and Caribbean pelagic hook-and-line/harpoon.	1,446	None documented.
U.S. Atlantic, Gulf of Mexico trotline	unknown	None documented.
TRAP/POT FISHERIES:		
Caribbean mixed species trap/pot	>501	None documented.
Caribbean spiny lobster trap/pot	>197	None documented.
FL spiny lobster trap/pot	1,268	Bottlenose dolphin, Biscayne Bay estuarine Bottlenose dolphin, Central FL coastal. Bottlenose dolphin, Eastern GMX coastal. Bottlenose dolphin, FL Bay estuarine. Bottlenose dolphin, FL Keys.
Gulf of Mexico blue crab trap/pot	4,113	Bottlenose dolphin, Barataria Bay. Bottlenose dolphin, Eastern GMX coastal. Bottlenose dolphin, GMX bay, sound, estuarine. Bottlenose dolphin, Mississippi Sound, Lake Borgne, Bay Boudreau. Bottlenose dolphin, Northern GMX coastal. Bottlenose dolphin, Western GMX coastal. West Indian manatee, FL.
Gulf of Mexico mixed species trap/pot	unknown	None documented.
Southeastern U.S. Atlantic, Gulf of Mexico golden crab trap/pot.	10	None documented.
U.S. Mid-Atlantic eel trap/pot	unknown	None documented.
STOP SEINE/WEIR/POUND NET/FLOATING TRAP/FYKE NET FISHERIES:		

TABLE 2—LIST OF FISHERIES—COMMERCIAL FISHERIES IN THE ATLANTIC OCEAN, GULF OF MEXICO, AND CARIBBEAN—Continued

Fishery description	Estimated number of vessels/persons	Marine mammal species and/or stocks incidentally killed or injured
Gulf of Maine herring and Atlantic mackerel stop seine/weir.	>1	Harbor porpoise, GME/BF. Harbor seal, WNA. Minke whale, Canadian east coast. Atlantic white-sided dolphin, WNA.
U.S. Mid-Atlantic crab stop seine/weir	2,600	None documented.
U.S. Mid-Atlantic mixed species stop seine/weir/pound net (except the NC roe mullet stop net).	unknown	Bottlenose dolphin, Northern NC estuarine system.
RI floating trap	9	None documented.
Northeast and Mid-Atlantic fyke net	unknown	None documented.
DREDGE FISHERIES:		
Gulf of Maine sea urchin dredge	unknown	None documented.
Gulf of Maine mussel dredge	unknown	None documented.
Gulf of Maine, U.S. Mid-Atlantic sea scallop dredge	>403	None documented.
Mid-Atlantic blue crab dredge	unknown	None documented.
Mid-Atlantic soft-shell clam dredge	unknown	None documented.
Mid-Atlantic whelk dredge	unknown	None documented.
U.S. Mid-Atlantic/Gulf of Mexico oyster dredge	7,000	None documented.
New England and Mid-Atlantic offshore surf clam/quahog dredge.	unknown	None documented.
HAUL/BEACH SEINE FISHERIES:		
Caribbean haul/beach seine	15	None documented in the most recent five years of data.
Gulf of Mexico haul/beach seine	unknown	None documented.
Southeastern U.S. Atlantic haul/beach seine	25	None documented.
DIVE, HAND/MECHANICAL COLLECTION FISHERIES:		
Atlantic Ocean, Gulf of Mexico, Caribbean shellfish dive, hand/mechanical collection.	20,000	None documented.
Gulf of Maine urchin dive, hand/mechanical collection	unknown	None documented.
Gulf of Mexico, Southeast Atlantic, Mid-Atlantic, and Caribbean cast net.	unknown	None documented.
COMMERCIAL PASSENGER FISHING VESSEL (CHARTER BOAT) FISHERIES:		
Atlantic Ocean, Gulf of Mexico, Caribbean commercial passenger fishing vessel.	4,000	Bottlenose dolphin, Biscayne Bay estuarine. Bottlenose dolphin, Central FL coastal. Bottlenose dolphin, Choctawhatchee Bay. Bottlenose dolphin, Eastern GMX coastal. Bottlenose dolphin, FL Bay. Bottlenose dolphin, GMX bay, sound, estuarine. Bottlenose dolphin, Indian River Lagoon estuarine system. Bottlenose dolphin, Jacksonville estuarine system. Bottlenose dolphin, Northern FL coastal. Bottlenose dolphin, Northern GA/Southern SC estuarine. Bottlenose dolphin, Northern GMX coastal. Bottlenose dolphin, Northern migratory coastal. Bottlenose dolphin, Northern NC estuarine. Bottlenose dolphin, Southern migratory coastal. Bottlenose dolphin, Southern NC estuarine system. Bottlenose dolphin, Southern SC/GA coastal. Bottlenose dolphin, Western GMX coastal.

List of Abbreviations and Symbols Used in Table 2:

DE—Delaware; FL—Florida; GA—Georgia; GME/BF—Gulf of Maine/Bay of Fundy; GMX—Gulf of Mexico; MA—Massachusetts; NC—North Carolina; NY—New York; RI—Rhode Island; SC—South Carolina; VA—Virginia; WNA—Western North Atlantic.

[1] Fishery classified based on mortalities and serious injuries of this stock, which are greater than or equal to 50 percent (Category I) or greater than 1 percent and less than 50 percent (Category II) of the stock's PBR.

[2] Fishery classified by analogy.

* Fishery has an associated high seas component listed in Table 3.

TABLE 3—LIST OF FISHERIES—COMMERCIAL FISHERIES ON THE HIGH SEAS

Fishery description	Number of HSFCA permits	Marine mammal species and/or stocks incidentally killed or injured
Category I		
LONGLINE FISHERIES:		

TABLE 3—LIST OF FISHERIES—COMMERCIAL FISHERIES ON THE HIGH SEAS—Continued

Fishery description	Number of HSFCA permits	Marine mammal species and/or stocks incidentally killed or injured
Atlantic Highly Migratory Species *	86	Atlantic spotted dolphin, WNA. Bottlenose dolphin, Northern GMX oceanic. Bottlenose dolphin, WNA offshore. Common dolphin, WNA. Cuvier's beaked whale, WNA. False killer whale, WNA. Killer whale, GMX oceanic. Kogia *spp.* whale (Pygmy or dwarf sperm whale), WNA. Long-finned pilot whale, WNA. Mesoplodon beaked whale, WNA. Minke whale, Canadian East coast. Pantropical spotted dolphin, WNA. Risso's dolphin, GMX. Risso's dolphin, WNA. Short-finned pilot whale, WNA.
Western Pacific Pelagic (HI Deep-set component) * ∧	139	Bottlenose dolphin, HI Pelagic. False killer whale, HI Pelagic. Pygmy killer whale, HI. Risso's dolphin, HI. Short-finned pilot whale, HI. Sperm whale, HI. Striped dolphin, HI.
DRIFT GILLNET FISHERIES:		
Pacific Highly Migratory Species ∧	5	Long-beaked common dolphin, CA. Humpback whale, CA/OR/WA. Northern right-whale dolphin, CA/OR/WA. Pacific white-sided dolphin, CA/OR/WA. Risso's dolphin, CA/OR/WA. Short-beaked common dolphin, CA/OR/WA.
Category II		
DRIFT GILLNET FISHERIES:		
Atlantic Highly Migratory Species	0	Undetermined.
TRAWL FISHERIES:		
Atlantic Highly Migratory Species **	1	Undetermined.
CCAMLR	0	Antarctic fur seal.
PURSE SEINE FISHERIES:		
South Pacific Tuna Fisheries	38	Undetermined.
Western Pacific Pelagic	3	Undetermined.
LONGLINE FISHERIES:		
CCAMLR	0	None documented.
South Pacific Albacore Troll	10	Undetermined.
South Pacific Tuna Fisheries **	2	Undetermined.
Western Pacific Pelagic (HI Shallow-set component) * ∧	20	Blainville's beaked whale, HI. Bottlenose dolphin, HI Pelagic. False killer whale, HI Pelagic. Humpback whale, Central North Pacific. Northern elephant seal, CA breeding. Risso's dolphin, HI. Rough-toothed dolphin, HI. Short-beaked common dolphin, CA/OR/WA. Short-finned pilot whale, HI. Striped dolphin, HI.
HANDLINE/POLE AND LINE FISHERIES:		
Atlantic Highly Migratory Species	3	Undetermined.
Pacific Highly Migratory Species	46	Undetermined.
South Pacific Albacore Troll	7	Undetermined.
Western Pacific Pelagic	2	Undetermined.
TROLL FISHERIES:		
Atlantic Highly Migratory Species	2	Undetermined.
South Pacific Albacore Troll	30	Undetermined.
South Pacific Tuna Fisheries **	4	Undetermined.
Western Pacific Pelagic	17	Undetermined.
Category III		
LONGLINE FISHERIES:		
Northwest Atlantic Bottom Longline	1	None documented.
Pacific Highly Migratory Species	114	None documented in the most recent 5 years of data.
PURSE SEINE FISHERIES:		

TABLE 3—LIST OF FISHERIES—COMMERCIAL FISHERIES ON THE HIGH SEAS—Continued

Fishery description	Number of HSFCA permits	Marine mammal species and/or stocks incidentally killed or injured
Pacific Highly Migratory Species * ∧	6	None documented.
TRAWL FISHERIES:		
Northwest Atlantic	1	None documented.
TROLL FISHERIES:		
Pacific Highly Migratory Species *	187	None documented.

List of Terms, Abbreviations, and Symbols Used in Table 3:

CA—California; GMX—Gulf of Mexico; HI—Hawaii; OR—Oregon; WA—Washington; WNA—Western North Atlantic.

* Fishery is an extension/component of an existing fishery operating within U.S. waters listed in Table 1 or 2. The number of permits listed in Table 3 represents only the number of permits for the high seas component of the fishery.

** These gear types are not authorized under the Pacific HMS FMP (2004), the Atlantic HMS FMP (2006), or without a South Pacific Tuna Treaty license (in the case of the South Pacific Tuna fisheries). Because HSFCA permits are valid for five years, permits obtained in past years exist in the HSFCA permit database for gear types that are now unauthorized. Therefore, while HSFCA permits exist for these gear types, it does not represent effort. In order to land fish species, fishers must be using an authorized gear type. Once these permits for unauthorized gear types expire, the permit-holder will be required to obtain a permit for an authorized gear type.

∧ The list of marine mammal species and/or stocks killed or injured in this fishery is identical to the list of marine mammal species and/or stocks killed or injured in U.S. waters component of the fishery, minus species and/or stocks that have geographic ranges exclusively in coastal waters, because the marine mammal species and/or stocks are also found on the high seas and the fishery remains the same on both sides of the EEZ boundary. Therefore, the high seas components of these fisheries pose the same risk to marine mammals as the components of these fisheries operating in U.S. waters.

TABLE 4—FISHERIES AFFECTED BY TAKE REDUCTION TEAMS AND PLANS

Take reduction plans	Affected fisheries
Atlantic Large Whale Take Reduction Plan (ALWTRP)—50 CFR 229.32	*Category I* Mid-Atlantic gillnet. Northeast/Mid-Atlantic American lobster trap/pot. Northeast sink gillnet. *Category II* Atlantic blue crab trap/pot. Atlantic mixed species trap/pot. Northeast anchored float gillnet. Northeast drift gillnet. Southeast Atlantic gillnet. Southeastern U.S. Atlantic shark gillnet *. Southeastern, U.S. Atlantic, Gulf of Mexico stone crab trap/pot ∧.
Bottlenose Dolphin Take Reduction Plan (BDTRP)—50 CFR 229.35	*Category I* Mid-Atlantic gillnet. *Category II* Atlantic blue crab trap/pot. Chesapeake Bay inshore gillnet fishery. Mid-Atlantic haul/beach seine. Mid-Atlantic menhaden purse seine. NC inshore gillnet. NC long haul seine. NC roe mullet stop net. Southeast Atlantic gillnet. Southeastern U.S. Atlantic shark gillnet. Southeastern U.S. Atlantic, Gulf of Mexico shrimp trawl ∧. Southeastern, U.S. Atlantic, Gulf of Mexico stone crab trap/pot ∧. VA pound net.
False Killer Whale Take Reduction Plan (FKWTRP)—50 CFR 229.37	*Category I* HI deep-set longline. *Category II* HI shallow-set longline.
Harbor Porpoise Take Reduction Plan (HPTRP)—50 CFR 229.33 (New England) and 229.34 (Mid-Atlantic).	*Category I* Mid-Atlantic gillnet. Northeast sink gillnet.
Pelagic Longline Take Reduction Plan (PLTRP)—50 CFR 229.36	*Category I* Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics longline.
Pacific Offshore Cetacean Take Reduction Plan (POCTRP)—50 CFR 229.31.	*Category I* CA thresher shark/swordfish drift gillnet (≥14 in mesh).
Atlantic Trawl Gear Take Reduction Team (ATGTRT)	*Category II* Mid-Atlantic bottom trawl. Mid-Atlantic mid-water trawl (including pair trawl). Northeast bottom trawl. Northeast mid-water trawl (including pair trawl).

* Only applicable to the portion of the fishery operating in U.S. waters.

∧ Only applicable to the portion of the fishery operating in the Atlantic Ocean.

Classification

The Chief Counsel for Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy of the Small Business Administration (SBA) at the proposed rule stage that this rule would not have a significant economic impact on a substantial number of small entities. No comments were received on that certification, and no new information has been discovered to change that conclusion. Accordingly, no regulatory flexibility analysis is required, and none has been prepared.

This rule contains collection-of-information (COI) requirements subject to the Paperwork Reduction Act. The COI for the registration of individuals under the MMPA has been approved by the Office of Management and Budget (OMB) under OMB control number 0648–0293 (0.15 hours per report for new registrants). The requirement for reporting marine mammal mortalities or injuries has been approved by OMB under OMB control number 0648–0292 (0.15 hours per report). These estimates include the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the COI. Send comments regarding these reporting burden estimates or any other aspect of the COI, including suggestions for reducing burden, to NMFS and OMB (see **ADDRESSES** and **SUPPLEMENTARY INFORMATION**).

Notwithstanding any other provision of law, no person is required to respond to, nor shall a person be subject to a penalty for failure to comply with a COI, subject to the requirements of the Paperwork Reduction Act, unless that COI displays a currently valid OMB control number.

This rule has been determined to be not significant for the purposes of Executive Order 12866.

An environmental assessment (EA) was prepared under the NEPA in 1995 and 2005. The 1995 EA examined the effects of regulations implementing section 118 of the 1994 Amendments of the MMPA on the affected environment. The 2005 EA analyzed the environmental impacts of continuing the existing scheme (as described in the 1995 EA) for classifying fisheries on the LOF. The 1995 EA and the 2005 EA concluded that implementation of MMPA section 118 regulations would not have a significant impact on the human environment. NMFS reviewed the 2005 EA in 2009 and 2014. NMFS concluded that because there were no changes to the process used to develop the LOF and implement section 118 of the MMPA, there was no need to update the 2005 EA. This rule would not change NMFS' current process for classifying fisheries on the LOF. Therefore, this rule is not expected to change the analysis or conclusion of the 2005 EA and Finding of No Significant Impact (FONSI), and no update is needed. If NMFS takes a management action, for example, through the development of a TRP, NMFS would first prepare an environmental document, as required under NEPA, specific to that action.

This rule would not affect species listed as threatened or endangered under the ESA or their associated critical habitat. The impacts of numerous fisheries have been analyzed in various biological opinions, and this rule will not affect the conclusions of those opinions. The classification of fisheries on the LOF is not considered to be a management action that would adversely affect threatened or endangered species. If NMFS takes a management action, for example, through the development of a TRP, NMFS would consult under ESA section 7 on that action.

This rule would have no adverse impacts on marine mammals and may have a positive impact on marine mammals by improving knowledge of marine mammals and the fisheries interacting with marine mammals through information collected from observer programs, stranding and sighting data, or take reduction teams.

This rule would not affect the land or water uses or natural resources of the coastal zone, as specified under section 307 of the Coastal Zone Management Act.

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Dated: January 5, 2017.

Samuel D. Rauch III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

[FR Doc. 2017–00250 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 648

[Docket No. 151211999–6343–02]

RIN 0648–XF133

Fisheries of the Northeastern United States; Northeast Multispecies Fishery; Georges Bank Cod Trimester Total Allowable Catch Area Closure and Possession Prohibition for the Common Pool Fishery

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Temporary rule; area closure and inseason adjustment.

SUMMARY: This action closes the Georges Bank Cod Trimester Total Allowable Catch Area to Northeast multispecies common pool vessels and prohibits the possession of Georges Bank cod by common pool vessels for the remainder of the fishing year, through April 30, 2017. The common pool fishery has exceeded its annual quota for Georges Bank cod. The closure and possession prohibition are intended to prevent further overage of the common pool's quota for this stock.

DATES: This action is effective January 9, 2017, through April 30, 2017.

FOR FURTHER INFORMATION CONTACT: Kyle Molton, Fishery Management Specialist, (978) 281–9236.

SUPPLEMENTARY INFORMATION: Federal regulations at 50 CFR 648.82(n)(2)(ii) require the Regional Administrator to close a common pool Trimester Total Allowable Catch (TAC) Area for a stock when 90 percent of the Trimester TAC is projected to be caught. The closure applies to all common pool vessels on a groundfish trip using gear capable of catching that stock for the remainder of the trimester.

As of December 26, 2016, the common pool fishery has exceeded its annual TAC for Georges Bank (GB) cod by 0.3 mt, or 2.7 percent. Additionally, any overages in Trimesters 1 and 2 must be deducted from the Trimester 3 TAC. The combined overages in Trimesters 1 and 2 (4.7 mt) exceed the Trimester 3 TAC of 4.3 mt. As a result, there is no TAC available to be harvested in Trimester 3.

Effective January 9, 2017, the GB Cod Trimester TAC Area is closed for the remainder of the fishing year, through April 30, 2017, to all common pool vessels fishing on a groundfish trip with trawl gear, sink gillnet gear, and longline/hook gear. The GB Cod Trimester TAC Area consists of statistical areas 521, 522, 525, and 561. The area reopens at the beginning of fishing year 2017 on May 1, 2017.

Data indicates that common pool vessels have caught a significant portion of the total catch from outside the statistical areas that will be affected by the closure described above. The Regional Administrator is authorized under 50 CFR 648.86(o)(1) to adjust possession and trip limits for common pool vessels to prevent exceeding the pertinent common pool quotas during the fishing year. To prevent the common pool from further exceeding its quota and discourage fishing behavior that results in bycatch of GB cod in areas not affected by the closure, the possession of GB cod by all common pool vessels is prohibited, effective January 9, 2017, through April 30, 2017.

If a vessel declared its trip through the Vessel Monitoring System (VMS) or the interactive voice response system, and crossed the VMS demarcation line prior to January 9, 2017, it may complete its trip within the Trimester TAC Area. Additionally, such vessels are not subject to the new possession prohibition for that trip. A vessel that has set gillnet gear prior to January 9, 2017, may complete its trip by hauling such gear and will not be subject to the new possession limit on that trip for fish caught with that gear.

Weekly quota monitoring reports for the common pool fishery are on our Web site at: *www.greateratlantic.fisheries.noaa.gov/ro/fso/MultiMonReports.htm.* Because the common pool fishery has exceeded its annual quota for GB cod in the 2016 fishing year, the overage will be deducted from the common pool's annual quota for fishing year 2017. The final 2016 overage, and the adjustment to the 2017 common pool quota, will be announced as close to May 1, 2017, as possible, once final catch information for the 2016 fishing year are available. We will continue to monitor common pool catch through vessel trip reports, dealer-reported landings, VMS catch reports, and other available information.

Classification

This action is required by 50 CFR part 648 and is exempt from review under Executive Order 12866.

The Assistant Administrator for Fisheries, NOAA, finds good cause pursuant to 5 U.S.C. 553(b)(B) and 5 U.S.C. 553(d)(3) to waive prior notice and the opportunity for public comment and the 30-day delayed effectiveness period because it would be impracticable and contrary to the public interest.

Regulations require the Regional Administrator to close a trimester TAC area to the common pool fishery when 90 percent of the Trimester TAC for a stock has been caught. Updated catch information only recently became available indicating that the common pool fishery had exceeded its annual quota for GB cod. The time necessary to provide for prior notice and comment, and a 30-day delay in effectiveness, prevents the immediate closure of the GB Cod Trimester 3 TAC Area and prohibition of GB cod possession. Delaying the effective date of a closure and possession prohibition may increase the overage in fishing year 2016 that will need to be deducted from next year's quota. This would be to the detriment of the GB cod stock, and could undermine management objectives of the Northeast Multispecies Fishery Management Plan. Additionally, the overage of the common pool quota could cause negative economic impacts to the common pool fishery as a result of required catch limit deductions in the 2017 fishing year.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: January 6, 2017.

Emily H. Menashes,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2017–00484 Filed 1–9–17; 8:45 am]

BILLING CODE 3510–22–P

Proposed Rules

Federal Register
Vol. 82, No. 8
Thursday, January 12, 2017

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

OFFICE OF PERSONNEL MANAGEMENT

5 CFR Part 532

RIN 3206–AN48

Prevailing Rate Systems; Redefinition of Certain Nonappropriated Fund Federal Wage System Wage Areas

AGENCY: U.S. Office of Personnel Management.

ACTION: Proposed rule with request for comments.

SUMMARY: This rule proposes to amend the geographic boundaries of several nonappropriated fund (NAF) Federal Wage System (FWS) wage areas. Based on recommendations of the Federal Prevailing Rate Advisory Committee (FPRAC), the U.S. Office of Personnel Management (OPM) would define Lee County, Florida, as an area of application county to the Hillsborough, FL, NAF FWS wage area; Leon County, FL, as an area of application county to the Lowndes, Georgia, NAF FWS wage area; Fulton County, GA, as an area of application county to the Cobb, GA, NAF FWS wage area; and Lane County, Oregon, as an area of application county to the Pierce, Washington, NAF FWS wage area. These changes are necessary because there are NAF FWS employees working in these four counties, and the counties are not currently defined to NAF wage areas. In addition, OPM is proposing to remove Mississippi County, AR, from the wage area definition of the Shelby, TN, NAF FWS wage area because there are no longer NAF FWS employees working in the county.

DATES: We must receive comments on or before February 13, 2017.

ADDRESSES: You may submit comments, identified by RIN 3206–AN48, using any of the following methods:

Federal eRulemaking Portal: http://www.regulations.gov. Follow the instructions for submitting comments.

Mail: Brenda L. Roberts, Deputy Associate Director for Pay and Leave, Employee Services, U.S. Office of Personnel Management, Room 7H31, 1900 E Street NW., Washington, DC 20415–8200.

Email: pay-leave-policy@opm.gov.

FOR FURTHER INFORMATION CONTACT: Madeline Gonzalez, by telephone at (202) 606–2838 or by email at *pay-leave-policy@opm.gov.*

SUPPLEMENTARY INFORMATION: OPM is issuing a proposed rule that would make changes to several NAF FWS wage area definitions. The Department of Veterans Affairs notified OPM that the Veterans Canteen Service (VCS) now employs NAF FWS employees in Lee and Leon Counties, FL; Fulton County, GA; and Lane County, OR. In addition, OPM is proposing to remove Mississippi County, AR, from the wage area definition of the Shelby, TN, NAF FWS wage area because there are no longer NAF FWS employees working in the county.

Under § 532.219 of title 5, Code of Federal Regulations (CFR), each NAF wage area ''shall consist of one or more survey areas, along with nonsurvey areas, if any, having nonappropriated fund employees.'' Lee, Leon, Fulton, and Lane Counties do not meet the regulatory criteria under 5 CFR 532.219 to be established as separate NAF wage areas; however, nonsurvey counties may be combined with a survey area to form a wage area. Section 532.219 lists the regulatory criteria that OPM considers when defining FWS wage area boundaries:

(i) Proximity of largest facilities activity in each county;

(ii) Transportation facilities and commuting patterns; and

(iii) Similarities of the counties in—

(A) Overall population;

(B) Private employment in major industry categories; and

(C) Kinds and sizes of private industrial establishments.

OPM recently completed reviews of the definitions of Lee, Leon, Fulton, Lane, and Mississippi Counties and is proposing the changes described below. FPRAC, the national labor-management committee responsible for advising OPM on matters concerning the pay of FWS employees, recommended these changes by consensus. These changes would apply on the first day of the first applicable pay period beginning on or after 30 days following publication of the final regulations.

Lee County, FL

Lee County would be defined as an area of application county to the Hillsborough, FL, NAF FWS wage area. The proximity criterion favors the Hillsborough wage area. The transportation facilities criterion favors the Hillsborough wage area. The commuting patterns criterion does not favor one wage area more than another. The overall population, employment sizes, and kinds and sizes of private industrial establishments criterion does not favor one wage area more than another. While a standard review of regulatory criteria shows mixed results, the proximity criterion solidly favors the Hillsborough wage area.

With the definition of Lee County to the Hillsborough NAF wage area, the Hillsborough wage area would consist of one survey county, Hillsborough County, and three area of application counties: Lee, Pinellas, and Polk Counties, FL.

Leon County, FL

Leon County would be defined as an area of application county to the Lowndes, GA, NAF FWS wage area. The proximity criterion favors the Lowndes wage area. The transportation facilities and commuting patterns criterion does not favor one wage area more than another. Although the overall population, employment sizes, and kinds and sizes of private industrial establishments criterion does not favor one wage area more than another, the industrial distribution pattern for Leon County is similar to the Lowndes survey area. Based on this analysis, we recommend that Leon County be defined to the Lowndes NAF wage area.

With the definition of Leon County to the Lowndes NAF wage area, the Lowndes wage area would consist of one survey county, Lowndes County, GA, and one area of application county, Leon County, FL.

Fulton County, GA

Fulton County would be defined as an area of application county to the Cobb, GA, NAF FWS wage area. The closest NAF wage area to Fulton County is the Cobb wage area. There are no other NAF wage areas in the immediate vicinity of Fulton County. The VCS No.357 is located approximately 22 miles from Dobbins Air Reserve Base, the Cobb wage area's host activity. Based on this

analysis, we recommend that Fulton County be defined to the Cobb NAF wage area.

With the definition of Fulton County to the Cobb NAF wage area, the Cobb wage area would consist of one survey county, Cobb County, GA, and three area of application counties: Bartow, De Kalb, and Fulton Counties, GA.

Lane County, OR

Lane County would be defined as an area of application county to the Pierce, WA, NAF FWS wage area. The closest NAF wage area to Lane County is the Pierce, WA, wage area. There are no other NAF wage areas in the immediate vicinity of Lane County. While VCS No. 356 is located approximately 240 miles from Joint Base Lewis-McChord, the Pierce wage area's host activity, Lane County is adjacent to two counties currently defined to the Pierce wage area: Coos and Douglas Counties, OR. Based on this analysis, we recommend that Lane County be defined to the Pierce NAF wage area.

With the definition of Lane County to the Pierce NAF wage area, the Pierce wage area would consist of one survey county, Pierce County, WA, and eight area of application counties: Clatsop, Coos, Douglas, Lane, Multnomah, and Tillamook Counties, OR, and Clark and Grays Harbor, WA.

Mississippi County, AR

Mississippi County would be removed as an area of application county to the Shelby, TN, NAF FWS wage area. No NAF FWS employment has been reported in Mississippi County since the closure of Eaker Air Force Base in 1992, and NAF employers have no plans to establish an activity there in the future. Under 5 U.S.C. 5343(a)(1)(B)(i), NAF wage areas ''shall not extend beyond the immediate locality in which the particular prevailing rate employees are employed.'' Therefore, Mississippi County should not be defined as part of an NAF wage area.

With the removal of Mississippi County from the Shelby NAF wage area, the Shelby wage area would consist of one survey county, Shelby County, TN, and one area of application county, Butler County, MO.

Regulatory Flexibility Act

I certify that these regulations would not have a significant economic impact on a substantial number of small entities because they would affect only Federal agencies and employees.

List of Subjects in 5 CFR Part 532

Administrative practice and procedure, Freedom of information, Government employees, Reporting and recordkeeping requirements, Wages.

U.S. Office of Personnel Management.

Beth F. Cobert,

Acting Director.

Accordingly, OPM is proposing to amend 5 CFR part 532 as follows:

PART 532—PREVAILING RATE SYSTEMS

■ 1. The authority citation for part 532 continues to read as follows:

Authority: 5 U.S.C. 5343, 5346; § 532.707 also issued under 5 U.S.C. 552.

Appendix D to Subpart B of Part 532—Nonappropriated Fund Wage and Survey Areas

■ 2. Appendix D to Subpart B is amended by revising the wage area listing for the Hillsborough, FL; Cobb, GA; Lowndes, GA; Shelby, TN; and Pierce, WA, wage areas to read as follows:

* * * * *

FLORIDA

* * * * *

Hillsborough

Survey Area

Florida:
Hillsborough

Area of Application. Survey area plus:

Florida:
Lee
Pinellas
Polk

* * * * *

GEORGIA

* * * * *

Cobb

Survey Area

Georgia:
Cobb

Area of Application. Survey area plus:

Georgia:
Bartow
De Kalb
Fulton

* * * * *

Lowndes

Survey Area

Georgia:
Lowndes

Area of Application. Survey area plus:

Florida:
Leon

* * * * *

TENNESSEE

Shelby

Survey Area

Tennessee:
Shelby

Area of Application. Survey area plus:

Missouri:
Butler

* * * * *

WASHINGTON

* * * * *

Pierce

Survey Area

Washington:
Pierce

Area of Application. Survey area plus:

Oregon:
Clatsop
Coos
Douglas
Multnomah
Tillamook

Washington:
Clark
Grays Harbor
Lane

* * * * *

[FR Doc. 2017–00577 Filed 1–11–17; 8:45 a.m.]

BILLING CODE 6325–39–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Medicare & Medicaid Services

42 CFR Part 424

[CMS–6012–P]

RIN 0938–AR84

Medicare Program; Establishment of Special Payment Provisions and Requirements for Qualified Practitioners and Qualified Suppliers of Prosthetics and Custom-Fabricated Orthotics

AGENCY: Centers for Medicare & Medicaid Services (CMS), HHS.

ACTION: Proposed rule.

SUMMARY: This proposed rule would specify the qualifications needed for qualified practitioners to furnish and fabricate, and qualified suppliers to fabricate prosthetics and custom-fabricated orthotics; accreditation requirements that qualified suppliers must meet in order to bill for prosthetics and custom-fabricated orthotics; requirements that an organization must meet in order to accredit qualified suppliers to bill for prosthetics and custom-fabricated orthotics; and a timeframe by which qualified practitioners and qualified suppliers must meet the applicable licensure, certification, and accreditation requirements. In addition, this rule would remove the current exemption from accreditation and quality standards for certain practitioners and suppliers.

DATES: To be assured consideration, comments must be received at one of the addresses provided below, no later than 5 p.m. on March 13, 2017.

ADDRESSES: In commenting, please refer to file code CMS–6012–P. Because of staff and resource limitations, we cannot accept comments by facsimile (FAX) transmission.

You may submit comments in one of four ways (please choose only one of the ways listed):

1. *Electronically.* You may submit electronic comments on this regulation to *http://www.regulations.gov*. Follow the ''Submit a comment'' instructions.

2. *By regular mail.* You may mail written comments to the following address ONLY: Centers for Medicare & Medicaid Services, Department of Health and Human Services, Attention: CMS–6012–P, P.O. Box 8013, Baltimore, MD 21244–8013.

Please allow sufficient time for mailed comments to be received before the close of the comment period.

3. *By express or overnight mail.* You may send written comments to the following address ONLY: Centers for Medicare & Medicaid Services, Department of Health and Human Services, Attention: CMS–6012–P, Mail Stop C4–26–05, 7500 Security Boulevard, Baltimore, MD 21244–1850.

4. *By hand or courier.* Alternatively, you may deliver (by hand or courier) your written comments ONLY to the following addresses prior to the close of the comment period:

a. For delivery in Washington, DC—Centers for Medicare & Medicaid Services, Department of Health and Human Services, Room 445–G, Hubert H. Humphrey Building, 200 Independence Avenue SW., Washington, DC 20201.

(Because access to the interior of the Hubert H. Humphrey Building is not readily available to persons without federal government identification, commenters are encouraged to leave their comments in the CMS drop slots located in the main lobby of the building. A stamp-in clock is available for persons wishing to retain a proof of filing by stamping in and retaining an extra copy of the comments being filed.)

b. For delivery in Baltimore, MD—Centers for Medicare & Medicaid Services, Department of Health and Human Services, 7500 Security Boulevard, Baltimore, MD 21244–1850.

If you intend to deliver your comments to the Baltimore address, call telephone number (410) 786–7195 in advance to schedule your arrival with one of our staff members.

Comments erroneously mailed to the addresses indicated as appropriate for hand or courier delivery may be delayed and received after the comment period.

For information on viewing public comments, see the beginning of the **SUPPLEMENTARY INFORMATION** section.

FOR FURTHER INFORMATION CONTACT: John Spiegel, (410) 786–1909.

SUPPLEMENTARY INFORMATION: *Inspection of Public Comments:* All comments received before the close of the comment period are available for viewing by the public, including any personally identifiable or confidential business information that is included in a comment. We post all comments received before the close of the comment period on the following Web site as soon as possible after they have been received: *http://www.regulations.gov*.

Follow the search instructions on that Web site to view public comments.

Comments received timely will also be available for public inspection as they are received, generally beginning approximately 3 weeks after publication of a document, at the headquarters of the Centers for Medicare & Medicaid Services, 7500 Security Boulevard, Baltimore, Maryland 21244, Monday through Friday of each week from 8:30 a.m. to 4 p.m. To schedule an appointment to view public comments, phone 1–800–743–3951.

I. Background

A. General Overview

Medicare services are furnished by two types of entities, providers and suppliers. The term ''provider of services'' is defined in sections 1861(u) and 1866(e) of the Social Security Act (the Act). Based on the statute definition of ''provider of services'' in sections 1861(u) and 1866(e) of the Act we define and use the term ''provider'' in our regulations. At § 400.202, the term ''provider'' is defined as a hospital, a critical access hospital (CAH), a skilled nursing facility (SNF), a comprehensive outpatient rehabilitation facility (CORF), a home health agency (HHA), or a hospice that has in effect an agreement to participate in Medicare, or a clinic, a rehabilitation agency, or a public health agency that has in effect a similar agreement but only to furnish outpatient physical therapy or speech pathology services, or a community mental health center that has in effect a similar agreement but only to furnish partial hospitalization services.

The term supplier is defined in section 1861(d) of the Act. Supplier is defined as a physician or other practitioner, facility or an entity other than a provider of services that furnishes items or services under Medicare. A supplier that furnishes durable medical equipment, prosthetics, orthotics, and supplies (DMEPOS) is one category of supplier. Section 424.57(a) of our regulations defines a DMEPOS supplier as an entity or individual, including a physician or Part A provider, that sells or rents covered DMEPOS items to Medicare beneficiaries that meets the DMEPOS supplier standards. Other supplier categories may include, for example, physicians, nurse practitioners, and physical therapists. If a supplier, such as a physician, nurse practitioners, or physical therapist, also furnishes DMEPOS to a patient and bills for those items, then the supplier is also considered to be a DMEPOS supplier and must be screened and enrolled in Medicare as a DMEPOS supplier, meeting all standards and requirements applicable to DMEPOS suppliers in order to be enrolled in and bill Medicare.

Section 1861(n) of the Act defines ''durable medical equipment.'' See *https://www.ssa.gov/OP_Home/ssact/title18/1861.htm*. Also, the term DME is included in the definition of ''medical and other health services'' in section 1861(s)(6) of the Act, see *https://www.ssa.gov/OP_Home/ssact/title18/1861.htm* and also included in the definition of medical equipment and supplies in section 1834(j)(5) of the Act. See *https://www.ssa.gov/OP_Home/ssact/title18/1834.htm*. Furthermore, the term is defined in § 414.202 as equipment furnished by a supplier or a HHA that—

- Can withstand repeated use;
- Effective for items classified as DME after January 1, 2002 has an expected life of at least 3 years;
- Is primarily and customarily used to serve a medical purpose;
- Generally, is not useful to an individual in the absence of an illness or injury; and
- Is for use in the home.

Prosthetics and orthotics which are defined under section 1861(s)(9) of the Act as leg, arm, back, and neck braces and artificial legs, arms, and eyes, including replacements if required because of a change in the patient's physical condition, are included under the coverage definition under section 1861(s)(9) of the Act. We are using this definition of prosthetics and orthotics for the purposes of this proposed rule. They are also described in the Medicare Benefit Policy Manual (100–02), Chapter 15, Section 130 that specifies that these appliances are covered under Part B when furnished incident to physicians' services or on a physician's order.

B. Legislative History

1. Medicare, Medicaid and SCHIP Benefits Improvement and Protection Act of 2000 (BIPA)

Section 427 of the Medicare, Medicaid and SCHIP Benefits Improvement and Protection Act of 2000 (BIPA) (Pub. L. 106–554) added section 1834(h)(1)(F) of the Act, which states that no payment shall be made for custom-fabricated orthotics or for an item of prosthetics unless furnished by a qualified practitioner and fabricated by a qualified practitioner or a qualified supplier at a facility that meets criteria the Secretary determines appropriate. Section 1834(h)(1)(F) of the Act describes custom-fabricated orthotics as individually fabricated for the patient over a positive model of the patient and also requires education, training, and experience to custom-fabricate.

A qualified practitioner is defined by BIPA as a physician or other individual who is a qualified physical therapist or a qualified occupational therapist; or is licensed in orthotics or prosthetics, in the cases where the state provides such licensing; or, in states where the state does not provide such licensing, is specifically trained and educated to provide or manage the provision of prosthetics and custom-designed or fabricated orthotics and is certified by the American Board for Certification in Orthotics, Prosthetics and Pedorthics (ABC) or the Board for Orthotist/Prosthetist Certification International, Incorporated (BOC); or is credentialed and approved by a program that the Secretary determines has training and education standards that are necessary to provide such prosthetics and orthotics.

A qualified supplier is defined by BIPA as any entity that is accredited by the ABC or the BOC or is accredited and approved by a program that the Secretary determines has accreditation and approval standards that are essentially equivalent to those of such Boards.

The Congress directed the Secretary to implement section 427 of BIPA no later than 1 year after the date of the enactment using a negotiated rulemaking process. The negotiated rulemaking committee (the Committee) on Special Payment Provisions for Prosthetics and Certain Custom-Fabricated Orthotics was established following the requirements set forth by the Federal Advisory Committee Act (FACA). The Committee held nine meetings from October 2002 to July 2003 and failed to reach a consensus on the rulemaking. Given the continued need to address payment provisions for prosthetics and certain custom-fabricated orthotics, we are proposing policies and inviting public comment on our proposals as described section II. of this proposed rule.

2. Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA)

Section 302(a)(1) of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) (Pub. L. 108–173) added a new paragraph (20) to section 1834(a) of the Act requiring the Secretary to establish and implement DMEPOS quality standards that suppliers must meet in order to furnish and bill for covered items and services described in new section 1834(a)(20)(D) of the Act, which includes prosthetics and orthotics. The new paragraph (20) also required the Secretary to designate and approve one or more independent accreditation organizations to apply the quality standards. In addition, the new section 1834(a)(20) of the Act required that to obtain or retain a Medicare Part B billing number DMEPOS suppliers must be accredited by one of the approved accreditation organizations.

The DMEPOS quality standards were posted on our Web site at *www.cms.gov/medicareprovidersupenroll* as required by section 1834(a)(20)(E) of the Act. On May 1, 2006, we published a proposed rule (71 FR 25654) and a subsequent final rule on August 18, 2006 (71 FR 48354) that specified the criteria that all approved accreditation organizations must meet, set forth in § 424.58. In December 2006, we approved 11 accreditation organizations. As a result of a merger of two of the accreditation organizations, there are now 10 accreditation organizations.

All DMEPOS suppliers must meet the quality standards. The quality standards required by section 1834(a)(20) of the Act are used by the approved accrediting organizations as the basis for their accrediting decisions.

3. Medicare Improvement for Patients and Providers Act of 2008 (MIPPA)

Section 154(b) of the Medicare Improvement for Patients and Providers Act of 2008 (MIPPA) (Pub. L. 110–275 amended section 1834(a)(20) of the Act by adding a new subparagraph (F) to require DMEPOS suppliers furnishing covered items and services, directly or as a subcontractor for another entity, to have submitted to the Secretary evidence of being accredited as meeting the applicable quality standards on or after October 1, 2009. Section 1834 (a)(20)(F)(ii) of the Act provided the Secretary the authority to exempt ''eligible professionals'' and such ''other persons'' from the quality standards and accreditation requirement unless the Secretary determined that the standards are designed specifically to be applied to such eligible professionals and other persons or if the Secretary determined that licensing, accreditation or other mandatory quality requirements apply to such eligible professionals and other persons. Eligible professionals are defined at section 1848(k)(3)(B) of the Act as a physician, physician assistant, nurse practitioner, clinical nurse specialist, certified registered nurse anesthetist, certified nurse-midwife, clinical social worker, clinical psychologist, physical or occupational therapist or a qualified speech-language pathologist. Section 1834(a)(20)(F)(ii) of the Act specifically refers to orthotists and prosthetists as examples of ''other persons.'' Since orthotists and prosthetists specifically were mentioned in the statute, we believe that the Congress intended for those persons to be exempt unless there were standards designed specifically to be applied to such eligible professionals and other persons.

To date there have not been accreditation or quality requirements designed specifically to be applied to such eligible professionals and thus as a result, all eligible professionals and other persons, including orthotists and prosthetists, that furnish, fabricate, and bill for prosthetics and certain custom-fabricated orthotic items are currently exempt from the quality standards and the accreditation requirement.

II. Provisions of the Proposed Regulations

This proposed rule would implement certain provisions of section 1834(h)(1)(F) of the Act. It would establish the qualifications and requirements that must be met in order to be considered a qualified practitioner or a qualified supplier. This proposed rule would also amend the special payment rules for items furnished by DMEPOS suppliers set forth at § 424.57 and the accreditation organization requirements in § 424.58. Only qualified practitioners who furnish or fabricate prosthetics and custom-fabricated orthotics and qualified suppliers that fabricate or bill for prosthetics and custom-fabricated orthotics would be subject to these requirements.

Specifically, we are proposing the following:

- Removing the exemption from quality standards and accreditation that is currently in place in accordance with section 1834(a)(20) of the Act for certain practitioners and suppliers who furnish

or fabricate prosthetics and custom-fabricated orthotics.

• Revising § 424.57 to include a definition of custom-fabricated orthotics as an item as listed in section 1861(s)(9) of the Act that must be individually made for a specific patient, constructed using one of the positive model techniques listed in § 424.57(a).

• Revising § 424.57(a) to include a definition of positive model of the patient as a particular type of custom fabrication in which one of the following modeling techniques is used:

++ Molded to the patient model as a negative impression of the patient's body part and a positive model rectification are constructed.

++ Computer Aided Design-Computer Aided Manufacturing (CAD–CAM) system.

++ Direct formed model.

• Defining ''qualified supplier'' as a DMEPOS supplier that is accredited in accordance with the section 1834(a)(20) of the Act.

• Defining ''qualified practitioner'' as an eligible professional or other person that meets the education, training, licensure, and certification requirements of the section 1834(h)(1)(F)of the Act.

• Specifying training, licensure, and certification requirements that qualified practitioners must meet in order to furnish or fabricate prosthetics and custom-fabricated orthotics.

• Requiring that claims for prosthetics and custom-fabricated orthotics that are submitted by qualified suppliers or by beneficiaries must have been furnished by a qualified practitioner and fabricated by a qualified practitioner or a qualified supplier as defined in this proposed rule. Suppliers that do not meet these requirements are at risk of revocation of their Medicare enrollment.

• Defining the requirements that must be met by organizations that are designated and approved by CMS to accredit suppliers that bill for prosthetics and custom-fabricated orthotics.

• Define ''fabrication facility'' and specify the requirements that a facility must meet in order for qualified practitioners and qualified suppliers to be able to fabricate prosthetics and custom-fabricated orthotics that can be paid for by Medicare.

Separately, in this proposed rule we also—

• Describe our intent to modify the DMEPOS quality standards to reflect the provisions of this rule, including the effective date for meeting the revised quality standards; and

• Provide the list of services and supplies subject to the requirements of this rule (*www.cms.gov/medicareprovidersupenroll*).

We provide a link to the list of items and describe our intent to revise the quality standards as information only. We are not soliciting comments on the content of or the process for updating the quality standards, which will be addressed through the regulatory process we reference in section II.A.6.a. of this proposed rule. Nor are we soliciting comment on the content of or process for updating the list of items and supplies, which is described in section II.B. of this proposed rule. Comments on those matters will be considered outside the scope of this rule.

A. Updating of Accreditation and Certification Requirements

1. Removing the MIPPA Exemptions for DMEPOS Suppliers and Certain Eligible Professionals and Other Persons Who Furnish or Fabricate Prosthetics and Custom-Fabricated Orthotics

Consistent with the provisions of the Act, including those provisions added by BIPA, MMA, and MIPPA, we have put in place a framework for accreditation of suppliers that fabricate DMEPOS and bill for DMEPOS services. However, qualified practitioners and qualified suppliers are currently exempt from having to meet the quality standards or to be accredited as suppliers in order to be able to bill Medicare for prosthetics and custom-fabricated orthotics. We are removing the exemptions in order to implement the provisions of section 1834(a)(20) of the Act.

As noted previously, section 1834(a)(20)(F)(ii) of the Act provided the Secretary the authority to exempt ''eligible professionals'' (as defined in section 1848(k)(3)(B) of the Act) and such ''other persons'' from the quality standards and accreditation requirement unless the Secretary determined that the standards are designed specifically to be applied to such eligible professionals and other persons or if the Secretary determined that licensing, accreditation or other mandatory quality requirements apply to such eligible professionals and other persons. The Secretary did not determine that there were standards designed specifically to be applied to such eligible professionals and other persons and the Secretary did not determine that licensing, accreditation or other mandatory quality requirements apply to such eligible professionals and other persons. Therefore, we issued a fact sheet on our Web site announcing the exemption at *www.cms.gov/medicareprovidersupenroll.*

Through this proposed rule, we are now designing standards specifically to apply to such eligible professionals and other persons. We believe that it is imperative to have both licensure and certification requirements for all qualified practitioners (eligible professionals and other persons who furnish or fabricate prosthetics and custom-fabricated orthotics) and to have accreditation requirements for all qualified suppliers (DMEPOS suppliers that fabricate or bill for prosthetics and custom-fabricated orthotics that are subject to the requirements of this proposed rule). Moreover, we believe that the provisions in section 1834(a)(20) of the Act were enacted to achieve that objective.

Therefore, in order to ensure that only those who are qualified to do so can furnish, fabricate, and bill for the prosthetics and custom-fabricated orthotics addressed by this proposed rule, we would remove the exemption from having to meet the quality standards and the exemption from having to be accredited that currently exist for eligible professionals and other persons that furnish, fabricate or bill for prosthetics and custom-fabricated orthotics.

2. Definition and Accreditation Requirements for Qualified Suppliers

Consistent with the provisions in section 1834(h)(1)(F) of the Act, which require that no payment will be made unless those furnishing prosthetics and custom-fabricated orthotics are qualified to do so, we are proposing to define qualified supplier, in§ 424.57(a), as an entity that is—

• Enrolled in Medicare as a DMEPOS supplier; and

• Accredited by one of the CMS-approved accreditation organizations that meets the proposed requirements that an organization must meet to accredit qualified suppliers of prosthetics and custom-fabricated orthotics in § 424.58(c) (described in section II.A.5. of this proposed rule).

In our existing regulations at § 424.57(c)(22), we require DMEPOS suppliers to be accredited by a CMS-approved accrediting organization to receive and retain a supplier billing number. We also state that the accreditation must indicate the specific products and services for which the DMEPOS supplier is accredited in order for the supplier to receive payment. To implement the statutory requirements regarding accreditation requirements for eligible professionals and other persons who want to furnish and bill for prosthetics and custom-fabricated

orthotics, we would revise § 424.57(c)(22) by—

• Redesignating the existing text as paragraph (c)(22)(i). We would also make clarifying, technical, and conforming changes. We note that changes would not modify the intent of this provision. We also note that this requirement would still be applicable to all DMEPOS suppliers.

• Adding a new paragraph (c)(22)(ii) to state the additional accreditation requirements for DMEPOS suppliers that would be fabricating and billing for prosthetics and custom-fabricated orthotics. In order to be a qualified supplier, the DMEPOS supplier must be accredited by a CMS-approved accreditation organization for prosthetics and custom-fabricated orthotics as described in § 424.58(c). The accreditation must indicate the specific products and services for which the DMEPOS supplier is accredited in order for the qualified supplier (as defined in § 424.57(a)) to receive payment for the specific prosthetics and custom-fabricated orthotics. We are also proposing that as part of compliance with the ongoing accreditation process, qualified suppliers must notify the AO of any change in conditions, practices, or operations that were relied upon by the AO at the time of accreditation. This would include, but not be limited to, a requirement for notifying the AO of any changes in personnel, including changes in status or qualifications of employees of the qualified supplier or of any personnel utilized by the qualified supplier via contract or other business relationship. This requirement is included to ensure that qualified suppliers, once accredited, continue to meet all of the accreditation and other supplier standards. (See section II.A.5. of this proposed rule for more detailed information regarding our proposed requirements for accrediting organizations.)

Section 1834(h)(1)(F) of the Act requires, in part, that no payment can be made for prosthetics or custom-fabricated orthotics unless the item is fabricated by a qualified practitioner or a qualified supplier at a facility that meets such criteria as the Secretary determines appropriate. Therefore, we are proposing to define and establish the criteria that such a facility must meet. We are proposing to define ''fabrication facility'' to distinguish this facility type from others referenced in our regulations. In § 424.57(a), we would define a fabrication facility as a physical structure that—

• Meets the requirements in § 424.57(d)(4); and

• Is utilized by a qualified practitioner or a qualified supplier to fabricate prosthetics or custom-fabricated orthotics.

In § 424.57(d)(4), based on input from other government agencies and contractors that are involved in ensuring that prosthetics and custom-fabricated orthotics are furnished, fabricated and paid for properly, we would specify that the fabrication facility at which qualified suppliers and qualified practitioners fabricate prosthetics and custom-fabricated orthotics, as defined in § 424.57(a), must meet all of the following requirements:

• Be located within the United States or one of its territories.

• Be a business that is organized, established and licensed under applicable state and federal laws.

• Have a process for maintenance and production of fabrication records including the following:

++ Job/work orders.

++ Record tracking systems.

++ Real time recordkeeping, for example, ensuring that records are updated as the fabrication takes place.

++ Secure storage of records with electronic and hard copy back-up.

• Have a quality assurance process to identify non-standard production outcomes, and improve fabrication outcomes.

• Have a periodic review and employee demonstration of fabrication/safety/communication/operations competencies with corrective action plans for staff that do not meet the minimal standards.

• Have full time appropriately credentialed staff member(s) who are (qualified practitioners or qualified suppliers) onsite to fabricate and to supervise fabrication.

• Have a laboratory area with appropriate safety equipment (for example, flammable material storage, gloves, safety glasses, and proper ventilation).

• Have a separate waiting area and chairs with armrests, as necessary.

• Have patient care and fitting rooms with appropriate levels of privacy and sanitation. Patient fitting and care areas should be separate from the fabrication area.

• Have disinfecting supplies, gloves, masks, and plastic for containing contaminated materials.

• Have a fabrication facility information system, paper or digital, that can track the production, list component part number (and serial number if available) and quantity, and that is linked to patient information and be Health Insurance Portability and Accountability Act compliant. Such a system must allow facility staff and management, including those fabricating, to identify any parts that could be recalled at a later date.

• Have parallel bars, a full-length mirror, and other appropriate assessment tools.

• Have a process that mandates following precautions to handle used patient devices that are contaminated.

• Have repair and disinfecting areas clearly labeled.

• Have the ability to handle all potentially hazardous materials in facility properly.

• Have an emergency management plan and a safety management plan.

• Have policy for detecting/reporting counterfeit supplies.

• Have the proper tools, equipment, and computers commonly used in the fabrication of particular items and typically associated with the particular technical approach (negative impression/positive model, CAD–CAM, or direct formed), as applicable. These tools and equipment would include, but are not limited to the following:

++ Computers with appropriate graphics/modeling capacity and technology.

++ Band saw.

++ Disc sander.

++ Sanding paper.

++ Flexible shaft sander.

++ Lathe.

++ Drill press.

++ Sewing machine.

++ Grinding equipment.

++ Paint-spraying equipment.

++ Welding equipment.

++ Alignment jig.

++ Ovens capable of heating plastics for molding.

++ Computer controlled milling machine.

++ Lockable storage areas for raw materials and finished devices.

++ Air compressor.

We note that these requirements would apply even if the fabrication facility is the same location as that of the DMEPOS supplier.

We intend to require that AO's cannot accredit a qualified supplier or renew the accreditation of a qualified supplier unless the qualified supplier uses a fabrication facility that meets these criteria. We are seeking comment on the definition of a fabrication facility and its requirements.

3. Definition of Qualified Practitioner

We are also proposing to define qualified practitioner in § 424.57(a). Our proposal would permit certain eligible professionals and other persons who are not enrolled as an accredited DMEPOS supplier to become a qualified

practitioner to furnish or fabricate prosthetic and custom-fabricated services and supplies that are billed to Medicare if the eligible professional or other person meets the training, licensure, and certification requirements in proposed § 424.57(d)(3).

a. Specific Eligible Professionals and Other Persons

In § 424.57(a), we would identify and define the types of eligible professionals and other persons who can become qualified practitioners, and therefore, in accordance with the BIPA provisions, furnish or fabricate prosthetics and custom-fabricated orthotics. Specifically, we propose to identify and to add definitions for the following practitioners: (1) Occupational therapist; (2) ocularist; (3) orthotist; (4) pedorthist; (5) physical therapist; (6) physician; and (7) prosthetist.

• *Occupational Therapist.* Our current regulations at § 484.4 specify in detail the personnel qualifications for an occupational therapist. We are proposing to define an occupational therapist as an individual who meets the requirements in § 484.4. We are specifically requesting comments on these proposed qualifications for an occupational therapist to furnish/fabricate prosthetics and custom-fabricated orthotics.

• *Ocularist.* The American Society of Ocularists defines an ocularist as a trained technician skilled in the arts of fitting, shaping, and painting ocular prostheses. We note, as indicated by the National Examining Board of Ocularists, that in addition to creating ocular prostheses, the ocularist typically shows the patient how to handle and care for the prosthesis, and provides long-term care through periodic examinations. We are proposing to define an ocularist as a trained technician skilled in the arts of fitting, shaping, and painting ocular prostheses who is certified by the American Board for Certification in Orthotics, Prosthetics and Pedorthics (ABC), the Board for Orthotist/Prosthetist Certification International, Incorporated (BOC) or the National Examining Board of Ocularists. We are specifically requesting comments on these proposed qualifications for an ocularist to furnish/fabricate prosthetics and custom-fabricated orthotics.

• *Orthotist.* Our current regulations in § 485.70(d) specify the following personnel qualifications for an orthotist:

++ Be licensed by all states in which practicing, if applicable.

++ Have successfully completed a training program in orthotics that is jointly recognized by the American Council on Education and the American Board for Certification in Orthotics and Prosthetics.

++ Be eligible to take that Board's certification examination in orthotics.

We are proposing to define an orthotist as an individual who meets the personnel qualifications in § 485.70(d). We are specifically requesting comments on these proposed qualifications for an orthotist to furnish or fabricate prosthetics and custom-fabricated orthotics.

• *Pedorthist.* The Pedorthic Footcare Association defines a pedorthist as a specialist in using footwear—which includes shoes, shoe modifications, foot orthoses and other pedorthic devices—to solve problems in, or related to, the foot and lower limb. We are proposing to define pedorthist in this manner. We are specifically requesting comments on these proposed qualifications for a pedorthist to furnish or fabricate prosthetics and custom-fabricated orthotics.

• *Physical Therapist.* Our current regulations at § 484.4 specify in detail the personnel qualifications for a physical therapist. We are proposing to define a physical therapist as an individual who meets the requirements in § 484.4. We are specifically requesting comments on these proposed qualifications for a physical therapist to furnish or fabricate prosthetics and custom-fabricated orthotics.

• *Physician.* Our current regulations at § 484.4 specify the personnel qualifications for a physician. In addition to those requirements, we propose to require that for purposes of furnishing or fabricating prosthetics and custom-fabricated orthotics, a physician must be specifically educated, certified or trained in the area of prosthetics and custom-fabricated orthotics. The physician must be knowledgeable and competent (as evidenced by education and experience) in the assessment, furnishing, fabrication, care, and follow-up needs of the patient as specifically delineated in the DMEPOS quality standards (discussed in section II.A.6. of this proposed rule). We are proposing such knowledge and competency requirements because we believe it is only specialty physicians who are trained and experienced, and who understand the specialized needs of the beneficiary requiring prosthetics and custom-fabricated orthotics. We are specifically requesting comments on these proposed *additional* qualifications for a physician to furnish prosthetics and custom-fabricated orthotics.

Doctors of dental surgery or dental medicine, doctors of optometry, psychiatrists, and chiropractors do not customarily furnish or fabricate prosthetics and custom-fabricated orthotics. Therefore, we have not proposed requirements for these eligible professionals or any others who do not typically furnish or fabricate the prosthetics and custom-fabricated orthotics that are subject to the provisions of this proposed rule. However, any qualified practitioner who furnishes or fabricates prosthetics or custom-fabricated orthotics and any qualified supplier that fabricates or bills for such services must meet the applicable requirements as specified in this rule.

• *Prosthetist.* A prosthetist is able to provide all types prosthetics, with the exception of facial prosthetics. Our current regulations at § 485.70(f) specify the personnel qualifications for a prosthetist as follows:

++ Be licensed by all states in which they are practicing, if applicable.

++ Have successfully completed a training program in prosthetics that is jointly recognized by the American Council on Education and the American Board for Certification in Orthotics and Prosthetics.

++ Be eligible to take that Board's certification examination in prosthetics.

We are proposing to define a prosthetist as an individual who meets the personnel qualifications in § 485.70(f). We are specifically requesting comments on these proposed qualifications for a prosthetist to furnish or fabricate prosthetics and custom-fabricated orthotics.

b. Training, Licensure, and Certification Requirements for Qualified Practitioners

In addition to defining the types of professionals that would be eligible to furnish and fabricate prosthetics and custom-fabricated orthotics, we are proposing certain licensure, training, and certification requirements that these practitioners must meet to be qualified practitioners who furnish or fabricate prosthetics or custom-fabricated orthotics that are billed to Medicare by qualified suppliers. Furnishing and fabricating prosthetics and custom-fabricated orthotics for Medicare beneficiaries, who need these items and services, is multifaceted and complex. We have proposed a framework of requirements designed to ensure that eligible professionals possess the skills and training to furnish and fabricate these items and services. It is important that the qualified practitioners who furnish and fabricate these items meet the requirements specified in this proposed rule.

Therefore, in proposed § 424.57(d)(3), we would specify that an eligible professional or other person who wants

to be a qualified practitioner who furnishes or fabricates prosthetics or custom-fabricated orthotics must meet either of the following licensure and certification requirements:

++ Licensed in orthotics, pedorthics or prosthetics by the state.

++ In states that do not provide licenses for orthotics, pedorthics or prosthetics, must be both of the following:

—Specifically, trained and educated to provide and manage the provision of pedorthics, prosthetics, and orthotics.

—Certified by the one of the following:

+++ ABC.

+++ BOC.

+++ A Secretary-approved organization that has standards equivalent to the ABC or BOC.

We believe these proposed requirements would ensure that the specialized needs of Medicare beneficiaries who require prosthetics and custom-fabricated orthotics are met. We are specifically seeking comment on these requirements and, in particular, we are very interested in comments regarding standards by which we should determine that qualified practitioners are specifically trained and educated to provide and manage the provision of pedorthics, prosthetics, and orthotics. For example, we solicit feedback on any relevant metrics, data sources or methods and processes to gauge competencies. We would appreciate comments on whether a qualified practitioner who is also a qualified supplier that is enrolled in Medicare as a DMEPOS supplier should be required to obtain certification from ABC or BOC in addition to meeting the qualified suppler requirements in this proposed rule.

We also clarify that, to the extent that a qualified supplier does not fabricate a prosthetic or a custom-fabricated orthotic, such prosthetic or custom-fabricated orthotic must be fabricated by a qualified practitioner, and that it is the responsibility of the qualified supplier to verify the practitioner's qualified status.

4. Claims for Prosthetics and Custom-Fabricated Orthotics

As stated previously, we are proposing that all DMEPOS suppliers that bill for prosthetics and custom-fabricated orthotics must meet the supplier standards in § 424.57, the quality standards (discussed in section II.A.6. of this proposed rule) and be accredited by one of the CMS-approved accrediting organizations.

We have proposed in § 424.535(a)(2)(iii) that we may revoke a qualified supplier's enrollment from Medicare for billing for prosthetics and custom-fabricated orthotics that are not furnished by a qualified practitioner and fabricated by a qualified practitioner or a qualified supplier at a facility that meets such criteria as the Secretary determines appropriate. This is particularly important because for those qualified practitioners who are not eligible to be enrolled in Medicare or who are not permitted to opt out of Medicare, there will be no CMS repository of information about their licensure or certification. The qualified supplier would be responsible for ensuring that the qualified practitioners who furnish or the qualified practitioners and qualified suppliers who fabricate the items for which the qualified supplier submits a bill meet the requirements of this rule. The decision about revocation based on the authority in § 424.535(a)(2)(iii) will be made based on the facts and circumstances of the particular situation, and will not be based on a single individual billing or miscoding mistake alone on the part of a supplier. We are specifically seeking comment on the implementation of this requirement, including how DMEPOS suppliers envision that they would comply with the requirements that they can bill only for prosthetics and custom-fabricated orthotics that have been furnished by qualified practitioners and fabricated by qualified practitioners or qualified suppliers at a facility that meets such criteria as the Secretary determines appropriate.

5. Requirements for Accreditation Organizations

Section 1834(a)(20)(B) of the Act requires the Secretary to designate and approve one or more independent accreditation organizations to apply the quality standards required in section 1834(a)(20)(A) of the Act. In the August 18, 2006 final rule (71 FR 48354), we implemented our regulations at § 424.58 that specified the criteria that all approved accreditation organizations must meet. In this proposed rule, we would specify requirements for any of the CMS-approved accreditation organizations that accredit suppliers fabricating prosthetics and custom-fabricated orthotics. In § 424.58, we are proposing to redesignate paragraphs (c) through (e), as paragraphs (d) through (f), and adding a new paragraph (c). In paragraph (c), we would specify that any approved accreditation organization must meet the following additional accreditation requirements to accredit suppliers that bill for prosthetics and custom-fabricated orthotics. In addition to meeting the current requirements set forth under § 424.58, the accreditation organization must be one of the following:

- The ABC.
- The BOC.
- An approved DMEPOS accreditation organization that has standards equivalent to the ABC or BOC.

We are proposing to define ''a DMEPOS accreditation organization that has standards equivalent to the ABC or BOC'' as one that employs or contracts with an orthotist, prosthetist, occupational therapist, or physical therapist who meets the qualified practitioner definition at § 424.57(a) and who is utilized for the purpose of surveying the supplier for compliance, and has the authority to approve or deny accreditation of qualified suppliers.

We believe that these proposed requirements are in concert with the provisions of section 1834(h) of the Act requiring that the supplier be accredited by the ABC, the BOC or accredited by a program that the Secretary determines has accreditation and approval standards that are essentially equivalent to those of such Board. We are specifically seeking comment on the proposed definition.

6. Quality Standards Required in Section 1834(a)(20) of the Act

a. Overview of and Process for Updating the Quality Standards

The quality standards required by section 1834(a)(20) of the Act are used by the accreditation organizations in order to determine whether a supplier meets statutory and regulatory requirements and therefore can be accredited. Any supplier would have to maintain these standards in order to meet the accreditation requirements and be approved as a qualified supplier to bill, continue to bill or fabricate Medicare Part B prosthetics and custom-fabricated orthotics.

After issuance of the final rule, we would update the DMEPOS quality standards to reflect the provisions contained in the final rule resulting from this proposed rule. The revised quality standards would include specifically the requirements that qualified practitioners must meet to furnish and fabricate prosthetics and custom-fabricated orthotics and that qualified suppliers must meet in order to fabricate and bill Medicare for prosthetics and custom-fabricated orthotics. We plan to solicit comments on the proposed updates to the quality standards as we have done in the past,

and as set forth in section 1834(a)(20)(E) of the Act, by posting the proposed updates to the quality standards on our Web site at: *www.cms.gov/medicareprovidersupenroll.* The quality standards are updated via our subregulatory process. Therefore, while we are notifying the public of our intent to update the quality standards, we are not, in this proposed rule, soliciting comment on the quality standards or the process for updating these standards.

b. Effective Date for Compliance With New Quality Standards

We are proposing in § 424.57(c)(22)(ii) that qualified suppliers who bill Medicare for prosthetics and custom-fabricated orthotics would need to meet the requirements included in the final rule no later than 1 year after the posting date of the final quality standards or at the time of the supplier's re-accreditation cycle, whichever is later. For qualified practitioners, we would expect them to meet the licensure and certification requirements proposed and subsequently finalized via rulemaking within 1 year of publication of the final rule. This takes into consideration the average length of time (5.5 months) needed by a DMEPOS supplier to complete the DMEPOS accreditation process, in addition to the time that may be needed for an eligible professional to become a qualified practitioner and become licensed or certified, as well as an extended period due to the additional numbers of suppliers or individuals that may need to meet the new requirements. We are requesting comment on the proposed implementation schedule so that we may ensure that there is no disruption in patient access to services or care.

If an ocularist, orthotist, prosthetist, physicians, pedorthist, occupational therapist, physical therapist or any other eligible professional is not furnishing or fabricating prosthetics or custom-fabricated orthotics, then they would not need to meet the specific prosthetics and custom-fabricated orthotics requirements in this proposed rule. Similarly, if an enrolled DMEPOS supplier is not billing for the prosthetics and custom-fabricated orthotics subject to the provisions of this proposed rule, then the supplier would not need to meet the specific prosthetics and custom-fabricated orthotics requirements in this proposed rule.

B. List of Prosthetics and Certain Custom-Fabricated Orthotics

The requirements of section 1834(h)(1)(F) of the Act apply to all prosthetics and certain custom-fabricated orthotics described in section 1834(h)(1)(F)(ii) of the Act. Section 1834(h)(1)(F)(ii)(I) of the Act, as added by section 427 of BIPA, states that an item described in this clause is an item of custom-fabricated orthotics that requires education, training, and experience to custom-fabricate and that is included in a list established by the Secretary. Section 1834(h)(1)(F)(ii)(I) of the Act also specifies that an item of custom-fabricated orthotics does not include shoes and shoe inserts.

Section 1834(h)(1)(F)(ii)(II) of the Act as added by section 427 of BIPA states that the Secretary, in consultation with appropriate experts in orthotics (including national organizations representing manufacturers of the same), shall establish and update as appropriate a list of items to which this subparagraph applies. No orthotic may be included in such list unless the item is individually fabricated for the patient over a positive model of the patient as defined later. On August 19, 2005, we issued program instructions (Transmittal 656, CR 3959) implementing the list of HCPCS codes describing prosthetics and custom-fabricated orthotics subject to the requirements of section 1834(h)(1)(F) of the Act. The list of HCPCS codes describing items subject to the requirements of section 1834(h)(1)(F) of the Act has been updated to reflect changes in HCPCS codes that have occurred since 2005. This list of HCPCS codes describing items subject to the requirements of section 1834(h)(1)(F) of the Act would continue to be updated through program instructions, as needed. The list is available on the CMS Web site at *www.cms.gov/medicareprovidersupenroll*.

In keeping with the statute's intent to consult with appropriate experts in developing the list, we not only reviewed the Committee's recommendations, but also consulted with the following:

- American Physical Therapy Association.
- Medicare Pricing, Data, Analysis and Coding (PDAC) contractor(s).
- Orthotic & Prosthetic Alliance.
- The American Occupational Therapy Association.
- The American Orthotic & Prosthetic Association.
- The U.S. Department of Veterans Affairs.

To implement this statutory provision, we propose to add the following definitions in § 424.57(a):

- Positive model of the patient means a particular type of custom fabrication in which one of the following occurs:

++ Is molded to the patient model as a negative impression taken of the patient's body part and a positive model rectification are constructed.

++ A Computer Aided Design-Computer Aided Manufacturing (CAD–CAM) system, by use of digitizers, transmits surface contour data to software that the practitioner uses to rectify or modify the model on the computer screen. The data depicting the modified shape is electronically transmitted to a commercial milling machine that carves the rectified model.

++ A direct formed model is one in which the patient serves as the positive model. The device is constructed over the model of the patient and is then fabricated to the patient. The completed custom fabrication is checked and all the necessary adjustments are made.

- Custom-fabricated means an item that is individually made for a specific patient. Specifically, a custom-fabricated item is a device that is fabricated based on clinically derived and rectified castings, tracings, measurements, and other images such as x-rays of the body part. The fabrication may involve using calculation, templates and components. This process requires the use of basic materials including, but not limited to plastic, metal, leather or cloth in the form of uncut or unshaped sheets, bars or other basic forms and involves substantial work such as vacuum forming, cutting, bending, molding, sewing, drilling, laminating, and finishing prior to fitting on the patient. An item is considered custom-fabricated if it is constructed by using one of the positive model techniques described in the definition of positive model of the patient.

Lastly, we would specify in § 424.57(d)(2) that items on the list must be—(1) furnished by a qualified practitioner; (2) fabricated by a qualified practitioner or a qualified supplier at a facility that meets such criteria as the Secretary determines appropriate; and (3) billed by a qualified supplier or, submitted as a claim by a beneficiary.

The list would be updated through periodic program instructions to reflect any changes. We intend to update the list as needed on the CMS Web site at *www.cms.gov/medicareprovidersupenroll.* We note that the list of services and supplies that are subject to the provisions of this proposed rule is being provided for information only. We are not, in this proposed rule, soliciting comments on the list.

We would continue to consult with experts in orthotics as changes in positive model techniques occur that might impact the definition and list of items subject to section 1834(h)(1)(F) of the Act. Any such changes to the list of

items would be issued through program instructions. We would continue to ensure that any change to the list of prosthetics and custom-fabricated orthotics is done in concert with our established processes.

We would issue contractor instructions and a provider educational article detailing the list of HCPCS codes for the prosthetics and custom-fabricated orthotic items to which the requirements apply, as well as instructions to DMEPOS suppliers regarding billing, data collection, and systems operations following the publication of the final rule. Any changes to the list items would also be published in future CMS contractor instructions.

III. Collection of Information Requirements

A. Background

Under the Paperwork Reduction Act of 1995, we are required to provide 60-day notice in the **Federal Register** and solicit public comment before a collection of information requirement is submitted to the Office of Management and Budget (OMB) for review and approval. In order to fairly evaluate whether an information collection should be approved by OMB, section 3506(c)(2)(A) of the Paperwork Reduction Act of 1995 requires that we solicit comment on the following issues:

- The need for the information collection and its usefulness in carrying out the proper functions of our agency.
- The accuracy of our estimate of the information collection burden.
- The quality, utility, and clarity of the information to be collected.
- Recommendations to minimize the information collection burden on the affected public, including automated collection techniques.

B. ICRs Regarding DMEPOS Suppliers and Eligible Professionals Providing Custom-Fabricated Orthotics (§ 424.57)

1. Accreditation for Physicians and Practitioners Enrolled as DMEPOS Suppliers

Under § 424.57(c)(22), DMEPOS suppliers that furnish, fabricate and bill for prosthetics or custom-fabricated orthotics must meet all accreditation requirements specified in these provisions, and be licensed in orthotics, pedorthics, or prosthetics in the state in which its practice is located (if the state requires such licensure). Table 1 identifies categories and approximate numbers of individuals who, as of February 2014: (1) Are enrolled in Medicare as DMEPOS suppliers; (2) have billed Medicare for prosthetic devices; and (3) are ABC or BOC certified. This data is based on internal CMS statistics, though the figures in Table 1 are merely rough estimates for purposes of this proposed rule. These individuals have met all applicable state licensure requirements (for example, for furnishing prosthetics).

TABLE 1—PROSTHETICS

Category	Number enrolled as DMEPOS suppliers	Number who are ABC or BOC certified
Prosthetists	8,000	5,000
Physicians	5,000	3,000
Physical and Occupational Therapists	1,000	500
Ocularists	400	200
Orthotists	1,500	800
Pedorthists	900	500
Total	16,800	10,000

The 10,000 physicians and practitioners in Table 1 who are enrolled as DMEPOS suppliers and are accredited would meet the requirements of proposed § 424.57(c)(22); hence, the information collection requirements in this proposed rule would not affect them. However, the remaining 6,800 would need to obtain ABC or BOC accreditation in order to bill Medicare for prosthetics.

Table 2 identifies categories and approximate numbers of individuals who, as of February 2014: (1) Are enrolled in Medicare as DMEPOS suppliers; (2) have billed Medicare for custom-fabricated orthotics; and (3) are ABC or BOC certified. This data, too, is based on internal CMS statistics. All of these persons have met the applicable state licensure requirements (for example, for furnishing custom-fabricated orthotics).

TABLE 2—CUSTOM-FABRICATED ORTHOTICS

Category	Number enrolled as DMEPOS suppliers	Number who are ABC or BOC certified
Prosthetists	4,000	2,000
Physicians	3,000	1,500
Physical and Occupational Therapists	1,000	500
Ocularists	300	200
Orthotists	4,000	2,500
Pedorthists	700	400
Total	13,000	7,100

The 7,100 physicians and practitioners in Table 2 who are currently enrolled as DMEPOS suppliers and are accredited would meet the requirements of proposed § 424.57(c)(22). Accordingly, the information collection requirements in this proposed rule would not affect them. However, the remaining 5,900 would need to obtain ABC or BOC accreditation in order to bill Medicare for custom-fabricated orthotics.

Although it is highly likely that some of the individuals in Tables 1 and 2 provide both prosthetics and custom-fabricated orthotics, we have chosen to assume that the tables reflect unduplicated counts of physicians and practitioners.

We cannot estimate the number of physicians and practitioners in the universe of 12,700 (6,800 + 5,900) who would either decline to obtain accreditation because of cost, other factors or inability to meet the accreditation requirements. We believe that the overwhelming majority of the 12,700 physicians and practitioners would elect to and become accredited to continue to provide, bill, or both provide and bill for these devices. We expect that a lower percentage of physicians, physical therapists, and occupational therapists would seek accreditation than would prosthetists, orthotists, pedorthists, and ocularists. This is because furnishing prosthetics and custom-fabricated orthotics traditionally constitutes a smaller portion of their practices than is the case with the latter four practitioner types. For purposes of this burden estimate only, and as outlined in Table 3, we project that—(1) all prosthetists, orthotists, ocularists, and pedorthists would pursue accreditation; and (2) 90 percent of physicians, physical therapists, and occupational therapists would seek accreditation. This results in a base figure of 12,250 physicians and practitioners that is only slightly less than the 12,700-person universe mentioned previously.

TABLE 3—NUMBER OF PHYSICIANS AND PRACTITIONERS SEEKING ACCREDITATION

Category	Approximate percentage of universe *	Number
Prosthetists	40.8	5,000
Physicians	25.7	3,150
Physical and Occupational Therapists	7.3	900
Ocularists	2.5	300
Orthotists	18.0	2,200
Pedorthists	5.7	700
Total		12,250

* Rounded to nearest tenth.

The hour and cost burdens on these physicians and practitioners of completing and submitting the paperwork associated with accreditation would vary because each physician's and practitioner's specific circumstances differ. However, we believe that an average per physician/practitioner time burden of 10 hours is reasonable, though we welcome comments on this estimate. This 10-hour period would include the time involved in completing and submitting the necessary accreditation paperwork, including obtaining any required supporting documentation.

Many of the 12,250 physicians and practitioners are part of group practices that have administrative personnel who handle various paperwork functions on behalf of the group's physicians and practitioners. It is probable that some administrative personnel would complete and submit the physicians' and practitioners' accreditation paperwork. However, we have no data that can help us predict the number of instances in which this would occur. In an effort not to underestimate the potential cost burden, we will assume for purposes of our analysis that physicians and practitioners would complete and submit their accreditation applications.

Table 4 identifies the mean hourly wages for the Bureau of Labor Statistics (BLS) categories that most appropriately apply to the physician and practitioner types mentioned previously. The data is from May 2015, the most recent month for which information is available; see *http://www.bls.gov/oes/current/oes_nat.htm#43-0000.* As there are no specific BLS categories for ocularists and pedorthists, we will include them within the larger category of orthotists and prosthetists.

TABLE 4—BLS MEAN HOURLY WAGES USING MAY 2015 DATA

BLS category	BLS mean hourly wage ($)	Hourly wage with fringe benefits and overhead ($)
Orthotists and Prosthetists *	33.63	67.26
Physicians and Surgeons	97.33	194.66
Physical Therapists	41.25	** 82.50
Occupational Therapists	39.27	** 78.54

* Includes ocularists and pedorthists.

** The average mean hourly wage for physical and occupational therapists combined, which we will use in our analysis, is $80.52 (or ($82.50 + $78.54)/2).

Table 5 identifies the total hour and cost burdens for enrolled physicians and practitioners seeking accreditation. The cost burdens are based on the wage estimates in Table 4.

TABLE 5—TOTAL HOUR AND COSTS BURDENS FOR ENROLLED PHYSICIANS AND PRACTITIONERS SEEKING ACCREDITATION

Category	Number of physicians and practitioners	Hour burden per submission	Total hour burden	Hourly wage ($)	Total cost burden ($)
Prosthetists	5,000	10	50,000	67.26	3,363,000
Physicians	3,150	10	31,500	194.66	6,131,790
Physical and Occupational Therapists	900	10	9,000	80.52	724,680
Ocularists	300	10	3,000	67.26	201,780
Orthotists	2,200	10	22,000	67.26	1,479,720
Pedorthists	700	10	7,000	67.26	470,820
Total	12,250		122,500		12,371,790

Although this burden would be incurred in the first year of our proposed requirement, 3 years is the maximum length of an OMB approval. Therefore, we must average the totals in Table 5 over a 3-year period. This result in the following average annual figures of: (1) 4,083 affected physicians and practitioners; (2) 40,830 ICR burden hours; and (3) $4,123,930 in ICR burden costs.

2. Accreditation for Newly Enrolling Physicians and Practitioners

Table 6 outlines the annual number of physicians and practitioners who, based on historical CMS data, would—(1) seek accreditation in accordance with § 424.57(c)(22); (2) enroll in Medicare as DMEPOS suppliers; and (3) bill Medicare for prosthetics or custom-fabricated orthotics.

TABLE 6—ANNUAL NUMBER OF PHYSICIANS AND OTHER PRACTITIONERS SEEKING ACCREDITATION, ENROLLING IN MEDICARE AS DMEPOS SUPPLIERS, AND BILLING FOR PROSTHETICS OR CUSTOM-FABRICATED ORTHOTICS

Category	Number of enrollees
Prosthetists	400
Physicians	250
Physical and Occupational Therapists	100
Ocularists	40
Orthotists	400
Pedorthists	100
Total	1,290

Table 7 outlines the annual hour and cost burdens for newly enrolling physicians and practitioners. The table applies the 10-hour and BLS wage estimates mentioned previously.

TABLE 7—ANNUAL HOUR AND COST BURDENS FOR NEWLY ENROLLING PHYSICIANS AND PRACTITIONERS SEEKING ACCREDITATION

Category	Number of physicians and practitioners	Hour burden per submission	Total hour burden	Hourly wage ($)	Total cost burden ($)
Prosthetists	400	10	4,000	67.26	269,040
Physicians	250	10	2,500	194.66	486,650
Physical and Occupational Therapists	100	10	1,000	80.52	80,520
Ocularists	40	10	400	67.26	26,904
Orthotists	400	10	4,000	67.26	269,040
Pedorthists	100	10	1,000	67.26	67,260
Total	1,290		12,900		1,199,414

3. Reporting Accreditation via the CMS–855S (Medicare Enrollment Application: Durable Medical Equipment, Prosthetics, Orthotics, and Supplies (DMEPOS) Suppliers)

The CMS–855S is currently approved under OMB control number 0938–1056. In order to account for the application information collection requirements contained in this notice of proposed rulemaking, we will submit a revised information collection request for OMB review and approval.

a. Enrolled Physicians and Practitioners

Upon becoming accredited, physicians and practitioners would need to report the accreditation to us via a CMS–855S change of information request. We estimate that it would take physicians and practitioners 30 minutes to complete and submit this change request. Table 8 outlines the total hour and cost burdens of this requirement.

TABLE 8—TOTAL HOUR AND COST BURDENS FOR ENROLLED PHYSICIANS AND PRACTITIONERS REPORTING ACCREDITATION VIA CMS–855S

Category	Number of physicians and practitioners	Hour burden per submission	Total hour burden	Hourly wage ($)	Total cost burden ($)
Prosthetists	5,000	0.5	2,500	67.26	168,150
Physicians	3,150	0.5	1,575	194.66	306,590
Physical and Occupational Therapists	900	0.5	450	80.52	36,234
Ocularists	300	0.5	150	67.26	10,089
Orthotists	2,200	0.5	1,100	67.26	73,986
Pedorthists	700	0.5	350	67.26	23,541
Total	12,250		6,125		618,590

Although this burden would be incurred in the first year of our proposed requirement, we must average the totals in Table 8 over a 3-year period. This results in: (1) 4,083 affected physicians and practitioners; (2) 2,042 ICR burden hours; and (3) $206,197 in ICR burden costs.

b. Newly Enrolling Physicians and Practitioners

When completing the CMS–855S initial enrollment application, physicians and practitioners would have to furnish accreditation information on the form. We estimate that this would take 30 minutes per application. Table 9 outlines the total annual hour and cost burdens.

TABLE 9—TOTAL ANNUAL HOUR AND COST BURDENS FOR NEWLY ENROLLING PHYSICIANS AND PRACTITIONERS REPORTING ACCREDITATION VIA CMS–855S

Category	Number of physicians and practitioners	Hour burden per submission	Total hour burden	Hourly wage ($)	Total cost burden ($)
Prosthetists	400	0.5	200	67.26	13,452
Physicians	250	0.5	125	194.66	24,333
Physical and Occupational Therapists	100	0.5	50	80.52	4,026
Ocularists	40	0.5	20	67.26	1,345
Orthotists	400	0.5	200	67.26	13,452
Pedorthists	100	0.5	50	67.26	4,026
Total	1,290		645		60,634

4. Requirements for Becoming a Qualified Practitioner

Under § 424.57(d)(3), all eligible professionals who wish to become qualified practitioners, to provide prosthetics or custom-fabricated orthotics, and who are not enrolled in Medicare as DMEPOS suppliers (and therefore do not bill Medicare for these items) must—

- Be licensed in orthotics, pedorthics, or prosthetics in the state in which his or her practice is located if the state requires such licensure; or
- If the state does not require such licensure—
- Be specifically trained and educated to provide and manage the provision of pedorthics, prosthetics, or orthotics; and
- Meet the certification requirements specified in § 424.57(d)(3)(i)(B)(2).

Specifically, this section discusses the hour and cost burdens for physicians and practitioners who are—(1) not enrolled in Medicare as DMEPOS suppliers; (2) located in a state that does not require licensure in orthotics, pedorthics, and prosthetics; and (3) must obtain certification under § 424.57(d)(3).

Approximately 15 states require licensure to furnish prosthetics and custom-fabricated orthotics. However, we do not have concrete data regarding the number of unenrolled and unlicensed individuals in the 35 other states or the territories who provide these items, for these persons do not bill Medicare for them. For purposes of this burden estimate, and solely to establish a rough figure on which commenters can submit feedback to us, we project that approximately 5,000 physicians and practitioners would seek certification within the first year following the implementation of § 424.57(d)(3). We estimate that 500 physicians and practitioners would seek certification under § 424.57(d)(3) each year thereafter.

As we lack sufficient data regarding the number of qualified practitioners, who fall within the universe of 5,000 physicians and practitioners, we will use the figures in Table 3 as a baseline estimate. To illustrate, orthotists represented 18 percent of the 12,250 suppliers referenced in Table 3 (or 2,200 out of 12,250); we project that 18 percent of the 5,000-person universe (or 900) would consist of orthotists. We also utilized the wage estimates and the 10-hour projection. This results in the following Year 1 hour and cost burdens associated with § 424.57(d)(3).

TABLE 10—HOUR AND COST BURDENS ASSOCIATED WITH § 424.57(d)(3) IN YEAR 1

Category	Number of physicians and practitioners	Hour burden per submission	Total hour burden	Hourly wage ($)	Total cost burden ($)
Prosthetists	2,040	10	20,400	67.26	1,372,104
Physicians	1,285	10	12,850	194.66	2,501,381
Physical and Occupational Therapists	365	10	3,650	80.52	293,898
Ocularists	125	10	1,250	67.26	84,075
Orthotists	900	10	9,000	67.26	605,340
Pedorthists	285	10	2,850	67.26	191,691
Total	5,000		50,000		5,048,489

Table 11 reflects the annual hour and cost burdens in Year 2 and each year thereafter. The figures are based on the 500-individual universe.

TABLE 11—ANNUAL HOUR AND COST BURDENS OF § 424.57(d)(3) IN YEAR 2 AND SUBSEQUENT YEARS

Category	Number of physicians and practitioners	Hour burden per submission	Total hour burden	Hourly wage ($)	Total cost burden ($)
Prosthetists	204	10	2,040	67.26	137,210
Physicians	128	10	1,280	194.66	249,165
Physical and Occupational Therapists	36	10	360	80.52	28,987
Ocularists	13	10	130	67.26	8,744
Orthotists	90	10	900	67.26	60,534
Pedorthists	29	10	290	67.26	19,505
Total	500		5,000		504,145

We averaged the totals in Tables 10 and 11 over a 3-year period. This results in the following annual figures of: (1) 2,000 affected physicians and practitioners; (2) 20,000 burden hours; and (3) $2,018,926.

C. Final ICR Hour and Cost Burdens

We estimate the following total ICR burdens associated with our proposed provisions in each of the first 3 years of this rule.

TABLE 12—SUMMARY OF ANNUAL INFORMATION COLLECTION BURDENS

Regulation section(s)	OMB Control No.	Number of respondents	Number of responses	Burden per response (hours)	Total annual burden (hours)	Hourly labor cost ($)	Total labor cost ($)	Total cost ($)
§ 424.57(c)(22)—Enrolled seeking accreditation.	0938-New	12,250	12,250	10	122,250	†	4,123,930	4,123,930
§ 424.57(c)(22)—Newly enrolling seeking accreditation.	0938-New	1,290	1,290	10	12,290	††	1,199,414	1,199,414
§ 424.57(c)(22)—Enrolled reporting accreditation via 855S.	0938-1056	4,083	4,083	0.5	2,042	†††	206,197	206,197
§§ 424.57(c)(22)—Newly enrolling reporting accreditation via 855S.	0938-1056	1,290	1,290	0.5	645	††††	60,634	60,634
§ 424.57(d)(3) ***	0938-New	2,000	2,000	10	20,000	†††††	2,018,926	2,018,926
Total		12,746	12,746		75,807		7,609,101	7,609,101

Note: There are no capital/maintenance costs associated with the information collection requirements contained in this rule; therefore, we have removed the associated column from Table 1.

† See the values listed in Table 5.

†† See the values listed in Table 7.

††† See the values listed in Table 8.

†††† See the values listed in Table 9.

*** The values are based on the 3-year average of the values listed in tables 10 and 11. Three years is the maximum length of an OMB approval.

††††† See the values listed in Tables 10 and 11.

We welcome comments on all burden estimates contained in the collection of information section of this notice of proposed rulemaking.

If you comment on these information collection and recordkeeping requirements, please do either of the following:

1. Submit your comments electronically as specified in the **ADDRESSES** section of this proposed rule; or

2. Submit your comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, Attention: CMS Desk Officer, (CMS–6012–P), Fax: (202) 395–6974; or Email: *OIRA_submission@omb.eop.gov*.

IV. Regulatory Impact Statement

This proposed rule would implement a statutory mandate that only individuals and suppliers qualified to do so can furnish, fabricate or bill for prosthetics and custom fabricated orthotics. The statute was enacted to ensure quality of care and eliminate care or services furnished or fabricated by individuals who were not qualified to do so. The idea inherent in the statute is not to deny necessary services but to ensure that the individuals and suppliers furnishing or fabricating these items are qualified to do so. As with all program changes, whether undertaken by us or in response to statutory imperative—as is the case with this rule—we always consider the impact of the proposed changes on access to care. In the case of the statutory provisions being implemented via this rule, we do not believe beneficiary access to care will be significantly affected. This rule involves only a very small percentage of the overall universe of physician, non-physician practitioner, and organizational suppliers. Of those affected, we believe that many either already comply with our proposed requirements or would come into compliance. We acknowledge that there may be some discontinuity of care in instances where a beneficiary seeks or has been receiving items from an individual or supplier that does not meet the requirements of the statute. However, we believe it will be minimal, and the benefit in improved quality of care outweighs the possible discontinuity. In addition, the phased in effective dates for compliance will allow reasonable time for practitioners and suppliers to meet the statutory and regulatory requirements thus minimizing any disruption in access to needed services. We welcome comment on these assumptions.

In summary, we believe that our proposed rule would, as the Congress ostensibly intended in its enactment of section 1834(h)(1)(F) of the Act, protect Medicare beneficiaries and the Medicare Trust Funds by ensuring that only qualified practitioners furnish prosthetics and custom fabricated orthotics.

We have examined the impact of this rule as required by Executive Order 12866 on Regulatory Planning and Review (September 30, 1993), Executive Order 13563 on improving Regulation and Regulatory Review (January 18, 2011), the Regulatory Flexibility Act (RFA) (September 19, 1980, Pub. L. 96–354), section 1102(b) of the Social Security Act, section 202 of the Unfunded Mandates Reform Act of 1995 (March 22, 1995, Pub. L. 104–4), Executive Order 13132 on Federalism (August 4, 1999) and the Congressional Review Act (5 U.S.C. 804(2)).

Executive Order 12866 and 13563 directs agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). A regulatory impact analysis (RIA) must be prepared for major rules with economically significant effects ($100 million or more in any 1 year).

As previously stated in section III. of this proposed rule, we estimate that 12,250 physicians and practitioners who are enrolled as DMEPOS suppliers and who have billed Medicare for prosthetics or custom-fabricated orthotics, but who are not accredited, would seek to obtain accreditation under § 424.57(c)(22) in order to continue billing for such items. Though accreditation figures vary by accreditation organization and by supplier type, we project (based on internal statistics and our review of the range of accreditation fees charged by various accreditation organizations) that the average annual cost for a physician or practitioner to obtain and remain accredited under § 424.57(c)(22) would be roughly $1,500; this represents the fee charged by the applicable accreditation organization. (This is predicated on a triennial accreditation cycle, with the accreditation costs being incurred incrementally over the 3-year period.) This results in an annual cost to these individuals of $18,375,000 (12,250 × $1,500). In combining this cost with the ICR costs of this proposed rule (as shown in section III. of this proposed rule), we determine that in no year would the total costs of this proposed rule exceed $100 million. Therefore, this is not a major rule.

The RFA requires agencies to analyze options for regulatory relief of small businesses. For purposes of the RFA, small entities include small businesses, nonprofit organization and small governmental jurisdictions. Most entities and most other providers and suppliers are small entities, either by nonprofit status or by having revenues of $7.5 million to $38.5 million in any 1 year. Individuals and states are not included in the definition of a small entity. We are not preparing an analysis for the RFA because we have determined, and the Secretary certifies, that this proposed rule would not have a significant economic impact on a substantial number of small entities for two reasons. First, the number of affected parties represents only an extremely small percentage of the universe of over 1.5 million individual and organizational medical providers nationwide. Second, we do not believe an annual cost of $1,500 combined with the occasional submission of paperwork (as described in section III. of this proposed rule) would have a significant economic impact on these suppliers and practitioners. We believe these costs would be less than 3 percent of the supplier's or practitioner's revenue, as defined by HHS for significant impact.

In addition, section 1102(b) of the Act requires us to prepare a regulatory impact analysis if a rule may have a significant impact on the operations of a substantial number of small rural hospitals. This analysis must conform to the provisions of section 603 of the RFA. For purposes of section 1102(b) of the Act, we define a small rural hospital as a hospital that is located outside of a Metropolitan Statistical Area for Medicare payment regulations and has fewer than 100 beds. We are not preparing an analysis for section 1102(b) of the Act because we have determined, and the Secretary certifies, that this proposed rule would not have a significant impact on the operations of a substantial number of small rural hospitals.

Section 202 of the Unfunded Mandates Reform Act of 1995 also requires that agencies assess anticipates costs and benefits before issuing any rule whose mandates require spending in any 1 year of $100 million in 1995 dollars, updated annually for inflation, as the anticipated annual spending is $30 million. In 2016, that threshold is approximately $146 million. This proposed rule would have no consequential effect on state, local or tribal governments or on the private sector.

Executive Order 13132 establishes certain requirements that an agency

must meet when it promulgates a proposed rule (and subsequent final rule) that imposes substantial direct requirement cost on state and local governments, preempts state law, or otherwise has Federalism implications. Since this rule does not impose any costs on state or local governments, the requirements of Executive Order 13132 are not applicable.

There were several uncertainties associated with our proposed projections. First, we could not determine precisely the number of DMEPOS suppliers who would choose not to pursue accreditation or be unable to become accredited. Second, we had no data on which to base our 5,000-person and 500-person estimates in Tables 10 and 11. As such, these estimates are merely designed to solicit comment on the number of individuals who would be affected by § 424.57(d)(3). Third, we welcome comment on our estimation of $1,500 as the annual cost for a qualified supplier to obtain and remain accredited in accordance our proposals. Fourth, as we lack sufficient data to estimate any potential burden on fabricating facilities, we request comments regarding the types of possible burden and, if there are any, the costs involved.

We note that by limiting payment to the circumstances described in this rule, our regulations would likely reduce the provision of and billing for these items to instances consistent with the statute. We believe, however, that this would enhance the quality of services and items by ensuring that unqualified entities and individuals are not furnishing such goods, while simultaneously having no real effect on how prices are set for them.

In accordance with the provisions of Executive Order 12866, this proposed rule was reviewed by the Office of Management and Budget.

V. Response to Comments

Because of the large number of public comments we normally receive on **Federal Register** documents, we are not able to acknowledge or respond to them individually. We will consider all comments we receive by the date and time specified in the **DATES** section of this preamble, and, when we proceed with a subsequent document, we will respond to the comments in the preamble to that document.

List of Subjects for 42 CFR Part 424

Emergency medical services, Health facilities, Health professions, Medicare.

For the reasons set forth in the preamble, the Centers for Medicare & Medicaid Services proposes to amend 42 CFR part 424 as set forth below:

PART 424—CONDITIONS FOR MEDICARE PAYMENT

■ 1. The authority citation for part 424 continues to read as follows:

Authority: Sections 1102 and 1871 of the Social Security Act (42 U.S.C. 1302 and 1395hh).

■ 2. Section 424.57 is amended as follows:

■ a. In paragraph (a) by adding the definition of ''Custom-fabricated orthotics,'' Fabrication facility'', ''Occupational therapist'', ''Ocularist'', ''Orthotist'', ''Pedorthist'', ''Physical therapist'', ''Physician'', ''Positive model of the patient'', ''Prosthetics'', ''Prosthetist'', ''Qualified practitioner'', and ''Qualified supplier'' in alphabetical order and in the definition of ''DMEPOS supplier'' by removing the reference ''paragraphs (c) and (d) of this section'' and adding in its place the reference ''paragraphs (c) and (h) of this section''.

■ b. Revising paragraph (c)(22);

■ c. In paragraph (c)(26) removing the reference ''paragraph (d) of this section'' and adding in its place the reference ''paragraph (h) of this section'';

■ d. Redesignating paragraph (d) as paragraph (h) and adding a new paragraph (d);

■ e. In newly designated paragraph (h)(1)(i) and (ii), removing the reference ''paragraph (d)(15) of this section'' and adding in its place the reference ''paragraph (h)(15) of this section''.

■ f. In newly designated paragraphs (h)(1)(i), (ii), (h)(4)(ii)(B), (h)(5)(iii) introductory text, (h)(12), and (h)(15)(ii), removing the reference ''paragraph (d)'' of this section and adding in its place the reference ''paragraph (h)'' of this section.

■ g. In newly designated paragraphs (h)(2)(i), (ii), and (iii) removing the reference ''paragraph (d)(3) of this section'' and adding in its place the reference ''paragraph (h)(3) of this section''.

■ h. In newly designated paragraphs (h)(3)(i), removing the references ''paragraph (d)(2) of this section'' and adding in its place the reference ''paragraph (h)(2)'' and removing the reference ''paragraph (d)(3)(ii) of this section'' and adding in its place the reference ''paragraph (h)(3)(ii) of this section''.

■ i. In newly designated paragraph (h)(15)(ii), removing the reference ''paragraph (d)(15)(i) of this section'' and adding in its place ''paragraph (h)(15)(i) of this section''.

The revisions and additions read as follows:

§ 424.57 Special payment rules for items furnished by DMEPOS suppliers and issuance of DMEPOS supplier billing privileges.

(a) * * *

Custom-fabricated orthotic means an item as listed in section 1861(s)(9) of the Act that meets all of the following:

(i) Is individually made for a specific patient.

(ii) Is constructed using one of the positive model techniques (as defined in this paragraph).

(iii) Is made based on clinically derived and rectified castings, tracings, measurements, and other images (such as x-rays) of the body part and may involve the use of calculations, templates, and components.

(iv) Is made using basic materials including, but not limited to the following:

(A) Plastic.

(B) Metal.

(C) Leather or cloth in the form of uncut or unshaped sheets or bars.

(D) Other basic forms and involves substantial work such as the following:

(*1*) Vacuum forming.

(*2*) Cutting.

(*3*) Bending.

(*4*) Molding.

(*5*) Sewing.

(*6*) Drilling.

(*7*) Laminating.

* * * * *

Fabrication facility means the physical structure that—

(1) Meets the requirements in paragraph (d)(4) of this section; and

(2) Must be used by a qualified practitioner or a qualified supplier to fabricate prosthetics or custom-fabricated orthotics that are billed to and paid for by Medicare.

* * * * *

Occupational therapist means an individual who meets the personnel qualifications for an occupational therapist as specified in § 484.4 of this chapter.

Ocularist means a trained technician skilled in the arts of fitting, shaping, and painting ocular prostheses who is certified by the National Examining Board of Ocularist.

Orthotist means an individual who meets the personnel qualifications for an orthotist as specified in § 485.70(d) of this chapter.

Pedorthist means an individual with specific training in footwear which includes other pedorthic devices to solve problems in, or related to, the foot.

* * * * *

Physical therapist means an individual who meets the personnel qualifications for a physical therapist as specified in § 484.4 of this chapter.

Physician means an individual who meets the personnel qualifications for a physician as specified in § 484.4 of this chapter.

Positive model of the patient means a particular type of custom fabrication in which one of the following modeling techniques is used:

(i) Molded to the patient model as a negative impression of the patient's body part and a positive model rectification are constructed.

(ii) Computer Aided Design-Computer Aided Manufacturing (CAD–CAM) system.

(iii) Direct formed model.

Prosthetics means an item as described in section 1861(s)(9) of the Act.

Prosthetist means an individual who meets the personnel qualifications for a prosthetist as specified in § 485.70(f) of this chapter.

Qualified practitioner means one of the following eligible professionals or other persons defined in paragraph (a) of this section who meets the prosthetic and custom-fabricated orthotic requirements specified in paragraph (d)(3) of this section:

(i) Occupational therapist.

(ii) Ocularist.

(iii) Orthotist.

(iv) Pedorthist.

(v) Physical therapist.

(vi) Physician.

(vii) Prosthetist.

Qualified supplier means a DMEPOS supplier as defined in paragraph (a) of this section that is accredited by a CMS-approved accreditation organization to fabricate prosthetics and custom-fabricated orthotics as described in § 424.58(c).

* * * * *

(c) * * *

(22)(i) *DMEPOS supplier requirements.* A DMEPOS supplier must be accredited by a CMS-approved accreditation organization in order to receive and retain a supplier billing number and to enroll in Medicare. The accreditation must indicate the specific products and services for which the DMEPOS supplier is accredited in order for the DMEPOS supplier to receive payment for those specific products and services.

(ii) *Requirements for DMEPOS suppliers fabricating or billing prosthetics and custom-fabricated orthotics.* Effective 1 year after the posting of the final revised quality standards or the next revalidation, whichever is later, a DMEPOS supplier fabricating or billing for prosthetics or any of the custom-fabricated orthotics identified on the list described in paragraph (d)(2) of this section must do all of the following:

(A) Meet the requirements specified in paragraph (c)(22)(i) of this section.

(B) Be accredited by a CMS-approved accreditation organization for orthotics and prosthetics as described in § 424.58(c). The accreditation must indicate the specific products and services for which the DMEPOS supplier is accredited in order for the qualified supplier (as defined in § 424.57(a)) to receive payment for the prosthetics and specific custom-fabricated orthotics.

(C) Notify the AO of any change in conditions, practices, or operations that were relied upon by the AO at the time of accreditation. This would include, but not be limited to, a requirement for notifying the AO of any changes in personnel, including changes in status or qualifications of employees of the qualified supplier or of any personnel utilized by the qualified supplier via contract or other business relationship. This requirement is included to ensure that qualified suppliers, once accredited, continue to meet all of the accreditation and other supplier standards.

* * * * *

(d) *Additional standards for qualified suppliers fabricating or billing for prosthetics or custom-fabricated orthotics, or qualified practitioners furnishing or fabricating prosthetics and custom-fabricated orthotics.*

(1) *General rule.* CMS makes payment for a bill or claim for a prosthetic or custom-fabricated orthotic identified on the list in paragraph (d)(2) of this section and meets all of the following:

(i) Furnished by a qualified practitioner.

(ii) Fabricated by a qualified practitioner or qualified supplier at a fabrication facility as defined in paragraph (a) of this section.

(iii)(A) Billed by a qualified supplier; or

(B) Submitted as a claim by a Medicare beneficiary.

(2) *List of prosthetics and custom-fabricated orthotics subject to the additional standards.* CMS maintains a list of prosthetics and custom-fabricated orthotics subject to the requirements in this section. The list is—

(i) Updated as necessary; and

(ii) Posted on the CMS Web site.

(3) *Training, licensure, and certification requirements for qualified practitioners.* (i) A qualified practitioner who is not enrolled in Medicare as a DMEPOS supplier must meet either of the following licensure and certification requirements:

(A) Licensed in orthotics, pedorthics or prosthetics by all States in which they practice.

(B) In States that do not provide licenses for orthotics, pedorthics or prosthetics a qualified practitioner must be—

(*1*) Specifically trained and educated to provide and manage the provision of pedorthics, prosthetics, and orthotics; and

(*2*) Certified by any of the following:

(*i*) ABC.

(*ii*) BOC.

(*iii*) A Secretary-approved organization that has standards equivalent to the ABC or BOC.

(ii) Qualified practitioners must meet the licensure, training, education and certification requirements specified in this section within 1 year of publication of the final rule.

(4) *Fabrication facility requirements.* A fabrication facility at which qualified suppliers and qualified practitioners fabricate prosthetics and custom-fabricated orthotics, as defined in § 424.57(a), must meet all of the following requirements:

(i) Be located within the United States or one of its territories.

(ii) Be a business that is organized, established and licensed under applicable state and federal laws.

(iii) Have a process for maintenance and production of fabrication records including the following:

(A) Job/work orders.

(B) Record tracking systems.

(C) Real time recordkeeping, for example, ensuring that records are updated as the fabrication takes place.

(iv) Have a quality assurance process to identify non-standard production outcomes, and improve fabrication outcomes.

(v) Have a periodic review and employee demonstration of fabrication/safety/communication/operations competencies with corrective action plans for staff that do not meet the minimal standards.

(vi) Have full time appropriately credentialed staff member(s) who are (qualified practitioners or qualified suppliers) onsite to fabricate and to supervise fabrication.

(vii) Have a laboratory area with appropriate safety equipment (for example, flammable material storage, gloves, safety glasses, proper ventilation).

(viii) Have a separate waiting area and chairs with armrests, as necessary.

(ix) Have a patient care and fitting rooms with appropriate levels of privacy and sanitation. Patient fitting and care areas should be separate from the fabrication area.

(x) Have disinfecting supplies, gloves, masks, and plastic for containing contaminated materials.

(xi) Have a fabrication facility information system, paper or digital, that can track the production, list component part number (and serial number if available), quantity, that is linked to patient information and be Health Insurance Portability and Accountability Act compliant. Such a system must allow facility staff and management, including those fabricating, to identify any parts that could be recalled at a later date.

(xii) Have parallel bars, a full-length mirror, and other appropriate assessment tools.

(xiii) Have a process using precautions to handle used patient devices that are contaminated.

(xiv) Have repair and disinfecting areas clearly labeled.

(xv) Have the ability to handle all potentially hazardous materials in facility properly.

(xvi) Have an emergency management plan and a safety management plan.

(xvii) Have policy for detecting/reporting counterfeit supplies.

(xviii) Have the proper tools, equipment, and computers commonly used in the fabrication of particular items and typically associated with the particular technical approach (negative impression/positive model, CAD–CAM, or direct formed), as applicable: These tools and equipment would include, but are not limited to the following

(A) Computers with appropriate graphics/modeling capacity and technology.

(B) Band saw.

(C) Disc sander.

(D) Sanding paper.

(E) Flexible shaft sander.

(F) Lathe.

(G) Drill press.

(H) Sewing machine.

(I) Grinding equipment.

(J) Paint-spraying equipment.

(K) Welding equipment.

(L) Alignment jig.

(M) Ovens capable of heating plastics for molding.

(N) Computer controlled milling machine.

(O) Lockable storage areas for raw materials and finished devices.

(P) Air compressor.

* * * * *

■ 3. Section 424.58 is amended as follows:

■ a. Revising the section heading.

■ b. Redesignating paragraphs (c) through (e) as paragraphs (d) through (f) respectively.

■ c. Adding a new paragraph (c).

The revision and addition read as follows:

§ 424.58 Requirements for DMEPOS accreditation organizations.

* * * * *

(c) *Additional requirements for accrediting qualified suppliers.* To accredit qualified suppliers that fabricate or bill Medicare for prosthetics and custom-fabricated orthotics as specified in § 424.57(c)(22)(ii), an independent accreditation organization must be one of the following:

(1) American Board for Certification in Orthotics and Prosthetics, Incorporated (ABC).

(2) Board for Orthotist/Prosthetist Certification International, Incorporated (BOC).

(3) An organization that—

(i) Employs or contracts with an orthotist, prosthetist, occupational therapist or physical therapist who—

(A) Meets the definition of qualified practitioner specified in § 424.57(a); and

(B) Is utilized for the purpose of surveying the supplier or practitioner for compliance; and

(ii) Has the authority granted by CMS to approve or deny the accreditation of qualified suppliers as defined in § 424.57(a) based on a determination that the organization has standards equivalent to the ABC or BOC.

* * * * *

■ 4. Section § 424.535 is amended as follows:

■ a. Revising the section heading.

■ b. In paragraph (a)(2) introductory text by removing the phrase ''the provider or supplier is—'' and adding in its place ''the provider or supplier is any of the following:''.

■ c. In paragraph (a)(2)(ii) by removing the phrase ''Is debarred, suspended, or'' and adding in its place the phrase ''Debarred, suspended or''.

■ d. Adding paragraph (a)(2)(iii).

The revision and addition reads as follows:

§ 424.535 Revocation of enrollment and billing privileges in the Medicare program.

(a) * * *

(2) * * *

(iii) A qualified supplier as defined in § 424.57(a) that submitted a claim for payment for a prosthetic or custom-fabricated orthotic that was not—

(A) Furnished by a qualified practitioner; and

(B) Fabricated by a qualified practitioner or qualified supplier as defined in § 424.57(a) at a fabrication facility as defined in § 424.57(a).

* * * * *

Dated: December 9, 2016.

Andrew M. Slavitt,

Acting Administrator, Centers for Medicare & Medicaid Services.

Dated: December 22, 2016.

Sylvia M. Burwell

Secretary, Department of Health and Human Services.

[FR Doc. 2017–00425 Filed 1–11–17; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 223

[Docket No. 160105011–6999–02]

RIN 0648–XE390

12-Month Finding on a Petition To List Giant and Reef Manta Rays as Threatened or Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; 12-month petition finding; request for comments.

SUMMARY: We, NMFS, announce a 12-month finding on a petition to list the giant manta ray (*Manta birostris*) and reef manta ray (*Manta alfredi*) as threatened or endangered under the Endangered Species Act (ESA). We have completed a comprehensive status review of both species in response to this petition. Based on the best scientific and commercial information available, including the status review report (Miller and Klimovich 2016), and after taking into account efforts being made to protect these species, we have determined that the giant manta ray (*M. birostris*) is likely to become an endangered species within the foreseeable future throughout a significant portion of its range. Therefore, we propose to list the giant manta ray as a threatened species under the ESA. Any protective regulations determined to be necessary and advisable for the conservation of the proposed threatened giant manta ray under ESA section 4(d) would be proposed in a subsequent **Federal Register** announcement. Should the proposed listing be finalized, we would also designate critical habitat for the species, to the maximum extent prudent and determinable. We solicit information to assist this proposed listing determination, the development of proposed protective regulations, and

designation of critical habitat in the event the proposed threatened listing for the giant manta ray is finalized. Additionally, we have determined that the reef manta ray (*M. alfredi*) is not currently in danger of extinction throughout all or a significant portion of its range and is not likely to become so within the foreseeable future. Therefore, we find that the reef manta ray does not warrant listing under the ESA at this time.

DATES: Comments on the proposed rule to list the giant manta ray must be received by March 13, 2017. Public hearing requests must be made by February 27, 2017.

ADDRESSES: You may submit comments on this document, identified by NOAA–NMFS–2016–0014, by either of the following methods:

• *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal. Go to *www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2016-0014.* Click the ''Comment Now'' icon, complete the required fields, and enter or attach your comments.

• *Mail:* Submit written comments to Maggie Miller, NMFS Office of Protected Resources (F/PR3), 1315 East West Highway, Silver Spring, MD 20910, USA.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on *www.regulations.gov* without change. All personally identifying information (*e.g.,* name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter ''N/A'' in the required fields if you wish to remain anonymous).

You can find the petition, status review report, **Federal Register** notices, and the list of references electronically on our Web site at *www.fisheries.noaa.gov/pr/species/fish/manta-ray.html.*

FOR FURTHER INFORMATION CONTACT: Maggie Miller, NMFS, Office of Protected Resources, (301) 427–8403.

SUPPLEMENTARY INFORMATION:

Background

On November 10, 2015, we received a petition from Defenders of Wildlife to list the giant manta ray (*M. birostris*), reef manta ray (*M. alfredi*) and Caribbean manta ray (*M. c.f. birostris*) as threatened or endangered under the ESA throughout their respective ranges, or, as an alternative, to list any identified distinct population segments (DPSs) as threatened or endangered. The petitioners also requested that critical habitat be designated concurrently with listing under the ESA. On February 23, 2016, we published a positive 90-day finding (81 FR 8874) announcing that the petition presented substantial scientific or commercial information indicating that the petitioned action may be warranted for the giant manta ray and reef manta ray, but that the Caribbean manta ray is not a taxonomically valid species or subspecies for listing, and explained the basis for that finding. We also announced the initiation of a status review of the giant manta ray and reef manta ray, as required by section 4(b)(3)(a) of the ESA, and requested information to inform the agency's decision on whether these species warrant listing as endangered or threatened under the ESA.

Listing Species Under the Endangered Species Act

We are responsible for determining whether giant and reef manta rays are threatened or endangered under the ESA (16 U.S.C. 1531 *et seq.*). To make this determination, we first consider whether a group of organisms constitutes a ''species'' under section 3 of the ESA, then whether the status of the species qualifies it for listing as either threatened or endangered. Section 3 of the ESA defines species to include ''any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.'' On February 7, 1996, NMFS and the U.S. Fish and Wildlife Service (USFWS; together, the Services) adopted a policy describing what constitutes a DPS of a taxonomic species (61 FR 4722). The joint DPS policy identified two elements that must be considered when identifying a DPS: (1) The discreteness of the population segment in relation to the remainder of the species (or subspecies) to which it belongs; and (2) the significance of the population segment to the remainder of the species (or subspecies) to which it belongs.

Section 3 of the ESA defines an endangered species as ''any species which is in danger of extinction throughout all or a significant portion of its range'' and a threatened species as one ''which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' Thus, in the context of the ESA, the Services interpret an ''endangered species'' to be one that is presently at risk of extinction. A ''threatened species'' is not currently at risk of extinction, but is likely to become so in the foreseeable future. The key statutory difference between a threatened and endangered species is the timing of when a species may be in danger of extinction, either now (endangered) or in the foreseeable future (threatened).

Additionally, as the definition of ''endangered species'' and ''threatened species'' makes clear, the determination of extinction risk can be based on either assessment of the range wide status of the species, or the status of the species in a ''significant portion of its range.'' The Services published a final policy to clarify the interpretation of the phrase ''significant portion of the range'' in the ESA definitions of ''threatened species'' and ''endangered species'' (79 FR 37577; July 1, 2014) (SPR Policy). The policy consists of the following four components:

(1) If a species is found to be endangered or threatened in only an SPR, and the SPR is not a DPS, the entire species is listed as endangered or threatened, respectively, and the ESA's protections apply across the species' entire range.

(2) A portion of the range of a species is ''significant'' if its contribution to the viability of the species is so important that without that portion, the species would be in danger of extinction or likely to become so in the foreseeable future.

(3) The range of a species is considered to be the general geographical area within which that species can be found at the time USFWS or NMFS makes any particular status determination. This range includes those areas used throughout all or part of the species' life cycle, even if they are not used regularly (*e.g.,* seasonal habitats). Lost historical range is relevant to the analysis of the status of the species, but it cannot constitute an SPR.

(4) If a species is not endangered or threatened throughout all of its range but is endangered or threatened within an SPR, and the population in that significant portion is a valid DPS, we will list the DPS rather than the entire taxonomic species or subspecies.

The statute also requires us to determine whether any species is endangered or threatened throughout all or a significant portion of its range as a result of any one or a combination of the following five factors: the present or threatened destruction, modification, or

curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other natural or manmade factors affecting its continued existence (ESA section 4(a)(1)(A)–(E)). Section 4(b)(1)(A) of the ESA requires us to make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and after taking into account efforts being made by any State or foreign nation or political subdivision thereof to protect the species. In evaluating the efficacy of existing domestic protective efforts, we rely on the Services' joint *Policy on Evaluation of Conservation Efforts When Making Listing Decisions* (''PECE''; 68 FR 15100; March 28, 2003) for any conservation efforts that have not been implemented, or have been implemented but not yet demonstrated effectiveness.

Status Review

A NMFS biologist in the Office of Protected Resources led the status review for the giant manta ray and reef manta ray (Miller and Klimovich 2016). The status review examined both species' statuses throughout their respective ranges and also evaluated if any portion of their range was significant as defined by the Services' SPR Policy (79 FR 37578; July 1, 2014).

In order to complete the status review, information was compiled on each species' biology, ecology, life history, threats, and status from information contained in the petition, our files, a comprehensive literature search, and consultation with experts. We also considered information submitted by the public in response to our petition finding. In assessing the extinction risk of both species, we considered the demographic viability factors developed by McElhany et al. (2000). The approach of considering demographic risk factors to help frame the consideration of extinction risk has been used in many of our status reviews, including for Pacific salmonids, Pacific hake, walleye pollock, Pacific cod, Puget Sound rockfishes, Pacific herring, scalloped, great, and smooth hammerhead sharks, and black abalone (see *www.nmfs.noaa.gov/pr/species/* for links to these reviews). In this approach, the collective condition of individual populations is considered at the species level according to four viable population descriptors: abundance, growth rate/productivity, spatial structure/connectivity, and diversity. These viable population descriptors reflect concepts that are well-founded in conservation biology and that individually and collectively provide strong indicators of extinction risk (NMFS 2015).

The draft status review report was subjected to independent peer review as required by the Office of Management and Budget (OMB) Final Information Quality Bulletin for Peer Review (M–05–03; December 16, 2004). The draft status review report was peer reviewed by independent specialists selected from the academic and scientific community, with expertise in manta ray biology, conservation, and management. The peer reviewers were asked to evaluate the adequacy, appropriateness, and application of data used in the status review, including the extinction risk analysis. All peer reviewer comments were addressed prior to dissemination and finalization of the draft status review report and publication of this finding.

We subsequently reviewed the status review report, its cited references, and peer review comments, and believe the status review report, upon which this 12-month finding and proposed rule is based, provides the best available scientific and commercial information on the two manta ray species. Much of the information discussed below on manta ray biology, distribution, abundance, threats, and extinction risk is attributable to the status review report. However, in making the 12-month finding determination and proposed rule, we have independently applied the statutory provisions of the ESA, including evaluation of the factors set forth in section 4(a)(1)(A)–(E) and our regulations regarding listing determinations. The status review report is available on our Web site (see **ADDRESSES** section) and the peer review report is available at *http://www.cio.noaa.gov/services_programs/prplans/PRsummaries.html.* Below is a summary of the information from the status review report and our analysis of the status of the giant manta ray and reef manta ray. Further details can be found in Miller and Klimovich (2016).

Description, Life History, and Ecology of the Petitioned Species

Species Description

Manta rays are large bodied, planktivorous rays, considered part of the Mobulidae subfamily that appears to have diverged from Rhinoptera around 30 million years ago (Poortvliet et al. 2015). *Manta* species are distinguished from other Mobula rays in that they tend to be larger, with a terminal mouth, and have long cephalic fins (Evgeny 2010). The genus *Manta* has a long and convoluted taxonomic history due partially to the difficulty of preserving such large specimens and conflicting historical reports of taxonomic characteristics (Couturier et al. 2012; Kitchen-Wheeler 2013). All manta rays were historically categorized as *Manta birostris,* but Marshall et al. (2009) presented new data that supported the splitting of the monospecific *Manta* genus into two species: *M. birostris* and *M. alfredi.*

Both *Manta* species have diamond-shaped bodies with wing-like pectoral fins; the distance over this wingspan is termed disc width (DW). There are two distinct color types in both species: chevron and black (melanistic). Most of the chevron variants have a black dorsal surface and a white ventral surface with distinct patterns on the underside that can be used to identify individuals (Marshall et al. 2008; Kitchen-Wheeler 2010; Deakos et al. 2011). While these markings are assumed to be permanent, there is some evidence that the pigmentation pattern of *M. birostris* may actually change over the course of development (based on observation of two individuals in captivity), and thus caution may be warranted when using color markings for identification purposes in the wild (Ari 2015). The black color variants of both species are entirely black on the dorsal side and almost completely black on the ventral side, except for areas between the gill-slits and the abdominal area below the gill-slits (Kitchen-Wheeler 2013).

Range, Distribution and Habitat Use

Manta rays are circumglobal in range, but within this broad distribution, individual populations are scattered and highly fragmented (CITES 2013). The ranges of the two manta species sometimes overlap; however, at a finer spatial scale, the two species generally appear to be allopatric within those habitat areas (Kashiwagi et al. 2011) and exhibit different habitat use and movement patterns (inshore versus offshore reef habitat use) (Marshall and Bennett 2010b; Kashiwagi et al. 2011). Clark (2010) suggests that the larger *M. birostris* may forage in less productive pelagic waters and conduct seasonal migrations following prey abundance, whereas *M. alfredi* is more of a resident species in areas with regular coastal productivity and predictable prey abundance. Kashiwagi et al. (2010) observed that even in areas where both species are found in large numbers at the same feeding and cleaning sites, the two species do not interact with each other (*e.g.,* they are not part of the same feeding group, and males of one species

do not attempt to mate with females of the other species). Additional studies on habitat use for both species are needed, particularly investigating how these individuals influence their environment as studies have shown that the removal of large plankton feeders, like manta rays, from the ecosystem can cause significant changes in species composition (Springer et al. 2003).

The giant manta ray can be found in all ocean basins. In terms of range, within the Northern Hemisphere, the species has been documented as far north as southern California and New Jersey on the United States west and east coasts, respectively, and Mutsu Bay, Aomori, Japan, the Sinai Peninsula and Arabian Sea, Egypt, and the Azores Islands (Gudger 1922; Kashiwagi et al. 2010; Moore 2012; CITES 2013). In the Southern Hemisphere, the species occurs as far south as Peru, Uruguay, South Africa, New Zealand and French Polynesia (Mourier 2012; CITES 2013). Despite this large range, sightings are often sporadic. The timing of these sightings also varies by region (for example, the majority of sightings in Brazil occur during June and September, while in New Zealand sightings mostly occur between January and March) and seems to correspond with the movement of zooplankton, current circulation and tidal patterns, seawater temperature, and possibly mating behavior (Couturier et al. 2012; De Boer et al. 2015; Armstrong et al. 2016).

Within its range, *M. birostris* inhabits tropical, subtropical, and temperate bodies of water and is commonly found offshore, in oceanic waters, and near productive coastlines (Marshall et al. 2009; Kashiwagi et al. 2011). As such, giant manta rays can be found in cooler water, as low as 19 °C, although temperature preference appears to vary by region (Duffy and Abbott 2003; Marshall et al. 2009; Freedman and Roy 2012; Graham et al. 2012). Additionally, giant manta rays exhibit a high degree of plasticity in terms of their use of depths within their habitat, with tagging studies that show the species conducting night descents of 200–450 m depths (Rubin et al. 2008; Stewart et al. 2016b) and capable of diving to depths exceeding 1,000 m (A. Marshall et al. unpubl. data 2011 cited in Marshall et al. (2011a)).

The giant manta ray is considered to be a migratory species, with satellite tracking studies using pop-up satellite archival tags registering movements of the giant manta ray from Mozambique to South Africa (a distance of 1,100 km), from Ecuador to Peru (190 km), and from the Yucatan, Mexico, into the Gulf of Mexico (448 km) (Marshall et al. 2011a). In a tracking study of six *M. birostris* individuals from off Mexico's Yucatan peninsula, Graham et al. (2012) calculated a maximum distance travelled of 1,151 km (based on cumulative straight line distance between locations; tag period ranged from 2 to 64 days). Similarly, Hearn et al. (2014) report on a tagged *M. birostris* that was tracked from Isla de la Plata (Ecuador) to west of Darwin Island (tag was released after 104 days), a straight-line distance of 1,500 km, further confirming that the species is capable of fairly long distance migrations but also demonstrating connectivity between mainland and offshore islands. However, a recent study by Stewart et al. (2016a) suggests that the species may not be as highly migratory as previously thought. Using pop-up satellite archival tags in combination with analyses of stable isotope and genetic data, the authors found evidence that *M. birostris* may actually exist as well-structured subpopulations off Mexico's coast that exhibit a high degree of residency (Stewart et al. 2016a). Additional research is required to better understand the distribution and movement of the species throughout its range.

In terms of range of the reef manta ray, *M. alfredi,* the species is currently only observed in the Indian Ocean and the western and south Pacific. The northern range limit for the species in the western Pacific is presently known to be off Kochi, Japan (32°48′ N., 132°58′ E.), and its eastern limit in the Pacific is known to be Fatu Hiva in French Polynesia (10°29′ S.; 138°37′ W.) (Kashiwagi et al. 2010; Mourier 2012). However, it is difficult to estimate the historical range of *M. alfredi* due to confusion until recently about its identification (Marshall et al. 2009). For example, prior to the splitting of the genus, it was assumed that all manta rays found in the Philippines were *M. birostris;* however, based on recent survey efforts, it has been confirmed that both *M. birostris* and *M. alfredi* occur in these waters (Verdote and Ponzo 2014; Aquino et al. 2015; Rambahiniarison et al. 2016). This may be the case elsewhere through its range and underscores the need for concentrated survey effort in order to better understand the distribution of these two manta ray species.

Manta alfredi is commonly seen inshore near coral and rocky reefs and appears to avoid colder waters (<21 °C) (Rohner et al. 2013; Braun et al. 2014). Reef manta rays prefer habitats along productive nearshore environments (such as island groups or near upwelling events), and while recent tracking studies indicate that *M. alfredi* is capable of traveling long distances, similar to *M. birostris* (Yano et al. 1999; Germanov and Marshall 2014), reef manta rays are considered a more resident species than giant manta rays (Homma et al. 1999; Dewar et al. 2008; Clark 2010; Kitchen-Wheeler 2010; Anderson et al. 2011a; Deakos et al. 2011; Marshall et al. 2011b; McCauley et al. 2014), with residencies estimated at up to 1.5 years (Clark 2010). For example, along the east coast of Australia, mark-recapture methods and photographic identification of reef manta rays from 1982 to 2012 revealed a re-sighting rate of more than 60 percent (with females more likely to be re-sighted than males), suggesting high site fidelity to aggregation sites, including several locations within a range of up to 650 km (Couturier et al. 2014). In Hawaii, 76 percent of 105 *M. alfredi* individuals observed over 15 years of surveys were re-sighted along the Kona coast, also confirming the high site fidelity behavior of the species (Clark 2010). Additionally, predictable seasonal aggregations of *M. alfredi,* largely thought to be feeding-related and influenced by the seasonal distribution of prey (Anderson et al. 2011a), have been documented off the Maldives (Anderson et al. 2011a), Maui, Hawaii (Deakos et al. 2011), Lady Elliott Island, Australia (Couturier et al. 2014), Ningaloo Reef, Western Australia (McGregor et al. 2008), and southern Mozambique (Marshall et al. 2011c; Rohner et al. 2013).

Diet and Feeding

As previously mentioned, manta feeding habits appear to be influenced by the movement and accumulation of zooplankton (Armstrong et al. 2016). Both manta species primarily feed on planktonic organisms such as euphausiids, copepods, mysids, decapod larvae and shrimp, but some studies have noted their consumption of small and moderate sized fishes as well (Bertolini 1933; Bigelow and Schroeder 1953; Carpenter and Niem 2001; The Hawaii Association for Marine Education and Research Inc. 2005). Mantas appear to be primarily nocturnal feeders, consistent with the upward migration of zooplankton at night, increasing their accessibility (Cushing 1951; Forward 1988). Known manta feeding areas that have been reported in the literature are summarized in Table 1 of Miller and Klimovich (2016); however, it is likely that additional feeding areas exist throughout both species' respective ranges.

Growth and Reproduction

Manta rays are viviparous (*i.e.,* give birth to live young), with a gestation period of around one year (Matsumoto and Uchida 2008; Uchida et al. 2008), and a reproductive periodicity of anywhere from 1 to 5 years (see Table 3 in Miller and Klimovich (2016)). Generally, not much is known about manta ray growth and development. Free swimming wild mantas have been observed as small as 1.02 m DW and 1.22 m DW (Kitchen-Wheeler 2013), with size at birth estimates ranging from 0.9 m DW to 1.92 m DW (see Tables 2 and 3 in Miller and Klimovich (2016)); however, the lack of observations of small manta rays throughout the species' respective ranges may indicate that manta rays segregate by size, with different habitats potentially used by neonates and juveniles (Deakos 2010b). While these habitats have yet to be identified, Erdmann (2014) presents a hypothesis, based on tagging data of a juvenile *M. alfredi* (~1.5m DW), that mantas likely give birth in protected areas, such as lagoons, that provide protection from larger predators.

In *M. alfredi,* Deakos (2012) observed that sexual maturity was delayed until growth had reached 90 percent of maximum size, pointing to large body size providing a reproductive advantage. Deakos (2010) concluded that the minimum size at sexual maturity was 3.37 DW for female *M. alfredi* and 2.80 m DW for males in Maui. There is no evidence that male size affects mating success of *M. alfredi* in any way, but larger females were observed to have higher rates of pregnancy than smaller females (Deakos 2012). Homma et al. (1999) hypothesized that age at sexual maturity was 8–13 years in mantas and the data of Uchida et al. (2008), Marshall et al. (2011a) and Marshall and Bennett (2010b) confirmed this estimate. However, a population of female *M. alfredi* in the Maldives displayed late maturity (15 years or more) and lower reproductive rates than previously reported (one pup every five years, instead of biennially) (G. Stevens in prep. as cited in CITES (2013)). In contrast, Clark (2010) described a rapid transition to maturity for *M. alfredi* in Kona, Hawaii, with estimates of males reaching sexual maturity as early as 3–4 years.

In terms of mating behavior, during courting, manta rays are commonly observed engaging in ''mating chains,'' where multiple males will pursue a single female. The mating displays can last hours or days, with the female swimming rapidly ahead of the males and occasionally somersaulting or turning abruptly (Deakos et al. 2011). Sexual dimorphism is present in manta rays, with female *M. alfredi* as much as 18 percent larger than males, so it is unlikely that a male could force a female to mate against her will (Deakos 2010; Marshall and Bennett 2010b). Additionally, males have never been observed to compete with each other directly for the attention of the female, so these mating chains may function as a kind of endurance rivalry (Andersson 1994; Deakos 2012). No copulations have been observed in the wild, so it is difficult to determine which males have a mating advantage, but this kind of endurance trial usually selects for the success of larger males (Andersson and Iwasa 1996; Deakos 2012).

Although mantas have been reported to live to at least 40 years old (Marshall and Bennett 2010b; Marshall et al. 2011b; Kitchen-Wheeler 2013) with low rates of natural mortality (Couturier et al. 2012), the time needed to grow to maturity and the low reproductive rates mean that a female will be able to produce only 5–15 pups in her lifetime (CITES 2013). Generation time for both species (based on *M. alfredi* life history parameters) is estimated to be 25 years (Marshall et al. 2011a; Marshall et al. 2011b). Known life history characteristics of *M. birostris* and *M. alfredi* are summarized in Tables 2 and 3 in Miller and Klimovich (2016).

Population Structure

Since the splitting of the *Manta* genus, most of the recent research has examined the genetic discreteness, phylogeny, and the evolutionary speciation in manta rays (Cerutti-Pereyra et al. 2012; Kashiwagi et al. 2012; Poortvliet et al. 2015). Very few studies have focused on the population structure within each species. However, based on genetic sampling, photo-identification, and tracking studies, preliminary results tend to indicate that reef manta rays exist in isolated and potentially genetically divergent populations. For example, using genetic sequencing of mitochondrial DNA (which is maternally-inherited) Cerutti-Pereyra et al. (2012) found low genetic divergence (<1 percent) but ''phylogeographic disjunction'' between the *M. alfredi* samples from Australia (n = 2; Ningaloo Reef) and Indonesia (n = 2), suggesting biogeographic factors may be responsible for population differentiation within the species. Although based on very few samples (4 total), these findings are consistent with photo-identification and tracking studies, which suggest high site-fidelity and residency for *M. alfredi* in many portions of its range, including Indonesia, Ningaloo Reef, Hawaii, Fiji, New Caledonia, and eastern Australia (Dewar et al. 2008; Clark 2010; Couturier et al. 2011; Deakos et al. 2011; Cerutti-Pereyra et al. 2012; Couturier et al. 2014).

The population structure for the wider-ranging *M. birostris* is less clear. While Clark (2010), using photo-identification survey data collected between 1992 and 2007 along the Kona, Hawaii, coast, found low site-fidelity for *M. birostris* and high rate of immigration, indicative of a population that is pelagic rather than coastal or island-associated, Stewart et al. (2016a) provided recent evidence to show that the giant manta rays off Pacific Mexico may exist as isolated subpopulations, with distinct home ranges. Additionally, researchers are presently investigating whether there is a potential third manta ray species resident to the Yucatán coastal waters of the Gulf of Mexico (previously identified as *M. birostris*) (Hinojosa-Alvarez et al. 2016). Using the mitochondrial *ND5* region (maternally-inherited DNA), Hinojosa-Alvarez et al. (2016) found shared haplotypes between Yucatán manta ray samples and known *M. birostris* samples from Mozambique, Indonesia, Japan, and Mexico, but discovered four new manta ray haplotypes, exclusive to the Yucatán samples. While analysis using the nuclear *RAG1* gene (bi-parentally-inherited DNA) showed the Yucatán samples to be consistent with identified *M. birostris* samples, the authors suggest that the *ND5* genetic evidence indicates the potential for a third, distinctive manta genetic group or possibly *M. birostris* subspecies. At this time, additional studies, including in-depth taxonomic studies and additional genetic sampling, are needed to better understand the population structure of both species throughout their respective ranges.

Population Demographics

Given their large sizes, manta rays are assumed to have fairly high survival rates after maturity (*e.g.,* low natural predation rates). Using estimates of known life history parameters for both giant and reef manta rays, and plausible range estimates for the unknown life history parameters, Dulvy et al. (2014) calculated a maximum population growth rate of *Manta* spp. and found it to be one of the lowest values when compared to 106 other shark and ray species. After taking into consideration different model assumptions, and the criteria for assessing productivity in Musick (1999), Dulvy et al. (2014) estimated realized productivity (r) for manta rays to be 0.029 (Dulvy et al.

2014). This value is similar to the productivity estimate from Kashiwagi (2014) who empirically determined an r value of 0.023 using capture-mark-recapture analyses. Ward-Paige et al. (2013) calculated slightly higher estimates for the intrinsic rate of population increase, with r = 0.05 for *M. alfredi* and r = 0.042 for *M. birostris;* however, these estimates still place both manta ray species into or at the very edge of the ''very low'' productivity category (r <0.05), based on the productivity parameters and criteria in Musick (1999).

In order to determine how changes in survival may affect populations, Smallegange et al. (2016) modeled the demographics of reef manta rays. Results showed that increases in yearling or adult annual survival rates resulted in much greater responses in population growth rates, mean lifetime reproductive success, and cohort generation time compared to similar increases in juvenile annual survival rates (Smallegange et al. 2016). Based on the elasticity analysis, population growth rate was most sensitive to changes in the survival rate of adults (Smallegange et al. 2016). In other words, in order to prevent populations from declining further, Smallegange et al. (2016) found that adult survival rates should be increased, such as through protection of adult aggregation sites or a reduction in fishing of adult manta rays (Smallegange et al. 2016). For those populations that are currently stable, like the Yaeyama Islands (Japan) population (where adult annual survival rate is estimated at 0.95; noted above), Smallegange et al. (2016) note that any changes in adult survival may significantly affect the population.

Overall, given their life history traits and productivity estimates, particularly their low reproductive output and sensitivity to changes in adult survival rates, giant and reef manta ray populations are inherently vulnerable to depletions, with low likelihood of recovery.

Historical and Current Distribution and Population Abundance

There are no current or historical estimates of the global abundance of *M. birostris.* Despite their larger range, they are encountered with less frequency than *M. alfredi.* Most estimates of subpopulations are based on anecdotal diver or fisherman observations, which are subject to bias. These populations seem to potentially range from around 100 to1,500 individuals (see Table 4 in Miller and Klimovich (2016)). In the proposal to include manta rays on the appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), it states that because 10 populations of *M. birostris* have been actively studied, 25 other aggregations have been anecdotally identified, and all other sightings are rare, the total global population may be small (CITES 2013). The greatest number of *M. birostris* identified in the four largest known aggregation sites ranges from 180 to 1,500. Ecuador is thought to be home to the largest identified population of *M. birostris* in the world, with large aggregation sites within the waters of the Machalilla National Park and the Galapagos Marine Reserve (Hearn et al. 2014). Within the Indian Ocean, numbers of giant manta rays identified through citizen science in Thailand's waters (primarily on the west coast, off Khao Lak and Koh Lanta) have been increasing over the past few years, from 108 in 2015 to 288 in 2016. These numbers reportedly surpass the estimate of identified giant mantas in Mozambique (n = 254), possibly indicating that Thailand may be home to the largest aggregation of giant manta rays within the Indian Ocean (MantaMatcher 2016). In the Atlantic, very little information on *M. birostris* populations is available, but there is a known, protected population within the Flower Garden Banks National Marine Sanctuary in the Gulf of Mexico. However, researchers are still trying to determine whether the manta rays in this area are only *M. birostris* individuals or potentially also comprise individuals of a new, undescribed species (Marshall et al. 2009; Hinojosa-Alvarez et al. 2016).

In areas where the species is not subject to fishing, populations may be stable. For example, Rohner et al. (2013) report that giant manta ray sightings remained constant off the coast of Mozambique over a period of 8 years. However, in regions where giant manta rays are (or were) actively targeted or caught as bycatch, such as the Philippines, Mexico, Sri Lanka, and Indonesia, populations appear to be decreasing (see Table 5 in Miller and Klimovich (2016)). In Indonesia, declines in manta ray landings are estimated to be on the order of 71 to 95 percent, with potential extirpations noted in certain areas (Lewis et al. 2015). Given the migratory nature of the species, population declines in waters where mantas are protected have also been observed but attributed to overfishing of the species in adjacent areas within its large home range. For example, White et al. (2015) provide evidence of a substantial decline in the *M. birostris* population in Cocos Island National Park, Costa Rica, where protections for the species have existed for over 20 years. Using a standardized time series of observations collected by dive masters on 27,527 dives conducted from 1993 to 2013, giant manta ray relative abundance declined by approximately 89 percent. Based on the frequency of the species' presence on dives (4 percent), with a maximum of 15 individuals observed on a single dive, the authors suggest that Cocos Island may not be a large aggregating spot for the species, and suggest that the decline observed in the population is likely due to overfishing of the species outside of the National Park (White et al. 2015).

Given that all manta rays were identified as *M. birostris* prior to 2009, information on the historical abundance and distribution of *M. alfredi* is scarce. In the proposal to include the reef manta ray on the appendices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), it states that current global population numbers are unknown and no historical baseline data exist (CMS 2014). Local populations of *M. alfredi* have not been well assessed either, but appear generally to be small, sparsely distributed, and isolated. Photo-identification studies in Hawaii, Yap, Japan, Indonesia, and the eastern coast of Australia suggest these subpopulations range from 100 to 350 individuals (see Table 6 in Miller and Klimovich (2016)), despite observational periods that span multiple decades. However, in the Maldives, population estimates range from 3,300 to 9,677 individuals throughout the 26 atolls in the archipelago (Kitchen-Wheeler et al. 2012; CITES 2013; CMS 2014), making it the largest identified population of *M. alfredi* in the world. Other larger populations may exist off southern Mozambique (superpopulation estimate of 802–890 individuals; Rohner et al. (2013); CITES (2013)) and Western Australia (metapopulation estimate = 1,200–1,500; McGregor (2009) cited in CITES (2013)).

In terms of trends, studies report that the rate of population reduction appears to be high in local areas, from 50–88 percent, with areas of potential local extirpations of *M. alfredi* populations (Homma et al. 1999; Rohner et al. 2013; Lewis et al. 2015). In the portions of range where reef manta rays are experiencing anthropogenic pressures, including Indonesia and Mozambique, encounter rates have dropped significantly over the last 5 to 10 years (CMS 2014). However, where *M. alfredi* receives some kind of protection, such as in Australia, Hawaii, Guam, Japan,

the Maldives, Palau, and Yap, CITES (2013) reports that subpopulations are likely to be stable. For example, in Hawaii, based on photo-identification survey data collected between 1992 and 2007 along the Kona Coast, Clark (2010) used a discovery curve to estimate that an average of 4.27 new pups were entering the population per year. Off the Yaeyama Islands, Japan, Kashiwagi (2014) conducted quantitative analyses using encounter records, biological observations, and photo-ID of manta rays over the period of 1987 to 2009 and found that the apparent population size increased steadily but slowly over the 23-year period, with a population growth rate estimate of 1.02–1.03. Based on aerial surveys of Guam conducted from 1963 to 2012, manta ray observations were infrequent but showed an increase over the study period (Martin et al. 2015). Off Lady Elliott Island, Australia, Couturier et al. (2014) modeled annual population sizes of *M. alfredi* from 2009 to 2012 and found an annual increase in abundance for both sexes, but cautioned that the modeled increase could be an artifact of improvements in photo-identification by observers over the study period. Within Ningaloo Marine Park, the status of reef manta rays was assessed as ''Good'' in 2013, but with low confidence in the ratings (Marine Parks & Reserves Authority 2013). Overall, however, the reef manta ray population of Australia is deemed to be one of the world's healthiest (Australian Government 2012).

Species Finding

Based on the best available scientific and commercial information described above, we find that *M. birostris* and *M. alfredi* are currently considered taxonomically-distinct species and, therefore, meet the definition of ''species'' pursuant to section 3 of the ESA. Below, we evaluate whether these species warrant listing as endangered or threatened under the ESA throughout all or a significant portion of their respective range.

Summary of Factors Affecting Giant and Reef Manta Rays

As described above, section 4(a)(1) of the ESA and NMFS' implementing regulations (50 CFR 424.11(c)) state that we must determine whether a species is endangered or threatened because of any one or a combination of the following factors: The present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; inadequacy of existing regulatory mechanisms; or other natural or man-made factors affecting its continued existence. We evaluated whether and the extent to which each of the foregoing factors contribute to the overall extinction risk of both manta ray species, with a ''significant'' contribution defined, for purposes of this evaluation, as increasing the risk to such a degree that the factor affects the species' demographics (*i.e.,* abundance, productivity, spatial structure, diversity) either to the point where the species is strongly influenced by stochastic or depensatory processes or is on a trajectory toward this point. This section briefly summarizes our findings and conclusions regarding threats to the giant and reef manta rays and their impact on the overall extinction risk of the species. More details can be found in the status review report (Miller and Klimovich 2016).

The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Due to their association with nearshore habitats, manta rays are at elevated risk for exposure to a variety of contaminants and pollutants, including brevotoxins, heavy metals, polychlorinated biphenyls, and plastics. Many pollutants in the environment have the ability to bioaccumulate in fish species; however, only a few studies have specifically examined the accumulation of heavy metals in the tissues of manta rays (Essumang 2010; Ooi et al. 2015), with findings that discuss human health risks from the consumption of manta rays. For example, Essumang (2010) found platinum levels within *M. birostris* samples taken off the coast of Ghana that exceeded the United Kingdom (UK) dietary intake recommendation levels, and Ooi et al. (2015) reported concentrations of lead in *M. alfredi* tissues from Lady Elliot Island, Australia, that exceeded maximum allowable level recommendations for fish consumption per the European Commission and the Codex Alimentarius Commission (WHO/FAO). While consuming manta rays may potentially pose a health risk to humans, there is no information on the lethal concentration limits of these metals or other toxins in manta rays. Additionally, at this time, there is no evidence to suggest that current concentrations of these environmental pollutants are causing detrimental physiological effects to the point where either species may be at an increased risk of extinction.

Plastics within the marine environment may also be a threat to the manta ray species, as the animals may ingest microplastics (through filter-feeding) or become entangled in plastic debris, potentially contributing to increased mortality rates. Jambeck et al. (2015) found that the Western and Indo-Pacific regions are responsible for the majority of plastic waste. These areas also happen to overlap with some of the largest known aggregations for manta rays. For example, in Thailand, where recent sightings data have identified over 288 giant manta rays (MantaMatcher 2016), mismanaged plastic waste is estimated to be on the order of 1.03 million tonnes annually, with up to 40 percent of this entering the marine environment (Jambeck et al. 2015). Approximately 1.6 million tonnes of mismanaged plastic waste is being disposed of in Sri Lanka, again with up to 40 percent entering the marine environment (Jambeck et al. 2015), potentially polluting the habitat used by the nearby Maldives aggregation of manta rays. While the ingestion of plastics is likely to negatively impact the health of the species, the levels of microplastics in manta ray feeding grounds and frequency of ingestion are presently being studied to evaluate the impact on these species (Germanov 2015b; Germanov 2015a).

Because manta rays are migratory and considered ecologically flexible (*e.g.,* low habitat specificity), they may be less vulnerable to the impacts of climate change compared to other sharks and rays (Chin et al. 2010). However, as manta rays frequently rely on coral reef habitat for important life history functions (*e.g.,* feeding, cleaning) and depend on planktonic food resources for nourishment, both of which are highly sensitive to environmental changes (Brainard et al. 2011; Guinder and Molinero 2013), climate change is likely to have an impact on the distribution and behavior of both *M. birostris* and *M. alfredi.* Currently, coral reef degradation from anthropogenic causes, particularly climate change, is projected to increase through the future. Specifically, annual, globally averaged surface ocean temperatures are projected to increase by approximately 0.7 °C by 2030 and 1.4 °C by 2060 compared to the 1986–2005 average (IPCC 2013), with the latest climate models predicting annual coral bleaching for almost all reefs by 2050 (Heron et al. 2016). As declines in coral cover have been shown to result in changes in coral reef fish communities (Jones et al. 2004; Graham et al. 2008), the projected increase in coral habitat degradation may potentially lead to a

decrease in the abundance of manta ray cleaning fish (*e.g., Labroides* spp., *Thalassoma* spp., and *Chaetodon* spp.) and an overall reduction in the number of cleaning stations available to manta rays within these habitats. This potential decreased access to cleaning stations may negatively impact the fitness of the mantas by hindering their ability to reduce parasitic loads and dead tissue, which could lead to increases in diseases and declines in reproductive fitness and survival rates. However, these scenarios are currently speculative, as there is insufficient information to indicate how and to what extent changes in reef community structure will affect the status of both manta ray species.

Changes in climate and oceanographic conditions, such as acidification, are also known to affect zooplankton structure (size, composition, diversity), phenology, and distribution (Guinder and Molinero 2013). As such, the migration paths and locations of both resident and seasonal aggregations of manta rays, which depend on these animals for food, may similarly be altered (Australian Government 2012; Couturier et al. 2012). It is likely that those *M. alfredi* populations that exhibit site-fidelity behavior will be most affected by these changes. For example, resident manta ray populations may be forced to travel farther to find available food or randomly search for new productive areas (Australian Government 2012; Couturier et al. 2012). As research to understand the exact impacts of climate change on marine phytoplankton and zooplankton communities is still ongoing, the severity of this threat to both species of manta rays has yet to be fully determined.

Overutilization for Commercial, Recreational, Scientific or Educational Purposes

Manta rays are both targeted and caught as bycatch in fisheries worldwide. In fact, according to Lawson et al. (2016), manta ray catches have been recorded in at least 30 large and small-scale fisheries covering 25 countries. The majority of fisheries that target mobulids are artisanal (Croll et al. 2015) and target the rays for their meat; however, since the 1990s, a market for mobulid gill rakers has significantly expanded, increasing the demand for manta ray products, particularly in China. The gill rakers of mobulids are used in Asian medicine and are thought to have healing properties, such as curing diseases from chicken pox to cancer, boosting the immune system, purifing the body, enhancing blood circulation, remedying throat and skin ailments, curing male kidney issues, and helping with fertility problems (Heinrichs et al. 2011). The use of gill rakers as a remedy, which was widespread in Southern China many years ago, has recently gained renewed popularity over the past decade as traders have increased efforts to market its healing and immune boosting properties directly to consumers (Heinrichs et al. 2011). As a result, demand has significantly increased, incentivizing fishermen who once avoided capture of manta rays to directly target these species (Heinrichs et al. 2011; CITES 2013). According to Heinrichs et al. (2011), it is primarily the older population in Southern China as well as Macau, Singapore, and Hong Kong, that ascribes to the belief of the healing properties of the gill rakers; however, unlike products like shark fins, the gill rakers are not considered ''traditional'' or ''prestigious'' items and many consumers and sellers are not even aware that gill rakers come from manta or mobula rays. Meat, cartilage, and skin of manta rays are also utilized, but valued significantly less than the gill rakers, and usually enter local trade or are kept for domestic consumption (Heinrichs et al. 2011; CITES 2013). Indonesia, Sri Lanka, and India presently represent the largest manta ray exporting range state countries; however, Chinese gill plate vendors have also reported receiving mobulid gill plates from other countries and regions as well, including Malaysia, Vietnam, South Africa, South America, the Middle East, and the South China Sea (CMS 2014). To examine the impact of this growing demand for gill rakers on manta ray populations, information on landings and trends (identified by species where available) are evaluated for both fisheries that target mantas and those that catch mantas as bycatch.

Targeted Fisheries

Indonesia is reported to be one of the countries that catch the most mobulid rays (Heinrichs et al. 2011). Manta and mobula ray fisheries span the majority of the Indonesian archipelago, with most landing sites along the Indian Ocean coast of East and West Nusa Tenggara and Java (Lewis et al. 2015). Manta rays (presumably *M. birostris,* but identified prior to the split of the genus) have traditionally been harvested in Indonesia using harpoons and boats powered by paddles or sails, with manta fishing season lasting from May through October. Historically, the harvested manta rays would be utilized by the village, but the advent of the international gill raker market in the 1970s prompted the commercial trade of manta ray products, with gill plates generally sent to Bali, Surabaya (East Java), Ujung Pandant (Sulawasi), or Jakarta (West Java) for export to Hong Kong, Taiwan, Singapore and other places in Asia (Dewar 2002; White et al. 2006; Marshall and Conradie 2014). This economic incentive, coupled with emerging technological advances (*e.g.,* motorized vessels) and an increase in the number of boats in the fishery, greatly increased fishing pressure and harvest of manta rays in the 1990s and 2000s (Dewar 2002). In Lamakera, Indonesia, one of the main landing sites for mobulids, and particularly manta rays, Dewar (2002) estimates that the total average harvest of ''mantas'' during the 2002 fishing season was 1,500 individuals (range 1,050–2,400), which is a significant increase from the estimated historical harvest levels of around 200–300 mantas per season. However, Lewis et al. (2015) note that this estimate likely represents all mobulid rays, not just manta rays.

However, given these amounts, it is perhaps unsurprising that anecdotal reports from fishermen indicate possible local population declines, with fishermen noting that they have to travel farther to fishing grounds as manta rays are no longer present closer to the village (Dewar 2002; Lewis et al. 2015). In fact, using the records from Dewar (2002) and community (local) catch records, Lewis et al. (2015) show that there has been a steady decline in manta landings at Lamakera since 2002 (despite relatively unchanged fishing effort), with estimated landings in 2013–2014 comprising only 25 percent of the estimated numbers from 2002–2006. These declines in manta landings are not just limited to Lamakera, but also appear to be the trend throughout Indonesia at the common mobulid landing sites. For example, Lewis et al. (2015) reports a 95 percent decline in manta landings in Tanjung Luar (between 2001–2005 and 2013–2014), a decrease in the average size of mantas being caught, and a 71 percent decline in manta landings in the Cilacap gillnet fishery between 2001–2005 and 2014. Areas in Indonesia where manta rays have potentially been fished to extirpation, based on anecdotal reports (*e.g.,* diver sightings data and fishermen interviews), include Lembeh Strait in northeast Sulawesi, Selayer Islands in South Sulawesi, and off the west coast of Alor Island (which may have been a local *M. alfredi* population) (Lewis et al. 2015).

Although fishing for manta rays was banned within the Indonesian exclusive economic zone (EEZ) in February 2014

(see *The Inadequacy of Existing Regulatory Mechanisms*), in May 2014, manta rays were still being caught and processed at Lamakera, with *M. birostris* the most commonly targeted species (Marshall and Conradie 2014). Around 200 fishing vessels targeting mantas rays are in operation (Marshall and Conradie 2014). Most of the fishing occurs in the Solor Sea and occasionally in the Lamakera Strait, with landings generally comprising around one to two dozen manta rays per day. Taking into account the manta ray fishing season in Lamakera (June to October), Marshall and Conradie (2014) estimate that between 625 and 3,125 manta rays (likely majority *M. birostris*) may be landed each season. Lewis et al. (2015), however, report a much smaller number, with 149 estimated as landed in 2014.

It is unlikely that fishing effort and associated utilization of the species will significantly decrease in the foreseeable future because interviews with fishermen indicate that many are excited for the new prohibition on manta rays in Indonesian waters, as it is expected to drive up the price of manta ray products and significantly increase the current income of resident fishermen (Marshall and Conradie 2014). Based on unpublished data, O'Malley et al. (2013) estimate that the total annual income from the manta ray fisheries in Indonesia is around $442,000 (with 94 percent attributed to the gill plate trade). Dharmadi et al. (2015) noted that there are still many fishermen, particularly in Raja Ampat, Bali, and Komodo, whose livelihoods depend on shark and ray fishing. Without an alternative for income, it is unlikely that these fishing villages will stop their traditional fishing practices. Additionally, enforcement of existing laws appears to be lacking in this region (Marshall and Conradie 2014). The high market prices for manta products, where a whole manta (~5 m DW) will sell for anywhere from $225–$450 (Lewis et al. 2015), drives the incentive to continue fishing the species, and evidence of continued targeted fishing despite prohibitions suggests that overutilization of the Indonesian manta ray populations (primarily *M. birostris,* based on the data) is likely to continue to occur into the foreseeable future.

In the Philippines, fishing for manta rays mainly occurs in the Bohol Sea. According to Acebes and Tull (2016), the manta ray fishery can be divided into two distinct periods based on technology and fishing effort: (1) 1800s to 1960s, when mantas were mainly hunted in small, non-motorized boats using harpoons from March to May; and (2) 1970s to 2013 (present), when boats became bigger and motorized and the fishing technique switched to drift gillnets, with the manta hunting season extending from November to June. In the earlier period, the manta fishing grounds were fairly close to the shore (<5 km), noted along the coasts of southern Bohol, northwestern and southern coasts of Camiguin and eastern coasts of Limasawa. Boats would usually catch around one manta per day, with catches of 5–10 mantas for a fishing village considered a ''good day'' (Acebes and Tull 2016). As the fishery became more mechanized in the 1970s, transitioning to larger and motorized boats, and as the primary gear changed from harpoons to non-selective driftnets, fishermen were able to access previously unexplored offshore fishing grounds, stay out for longer periods of time, and catch more manta rays (Acebes and Tull 2016). Additionally, it was during this time that the international gill raker market opened up, increasing the value of gill rakers, particularly for manta species. By 1997, there were 22 active mobulid ray fishing sites in the Bohol Sea (Acebes and Tull 2016). In Pamilacan, 18 boats were fishing for mobulids in 1993, increasing to 40 by 1997, and in Jagna, at least 20 boats were engaged in mobulid hunting in the 1990s (Acebes and Tull 2016). Catches from this time period, based on the recollection of fishermen from Pamilacan and Baclayon, Bohol, were around 8 manta rays (for a single boat) in 1995 and 50 manta rays (single boat) in 1996 (Alava et al. 2002). However, it should be noted that the mobulid fishery ended in Lila and Limasawa Island in the late 1980s and in Sagay in 1997, around the time that the whale fishery closed and a local ban in manta ray fishing was imposed (Acebes and Tull 2016).

Despite increases in fishing effort, catches of manta rays began to decline in Philippine waters, likely due to a decrease in the abundance of the population, prompting fishermen to shift their fishing grounds farther east and north. Although a ban on hunting and selling giant manta rays was implemented in the Philippines in 1998 (see *The Inadequacy of Existing Regulatory Mechanisms*), this has not seemed to impact the mobulid fishery in any way. In Pamilacan, there were 14 mobulid hunting boats reported to be in operation in 2011 (Acebes and Tull 2016). In the village of Bunga Mar, Bohol, there were 15 boats targeting mobulids in 2012, and out of 324 registered fishermen, over a third were actively engaged in ray fishing (Acebes and Tull 2016). Acebes and Tull (2016) monitored the numbers of manta rays landed at Bunga Mar over a period of 143 days from April 2010 to December 2011 (during which there were around 16–17 active fishing boats targeting mobulids), and in total, 40 *M. birostris* were caught. In 2013, records from a single village (location not identified) showed over 2,000 mobuilds landed from January to May, of which 2 percent (n = 51 individuals) were *M. birostris* (Verdote and Ponzo 2014). As there is little evidence of enforcement of current prohibitions on manta ray hunting, and no efforts to regulate the mobulid fisheries, with mobulid fishing providing the greatest profit to fishermen, it is unlikely that fishing for mantas, of which the majority appears to be *M. birostris,* will decrease in the future.

Manta rays are also reportedly targeted in fisheries in India, Ghana, Peru, Thailand, Mozambique, Tonga, Micronesia, possibly the Republic of Maldives, and previously in Mexico. In India, Ghana, Peru, and Thailand, little information is available on the actual level of take of manta rays. In India, manta rays are mainly landed as bycatch in tuna gillnetting and trawl fisheries; however, a harpoon fishery at Kalpeni, off Lakshadweep Islands, is noted for ''abundantly'' landing mantas (likely *M. alfredi;* A.M. Kitchen-Wheeler pers. comm. 2016) during peak season (from June–August) (Raje et al. 2007). In Ghana, there is no available data on the amount of manta rays landed in Ghanaian fisheries; however, Debrah et al. (2010) observed that giant manta rays were targeted using wide-mesh drift gillnets in artisanal fisheries between 1995 and 2010, and D. Berces (pers. comm. 2016) confirmed that manta rays are taken during artisanal fishing for pelagic sharks, and not ''infrequently,'' with manta rays consumed locally. In Peru, Heinrichs et al. (2011), citing to a rapid assessment of the mobulid fisheries in the Tumbes and Piura regions, reported estimated annual landings of *M. birostris* on the order of 100–220 manta rays for one family of fishermen. As such, total landings for Peru are likely to be much larger. According to Heinrichs et al. (2011), dive operators in the Similan Islands, Thailand, have also observed an increase in fishing for manta rays, including in protected Thai national marine parks, and while information on catches is unavailable, sightings of *Manta* spp. (likely *M. birostris*) decreased by 76 percent between 2006 and 2012 (CITES 2013b).

In southern Mozambique, reef manta rays are targeted by fishermen, with

estimates of around 20–50 individuals taken annually from only a 50 km section of studied coastline (Rohner et al. 2013). As annual estimates of this *M. alfredi* population range only from 149 to 454 individuals (between 2003 and 2007), this take is equivalent to removing anywhere from 4 percent to 34 percent of the population per year. This removal rate is potentially unsustainable for a species with such a low productivity, and has likely contributed to the estimated 88 percent decline that has already been observed in the local reef manta ray population (Rohner et al. 2013). *Manta birostris,* on the other hand, has not exhibited a decline off Mozambique, represents only 21 percent of the identified manta rays in this area, and is rarely observed in the local fishery (one observed caught over an 8-year period), indicating that fishing pressure is likely low for this species (Rohner et al. 2013; Marine Megafauna Foundation 2016).

Opportunistic hunting of manta rays (likely *M. alfredi*) has been reported in Tonga and Micronesia (B. Newton and J. Hartup pers. comms. cited in CMS 2014), and in the Maldives, Anderson and Hafiz (2002) note that very small catches of manta rays occur in the traditional fisheries, with meat used for bait for shark fishing and skin used for musical drums. Given the available information, it is unlikely that fishing pressure on either manta ray species is significant in these areas.

In Mexico, giant manta rays and mobula rays were historically targeted for their meat in the Gulf of California. In 1981, Notarbartolo di Sciara (1988) observed a seasonally-active mobulid fishery located near La Paz, Baja California Sur. Mobulids were fished in the Gulf of California using both gillnets and harpoons, with their meat either fileted for human consumption or used as shark bait. The giant manta ray was characterized as ''occasionally captured'' by the fishery, and while it is unclear how abundant *M. birostris* was in this area, by the early 1990s, Homma et al. (1999) reported that the entire mobulid fishery had collapsed.

Bycatch

Given the global distribution of manta rays, they are frequently caught as bycatch in a number of commercial and artisanal fisheries worldwide. In a study of elasmobranch bycatch patterns in commercial longline, trawl, purse seine and gillnet fisheries, Oliver et al. (2015) presented information on species-specific composition of ray bycatch in 55 fisheries worldwide. Based on the available data, Oliver et al. (2015) found that manta rays comprised the greatest proportion of ray bycatch in the purse seine fisheries operating in the Indian Ocean (specifically *M. birostris;* ~40 percent) and especially the Eastern Pacific Ocean (identified as *Manta* spp.*;* ~100 percent, but would be *M. birostris* as well), but were not large components of the ray bycatch in the longline, trawl, or gillnet fisheries in any of the ocean basins.

In the Atlantic Ocean, bycatch of giant manta rays has been observed in purse seine, trawl, and longline fisheries; however, *M. birostris* does not appear to be a significant component of the bycatch. For example, in the European purse seine fishery, which primarily operates in the Eastern Atlantic off western Africa, observer data collected over the period of 2003–2007 (27 trips, 598 sets; observer coverage averaged 2.93 percent) showed only 11 *M. birostris* caught, with an equivalent weight of 2.2 mt (Amandè et al. 2010). In the U.S. bottom longline and gillnet fisheries operating in the western Atlantic, *M. birostris* is also a very rare occurrence in the elasmobranch catch, with the vast majority that are caught released alive (see NMFS Reports available at *http://www.sefsc.noaa.gov/labs/panama/ob/bottomline observer.htm* and *http://www.sefsc.noaa.gov/labs/panama/ob/gillnet.htm*). Overall, given the present low fishing pressure on giant manta rays, and evidence of minimal bycatch of the species (see Miller and Klimovich (2016) for additional discussion), it is unlikely that overutilization as a result of bycatch mortality is a significant threat to *M. birostris* in the Atlantic Ocean. However, information is severely lacking on both population sizes and distribution of the giant manta ray as well as current catch and fishing effort on the species throughout this portion of its range.

In the Indian Ocean, manta rays (primarily *M. birostris*) are mainly caught as bycatch in purse seine and gillnet fisheries. In the western Indian Ocean, data from the pelagic tuna purse seine fishery suggests that manta and mobula rays, together, are an insignificant portion of the bycatch, comprising less than one percent of the total non-tuna bycatch per year (Romanov 2002; Amandè et al. 2008). However, in the eastern Indian Ocean, manta rays appear at higher risk of capture from the fisheries operating throughout this area, with two of the top three largest *Manta* spp. fishing and exporting range states (Sri Lanka and India) located in this region (Heinrichs et al. 2011). In Sri Lanka, manta rays are primarily caught as bycatch in the artisanal gillnet fisheries. While fishermen note that they generally tend to avoid deploying nets near large aggregations of manta rays or regularly release them when caught, as recently as 2011, giant manta rays were observed being sold at Sri Lanka fish markets (Fernando and Stevens 2011). Additionally, although Sri Lankan fishermen state that they try to release pregnant and young manta rays alive, based on 40 observed *M. birostris* being sold at markets (from May through August 2011), 95 percent were juveniles or immature adults (Fernando and Stevens 2011). Extrapolating the observed market numbers to a yearly value, Fernando and Stevens (2011) estimated total annual landings for *M. birostris* in Sri Lanka to be around 1,055 individuals, which they concluded would likely result in a population crash (Fernando and Stevens 2011). Additionally, more recent data from the Indian Ocean Tuna Commission (IOTC) database (*http://www.iotc.org/iotc-online-data-querying-service*) covering the time period of 2012–2014 indicate that over 2,400 mt of *M. birostris* were recorded caught by the Sri Lankan gillnet and longline fleets primarily engaged in artisanal fishing. This amount is almost double the 1,413 mt total catch that was reported in Clarke and IOTC Secretariat (2014) by both Sri Lanka and Sudan fleets from a time period that was more than twice as long (2008–2013). Using the maximum observed weight of *M. birostris* in the Indian Ocean (2,000 kg; which was described as ''unusually large'' (Kunjipalu and Boopendranath 1982)), this translates to a minimum of around 400 giant manta rays caught annually in recent years by Sri Lankan fishing fleets. Given that fishermen have already noted a decrease in catches of manta rays over the past 5 years, it is likely that the continued and heavy fishing pressure on *M. birostris,* and associated bycatch mortality, is significantly contributing to the overutilization of the species in this portion of its range.

Manta ray landings have also become a more common occurrence in the bycatch of fishermen operating off India. Here, mobulids, including mantas, are landed as bycatch during tuna gillnetting and trawling operations and are auctioned off for their gill plates, while the meat enters the local markets. Historical reports (from 1961–1995) indicate that manta rays were only sporadically caught by fishermen along the east and west coasts of India, likely due to the fact that the species was rarely found near the shore (Pillai 1998). However, based on available information, it appears that landings

have increased in recent years, particularly on the southwest coast. For the years 2003 and 2004, Raje et al. (2007) reported 647 mt of *M. birostris* from the southwest coast of India by the trawl fisheries. In a snapshot of the Indian tuna gillnet fishery, Nair et al. (2013) documented 5 individuals of *M. birostris* that were landed by fishermen off the coast of Vizhinjam, Kovalam and Colachel over the course of only 7 days. On the east coast of India, Raje et al. (2007) documented 43 mt of *M. birostris* landed in 2003 and 2004 at the Chennai fishing harbor. The apparent increase in landings since the sporadic reports of the species in the mid-1990s is likely due to the demand for the species' gill rakers, with *M. birostris* gill plates characterized as ''First Grade'' and fetching the highest price at auction at the major fishing port of Cochin Fisheries Harbour (Nair et al. 2013).

While *Manta* spp. are rarely reported in the catch from the western Pacific, with Hall and Roman (2013) noting that *M. japonica* represents the most abundant mobulid in the fisheries data, the available information still suggests the potential for bycatch mortality and indicates declining trends within this region. For example, based on observer data from the Western and Central Pacific Fisheries Commission (WCPFC) fisheries, *M. birostris* is observed at a rate of 0.0017 individuals per associated set and 0.0076 individuals per unassociated set in the purse seine fisheries, and at a rate of 0.001–0.003 individuals per 1,000 hooks in the longline fisheries (Tremblay-Boyer and Brouwer 2016). The longline standardized catch-per-unit-effort data, while covering observations from only the past decade, indicates that *M. birostris* is observed less frequently in recent years compared to 2000–2005 (Tremblay-Boyer and Brouwer 2016). Additionally, a sharp decline in the catches of manta rays off Papua New Guinea, where WCPFC fishing effort is high, was observed in Papua New Guinea purse seiner bycatch in 2005–2006, after a previously steady rise in manta ray catches from 1994–2005 (C. Rose pers. comm. cited in Marshall et al. 2011b).

In the eastern Pacific, giant manta rays are frequently reported as bycatch in the purse seine fisheries; however, identification to species level is difficult, and, as such, most manta and mobula ray captures are pooled together (Hall and Roman 2013). Based on reported *M. birostris* catch to the Inter-American Tropical Tuna Commission (IATTC), including available national observer program data, an average of 135 giant manta rays were estimated caught per year from 1993–2015 in the eastern Pacific purse seine fishery by IATTC vessels (Hall unpublished data). While the impact of these bycatch levels on giant manta ray populations is uncertain, effort in the fishery appears to coincide with high productivity areas, such as the Costa Rica Thermal Dome, west of the Galapagos, off the Guayas River estuary (Ecuador), and off central and northern Peru, where giant mantas are likely to aggregate and have been observed caught in sets (Hall and Roman 2013). If effort is concentrated in manta ray aggregation areas, this could lead to substantial declines and potential local extirpations of giant manta ray populations. Already, evidence of declines in this portion of the giant manta ray's range is apparent, with White et al. (2015) estimating an 89 percent decline in the relative abundance of *M. birostris* off Cocos Island, Costa Rica. Presently, the largest population of *M. birostris* is thought to reside within the waters of the Machalilla National Park and the Galapagos Marine Reserve (Hearn et al. 2014); however, given the distribution of purse seine fishing effort, and the migratory nature of the species, it is likely that individuals from this population are highly susceptible to the purse seine fisheries operating in the area.

Overall, given that the majority of observed declines in landings and sightings of manta rays originate from the Indo-Pacific and eastern Pacific portions of their range (see Table 5 in Miller and Klimovich 2016), additional pressure on these species through bycatch mortality may have significant negative effects on local populations throughout this area. This is particularly a risk for *M. birostris,* which appears to be the species most frequently observed in the fisheries catch and bycatch, with this pressure already contributing to declines in the species (of up to 95 percent) throughout many areas (*i.e.,* Indonesia, Philippines, Sri Lanka, Thailand, Madagascar, Costa Rica). As such, we find that current fisheries-related mortality rates are a threat significantly contributing to the overutilization of *M. birostris* throughout this portion of its range. Additionally, given the high market prices for manta ray gill plates, we find that the practice of landing these species as valuable bycatch will likely continue through the foreseeable future.

Disease or Predation

No information has been found to indicate that disease or predation is a factor that is significantly and negatively affecting the status of manta rays. Manta rays are frequently observed congregating in inshore cleaning stations, often associated with coral reefs, where small cleaner fish remove parasites and dead tissue from their bodies (Marshall and Bennett 2010a; O'Shea et al. 2010; CITES 2013). They may remain at these cleaning stations for large periods of time, sometimes up to 8 hours a day, and may visit daily (Duinkerken 2010; Kitchen-Wheeler 2013; Rohner et al. 2013). While there is no information on manta ray diseases, or data to indicate that disease is contributing to population declines in either species, impacts to these cleaning stations (such as potential loss through habitat degradation) may negatively impact the fitness of the mantas by decreasing their ability to reduce their parasite load. However, at this time, the impact and potential loss of cleaning stations is highly speculative.

In terms of predation, manta rays are frequently sighted with non-fatal injuries consistent with shark attacks, although the prevalence of these sightings varies by location (Homma et al. 1999; Ebert 2003; Mourier 2012). For example, Deakos et al. (2011) reported that scars from shark predation, mostly on the posterior part of the body or the wing tip, were evident in 24 percent of *M. alfredi* individuals observed at a manta ray aggregation site off Maui, Hawaii. At Lady Elliott Island, off eastern Australia, Couturier et al. (2014) observed 23 percent of individuals had shark scars. In contrast, in southern Mozambique, between 2003 and 2006, 76.3 percent of the *M. alfredi* identified by Marshall and Bennett (2010a) exhibited shark-inflicted bite marks, the majority of which were already healed. Rohner et al. (2013) found a lower rate for *M. birostris,* with only 35 percent of individuals observed with bite marks. Marshall and Bennett (2010a) also recorded two mid-pregnancy abortions by pregnant female *M. alfredi* attributed to damage from shark attacks. The authors observed that the rate of shark-inflicted bites in southern Mozambique appears to be higher than predation rates in other manta ray populations, which is generally noted at less than five percent (Ito 2000; Kitchen-Wheeler et al. 2012), but it is unknown why this difference exists.

Because the damage from a shark bite usually occurs in the posterior region of the manta ray, there may be disfigurement leading to difficult clasper insertion during mating or inhibited waste excretion (Clark and Papastamatiou 2008). Given the already low reproductive ability of these species, attacks by sharks (or occasionally killer whales, see Fertl et

al. (1996) and Visser and Bonoccorso (2003)) may pose a threat to the species by further impairing the manta rays' ability to rebuild after depletion. However, at this time, the impact of shark bites on manta ray reproduction, or predation mortality rates on the status of either species, is highly speculative.

The Inadequacy of Existing Regulatory Mechanisms

Protections for manta rays are increasing, yet there are still a number of areas where manta rays are targeted or allowed to be landed as bycatch. In fact, only one of the Regional Fishery Management Organizations (RFMOs) has prohibited retention of bycaught manta rays. Additionally, because both manta species were identified as *M. birostris* prior to 2009, some national protections that were implemented before 2009 are specific only to giant manta rays, despite both species being present in that nation's waters. Below we provide an analysis of the adequacy of measures in terms of controlling threats to each species where available data permit. A list of current protections for manta rays can be found in the Appendix of Miller and Klimovich (2016).

Overutilization of *M. birostris*

Based on the available data, *M. birostris* appears to be most at risk of overutilization in the Indo-Pacific and eastern Pacific portions of its range. Targeted fishing and incidental capture of the species in Indonesia, Philippines, Sri Lanka, and India, and throughout the eastern Pacific, has led to observed declines in the *M. birostris* populations. Despite national protections for the species, poor enforcement and illegal fishing have essentially rendered the existing regulatory mechanisms inadequate to achieve their purpose of protecting the giant manta ray from fishing mortality.

In Indonesia, *M. birostris* and *M. alfredi* were provided full protection in the nation's waters in 2014 (4/KEPMEN–KP/2014), with the creation of the world's largest manta ray sanctuary at around 6 million km^2. Fishing for the species and trade in manta ray parts are banned. Despite this prohibition, fishing for manta rays continues, with evidence of the species being landed and traded in Indonesian markets (AFP 2014; Marshall and Conradie 2014; Dharmadi et al. 2015). As mentioned previously (see *Overutilization for commercial, recreational, scientific, or educational purposes*), many fishermen throughout Indonesia rely on shark and ray fishing for their livelihoods, and without an alternative source of income, are unlikely to stop their traditional fishing practices, including the targeting of manta rays. Additionally, in interviews with fishermen, many viewed the prohibition positively because it would likely drive up the market price of manta ray products (Marshall and Conradie 2014). Given the size of the Indonesian archipelago, and current resources, Dharmadi et al. (2015) note there are many issues with current enforcement of regulations. For example, the collection of data is difficult due to insufficient fisheries officers trained in species identification and the large number of landing sites that need to be monitored (over 1,000). Catch data are typically not accurately recorded at the smaller landing sites either, with coastal waters heavily fished by artisanal fishermen using non-selective gear (Dharmadi et al. 2015). Given the issues with enforcement and evidence of illegal fishing, existing regulatory mechanisms are inadequate to protect the species from further declines due to overutilization.

In the Philippines, legal protection for manta rays was introduced in 1998; however, similar to the situation in Indonesia, enforcement of the prohibitions is lacking and illegal fishing of the species is evident. For example, in a random sampling of 11 dried products of sharks and rays confiscated for illegal trading, Asis et al. (2016) found that four of the products could be genetically identified as belonging to *M. birostris.* Dried manta meat and gill rakers were frequently observed in markets between 2010 and 2012, and fishing boats specifically targeting mobulids (including manta rays) were identified in a number of local fishing villages in the Philippines, with landings consisting of *M. birostris* individuals. Fishing for mobulids is a ''way of life'' and the primary source of income for many fishermen, and with the high prices for manta gill rakers in the Philippine markets (where an average manta ray of around 3 m DW could fetch up to $808; Acebes and Tull (2016)), it is unlikely that pressure on the species will decrease. With essentially no efforts to regulate the mobulid fisheries in the Philippines, and a severe lack of enforcement of the current manta ray hunting prohibition, current regulations to protect *M. birostris* from overutilization in the Philippines are inadequate.

In the eastern and central Indian Ocean, very few national protections have been implemented for *M. birostris.* Essentially, fishing for the species and retention of bycatch is allowed except within the Republic of Maldives EEZ and within specific marine parks of Western Australia. Given the declines observed in the species throughout the Indian Ocean, and the migratory nature of the animal, with the potential for the species to move out of protected areas into active fishing zones (*e.g.,* from the Maldives to Sri Lanka—a distance of ~820 km, well within the ability of *M. birostris*), it is likely that existing regulatory measures within this portion of the species' range are inadequate to protect it from overutilization.

In the eastern Pacific portion of the species' range, the IATTC recently implemented a prohibition on the retention, transshipment, storage, landing, and sale of all devil and manta (mobula and manta) rays taken in its large-scale fisheries (Resolution C–15–04). This regulation went into force on August 1, 2016. Cooperating members must report mobulid catch data and ensure safe release; however, developing countries were granted an exception for small-scale and artisanal fisheries that catch these species for domestic consumption. Given that *M. birostris* is primarily caught as bycatch in the IATTC purse seine fisheries, the adequacy of this prohibition in protecting the species from overutilization depends on the post-release survival rate of the species. While injuries from entanglements in fishing gear (*e.g.,* gillnets and longlines) have been noted (Heinrichs et al. 2011), at this time, at-vessel and post-release mortality rates for manta rays in purse seine nets are unknown. For other Mobula species, Francis and Jones (2016) provided preliminary evidence that may indicate a potential for significant post-release mortality of the spinetail devilray (*Mobula japanica*) in purse seine fisheries; however, the study was based on only seven observed individuals and, because of this, the authors caution that it is ''premature to draw conclusions about survival rates.'' In fact, based on observer data in the New Zealand purse seine fishery, mentioned in Francis and Jones (2016), rays that were caught during sets and released were ''usually lively'' and swam away from the vessel and judged by the observers as ''likely to survive.'' Although decreasing purse seine fishing effort in manta ray hotspots would significantly decrease the likelihood of bycatch mortality, without further information on post-release survival rates, it is highly uncertain if the prohibition will be adequate in decreasing the mortality of the species.

Additionally, in 2016, prohibitions on the fishing and sale of *M. birostris* and requirement for immediate release of mantas caught as bycatch were

implemented in Peru. Ecuador banned the fishing, landing and sale of manta rays in its waters back in 2010. Given that the largest population of *M. birostris* is found in the waters between Peru and Ecuador (with the Isla de la Plata population estimated at around 1,500 individuals), these prohibitions should provide some protection to the species from fishing mortality when in these waters. However, illegal fishing still occurs in these waters. For example, in Ecuador's Machalilla National Park (a major *M. birostris* aggregation site), researchers have observed large numbers of manta rays with life-threatening injuries as a result of incidental capture in illegal wahoo (*Acanthocybium solandri*) trawl and drift gillnet fisheries operating within the park (Heinrichs et al. 2011; Marshall et al. 2011a). Depending on the extent of the activities, illegal fishing could potentially contribute to local declines in the population if not adequately controlled. Also, given the migratory nature of the species, national protections may not be adequate to protect the species from overutilization throughout its range, particularly when the species crosses boundary lines where protections no longer exist, as evidenced by the significant decline in *M. birostris* observed in Cocos Island National Park, Costa Rica (White et al. 2015).

Overutilization of *M. alfredi*

Despite a significant overlap in range with *M. birostris* in the Indian and Pacific Oceans, and the more nearshore and reef-associated resident behavior, *M. alfredi* is rarely identified in commercial and artisanal fisheries catch. While the prior lumping of all manta rays as *M. birostris* may account for these findings, in certain portions of the species' range, the distribution of *M. alfredi* may not overlap with the areas of fishing operations. For example, in the Philippines, Rambahiniarison et al. (2016) explains that capture of reef manta rays is unusual, as the main mobulid fishing ground in the Bohol Sea lies offshore in deeper waters, where the presence of the more coastal *M. alfredi* is unlikely. Additionally, while *M. alfredi* are known to make night time deep-water dives offshore for foraging (≤150 m; Braun et al. (2014)), the driftnets deployed by the mobulid fishermen are set at night at much shallower maximum depths of 40 m and thus are unlikely to catch the species (Rambahiniarison et al. 2016). However, Acebes and Tull (2016) did observe a new, active mobulid fishery off Dinagat Island in northern Mindanao that appears to target *M. alfredi* around seamounts in the Leyte Gulf. In 2010, there were 4 active fishing boats in this fishery, supplying manta ray products to Bohol during the ''off season'' (Acebes and Tull 2016). While it is uncertain whether fishing pressure on *M. alfredi* will increase in the future (given that the majority of effort is presently concentrated outside of their distribution), current regulations in the Philippines only prohibit fishing of *M. birostris,* and, as such, are inadequate to protect the species from potential declines in the future.

In Indonesia, while the majority of landings data is reported as *M. birostris,* anecdotal reports from fishermen note that *M. alfredi* used to be caught as bycatch in drift gillnets. Evidence of declines and extirpations of local reef manta ray populations suggest that the species is at risk of overutilization by fisheries in these local, inshore areas, despite a lack of records. As such, the inadequacy of existing mechanisms (discussed previously) may pose a threat to the remaining local reef manta ray populations in Indonesia.

In the Indian Ocean, *M. alfredi* is subject to targeted fishing in the western Indian Ocean (off Mozambique) where declines of up to 88 percent have been observed but no fishery protections or regulatory measures are in place. While the Commonwealth of Australia has now listed both species of *Manta* on its list of migratory species under its Environment Protection and Biodiversity Conservation Act 1999, which means that any action that may have a significant impact on the species must undergo an environmental assessment and approval process, there are no specific regulatory protections for the species throughout Western Australian waters. *Manta* spp. are only explicitly protected from targeted fishing within Ningaloo Marine Park and, collectively, with all species in small designated zones along the Western Australian coast; however, it is important to note that neither species is subject to directed fishing in these waters. In fact, in those portions of the species' range where populations are either not fished and/or are afforded protection and appear stable, we find existing regulatory measures to be adequate in protecting the species from overutilization. These areas include waters of Australia, Hawaii, Guam, Japan, the Republic of Maldives, Palau, and Yap. Given the more coastal and resident behavior of *M. alfredi,* national measures prohibiting fishing of manta rays are likely to provide adequate protection to the species from overutilization through the foreseeable future.

Tourism Impacts

Codes of conduct have been developed by a number of organizations and used by dive operators to promote the safe viewing of manta rays and reduce the potential negative impacts of these activities on manta rays (see *Other Natural or Man-Made Factors Affecting Its Continued Existence* for discussion of this threat). The Manta Trust, a UK-registered charity, has developed a number of guidelines for divers, snorkelers, tour group operators, and in-water tourists, based on studies of interaction effects conducted by the organization from 2005–2013 (available here: *http://www.mantatrust.org/awareness/resources/*). The Hawaii Association for Marine Education and Research Inc. (2014) notes that codes of conduct for manta ray dive operators have been implemented in a number of popular manta ray diving locales, including Kona, Hawaii, Western Australia, Mozambique, Bora Bora, and in the Maldives; however, information on the adherence to, effectiveness, or adequacy of these codes of conduct in minimizing potential negative impacts of tourism activities on the populations could not be found.

Other Natural or Man-Made Factors Affecting Its Continued Existence

Manta rays are known to aggregate in various locations around the world, in groups usually ranging from 100–1,000 for *M. birostris* and 100–700 for *M. alfredi* (Notarbartolo-di-Sciara and Hillyer 1989; Graham et al. 2012; Venables 2013). These sites function as feeding sites, cleaning stations, or sites where courtship interactions take place (Heinrichs et al. 2011; Graham et al. 2012; Venables 2013), with the appearance of manta rays at these locations generally predictable and related to food availability (Notarbartolo-di-Sciara and Hillyer 1989; Heinrichs et al. 2011; Jaine et al. 2012). Additionally, manta rays exhibit learned behaviors, with diving spots using artificial lights to concentrate plankton and attract manta rays (Clark 2010). These behavioral traits, including the predictable nature of manta ray appearances, combined with their slow swimming speeds, large size, and lack of fear towards humans, may increase their vulnerability to other threats, such as overfishing, which was previously discussed, and tourism (O'Malley et al. 2013; CMS 2014).

Tourism was identified as a potential threat to the species, given that interacting (*i.e.,* swimming) with manta rays is a significant tourist attraction throughout the range of both species. In

fact, O'Malley et al. (2013) estimated that the manta ray tourism industry provides $140 million annually in direct revenue or economic impact. Regular manta ray concentrations off Mozambique, parts of Indonesia, Australia, Philippines, Yap, southern Japan, Hawaii, and Mexico have all become tourist attractions where manta dives are common (Anderson et al. 2011b). Estimates of the number of people interacting with manta rays per year at these popular dive sites are significant, ranging from over 10,000 at Ho'ona Bay (Hawaii; Clark (2010)) to at least 14,000 in the Maldives (Anderson et al. 2011b).

While manta ray tourism is far less damaging to the species than the impact of fisheries, this increasing demand to see and dive with the animals has the potential to lead to other unintended consequences that could harm the species. For example, Osada (2010) found that a popular manta dive spot in Kona, Hawaii, had fewer emergent zooplankton and less diversity compared to a less used dive spot, and attributed the difference to potential inadvertent habitat destruction by divers. Tour groups may also be engaging in inappropriate behavior, such as touching the mantas. Given the increasing demand for manta ray tourism, with instances of more than 10 tourism boats present at popular dive sites with over 100 divers in the water at once (Anderson et al. 2011b; Venables 2013), without proper tourism protocols, these activities could have serious consequences for manta ray populations.

Already, evidence of tourism activities potentially altering manta ray behavior has been observed. For example, from 2007–2008, low numbers of mantas were observed at normally popular manta dive sites in the Maldives while manta ray numbers remained stable at less visited sites (Anderson et al. 2011b). Similarly, De Rosemont (2008) noted the disappearance of a resident manta ray colony from a popular cleaning station in a Bora Bora lagoon in 2005, and attributed the absence to new hotel construction and increased tourism activities; however, by 2007, the author notes that the mantas had returned to the site. In a study of the tourism impacts on *M. alfredi* behavior in Coral Bay, Western Australia, Venables (2013) observed that mantas exhibited a variety of behavioral changes in response to swim group interactions (*i.e.,* their response was different than their behavior prior to the approach of the swim group). Although the long-term effects of tourism interactions are at this time unknown, the results from the Venables (2013) study provide a preliminary estimate of the potentially minimum response of the species to interactions with tourists, and indicates that these interactions can cause the species to alter (and even stop) behaviors that serve critical biological functions (such as feeding and cleaning). Additional studies on both the short-term and long-term impact of tourist interactions with manta rays are needed in order to evaluate if this interaction is a potential threat to the survival of the species.

In addition to tourism activities, another potential threat to both manta ray species is an increase in mortality from boat strikes and entanglements. Because manta ray aggregation sites are sometimes in areas of high maritime traffic (such as Port Santos in Brazil or in the Caribbean (Marshall et al. 2011a; Graham et al. 2012)), manta rays are at potential risk of being struck and killed by boats. Mooring and boat anchor line entanglement may also wound manta rays or cause them to drown (Deakos et al. 2011; Heinrichs et al. 2011). For example, in a Maui, Hawaii, *M. alfredi* population (n = 290 individuals), Deakos et al. (2011) observed that 1 out of 10 reef manta rays had an amputated or disfigured non-functioning cephalic fin, likely a result of line entanglement. Internet searches also reveal photographs of mantas with injuries consistent with boat strikes and line entanglements, and manta researchers report that such injuries may affect manta fitness in a significant way (The Hawaii Association for Marine Education and Research Inc. 2005; Deakos et al. 2011; Heinrichs et al. 2011; Couturier et al. 2012; CMS 2014; Germanov and Marshall 2014; Braun et al. 2015), potentially similar to the impacts of shark or orca attacks. However, there is very little quantitative information on the frequency of these occurrences and no information on the impact of these injuries on the overall health of the populations.

Assessment of Extinction Risk

The ESA (section 3) defines an endangered species as ''any species which is in danger of extinction throughout all or a significant portion of its range.'' A threatened species is defined as ''any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' For the term ''foreseeable future,'' we define it as the time frame over which identified threats could be reliably predicted to impact the biological status of the species. For the assessment of extinction risk for both manta ray species, the ''foreseeable future'' was considered to extend out several decades (>50 years). Given both species' life history traits, with longevity estimated to be greater than 20–40 years, maturity ranges from 3 to >15 years, reproductive periodicity anywhere from an annual cycle to a 5-year cycle, with a litter of only 1 pup, and a generation time estimated to be around 25 years, it would likely take more than a few decades (*i.e.,* multiple generations) for any recent management actions to be realized and reflected in population abundance indices. Similarly, the impact of present threats to both species could be realized in the form of noticeable population declines within this time frame, as demonstrated in the very limited available sightings time-series data. As the main potential operative threat to the species is overutilization by commercial and artisanal fisheries, this time frame would allow for reliable predictions regarding the impact of current levels of fishery-related mortality on the biological status of the two species. Additionally, this time frame allows for consideration of the previously discussed impacts on manta ray habitat from climate change and the potential effects on the status of these two species.

In determining the extinction risk of a species, it is important to consider both the demographic risks facing the species as well as current and potential threats that may affect the species' status. To this end, a demographic analysis was conducted for the giant manta ray and the reef manta ray. A demographic risk analysis is an assessment of the manifestation of past threats that have contributed to the species' current status and informs the consideration of the biological response of the species to present and future threats. This analysis evaluated the population viability characteristics and trends available for the manta rays, such as abundance, growth rate/productivity, spatial structure and connectivity, and diversity, to determine the potential risks these demographic factors pose to each species. The information from this demographic risk analysis was considered alongside the information previously presented on threats to these species, including those related to the factors specified by the ESA section 4(a)(1)(A)–(E) (and summarized in a separate Threats Assessment section below) and used to determine an overall risk of extinction for *M. birostris* and *M. alfredi.* Because species-specific information is sporadic and sometimes

uncertain (due to the prior lumping of the *Manta* genus), the qualitative reference levels of ''low risk,'' ''moderate risk'' and ''high risk'' were used to describe the overall assessment of extinction risk, with detailed definitions of these risk levels found in the status review report (Miller and Klimovich 2016).

Demographic Risk Analysis

Giant Manta Ray

Abundance

Current and accurate abundance estimates are unavailable for the giant manta ray, as the species tends to be only sporadically observed. While observations of individuals in local aggregations range from around 40 individuals to over 600, estimates of subpopulation size have only been calculated for Mozambique (n = 600 individuals) and Isla de la Plata, Ecuador (n = 1,500 individuals).

If a population is critically small in size, chance variations in the annual number of births and deaths can put the population at added risk of extinction. Demographic stochasticity refers to the variability of annual population change arising from random birth and death events at the individual level. When populations are very small, chance demographic events can have a large impact on the population. The conservation biology ''50/500'' rule-of-thumb suggests that the effective population size (*Ne;* the number of reproducing individuals in a population) in the short term should not be <50 individuals in order to avoid inbreeding depression and demographic stochasticity (Franklin 1980; Harmon and Braude 2010). In the long-term, *Ne* should not be <500 in order to decrease the impact of genetic drift and potential loss of genetic variation that will prevent the population from adapting to environmental changes (Franklin 1980; Harmon and Braude 2010). Given the two available subpopulation estimates, *M. birostris* is not likely to experience extreme fluctuations that could lead to depensation; however, data are severely lacking. The threshold for depensation in giant manta rays is also unknown. Additionally, the genetic diversity in the giant manta ray has not been investigated. While a preliminary study suggests that the species may exist as isolated subpopulations, available tracking information indicates these manta rays are pelagic and migratory and can likely travel large distances to reproduce. It is this more transient and pelagic nature of the species that has made it difficult to estimate population sizes.

Yet, given the reports of anecdotal declines in sightings and decreases in *M. birostris* landings (of up to 95 percent) in areas subject to fishing (particularly the Indo-Pacific and eastern Pacific portions of the species' range), with take estimates that currently exceed those subpopulation and aggregation estimates (*e.g.,* 50–3,125 individuals), abundance of these particular populations may be at levels that place them at increased risk of genetic drift and potentially at more immediate risks of inbreeding depression and demographic stochasticity. Extirpations of these populations would inherently increase the overall risk of extinction for the entire species.

Growth Rate/Productivity

The current net productivity of *M. birostris* is unknown due to the imprecision or lack of available abundance estimates or indices. Fecundity, however, is extremely low, with one pup per litter and a reproductive periodicity of 1–2 years. Using estimates of life history parameters for both giant and reef manta rays, Dulvy et al. (2014) calculated a median maximum population growth rate to be 0.116 (one of the lowest values compared to other shark and ray species), and estimated productivity (r) to be 0.029. Ward-Paige et al. (2013) calculated a slightly higher intrinsic rate of population increase for *M. birostris* at r = 0.042; however, both these estimates indicate that the giant manta ray has very low productivity and, thus, is extremely susceptible to decreases in its abundance.

Given their large sizes, manta rays are assumed to have a fairly high survival rate after maturity (*e.g.,* low natural predation), with estimated annual survival rates for *M. alfredi* populations supporting this assumption. Based on modeling work on *M. alfredi,* adult survival rate was found to be the most significant factor affecting the viability of the population.

Additionally, at this time, no changes in demographic or reproductive traits or barriers to the exploitation of requisite habitats/niches/etc. have been observed in *M. birostris.*

Spatial Structure/Connectivity

The giant manta ray inhabits tropical, subtropical, and temperate bodies of water and is commonly found offshore, in oceanic waters, and near productive coastlines. It occurs over a broad geographic range and is found in all ocean basins. Most tagging and tracking studies indicate that the home range of individuals is likely large, with the species exhibiting migratory behavior and distances tracked of up to 1,500 km. However, a recent study of the *M. birostris* population found off Pacific Mexico suggests there may be a degree of spatial structuring within the species. At this time, it is unknown whether natural rates of dispersal among populations are too low to prevent sufficient gene flow among populations. Additionally, there is no information to indicate that *M. birostris* is composed of conspicuous source-sink populations or habitat patches.

Diversity

Rates of dispersal and gene flow are not known to have been altered in *M. birostris.* Presently, giant manta rays are wide-ranging inhabitants of offshore, oceanic waters and productive coastline ecosystems and thus are continually exposed to ecological variation at a broad range of spatial and temporal scales. As such, large-scale impacts that affect ocean temperatures, currents, and potentially food chain dynamics, may pose a threat to this species. However, given the migratory behavior of the giant manta ray and tolerance to both tropical and temperate waters, these animals likely have the ability to shift their range or distribution to remain in an environment conducive to their physiological and ecological needs, providing the species with resilience to these effects. At this time, there is no information to suggest that natural processes that cause ecological variation have been significantly altered to the point where *M. birostris* is at risk.

Reef Manta Ray

Abundance

Current and accurate abundance estimates are unavailable for the reef manta ray. Observations of individuals in local aggregations range from 35 individuals to over 2,400; however, many are on the order of 100–600 individuals. Subpopulation sizes range from 100 to 350 individuals, with the exception of the Maldives at 3,300–9,677 individuals. Meta-population estimates for southern Mozambique and Ningaloo Reef, Australia are 802–890 and 1,200–1,500 individuals, respectively.

The rather low subpopulation estimates for *M. alfredi* throughout most of its range suggest that the species may be at increased risk of genetic drift and potential loss of genetic variation. Unlike the giant manta ray, *M. alfredi* is thought to be a more resident species, with populations that occur year-round at certain sites. This reproductive isolation further increases the risk of

inbreeding depression and potential inability of the population to respond to environmental variation or anthropogenic perturbations. For example, Kashiwagi (2014) recently estimated the effective population size of the *M. alfredi* population off the Yaeyama Islands to be *Ne* = 89, indicating that the population is not part of a large gene pool and may be close to a level where viability could be jeopardized in the shorter term. Total population was estimated at 165–202 individuals, indicating long-term viability vulnerability. With most available subpopulation estimates ranging only from 100 to 600 individuals (with the exception of Western Australia, Maldives, and Southern Mozambique), it is likely that these populations similarly have low effective population sizes that may increase their vulnerability to inbreeding depression, the loss of genetic variants, or fixation of deleterious mutations.

Overall, based on the information above, the estimates of small and isolated subpopulations throughout most of the species' range, with the three exceptions off Mozambique, Maldives, and Western Australia, inherently place *M. alfredi* at an increased risk of extinction from environmental variation or anthropogenic perturbations. However, the trend in overall abundance of *M. alfredi* is highly uncertain.

Growth Rate/Productivity

The current net productivity of *M. alfredi* is unknown due to the imprecision or lack of available abundance estimates or indices. Fecundity, however, is extremely low, with one to, rarely, two pups per litter and a reproductive periodicity of anywhere from 1–5 years. Estimated productivity (r) values range from 0.023 to 0.05, indicating that the reef manta ray has very low productivity and, thus, is extremely susceptible to decreases in its abundance.

Annual survival rate for reef manta rays is fairly high. Estimated survival rates for subpopulations range from 0.95 to 1 off Australia, Hawaii, and Japan (Deakos et al. 2011; Couturier et al. 2014; Kashiwagi 2014). In Mozambique, rates were lower, between 0.6–0.7; however shark attacks are also more common in this area (Marshall et al. 2011c). Based on modeling work, Smallegange et al. (2016) showed that population growth rate was most sensitive to changes in the survival of adults.

Additionally, no changes in demographic or reproductive traits or barriers to the exploitation of requisite habitats/niches/etc. have been observed.

Spatial Structure/Connectivity

The reef manta ray is commonly seen inshore near coral and rocky reefs. The species is associated with warmer waters (≤21 °C) and productive nearshore habitats (such as island groups). It is considered a more resident species than *M. birostris.* While the species has been tracked undertaking long-distance movements (≤700 km), usually to exploit offshore productive areas, reef manta rays tend to return to known aggregation sites, indicating a degree of site-fidelity. Based on photo-identification surveys of the *M. alfredi* population off Maui, Hawaii, Deakos et al. (2011) suggested that geographic barriers, such as deep channels, might be barriers to movement between neighboring *M. alfredi* populations. Collectively, this information suggests that gene flow is likely limited among populations of *M. alfredi,* particularly those separated by deep ocean expanses.

With the exception of the Yaeyama, Japan population of *M. alfredi,* which Kashiwagi (2014) hypothesized may be a ''sink'' population but is presently increasing with a population growth rate of 1.02–1.03, there is no information to indicate that *M. alfredi* is composed of conspicuous source-sink populations or habitat patches whose loss may pose a risk of extinction.

Diversity

Given their tendency towards site fidelity, *M. alfredi* likely exists as isolated populations with low rates of dispersal and little gene flow among populations. Currently, there is no information to suggest that natural processes that cause ecological variation have been significantly altered to the point where the species is at risk. Reef manta rays also likely have the ability to shift their distribution to remain in an environment conducive to their physiological and ecological needs, providing the species with resilience to these effects. For example, in response to changing ecological conditions, like the biannual reversal of monsoon currents, reef manta rays will migrate to the downstream side of atolls, potentially to remain in nutrient-rich waters year-round (Anderson et al. 2011a). Presently, there is no information to suggest that natural processes that cause ecological variation have been significantly altered to the point where *M. alfredi* is at risk.

Threats Assessment

Giant Manta Ray

The most significant and certain threat to the giant manta ray is overutilization for commercial purposes. Giant manta rays are both targeted and caught as bycatch in a number of global fisheries throughout their range. Estimated take of giant manta rays, particularly in many portions of the Indo-Pacific, frequently exceeds numbers of observed individuals in those areas, and is accompanied by observed declines in sightings and landings of the species. Efforts to address overutilization of the species through regulatory measures appear inadequate, with evidence of targeted fishing of the species despite prohibitions (Indo-Pacific; Eastern Pacific) and only one regional measure to address bycatch issues, with uncertain effectiveness (Eastern Pacific). Additionally, given the migratory and pelagic behavior, national protections for the species are less likely to adequately protect the species from fisheries-related mortality. Giant manta rays are not confined by national boundaries and may, for example, lose certain protections as they conduct seasonal migrations or even as they move around to feed if they cross particular national jurisdictional boundaries (*e.g.,* between the Maldives and Sri Lanka or India), move outside of established Marine Protected Areas, or enter into high seas. While the species recently has been added to CITES Appendix II (added in March 2013 with a delayed effectiveness of September 2014), which may curb targeted fishing as countries must ensure that manta ray products are legally obtained and trade is sustainable, the species is still likely to be caught as bycatch in the industrial fisheries and targeted by artisanal fisheries for domestic consumption.

Other threats to *M. birostris* that potentially contribute to long-term risk of the species include (micro) plastic ingestion rates, increased parasitic loads as a result of climate change effects, and potential disruption of important life history functions as a result of increased tourism; however, due to the significant data gaps, the likelihood and impact of these threats on the status of the species is highly uncertain.

Reef Manta Ray

Given their more inshore distribution and association with shallow coral and rocky reefs, *M. alfredi* does not appear to be as vulnerable to commercial and larger-scale artisanal fishing operations as *M. birostris.* These fisheries tend to operate in deeper and more pelagic

waters, targeting migratory and commercially valuable species (like tunas, billfishes, and sharks), and, hence, have a higher likelihood of catching giant manta rays. In the available information, only two countries are reported to have targeted artisanal fisheries for *M. alfredi:* The Philippines (documented 4 fishing boats) and Mozambique. The species has been identified in bycatch from Indonesia, Papua New Guinea, and Kiribati, with subsequent observed declines in sightings, and potential local extirpations; however, the extent of fishing mortality on the species throughout its range is highly uncertain. Additionally, the lumping of both species as *M. birostris* prior to 2009, as well as the fact that much of the catch is not reported down to species level, also significantly contributes to this uncertainty. However, based on the data available, many of the identified populations of *M. alfredi* throughout the western and central Pacific are currently protected by regulations and appear stable, indicating that these existing regulatory measures are adequate at protecting the species from declines due to fishing mortality. Within the Indian Ocean, national protections exist for the large population of *M. alfredi* off the Maldives, and while specific protections for *M. alfredi* have not been implemented in Western Australia, the species is not subject to directed fishing (or prevalent in bycatch) and is presently one of the largest identified populations.

Climate change was identified as a potential threat contributing to the long-term extinction risk of the species. Because *M. alfredi* are more commonly associated with coral reefs compared to giant manta rays, frequently aggregating within these habitats and showing a high degree of site-fidelity and residency to these areas, we found the impact of climate change on coral reefs to be a potential risk to the species. Although the species itself is not dependent on corals, which are most susceptible to the effects of climate change, the manta rays rely on the reef community structure, like the abundance of cleaner fish, to carry out important functions, such as removing parasite loads and dead tissue. Coral reef community structure is likely to be altered as a result of increasing events of coral bleaching through the foreseeable future; however, what this change will look like and its subsequent impact on the species is highly uncertain. Similarly, changes in zooplankton communities and distribution, including in and around coral reefs, are also likely to occur as a result of climate change, affecting the potential previous predictability of *M. alfredi* food resources. Reef manta rays may need to venture out farther to find available food or search for new productive areas; however, given that the species has been shown capable of making long-distance foraging movements, the impact of this potential displacement or change in distribution of zooplankton may not be a significant contributor to the species' extinction risk.

Other threats that potentially contribute to long-term risk of the species include (micro) plastic ingestion rates, and potential disruption of important life history functions or destruction of habitat as a result of increased tourism; however, due to the significant data gaps, the likelihood and impact of these threats on the status of the species is highly uncertain.

Overall Risk Summary

Giant Manta Ray

Given the extremely low reproductive output and overall productivity of the giant manta ray, it is inherently vulnerable to threats that would deplete its abundance, with a low likelihood of recovery. While there is considerable uncertainty regarding the current abundance of *M. birostris* throughout its range, the best available information indicates that the species has experienced population declines of potentially significant magnitude within areas of the Indo-Pacific and eastern Pacific portions of its range, primarily due to fisheries-related mortality. Yet, larger subpopulations of the species still exist, including off Mozambique (where declines were not observed) and Ecuador. However, as giant manta rays are a migratory species and continue to face fishing pressure, particularly from the industrial purse seine fisheries and artisanal gillnet fisheries operating within the Indo-Pacific and eastern Pacific portions of its range, overutilization will continue to be a threat to these remaining *M. birostris* populations through the foreseeable future, placing them at a moderate risk of extinction.

While we assume that declining populations within the Indo-Pacific and eastern Pacific portions of its range will likely translate to overall declines in the species throughout its entire range, there is very little information on the abundance, spatial structure, or extent of fishery-related mortality of the species within the Atlantic portion of its range. As such, we cannot conclude that the species is at a moderate risk of extinction throughout its *entire* range. However, under the final *Significant Portion of Its Range (SPR) policy,* we must consider whether the species may be in danger of extinction, or likely to become so within the foreseeable future, in a significant portion of its range (79 FR 37577; July 1, 2014).

Significant Portion of Its Range (SPR) Analysis

To identify only those portions that warrant further consideration under the SPR Policy, we must determine whether there is substantial information indicating that (1) the portions may be significant and (2) the species may be in danger of extinction in those portions or likely to become so within the foreseeable future. With respect to the second of those determinations, as mentioned previously, the best available information indicates that the giant manta ray faces concentrated threats throughout the Indo-Pacific and eastern Pacific portion of its range. Estimated take of giant manta rays is frequently greater than the observed individuals in those areas, with observed declines in sightings and landings of the species of up to 95 percent. Efforts to address overutilization of the species through regulatory measures appear inadequate in this portion of its range, with evidence of targeted fishing of the species despite prohibitions and bycatch measures that may not significantly decrease fisheries-related mortality rates of the species. Based on the demographic risks and threats to the species in this portion, we determined that the species has a moderate risk of extinction in this portion of its range.

Next, we must evaluate whether this portion is ''significant.'' As defined in the SPR Policy, a portion of a species' range is ''significant'' ''if the species is not currently endangered or threatened throughout its range, but the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range'' (79 FR 37578; July 1, 2014). Without the Indo-Pacific and eastern Pacific portion of the species' range, the species would have to depend on only its members in the Atlantic for survival. While areas exhibiting source-sink dynamics, which could affect the survival of the species, are not known, the largest subpopulations and records of individuals of the species come from the Indo-Pacific and eastern Pacific portion. The only data from the Atlantic on the abundance of the species are records of >70 individuals in the Flower Garden

Banks Marine Sanctuary (Gulf of Mexico) and 60 manta rays from waters off Brazil (see Table 4 in Miller and Klimovich (2016)). Given that the species is rarely identified in the fisheries data in the Atlantic, it may be assumed that populations within the Atlantic are small and sparsely distributed. These demographic risks, in conjunction with the species' inherent vulnerability to depletion, indicate that even low levels of mortality may portend drastic declines in the population. As such, without the Indo-Pacific and eastern Pacific portion, the minimal targeted fishing of the species by artisanal fishermen and bycatch mortality from the purse seine, trawl, and longline fisheries operating in the Atlantic becomes a significant contributing factor to the extinction risk of the species. Based on the above findings, we conclude that the Indo-Pacific and eastern Pacific portion of the giant manta ray's range comprises a significant portion of the range of the species because this portion's contribution to the viability of *M. birostris* is so important that, without the members in this portion, the giant manta ray would likely become in danger of extinction within the foreseeable future, throughout all of its range.

Under the SPR policy, we conclude that the Indo-Pacific and eastern Pacific portion of the giant manta ray's range qualifies as a significant portion of the species' range. Additionally, based on the information above and further discussed in our demographic risks analysis and threats assessment, as well as the information in the status review report, we conclude that *M. birostris* is at a moderate risk of extinction within this significant portion of its range.

Distinct Population Segment (DPS) Analysis

In accordance with the SPR policy, if a species is determined to be threatened or endangered in a significant portion of its range, and the population in that significant portion is a valid distinct population segment (DPS), NMFS will list the DPS rather than the entire taxonomic species or subspecies. Because the Indo-Pacific and eastern Pacific represents a significant portion of the range of the species, and this portion is at a risk of extinction that is higher than ''low,'' we performed a DPS analysis on the population within this portion to see if it qualifies as a valid DPS.

The Services' policy on identifying DPSs (61 FR 4722; February 7, 1996) identifies two criteria for DPS designations: (1) The population must be discrete in relation to the remainder of the taxon (species or subspecies) to which it belongs; and (2) the population must be ''significant'' (as that term is used in the context of the DPS policy, which is different from its usage under the SPR policy) to the remainder of the taxon to which it belongs.

In terms of discreteness, a population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions: (1) ''It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation''; or (2) ''it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D)'' of the ESA (61 FR 4722; February 7, 1996).

Research on the genetics of the species, which may provide evidence of discreteness between populations, is ongoing. As discussed previously in this finding, while there may be evidence of a potential *M. birostris* subspecies, or new manta species, found off the Yucatán coast in the Gulf of Mexico, the study by Hinojosa-Alvarez et al. (2016) also showed that some of the Yucatán manta rays found in the area shared haplotypes with *M. birostris* samples from the Indo-Pacific and eastern Pacific. Additionally, based on nuclear DNA, the Yucatán samples were consistent with the *M. birostris* samples from the Indo-Pacific and eastern Pacific portions of its range. This is the only study that we are aware of that has compared potential genetic differences between ocean basins for giant manta rays. Given the available data, we do not find evidence to indicate genetic discreteness between *M. birostris* in the Atlantic and *M. birostris* in the Indo-Pacific and eastern Pacific.

In terms of physical, physiological, morphological, ecological, behavioral, and regulatory factors, there is no evidence that the Indo-Pacific and eastern Pacific population of *M. birostris* is markedly separate from the population in the Atlantic. There is no evidence of differences in the morphology or physiology between the populations, nor any information to indicate changes in habitat use or behavior across ocean basins. Also, given that the species is highly migratory and pelagic, with no identified barriers to movement, these populations cannot be delimited by international governmental boundaries. As such, we find that the *M. birostris* population in the Indo-Pacific and eastern Pacific does not meet the discreteness criteria of the DPS policy, and, thus, is not a valid DPS.

Reef Manta Ray

Overall, the species' life history characteristics increase its inherent vulnerability to depletion. Its tendency towards site fidelity and high residency rates suggests that there may be little gene flow between subpopulations, meaning that reestablishment after depletion is unlikely. Additionally, because these aggregations tend to be small, even light fishing may lead to population depletion. However, despite these inherent risks, the species does not appear subjected to significant threats that are causing declines, or likely to cause declines, to the point where the species would be at risk of extinction. As mentioned in the threats analysis, targeted fishing of the species has only been observed in a select few locations, and its identification in bycatch is limited. The majority of the known *M. alfredi* subpopulations, particularly throughout the western and Central Pacific, while small, are protected from fishing mortality and appear stable. Some of the larger known *M. alfredi* subpopulations, such as off the Maldives (n = 3,300–9,677 individuals) and Western Australia (n = 1,200–1,500 individuals), are not subject to directed fishing, with Australia's overall population considered to be one of the world's healthiest. While climate change may alter aspects of the habitat and food resources of the species, the subsequent impact on the species is highly uncertain. Thus, based on the above evaluation of demographic risks and threats to the species, we find that the reef manta ray is likely to be at a low overall risk of extinction.

SPR Analysis

As was done for the giant manta ray, we must conduct an SPR analysis to determine if the species is in danger of extinction, or likely to become so within the foreseeable future, in a significant portion of its range. In applying the policy, we first examined where threats are concentrated to evaluate whether the species is at risk of extinction within those portions. Targeted fishing and subsequent declines in populations of *M. alfredi* are known from waters off Mozambique and the Philippines, and the species has also been identified in bycatch from Indonesia, Papua New Guinea, and Kiribati. However, with the exception of the southern Mozambique population, the extent of decline of the

species throughout these other areas has not been quantified. But while the rate of decline is unknown, fishing pressure on the species continues in these portions of range and, combined with the species' demographic risks of isolated, small populations and extremely low productivity, these threats are likely placing these populations on a trajectory toward a higher risk of extinction.

The second question that needs to be addressed in the SPR analysis is whether these portions can be considered ''significant.'' Without these portions, would the species be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range? We find that this is unlikely to be the case. Even if these populations were gone, the species would still exist as small, isolated populations throughout the Indo-Pacific. There is no evidence of source-sink dynamics between these portions and other areas, which could affect the survival of the species. In fact, the only indication of a potential source-sink dynamic was hypothesized for the *M. alfredi* population off Yaeyama, Japan, which Kashiwagi (2014) found is presently increasing, indicating no risk of loss to this population. In fact, many of the *M. alfredi* populations outside of the portions identified above, while small in size, are presently thought to be stable or increasing. Additionally, these populations, such as the largest identified *M. alfredi* population, off the Maldives, benefit from national protections that prohibit the fishing, landing, or selling of the species. Because these populations occur nearshore, and the species exhibits high residency rates and site-fidelity behavior, these protections will be adequate to prevent overutilization of the species through the foreseeable future. As such, even without the portions identified above, the species will unlikely be in danger of extinction throughout all of its range now or in the foreseeable future.

Thus, under the SPR policy, we could not identify any portions of the species' range that meet both criteria (*i.e.,* the portion is biologically significant *and* the species may be in danger of extinction in that portion, or likely to become so within the foreseeable future). Therefore, we find that our conclusion about the species' overall risk of extinction does not change and conclude that *M. alfredi* is likely to be at a low risk of extinction throughout its range.

Protective Efforts

There are many conservation efforts presently ongoing to collect research on manta ray life history, ecology, and biology, and to raise awareness of threats to manta rays (see Miller and Klimovich (2016) for detailed discussion). The available research and citizen science data that have resulted from these conservation efforts have already been considered in the above analysis, and future research activities will continue to provide valuable information on these manta ray species. Additionally, the efforts by these organizations to educate the public, such as through awareness campaigns, could eventually lead to decreases in the demand for manta ray products. For example, Lawson et al. (2016), citing unpublished data, noted an 18-month awareness-raising campaign conducted in 2015 in Guangzhou, China, that seemed to indicate a level of success in decreasing consumer demand for gill rakers, which, in turn, decreased the interest of traders to carry gill plates in the future. While more monitoring of trade and consumer behavior is required to evaluate the success of these efforts, it may indicate that awareness-raising campaigns could be successful tools for influencing customer behavior. With demand reduction viewed as a potential avenue to indirectly reduce fishing pressure on manta rays, these campaigns may ultimately help decrease the main threat to the species (Lawson et al. 2016).

Awareness campaigns are also being used to educate the public on appropriate tourist behavior during manta ray dives, which can help decrease potential negative impacts of tourism activities on manta rays. As mentioned previously, best practice codes of conduct have been developed by a number of organizations and are increasingly being used by dive operators at a number of popular manta ray diving sites, including Kona, Hawaii, Western Australia, Mozambique, Bora Bora, and the Maldives, to promote the safe viewing of manta rays.

While we find that these efforts will help increase the scientific knowledge and promote public awareness about manta rays, with the potential (but not certainty) to decrease the impacts of specific threats in the future, we do not find that these efforts have significantly altered the extinction risk for the giant manta ray to where it would not be at risk of extinction in the foreseeable future. However, we seek additional information on these and other conservation efforts in our public comment process (see below).

Determination

Section 4(b)(1) of the ESA requires that NMFS make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and taking into account those efforts, if any, being made by any state or foreign nation, or political subdivisions thereof, to protect and conserve the species. We have independently reviewed the best available scientific and commercial information including the petition, public comments submitted on the 90-day finding (81 FR 8874; February 23, 2016), the status review report (Miller and Klimovich 2016), and other published and unpublished information, and have consulted with species experts and individuals familiar with manta rays. We considered each of the statutory factors to determine whether it presented an extinction risk to each species on its own, now or in the foreseeable future, and also considered the combination of those factors to determine whether they collectively contributed to the extinction risk of the species, now or in the foreseeable future.

Based on our consideration of the best available scientific and commercial information, as summarized here and in Miller and Klimovich (2016), including our SPR and DPS analyses, we find that the giant manta ray (*Manta birostris*) is at a moderate risk of extinction within a significant portion of its range, with the species likely to become in danger of extinction within the foreseeable future throughout that portion. We did not find that the significant portion meets the criteria of a DPS. Therefore, we have determined that the giant manta ray meets the definition of a threatened species and, per the SPR policy, propose to list it is as such throughout its range under the ESA.

Based on our consideration of the best available scientific and commercial information, as summarized here and in Miller and Klimovich (2016), we find that the reef manta ray (*Manta alfredi*) faces an overall low risk of extinction throughout its range. As previously explained, we could not identify any portion of the species' range that met both criteria of the SPR policy. Accordingly, the reef manta ray does not meet the definition of a threatened or endangered species, and thus, the reef manta ray does not warrant listing as threatened or endangered at this time. This is a final action on the aforementioned petition to list the reef

manta ray under the ESA, and, therefore, we do not solicit comments on it.

Effects of Listing

Conservation measures provided for species listed as endangered or threatened under the ESA include recovery actions (16 U.S.C. 1533(f)); concurrent designation of critical habitat, if prudent and determinable (16 U.S.C. 1533(a)(3)(A)); Federal agency requirements to consult with NMFS under section 7 of the ESA to ensure their actions do not jeopardize the species or result in adverse modification or destruction of critical habitat should it be designated (16 U.S.C. 1536); and prohibitions on ''taking'' (16 U.S.C. 1538). Recognition of the species' plight through listing promotes conservation actions by Federal and state agencies, foreign entities, private groups, and individuals.

Identifying Section 7 Conference and Consultation Requirements

Section 7(a)(2) (16 U.S.C. 1536(a)(2)) of the ESA and NMFS/USFWS regulations require Federal agencies to confer with us on actions likely to jeopardize the continued existence of species proposed for listing, or that result in the destruction or adverse modification of proposed critical habitat. If a proposed species is ultimately listed, Federal agencies must consult on any action they authorize, fund, or carry out if those actions may affect the listed species or its critical habitat and ensure that such actions do not jeopardize the species or result in adverse modification or destruction of critical habitat should it be designated. Examples of Federal actions that may affect the giant manta ray include, but are not limited to: Alternative energy projects, discharge of pollution from point sources, non-point source pollution, contaminated waste and plastic disposal, dredging, pile-driving, development of water quality standards, vessel traffic, military activities, and fisheries management practices.

Critical Habitat

Critical habitat is defined in section 3 of the ESA (16 U.S.C. 1532(3)) as: (1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon a determination that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures needed to bring the species to the point at which listing under the ESA is no longer necessary. Section 4(a)(3)(a) of the ESA (16 U.S.C. 1533(a)(3)(A)) requires that, to the extent prudent and determinable, critical habitat be designated concurrently with the listing of a species. Designations of critical habitat must be based on the best scientific data available and must take into consideration the economic, national security, and other relevant impacts of specifying any particular area as critical habitat. If we determine that it is prudent and determinable, we will publish a proposed designation of critical habitat for the giant manta ray in a separate rule. Public input on features and areas in U.S. waters that may meet the definition of critical habitat for the giant manta ray is invited.

Protective Regulations Under Section 4(d) of the ESA

We are proposing to list the giant manta ray (*Manta birostris*) as a threatened species. In the case of threatened species, ESA section 4(d) leaves it to the Secretary's discretion whether, and to what extent, to extend the section 9(a) ''take'' prohibitions to the species, and authorizes us to issue regulations necessary and advisable for the conservation of the species. Thus, we have flexibility under section 4(d) to tailor protective regulations, taking into account the effectiveness of available conservation measures. The 4(d) protective regulations may prohibit, with respect to threatened species, some or all of the acts which section 9(a) of the ESA prohibits with respect to endangered species. We are not proposing such regulations at this time, but may consider potential protective regulations pursuant to section 4(d) for the giant manta ray in a future rulemaking. In order to inform our consideration of appropriate protective regulations for the species, we seek information from the public on the threats to giant manta rays and possible measures for their conservation.

Role of Peer Review

The intent of peer review is to ensure that listings are based on the best scientific and commercial data available. In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review establishing minimum peer review standards, a transparent process for public disclosure of peer review planning, and opportunities for public participation. The OMB Bulletin, implemented under the Information Quality Act (Pub. L. 106–554), is intended to enhance the quality and credibility of the Federal government's scientific information, and applies to influential or highly influential scientific information disseminated on or after June 16, 2005. To satisfy our requirements under the OMB Bulletin, we obtained independent peer review of the status review report. Independent specialists were selected from the academic and scientific community for this review. All peer reviewer comments were addressed prior to dissemination of the status review report and publication of this proposed rule.

Public Comments Solicited on Listing

To ensure that the final action resulting from this proposal will be as accurate and effective as possible, we solicit comments and suggestions from the public, other governmental agencies, the scientific community, industry, environmental groups, and any other interested parties. Comments are encouraged on this proposal (See **DATES** and **ADDRESSES**). Specifically, we are interested in information regarding: (1) New or updated information regarding the range, distribution, and abundance of the giant manta ray; (2) new or updated information regarding the genetics and population structure of the giant manta ray; (3) habitat within the range of the giant manta ray that was present in the past but may have been lost over time; (4) new or updated biological or other relevant data concerning any threats to the giant manta ray (*e.g.,* post-release mortality rates, landings of the species, illegal taking of the species); (5) current or planned activities within the range of the giant manta ray and their possible impact on the species; (6) recent observations or sampling of the giant manta ray; and (7) efforts being made to protect the giant manta ray.

Public Comments Solicited on Critical Habitat

We request information describing the quality and extent of habitats for the giant manta ray, as well as information on areas that may qualify as critical habitat for the species in U.S. waters. Specific areas that include the physical and biological features essential to the conservation of the species, where such features may require special management considerations or protection, should be identified. Areas outside the occupied geographical area should also be identified, if such areas themselves are essential to the

conservation of the species. ESA implementing regulations at 50 CFR 424.12(g) specify that critical habitat shall not be designated within foreign countries or in other areas outside of U.S. jurisdiction. Therefore, we request information only on potential areas of critical habitat within waters under U.S. jurisdiction.

Section 4(b)(2) of the ESA requires the Secretary to consider the ''economic impact, impact on national security, and any other relevant impact'' of designating a particular area as critical habitat. Section 4(b)(2) also authorizes the Secretary to exclude from a critical habitat designation those particular areas where the Secretary finds that the benefits of exclusion outweigh the benefits of designation, unless excluding that area will result in extinction of the species. For features and areas potentially qualifying as critical habitat, we also request information describing: (1) Activities or other threats to the essential features or activities that could be affected by designating them as critical habitat; and (2) the positive and negative economic, national security and other relevant impacts, including benefits to the recovery of the species, likely to result if these areas are designated as critical habitat. We seek information regarding the conservation benefits of designating areas within waters under U.S. jurisdiction as critical habitat. In keeping with the guidance provided by OMB (2000; 2003), we seek information that would allow the monetization of these effects to the extent possible, as well as information on qualitative impacts to economic values.

Data reviewed may include, but are not limited to: (1) Scientific or commercial publications; (2) administrative reports, maps or other graphic materials; (3) information received from experts; and (4) comments from interested parties. Comments and data particularly are sought concerning: (1) Maps and specific information describing the amount, distribution, and use type (*e.g.,* foraging or migration) by the giant manta ray, as well as any additional information on occupied and unoccupied habitat areas; (2) the reasons why any habitat should or should not be determined to be critical habitat as provided by sections 3(5)(A) and 4(b)(2) of the ESA; (3) information regarding the benefits of designating particular areas as critical habitat; (4) current or planned activities in the areas that might be proposed for designation and their possible impacts; (5) any foreseeable economic or other potential impacts resulting from designation, and in particular, any impacts on small entities; (6) whether specific unoccupied areas may be essential to provide additional habitat areas for the conservation of the species; and (7) potential peer reviewers for a proposed critical habitat designation, including persons with biological and economic expertise relevant to the species, region, and designation of critical habitat.

References

A complete list of the references used in this proposed rule is available upon request (see **ADDRESSES**).

Classification

National Environmental Policy Act

The 1982 amendments to the ESA, in section 4(b)(1)(A), restrict the information that may be considered when assessing species for listing. Based on this limitation of criteria for a listing decision and the opinion in *Pacific Legal Foundation* v. *Andrus,* 675 F. 2d 825 (6th Cir. 1981), NMFS has concluded that ESA listing actions are not subject to the environmental assessment requirements of the National Environmental Policy Act (NEPA).

Executive Order 12866, Regulatory Flexibility Act, and Paperwork Reduction Act

As noted in the Conference Report on the 1982 amendments to the ESA, economic impacts cannot be considered when assessing the status of a species. Therefore, the economic analysis requirements of the Regulatory Flexibility Act are not applicable to the listing process. In addition, this proposed rule is exempt from review under Executive Order 12866. This proposed rule does not contain a collection-of-information requirement for the purposes of the Paperwork Reduction Act.

Executive Order 13132, Federalism

In accordance with E.O. 13132, we determined that this proposed rule does not have significant Federalism effects and that a Federalism assessment is not required. In keeping with the intent of the Administration and Congress to provide continuing and meaningful dialogue on issues of mutual state and Federal interest, this proposed rule will be given to the relevant governmental agencies in the countries in which the species occurs, and they will be invited to comment. As we proceed, we intend to continue engaging in informal and formal contacts with the states, and other affected local, regional, or foreign entities, giving careful consideration to all written and oral comments received.

List of Subjects in 50 CFR Part 223

Endangered and threatened species.

Dated: January 5, 2017.

Samuel D. Rauch, III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons set out in the preamble, 50 CFR part 223 is proposed to be amended as follows:

PART 223—THREATENED MARINE AND ANADROMOUS SPECIES

■ 1. The authority citation for part 223 continues to read as follows:

Authority: 16 U.S.C. 1531–1543; subpart B, § 223.201–202 also issued under 16 U.S.C. 1361 *et seq.;* 16 U.S.C. 5503(d) for § 223.206(d)(9).

■ 2. In § 223.102, in the table in paragraph (e) add a new entry for ''ray, giant manta'' in alphabetical order by common name under the ''Fishes'' subheading to read as follows:

§ 223.102 Enumeration of threatened marine and anadromous species.

* * * * *

(e) * * *

Species [1]			Citation(s) for listing determination(s)	Critical habitat	ESA rules
Common name	Scientific name	Description of listed entity			
*	*	*	*	*	*
Fishes					
*	*	*	*	*	*
Ray, giant manta	*Manta birostris* ...	Entire species	[Insert **Federal Register** page where the document begins], [Insert date of publication when published as a final rule].	NA	NA.
*	*	*	*	*	*

[1] Species includes taxonomic species, subspecies, distinct population segments (DPSs) (for a policy statement, see 61 FR 4722, February 7, 1996), and evolutionarily significant units (ESUs) (for a policy statement, see 56 FR 58612, November 20, 1991).

[FR Doc. 2017–00370 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

Notices

Federal Register

Vol. 82, No. 8

Thursday, January 12, 2017

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

DEPARTMENT OF AGRICULTURE

Forest Service

National Urban and Community Forestry Advisory Council

AGENCY: Forest Service, USDA.

ACTION: Notice of meeting.

SUMMARY: The National Urban and Community Forestry Advisory Council (Council) will meet via teleconference.

DATES: The teleconference will be held on Thursday February 9, 2017, from 10:00 a.m. to 5:00 p.m., Eastern Standard Time (EST) or until Council business is completed.

All meetings are subject to cancellation. For an updated status of the teleconference prior to attendance, please contact the person listed under **FOR FURTHER INFORMATION CONTACT.**

ADDRESSES: The meeting will be held via teleconference. For anyone who would like to attend the teleconference, please visit the Web site listed in the **SUMMARY** section or contact Nancy Stremple at *nstremple@fs.fed.us* for further details. Written comments may be submitted as described under **SUPPLEMENTARY INFORMATION.** All comments, including names and addresses when provided, are placed in the record and are available for public inspection and copying. The public may inspect comments received at the USDA Forest Service, Sidney Yates Building, Room 3SC–01C, 201 14th Street SW., Washington, DC 20024. Please call ahead at 202–309–7829 to facilitate entry into the building.

FOR FURTHER INFORMATION CONTACT: Nancy Stremple, Executive Staff, National Urban and Community Forestry Advisory Council, by telephone at 202–205–7829, or by email at *nstremple@fs.fed.us,* or by cell phone at 202–309–9873, or via facsimile at 202–690–5792.

Individuals who use telecommunication devices for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339 between 8:00 a.m. and 8:00 p.m., Eastern Standard Time, Monday through Friday.

SUPPLEMENTARY INFORMATION: The Council is authorized under Section 9 of the Cooperative Forestry Assistance Act, as amended by Title XII, Section 1219 of Public Law 101–624 (the Act) (16 U.S.C. 2105g) and the Federal Advisory Committee Act (FACA) (5 U.S.C. App. II). Additional information concerning the Council, can be found by visiting the Council's Web site at: *http://www.fs.fed.us/ucf/nucfac.shtml.*

The purpose of the meeting is to:

1. Review the 2017 Work Plan;
2. Update on the 2017 grant proposal review; and 2018 Call for Proposals
3. Listen to presentation on innovation in timber building construction;
4. Listen to local constituents with urban forestry concerns;
5. Discuss the National ten year action plan (2016–2026) implementation;
6. Receive Forest Service budget, administration, and program updates; and
7. Discuss the annual accomplishments/recommendations report.

The teleconference is open to the public. However, the public is strongly encouraged to RSVP prior to the teleconference to ensure all related documents are shared with public meeting participants. The agenda will include time for people to make oral statements of three minutes or less. Individuals wishing to make an oral statement should submit a request in writing by January 31, 2017, to be scheduled on the agenda. Council discussion is limited to Forest Service staff and Council members, however anyone who would like to bring urban and community forestry matters to the attention of the Council may file written statements with the Council's staff before or after the meeting. Written comments and time requests for oral comments must be sent to Nancy Stemple, Executive Staff, National Urban and Community Forestry Advisory Council, Sidney Yates Building, Room 3SC–01C, 201 14th Street SW., Washington, DC 20024, or by email at *nstremple@fs.fed.us.*

Meeting Accommodations: If you are a person requiring reasonable accommodation, please make requests in advance for sign language interpreting, assistive listening devices or other reasonable accommodation for access to the facility or proceedings by contacting the person listed in the section titled **FOR FURTHER INFORMATION CONTACT.** All reasonable accommodation requests are managed on a case by case basis.

Dated: January 4, 2017.

Steven W. Koehn,

Director, Cooperative Forestry.

[FR Doc. 2017–00485 Filed 1–11–17; 8:45 am]

BILLING CODE 3411–15–P

COMMISSION ON CIVIL RIGHTS

Notice of Public Meeting of the Virginia Advisory Committee To Discuss Potential Projects of Study Including a Proposal on Hate Crimes

AGENCY: Commission on Civil Rights.

ACTION: Announcement of meeting.

SUMMARY: Notice is hereby given, pursuant to the provisions of the rules and regulations of the U.S. Commission on Civil Rights (Commission), and the Federal Advisory Committee Act (FACA), that a planning meeting of the Virginia Advisory Committee to the Commission will convene by conference call at 12:00 p.m. (EDT) on Thursday, February 2, 2017. The purpose of the meeting is to discuss project planning and eventually select topic(s) for the Committee's civil rights review.

DATES: The meeting will be held on Thursday, February 2, 2017, at 12:00 p.m. EST.

ADDRESSES: Public call information: Dial: 888–601–3861, Conference ID: 417838.

FOR FURTHER INFORMATION CONTACT: Ivy L. Davis, at *ero@usccr.gov* or by phone at 202–376–7533.

SUPPLEMENTARY INFORMATION: Interested members of the public may listen to the discussion by calling the following toll-free conference call-in number: 1–888–601–3861 and conference ID: 417838. Please be advised that before being placed into the conference call, you will be prompted to provide your name, organizational affiliation (if any), and email address (so that callers may be notified of future meetings). Callers can expect to incur charges for calls they

initiate over wireless lines, and the Commission will not refund any incurred charges. Callers will incur no charge for calls they initiate over land-line connections to the toll-free conference call-in number.

Persons with hearing impairments may also follow the discussion by first calling the Federal Relay Service at 1–800–977–8339 and providing the operator with the toll-free conference call-in number: 1–888–601–3861 and conference call ID: 417838.

Members of the public are invited to submit written comments; the comments must be received in the regional office approximately 30 days after each scheduled meeting. Written comments may be mailed to the Eastern Regional Office, U.S. Commission on Civil Rights, 1331 Pennsylvania Avenue, Suite 1150, Washington, DC 20425, faxed to (202) 376–7548, or emailed to Evelyn Bohor at *ero@usccr.gov.* Persons who desire additional information may contact the Eastern Regional Office at (202) 376–7533.

Records and documents discussed during the meeting will be available for public viewing as they become available at *http://facadatabase.gov/committee/meetings.aspx?cid=279;* click the ''Meeting Details'' and ''Documents'' links. Records generated from this meeting may also be inspected and reproduced at the Eastern Regional Office, as they become available, both before and after the meetings. Persons interested in the work of this advisory committee are advised to go to the Commission's Web site, *www.usccr.gov,* or to contact the Eastern Regional Office at the above phone numbers, email or street address.

Agenda

I. Welcome and Introductions
—Rollcall
II. Planning Meeting
—Discuss Project Planning
III. Other Business
IV. Adjournment

Dated: January 9, 2017.

David Mussatt,

Supervisory Chief, Regional Programs Unit.

[FR Doc. 2017–00542 Filed 1–11–17; 8:45 am]

BILLING CODE P

COMMISSION ON CIVIL RIGHTS

Notice of Public Meeting of the Nevada State Advisory Committee

AGENCY: U.S. Commission on Civil Rights.

ACTION: Announcement of public meeting.

SUMMARY: Notice is hereby given, pursuant to the provisions of the rules and regulations of the U.S. Commission on Civil Rights (Commission) and the Federal Advisory Committee Act (FACA) that a meeting of the Nevada Advisory Committee (Committee) to the Commission will be held at 1:30 p.m. (Pacific Time) Thursday, January 19, 2017, for the purpose of discussing the logistics and agenda for the Committee's upcoming public meeting to hear testimony on the civil rights issues regarding municipal fees and policing practices in Nevada.

DATES: The meeting will be held on Thursday, January 19, 2017, at 1:30 p.m. PST

Public Call Information: Dial: 888–298–3457. Conference ID: 5007352.

FOR FURTHER INFORMATION CONTACT: Ana Victoria Fortes (DFO) at *afortes@usccr.gov* or (213) 894–3437.

SUPPLEMENTARY INFORMATION: This meeting is available to the public through the following toll-free call-in number: 888–298–3457, conference ID number: 5007352. Any interested member of the public may call this number and listen to the meeting. Callers can expect to incur charges for calls they initiate over wireless lines, and the Commission will not refund any incurred charges. Callers will incur no charge for calls they initiate over land-line connections to the toll-free telephone number. Persons with hearing impairments may also follow the proceedings by first calling the Federal Relay Service at 1–800–977–8339 and providing the Service with the conference call number and conference ID number.

Members of the public are entitled to make comments during the open period at the end of the meeting. Members of the public may also submit written comments; the comments must be received in the Regional Programs Unit within 30 days following the meeting. Written comments may be mailed to the Regional Programs Unit, U.S. Commission on Civil Rights, 55 W. Monroe St., Suite 410, Chicago, IL 60603. They may be faxed to the Commission at (312) 353–8324, or emailed to David Mussatt, Regional Programs Unit at *dmussatt@usccr.gov.* Persons who desire additional information may contact the Regional Programs Unit at (312) 353–8311.

Records and documents discussed during the meeting will be available for public viewing prior to and after the meeting at *http://facadatabase.gov/committee/meetings.aspx?cid=261.* Please click on the ''Meeting Details'' and ''Documents'' links. Records generated from this meeting may also be inspected and reproduced at the Regional Programs Unit, as they become available, both before and after the meeting. Persons interested in the work of this Committee are directed to the Commission's Web site, *http://www.usccr.gov,* or may contact the Regional Programs Unit at the above email or street address.

Agenda

I. Introductions—Wendell Blaylock, Chair of the Nevada Advisory Committee
II. Discussion of Potential Panelists and Logistics: Civil Rights Issues Regarding Municipal Fees and Police Practices in Nevada—Member of the Nevada Advisory Committee
III. Public Comment
IV. Adjournment

Exceptional Circumstance: Pursuant to the Federal Advisory Committee Management Regulations (41 CFR 102–3.150), the notice for this meeting cancelation is given less than 15 calendar days prior to the meeting due to exceptional circumstance of the Committee project supporting the Commission's 2017 statutory enforcement report.

Dated: January 9, 2017.

David Mussatt,

Supervisory Chief, Regional Programs Unit.

[FR Doc. 2017–00530 Filed 1–11–17; 8:45 am]

BILLING CODE P

DEPARTMENT OF COMMERCE

Census Bureau

Proposed Information Collection; Comment Request; Monthly Retail Surveys

AGENCY: U.S. Census Bureau, Commerce.

ACTION: Notice.

SUMMARY: The Department of Commerce, as part of its continuing effort to reduce paperwork and respondent burden, invites the general public and other Federal agencies to take this opportunity to comment on proposed and/or continuing information collections, as required by the Paperwork Reduction Act of 1995, Public Law 104–13 (44 U.S.C. 3506(c)(2)(A)).

DATES: To ensure consideration, written comments must be submitted on or before March 13, 2017.

ADDRESSES: Direct all written comments to Jennifer Jessup, Departmental Paperwork Clearance Officer, Department of Commerce, Room 6616, 14th and Constitution Avenue NW.,

Washington, DC 20230 (or via the Internet at *jjessup@doc.gov*).

FOR FURTHER INFORMATION CONTACT: Requests for additional information or copies of the information collection instrument(s) and instructions should be directed to Rebecca DeNale, U.S. Census Bureau, EID HQ–8K181, 4600 Silver Hill Road, Washington, DC 20233–6500, (301) 763–3113 (or via the Internet at *Rebecca.DeNale@census.gov*).

SUPPLEMENTARY INFORMATION

I. Abstract

The Census Bureau plans to request a revision of the current Office of Management and Budget clearance for the surveys known as the Monthly Retail Trade Survey (MRTS) and the Advance Monthly Retail Trade Survey (MARTS). The MRTS and MARTS are related collections sharing the same initial sample frame and collect data that are published in conjunction with each other. These two surveys, currently cleared separately under control numbers 0607–0717 and 0607–0104, respectively, will therefore be combined under one control number and will be collectively called the Monthly Retail Surveys (MRS).

The Monthly Retail Trade Survey (MRTS) provides estimates of monthly retail sales, end-of-month merchandise inventories, and quarterly e-commerce sales for firms located in the United States and classified in the Retail Trade or Food Services sectors as defined by the North American Industry Classification System (NAICS).

Estimates produced from the MRTS are based on a probability sample of approximately 11,500 firms. The sample design consists of one fixed panel where all cases are requested to report sales, e-commerce sales, and/or inventories for the prior month. If reporting data for a period other than the calendar month, the survey asks for the period's length (4 or 5 weeks) and the date on which the period ended. The survey also asks for the number of establishments covered by the data provided and whether or not the sales data provided are estimates or more accurate ''book'' figures. The sample is drawn approximately every 5 years from the Business Register, which contains all Employer Identification Numbers (EINs) and listed establishment locations. The sample is updated quarterly to reflect employer business ''births'' and ''deaths''; adding new employer businesses identified in the Business and Professional Classification Survey (SQ–CLASS) and deleting firms and EINs when it is determined they are no longer active. Estimates from the MRTS are released in three different reports each month. High level aggregate estimates for end of month inventories are first released as part of the Advance Economic Indicators Report approximately 27 days after the close of the reference month. The sales and inventories estimates from MRTS are released approximately 44 days after the close of the reference month as part of the Monthly Retail Trade report and the Manufacturing and Trade Inventories and Sales (MTIS) report, which are released on the same day. Additionally, once per quarter, data for quarterly e-commerce sales are released approximately 48 days after the close of the reference quarter as part of the Quarterly Retail E-Commerce Sales report.

Effective with the next MRTS sample, which begins collection in December of 2017, we will be removing the Leased Department question and all impacted forms, and will no longer provide monthly estimates for this data series moving forward. All historical series including these estimates will still be available to data users.

The Advance Monthly Retail Trade Survey (MARTS) provides an early indication of monthly sales for retail trade and food services firms located in the United States. It was developed in response to requests by government, business, and other users to provide an early indication of current retail trade activity in the United States. Retail sales are one of the primary measures of consumer demand for both durable and non-durable goods. The MARTS survey results are published approximately 14 days after the end of the reference month. MARTS provides a designated principal economic indicator and the earliest available monthly estimates of broad based retail trade activity. It also provides an estimate of monthly sales at food service establishments and drinking places. If the advance survey were not conducted, there would be a delay in the availability of these results as the results from the MRTS are not published until approximately 6 weeks after the end of the reference month.

The MARTS sample is a sub-sample of companies selected from the MRTS. The advance survey sample of about 4,900 companies are selected using a stratified design where the companies are selected by stratifying the companies in the larger MRTS sample by industry and size and selecting the desired number of cases within each size stratum using a systematic probability-proportional-to-size procedure where the size used is the MRTS sampling weight. Some 1,250 firms, because of their relatively large effect on the sales of certain industry groups, are selected with certainty. The MARTS sample is re-selected, generally at 2½ to 3 year intervals, to ensure it is representative of the target population and redistribute burden for small and medium size businesses.

Advance sales estimates for each kind of business are developed by applying a ratio of current-month to previous-month sales (derived from the advance retail and food service sample) to the preliminary estimate of sales for the previous month (from the larger monthly sample). Industry estimates are summed to derive total retail sales figures.

The MARTS survey requests sales and e-commerce sales for the month just ending. As on the MRTS survey, if firms report data for a period other than the calendar month, the survey asks for the period's length (4 or 5 weeks) and the date on which the period ended. Also similar to MRTS, the survey also asks for the number of establishments covered by the data provided and whether or not the sales data provided are estimates or more accurate ''book'' figures. At this time, there are no planned changes for MARTS.

The Bureau of Economic Analysis (BEA) uses the information collected on these surveys to prepare the National Income and Products Accounts, to benchmark the annual input-output tables and as critical inputs to the calculation of the Gross Domestic Product (GDP). Policymakers such as the Federal Reserve Board (FRB) need to have the timeliest estimates in order to anticipate economic trends and act accordingly. The Council of Economic Advisors (CEA) and other government agencies and businesses use the survey results to formulate and make decisions about economic policy.

II. Method of Collection

We will collect this information by mail, FAX, telephone follow-up, and internet.

III. Data

OMB Control Numbers: 0607–0104 and 0607–0717.

Form Numbers: SM–4412A–A, SM–4412A–E, SM–4412AE–A, SM–4412AE–E, SM–4412AS–A, SM–4412AS–E, SM–7212A–A, SM7212A–E, SM–2012I–A, SM–2012I–E, SM–4412B–A, SM4412B–E, SM–4412BE–A, SM–4412BE–E, SM4412BS–A, SM–4412BS–E, SM–4412S–A, SM–4412S–E, SM–4412SE–A, SM–4412SE–E, SM–4412SS–A, SM–4412SS–E, SM–7212S–A, SM–7212S–E, SM–4512B–A, SM–4512B–E, SM–4512BE–A, SM–4512BE–E, SM–4512BS–A, SM–4512BS–E, SM–4512S–

A, SM–4512S–E, SM–4512SE–A, SM–4512SE–E, SM–4512SS–A, SM–4512SS–E.

Type of Review: Regular submission.

Affected Public: Retail and Food Services firms in the United States.

Estimated Number of Respondents: MRTS–10,305; MARTS–4,700.

Estimated Time per Response: MRTS–7 minutes; MARTS–5 minutes.

Estimated Total Annual Burden Hours: 19,327.

Estimated Total Annual Cost: $0.

Respondent's Obligation: Voluntary.

Legal Authority: Title 13, United States Code, Sections 131 and 182.

V. Request for Comments

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden (including hours and cost) of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

Comments submitted in response to this notice will be summarized and/or included in the request for OMB approval of this information collection; they also will become a matter of public record.

Sheleen Dumas,

PRA Departmental Lead, Office of the Chief Information Officer.

[FR Doc. 2017–00525 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–07–P

DEPARTMENT OF COMMERCE

[Docket No. 161018975–6975–01]

Privacy Act of 1974, Amended System of Records

AGENCY: National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

ACTION: Notice of an Amended Privacy Act System of Records: COMMERCE/NOAA–20, Search and Rescue Satellite Aided Tracking (SARSAT) 406 MHz Emergency Beacon Registration Database.

SUMMARY: In accordance with the Privacy Act of 1974, as amended, Title 5 of the United States Code (U.S.C.) sections 552a(e)(4) and (11); and Office of Management and Budget (OMB) Circular A–130, Appendix I, ''Federal Agency Responsibilities for Maintaining Records About Individuals,'' the Department of Commerce (Department) is issuing a notice of intent to establish an amended system of records entitled, ''COMMERCE/NOAA–20, Search and Rescue Satellite Aided Tracking (SARSAT) 406 MHz Emergency Beacon Registration Database.'' Amendments (updates) were made to the Addresses, Supplementary Information, Routine Uses and Storage sections.

SARSAT is responsible for keeping and maintaining a registration database for 406 MHz emergency beacons as directed by the Federal Communications Commission (FCC). This database contains personally identifiable information that is required to be protected by the Privacy Act, as amended. The purpose of this system of records is to provide search and rescue (SAR) authorities with information about the user of the beacon, such as the name, phone number, and emergency contact information. This information provides the Rescue Coordination Center (RCC) and Mission Control Center (MCC) with the identity of the individual(s) they are searching for, contact information so that the RCC can determine whether or not the beacon has been activated as the result of an actual emergency, and information about the vessel or aircraft. The registration information allows the RCC and MCC to resolve a distress case by telephone instead of wasting valuable resources responding to false alerts. Information may be provided to or received from international registration authorities to ensure registration information resides in the correct database based on the country code of the beacon or the mailing address of the beacon owner. This information allows SAR authorities to shorten response times, and it provides a way to cancel false alerts quickly and safely, thereby increasing safety for SAR authorities and decreasing costs to the government and the SAR system. The completed forms also contain personal identifiable information that is required to be protected by the Privacy Act. We invite public comment on the amended system in this publication.

DATES: To be considered, written comments must be submitted on or before February 13, 2017. Unless comments are received, the amended system of records will become effective as proposed on February 21, 2017. If comments are received, the Department will publish a subsequent notice in the **Federal Register** within 10 days after the comment period closes, stating that the current system of records will remain in effect until publication of a final action in the **Federal Register**.

ADDRESSES: Comments may be mailed to: NOAA SARSAT, NSOF E/SPO53, 1315 East West Highway, Silver Spring, MD 20910.

FOR FURTHER INFORMATION CONTACT: NOAA SARSAT, NSOF E/SPO53, 1315 East West Highway, Silver Spring, MD 20910.

SUPPLEMENTARY INFORMATION: The National Oceanic and Atmospheric Administration's (NOAA's) National Environmental Satellite, Data, and Information Service (NESDIS) is revising its system of records for SARSAT, which is required by the FCC under 47 CFR parts 80, 87, and 95 to maintain a registration for emergency beacons that operate on the 406 MHz frequency. SARSAT has not found any probable or potential adverse effects of the proposal on the privacy of individuals. To minimize the risk of unauthorized access to the system of records, electronic data will be stored securely with access password protected, two-factor authentication for internal System Administrators, and limited to those SARSAT program employees whose official duties require access.

COMMERCE/NOAA–20

SYSTEM NAME:

Search and Rescue Satellite Aided Tracking (SARSAT) 406 MHz Emergency Beacon Registration Database.

SECURITY CLASSIFICATION:

None.

SYSTEM LOCATION:

U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), 4231 Suitland Road, Suitland, MD 20746–4304

CATEGORIES OF INDIVIDUALS COVERED BY THE SYSTEM:

Owners of 406 MHz Emergency Position Indicating Radio Beacons (EPIRBs), 406 MHz Emergency Location Transmitters (ELTs), 406 MHz Personnel Locator Beacons (PLBs), and 406 MHz Ship Security Alerting System (SSAS) Beacons.

CATEGORIES OF RECORDS IN THE SYSTEM:

Personal Identifiable Information: Beacon Unique Identifier Number (Beacon ID), beacon category, beacon manufacturer, beacon model; owner name, owner address, owner email address, owner telephone number by home, work, cellular, and fax; and name

and telephone number of primary/alternate 24-hour emergency contact. Additional categories specifically for:

a. EPIRBs and SSAS beacon registrations—vessel information including usage, type, name, color, survival and radio equipment, vessel telephone numbers with call sign, Inmarsat number, cellular and MMSI number, federal/state registration number, length, capacity, and homeport;

b. ELT registrations—aircraft information including registration (tail) number, type, manufacturer, model, color, seating capacity, radio equipment, survival equipment, principal airport; and

c. PLB registrations—general use data including usage, specific usage, and type.

AUTHORITY FOR MAINTENANCE OF THE SYSTEM:

This system of records is consistent with 47 CFR parts 80, 87, and 95. The system is also authorized by the U.S. Office of Management & Budget (OMB) Control Number: OMB 0648–0295.

PURPOSES:

The records are maintained and used to assist search and rescue forces in carrying out their mission of rescue assistance and false alert abatement.

ROUTINE USES OF RECORDS MAINTAINED IN THE SYSTEM, INCLUDING CATEGORIES OF USERS AND THE PURPOSES OF SUCH USES:

These records may be disclosed as follows:

1. A record in this system of records is used when a beacon alert is received at the United States Mission Control Center (USMCC) from a registered beacon. The information kept in the database is automatically forwarded to rescue coordination centers operated by the United States Air Force, United States Coast Guard, State Police/State SAR authority, or another foreign SARSAT Mission Control Center, should it be requested for use in a SAR case in a foreign search and rescue region. The information is used by SAR controllers as a tool to coordinate and resolve the SAR event.

2. Every two years, NOAA uses the information in the database to alert beacon owners to update and renew their registration in the database.

3. In the event that a system or records maintained by the Department to carry out its functions indicates a violation or potential violation of law or contract, whether civil, criminal or regulatory in nature, and whether arising by general statute or particular program statute or contract, or rule, regulation, or order issued pursuant thereto, or the necessity to protect an interest of the Department, the relevant records in the system of records may be referred, as a routine use, to the appropriate agency, whether Federal, state, local or foreign, charged with the responsibility of investigating or prosecuting such violation or charged with enforcing or implementing the statute or contract, or rule, regulation or order issued pursuant thereto, or protecting the interest of the Department.

4. A record from this system of records may be disclosed, as a routine use, to a Federal, state or local agency maintaining civil, criminal or other relevant enforcement information or other pertinent information, such as current licenses, if necessary to obtain information relevant to a Department decision concerning the assignment, hiring or retention of an individual, the issuance of a security clearance, the letting of a contract, or the issuance of a license, grant or other benefit.

5. A record from this system of records may be disclosed, as a routine use, to a Federal, state, local, or international agency, in response to its request, in connection with the assignment, hiring or retention of an individual, the issuance of a security clearance, the reporting of an investigation of an individual, the letting of a contract, or the issuance of a license, grant, or other benefit by the requesting agency, to the extent that the information is relevant and necessary to the requesting agency's decision on the matter.

6. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

7. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual when the individual has requested assistance from the Member with respect to the subject matter of the record.

8. A record in this system of records which contains medical information may be disclosed, as a routine use, to the medical advisor of any individual submitting a request for access to the record under the Act and 15 CFR part 4b if, in the sole judgment of the Department, disclosure could have an adverse effect upon the individual, under the provision of 5 U.S.C. 552a(f)(3) and implementing regulations at 15 CFR 4b26.

9. A record in this system of records may be disclosed, as a routine use, to the Office of Management and Budget in connection with the review of private relief legislation as set forth in OMB Circular No. A–19 at any stage of the legislative coordination and clearance process as set forth in that Circular.

10. A record in this system of records may be disclosed, as a routine use, to the Department of Justice in connection with determining whether disclosure thereof is required by the Freedom of Information Act (5 U.S.C. 552).

11. A record in this system of records may be disclosed, as a routine use, to a contractor of the Department having need for the information in the performance of the contract, but not operating a system of records within the meaning of 5 U.S.C. 552a(m).

12. A record in this system may be transferred, as a routine use, to the Office of Personnel Management: For personnel research purposes; as a data source for management information; for the production of summary descriptive statistics and analytical studies in support of the function for which the records are collected and maintained or for related manpower studies.

13. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services Administration (GSA), or his designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.* GSA or Department) directive. Such disclosure shall not be used to make determinations about individuals.

14. A record in this system of records may be disclosed to appropriate agencies, entities and persons when: (1) It is suspected or determined that the security or confidentiality of information in the system of records has been compromised; (2) the Department has determined that as a result of the suspected or confirmed compromise there is a risk of harm to economic or property interests, identity theft or fraud, or harm to the security or integrity of this system or other systems or programs (whether maintained by the Department or another agency or entity) that rely upon the compromised information; and (3) the disclosure made to such agencies, entities, and persons is reasonably necessary to assist in connection with the Department's efforts to respond to the suspected or confirmed compromise and to prevent, minimize, or remedy such harm.

15. A record in this system of records may be disclosed to student volunteers, individuals working under a personal services contract, and other workers who technically do not have the status of Federal employees, when they are performing work for the Department and/or its agencies, as authorized by law, as needed to perform their assigned Agency functions.

DISCLOSURE TO CONSUMER REPORTING AGENCIES:

None.

POLICIES AND PRACTICES FOR STORING, RETRIEVING, ACCESSING, RETAINING, AND DISPOSING OF RECORDS IN THE SYSTEM:

STORAGE:

Computerized database stored behind several layers of firewalls configured with the firm policy of denying all and allow only by exception, electronic storage media, and paper records. All three mediums are retained in accordance with NOAA Records Disposition Handbook, Chapter 1404–02.

RETRIEVABILITY:

Records may be retrieved by unique beacon identification number, the name of beacon owner, date of submittal, vessel name, aircraft name, or aircraft tail number; however, records can be accessed by any file element or any combination thereof.

SAFEGUARDS:

Due to the sensitive information stored in the registration database, access has been granted only to a limited number of personnel in accordance with this system of records routine uses provision. This access comes in four different categories; beacon owners, system administrators, SAR users, and vessel/aircraft inspectors.

The beacon owner is granted access to his/her own registration information through the use of a user ID and an online password. Information can be accessed and updated by the beacon owner at any time.

The system administrator consists of personnel at the USMCC who maintains and operates the registration database. Access to records is through the use of a user ID and an online password.

The SAR user is limited to rescue coordination personnel responsible for SAR operations within internationally recognized SAR regions. Each SAR controller is issued a user ID and an online password. SAR controllers are given a view-only capability.

The vessel or aircraft inspector is an approved representative of a federal agency charged with inspecting vessels or aircraft which includes verifying that the emergency beacons carried onboard the vessel or aircraft are properly registered. Each inspector is issued a user ID and an online password. Inspectors are given a view-only capability.

Exceptions to the above categories can only be approved by the SARSAT Program Steering Group. Consideration for access to the database by a requesting individual/agency will be based in light of their overall contribution to the SAR mission versus balancing the individual beacon owner's right to privacy.

RETENTION AND DISPOSAL:

NESDIS shall maintain its records in accordance with NOAA's Records Management Guide and Records Disposition Handbook, Departmental directives, and comprehensive records schedules.

SYSTEM MANAGER(S) AND ADDRESS:

NOAA/SARSAT, NSOF E/SPO53, 1315 East West Highway, Silver Spring, MD 20910.

NOTIFICATION PROCEDURE:

Beacon owners are notified by letter once registration information has been put into the database. Every two years thereafter, beacon owners are contacted by email or letter to update their information or to confirm that their information is correct.

In accordance with the Department of Commerce regulations implementing the Privacy Act, at Title 15 of the Code of Federal Regulations, part 4, subpart B—Privacy Act, individuals interested in determining if the system contains their name should direct their Privacy Act request to the National Oceanic and Atmospheric Administration, Public Reference Facility, OFA56, 1315 East West Highway (SSMC3), Room 10730, Silver Spring, Maryland 20910.

RECORD ACCESS PROCEDURES:

Individuals with information in the database have the ability to review and update their own individual information on the internet at *http://www.beaconregistration.noaa.gov*. User ID and user password are set-up with initial Web registration or with a first visit to the Web site.

CONTESTING RECORD PROCEDURES:

Individual beacon owners have access to their database file and have the ability to update or correct information. Other issues are addressed by the system manager who can be contacted at NOAA/SARSAT, NSOF E/SPO53, 1315 East West Highway, Silver Spring, MD 20910.

RECORD SOURCE CATEGORIES:

The individual on whom the record is maintained provides information to NOAA by either the Web site or mail. Existing registrations can be updated according to the above processes, by a phone call from the beacon owner, or by rescue coordination center controllers when updated information is collected while processing a case.

EXEMPTIONS CLAIMED FOR THE SYSTEM:

None.

Michael J. Toland,

Department of Commerce, Deputy Chief Officer, Department Privacy Act Officer.

[FR Doc. 2017–00495 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–12–P

DEPARTMENT OF COMMERCE

[Docket No. 160809701–6701–01]

Privacy Act of 1974, Amended System of Records

AGENCY: National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

ACTION: Notice of an Amended Privacy Act System of Records: COMMERCE/NOAA–11, Contact Information for Members of the Public Requesting or Providing Information Related to NOAA's Mission.

SUMMARY: In accordance with the Privacy Act of 1974, as amended, and Office of Management and Budget (OMB) Circular A–130, Appendix I, ''Federal Agency Responsibilities for Maintaining Records About Individuals,'' the Department of Commerce (Department) is issuing a notice of intent to establish an amended system of records entitled, ''COMMERCE/NOAA–11, Contact Information for Members of the Public Requesting or Providing Information Related to NOAA's Mission.'' Amendments (updates) were made to categories of individuals, categories of records, and purpose, as well as to the lists of system locations and system managers and addresses. Updates also include the addition of a new routine use for student volunteers, individuals working under a personal services contract, and other workers who technically do not have the status of Federal employees.

DATES: To be considered, written comments must be submitted on or before February 13, 2017. Unless comments are received, the amended

system of records will become effective as proposed on February 21, 2017. If comments are received, the Department will publish a subsequent notice in the **Federal Register** within 10 days after the comment period closes, stating that the current system of records will remain in effect until publication of a final action in the **Federal Register**.

ADDRESSES: Comments may be mailed to Sarah Brabson, NOAA Office of the Chief Information Officer, Room 9856, 1315 East-West Highway, SSMC3, Silver Spring, MD 20910.

FOR FURTHER INFORMATION CONTACT: Sarah Brabson, NOAA Office of the Chief Information Officer, Room 9856, 1315 East-West Highway, Silver Spring, MD 20910.

SUPPLEMENTARY INFORMATION: The National Oceanic and Atmospheric Administraton (NOAA), pursuant to Title 5 of the United States Code (U.S.C.) sections 552a(e)(4) and (11); is amending this system of records to include development of satellite data system user agreements with government or non-government entities, and to allow further communication and information sharing with these entities. This system of records notice encompasses all NOAA systems which collect, store and/or disseminate contact information for members of the public requesting or providing information related to NOAA's mission. Information collections would be requested from individuals under the authority of 5 U.S.C. 301, Departmental Regulations and 15 U.S.C. 1512, Powers and duties of Department. The collection of information is necessary to facilitate communication with, and share mission-related information with, the public. NOAA would collect information from individuals in order to provide and acquire NOAA mission-related data. The resulting system of records, as amended, appears below.

COMMERCE/NOAA–11

SYSTEM NAME:

Contact Information for Members of the Public Requesting or Providing Information Related to NOAA's Mission.

SECURITY CLASSIFICATION:

None.

SYSTEM LOCATION:

1. National Environmental Satellite, Data, and Information Service (NESDIS):

a. NOAA5004, Data Collection System: (1) NSOF: 4231 Suitland Rd., Suitland, Md 20746. (2) Wallops: U.S. Department of Commerce, NOAA Wallops CDA Station, 35663 Chincoteague Road, Wallops, Virginia 23337.

b. NOAA5009, National Climatic Data Center Local Area Network: Federal Building, Room 311, 151 Patton Avenue, Asheville, NC 28801.

NOAA5010, National Oceanographic Data Center: 1315 East West Highway, Silver Spring, MD 20910.

c. NOAA5036, National Coastal Data Development Center Local Area Network: 1021 Balch Blvd., Stennis Space Center, MS 39529.

d. NOAA5036 Mirror Site: 25 Broadway, E/GC4, Boulder, CO 80305.

e. NOAA5040, Comprehensive Large Array-data Stewardship System: 2110 Pleasant Valley Road, Fairmont, WV 26554.

f. NOAA5045, NOAA Environmental Satellite Processing Center: 4231 Suitland Rd., Suitland, MD 20746.

2. National Marine Fisheries Service (NMFS):

a. NOAA4010, NMFS Headquarters Local Area Network: 1315 East West Highway, Silver Spring, MD 20910.

b. NOAA4960, Honolulu, HI Pacific Islands Fisheries Science Center Local Area Network: 2570 Dole Street, Honolulu, HI 96822.

3. National Ocean Service (NOS):

a. NOAA6001, NOS Enterprise Information System: 1305 East West Highway, Floor 13, Silver Spring, MD 20910.

b. NOAA6101, Coastal Services Center (CSC) Information Technology Support System: 2234 S. Hobson Ave., Charleston, SC 29405.

c. NOAA6301, National Centers for Coastal Ocean Science (NCCOS) Research Support System: 1305 East West Highway, 13th Floor, Silver Spring, MD 20910.

d. NOAA6501, Office of Coast Survey (OCS) Nautical Charting System: 1315 East West Highway, Floors 5, 6 & 7, Silver Spring, MD 20910.

4. National Weather Service (NWS):

a. NOAA8860, National Centers for Environmental Prediction: 5830 University Research Court, College Park, MD 20740.

b. NOAA8874, National Operations Hydrologic Remote Sensing Center, 1735 Lake Dr. West, Chanhassen, MN 55317.

c. NOAA8884, Southern Region Headquarters, 819 Taylor St., Rm. 10A05C, Fort Worth, TX 76102.

d. NOAA8885, Western Region Headquarters, 125 South State St., Salt Lake City, UT 84103.

CATEGORIES OF INDIVIDUALS COVERED BY THE SYSTEM:

Members of the public requesting information. Members of the public (non-NOAA researchers), who provide information to NOAA for dissemination to the public. Members of the public who are users of NOAA data or access NOAA information who provide information to NOAA in order to gain access to or use NOAA information.

CATAGORIES OF RECORDS IN THE SYSTEM:

This information is collected and/or maintained by all systems covered by this system of records: Name, address, email address, telephone number (business or private, by individuals' choice), organization name, address and position if applicable, as well as affected public classification (whether they are government (foreign, federal, state, local or tribal, or non-government (public or private agencies).

AUTHORITY FOR MAINTENANCE OF THE SYSTEM:

5 U.S.C. 301, Departmental Regulations and 15 U.S.C. 1512, Powers and duties of Department.

PURPOSES:

This information will allow NOAA to contact customers who have requested data, will participate or have participated in NOAA conferences, meetings and trainings, as well as those researchers providing data and making presentations. Maintenance of this contact information allows further communication and information sharing, as well as a mechanism for customer surveys with the goal of improving services. Maintenance and use of this contact information will also be used to improve user experience, electronic accessibility, and functionality of NOAA information.

ROUTINE USES OF RECORDS MAINTAINED IN THE SYSTEM, INCLUDING CATEGORIES OF USERS AND PURPOSES OF SUCH USES:

1. In the event that a system of records maintained by the Department to carry out its functions indicates a violation or potential violation of law or contract, whether civil, criminal or regulatory in nature and whether arising by general statute or particular program statute or contract, rule, regulation, or order issued pursuant thereto, or the necessity to protect an interest of the Department, the relevant records in the system of records may be referred to the appropriate agency, whether Federal, State, local, or foreign, charged with the responsibility of investigating or prosecuting such violation or charged with enforcing or implementing the statute or contract, rule, regulation, or order issued pursuant thereto, or protecting the interest of the Department.

2. A record from this system of records may be disclosed, as a routine

use, to a Federal, state or local agency maintaining civil, criminal or other relevant enforcement information or other pertinent information, such as current licenses, if necessary to obtain information relevant to a Department decision concerning the assignment, hiring or retention of an individual, the issuance of a security clearance, the letting of a contract, or the issuance of a license, grant or other benefit.

3. A record from this system of records may be disclosed, as a routine use, to a Federal, state, local, or international agency, in response to its request, in connection with the assignment, hiring or retention of an individual, the issuance of a security clearance, the reporting of an investigation of an individual, the letting of a contract, or the issuance of a license, grant, or other benefit by the requesting agency, to the extent that the information is relevant and necessary to the requesting agency's decision on the matter.

4. A record from this system of records may be disclosed in the course of presenting evidence to a court, magistrate, hearing officer or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations, administrative appeals and hearings.

5. A record in this system of records may be disclosed to a Member of Congress submitting a request involving an individual when the individual has requested assistance from the Member with respect to the subject matter of the record.

6. A record in this system of records which contains medical information may be disclosed, as a routine use, to the medical advisor of any individual submitting a request for access to the record under the Act and 15 CFR part 4b if, in the sole judgment of the Department, disclosure could have an adverse effect upon the individual, under the provision of 5 U.S.C. 552a(f)(3) and implementing regulations at 15 CFR part 4b.26.

7. A record in this system of records may be disclosed, as a routine use, to the Office of Management and Budget in connection with the review of private relief legislation as set forth in OMB Circular No. A–19 at any stage of the legislative coordination and clearance process as set forth in that Circular.

8. A record in this system of records may be disclosed to the Department of Justice in connection with determining whether the Freedom of Information Act (5 U.S.C. 552) requires disclosure thereof.

9. A record in this system of records may be disclosed to a contractor of the Department having need for the information in the performance of the contract but not operating a system of records within the meaning of 5 U.S.C. 552a(m).

10. A record in this system may be transferred, as a routine use, to the Office of Personnel Management: For personnel research purposes; as a data source for management information; for the production of summary descriptive statistics and analytical studies in support of the function for which the records are collected and maintained; or for related manpower studies.

11. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services Administration (GSA), or his designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.* GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

12. A record in this system of records may be disclosed to appropriate agencies, entities and persons when: (1) It is suspected or determined that the security or confidentiality of information in the system of records has been compromised; (2) the Department has determined that as a result of the suspected or confirmed compromise there is a risk of harm to economic or property interests, identity theft or fraud, or harm to the security or integrity of this system or whether systems or programs (whether maintained by the Department or another agency or entity) that rely upon the compromised information; and (3) the disclosure made to such agencies, entities, and persons is reasonably necessary to assist in connection with the Department's efforts to respond to the suspected or confirmed compromise and to prevent, minimize, or remedy such harm.

13. A record in this system of records may be disclosed to student volunteers, individuals working under a personal services contract, and other workers who technically do not have the status of Federal employees, when they are performing work for the Department and/or its agencies, as authorized by law, as needed to perform their assigned Agency functions.

DISCLOSURE TO CONSUMER REPORTING AGENCIES:

Disclosure to consumer reporting agencies pursuant to 5 U.S.C. 552a(b)(12) may be made from this system to ''consumer reporting agencies'' as defined in the Fair Credit Reporting Act (15 U.S.C. 1681a(f)) and the Federal Claims Collection Act of 1966 (31 U.S.C. 3701(a)(3)).

POLICIES AND PRACTICES FOR STORING, RETRIEVING, ACCESSING, RETAINING, AND DISPOSING OF RECORDS IN THE SYSTEM:

STORAGE:

Computerized database (in some instances, also CDs; back-up files stored on tape and/or paper records stored in file folders in locked metal cabinets and/or locked rooms).

RETRIEVABILITY:

Records are organized and retrieved by category of entity.

SAFEGUARDS:

The system of records is stored in a building with doors that are locked during and after business hours. Visitors to the facility must register with security guards and must be accompanied by Federal personnel at all times. Paper records are stored in a locked room and/or a locked file cabinet. Electronic records containing Privacy Act information are protected by a user identification/password. The user identification/password is issued to individuals as authorized by authorized personnel.

All electronic information disseminated by NOAA adheres to the standards set out in Appendix III, Security of Automated Information Resources, OMB Circular A–130; the Computer Security Act (15 U.S.C. 278g–3 and 278g–4); and the Government Information Security Reform Act, Public Law 106–398; and follows NIST SP 800–18, Guide for Developing Security Plans for Federal Information Systems; NIST SP 800–26, Security Self-Assessment Guide for Information Technology Systems; and NIST SP 800–53, Recommended Security Controls for Federal Information Systems. NIST 800–122 recommended security controls for protecting Personally Identifiable Information are in place. The Federal Information Processing Standard (FIPS) 199, Standards for Security Categorization of Federal Information and Information Systems, security impact category for these systems is moderate or higher, except for two systems: NOAA4960 and NOAA6101. Contractors that have access to the system are subject to information

security provisions in their contracts required by Department policy.

RETENTION AND DISPOSAL:

All records are retained and disposed of in accordance with National Archive and Records Administration regulations (36 CFR Chapter XII, Subchapter B—Records Management); Departmental directives and comprehensive records schedules; NOAA Administrative Order 205–01; and the NMFS Records Disposition Schedule, Chapters 1200, 1300, 1400, 1500 and 1600.

SYSTEM MANGER(S) AND ADDRESS:

For records at location 1., NESDIS:

a. NOAA5004, Mark Hall, U.S. Department of Commerce, NOAA Wallops CDA Station, 35663 Chincoteague Road, Wallops, Virginia 23337.

b. NOAA5009, John Jensen, Federal Building, Room 311, 151 Patton Avenue, Asheville, NC 28801.

c. NOAA5010, Parmesh Dwivedi, 1315 East West Highway, Silver Spring, MD 20910.

d. NOAA5036: Juanita Sandidge, 1021 Balch Blvd., Stennis Space Center, MS 39529.

e. NOAA 5036 Mirror Site: 25 Broadway, E/GC4, Boulder, CO 80305.

f. NOAA5040: Kern Witcher, 2110 Pleasant Valley Road, Fairmont, WV 26554.

g. NOAA5045: Linda Stathoplos, 4231 Suitland Rd., Suitland, MD 20746.

For records at location 2., NMFS:

a. NOAA4010: Kevin Schulke, 1315 East West Highway, Silver Spring, MD 20910.

b. NOAA4960: Donald Tieman, 2570 Dole Street, Honolulu, HI 96822.

For records at location 3., NOS:

a. NOAA6001: Tim Morris, 1305 East West Highway, Floor 13, Silver Spring, MD 20910.

b. NOAA6101: Paul Scholz, 2234 S. Hobson Ave, Charleston, SC 29405.

c. NOAA6301: Linda Matthews, 1305 East West Highway, 13th Floor, Silver Spring, MD 20910.

d. NOAA6501: Kathryn Ries, 1315 East West Highway, Floors 5, 6 & 7, Silver Spring, MD 20910.

For records at location 4., NWS:

a. NOAA8860: David Glotfelty, 5830 University Research Court, College Park, MD 20740.

b. NOAA8874: Andy Rost, National Operations Hydrologic Remote Sensing Center, 1735 Lake Dr. West, Chanhassen, MN 55317.

c. NOAA8884: John Duxby, Southern Region Headquarters, 819 Taylor St., Rm. 10A05C, Fort Worth, TX 76102.

d. NOAA8885: Sean Wink, Western Region Headquarters, 125 South State St., Salt Lake City, UT 84103.

NOTIFICATION PROCEDURE:

Individuals seeking to determine whether information about them is contained in this system should address written inquiries to the National or Line Office Privacy Act Officers:

Privacy Act Officer, NOAA, 1305 East West Highway, Room 7437, Silver Spring, MD 20910.

Privacy Act Officer, NESDIS, 1335 East West Highway, Room 8245, Silver Spring, MD 20910.

Privacy Act Officer, NMFS, 1315 East West Highway, Room 10843, Silver Spring, MD 20910.

Privacy Act Officer, NOS, 1305 East West Highway, Rm. 13236, Silver Spring, MD 20910.

Privacy Act Officer, NWS, 1325 East West Highway, Room 18426, Silver Spring, MD 20910.

Written requests must be signed by the requesting individual. Requestor must make the request in writing and provide his/her name, address, and date of the request and record sought. All such requests must comply with the inquiry provisions of the Department's Privacy Act rules which appear at 15 CFR part 4, Appendix A.

RECORD ACCESS PROCEDURES:

Requests for access to records maintained in this system of records should be addressed to the same address given in the Notification section above.

CONTESTING RECORD PROCEDURES:

The Department's rules for access, for contesting contents, and appealing initial determinations by the individual concerned are provided for in 15 CFR part 4, Appendix A.

RECORD SOURCE CATEGORIES:

Information in this system will be collected from individuals requesting or providing NOAA mission-related information.

EXEMPTIONS CLAIMED FOR THE SYSTEM:

None.

Michael J. Toland,

Department of Commerce, Deputy Chief FOIA Officer, Department Privacy Act Officer.

[FR Doc. 2017–00494 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

Economic Development Administration

Notice of Petitions by Firms for Determination of Eligibility To Apply for Trade Adjustment Assistance

AGENCY: Economic Development Administration, Department of Commerce.

ACTION: Notice and opportunity for public comment.

Pursuant to Section 251 of the Trade Act 1974, as amended (19 U.S.C. 2341 *et seq.*), the Economic Development Administration (EDA) has received petitions for certification of eligibility to apply for Trade Adjustment Assistance from the firms listed below. Accordingly, EDA has initiated investigations to determine whether increased imports into the United States of articles like or directly competitive with those produced by each of these firms contributed importantly to the total or partial separation of the firm's workers, or threat thereof, and to a decrease in sales or production of each petitioning firm.

LIST OF PETITIONS RECEIVED BY EDA FOR CERTIFICATION ELIGIBILITY TO APPLY FOR TRADE ADJUSTMENT ASSISTANCE

[12/24/2016 through 12/31/2016]

Firm name	Firm address	Date accepted for investigation	Product(s)
Throttle Up, Corporation d/b/a Throttle Up! Corporation.	141 Burnett Drive Durango, CO 80301 ..	12/29/2016	The firm manufactures toy model train components and accessories.

Any party having a substantial interest in these proceedings may request a public hearing on the matter. A written request for a hearing must be submitted to the Trade Adjustment Assistance for Firms Division, Room 71030, Economic Development Administration, U.S. Department of Commerce, Washington, DC 20230, no later than ten (10) calendar days following publication of this notice.

Please follow the requirements set forth in EDA's regulations at 13 CFR 315.9 for procedures to request a public hearing. The Catalog of Federal Domestic Assistance official number and title for the program under which these petitions are submitted is 11.313, Trade Adjustment Assistance for Firms.

Miriam Kearse,

Lead Program Analyst.

[FR Doc. 2017–00535 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–WH–P

DEPARTMENT OF COMMERCE

International Trade Administration

Proposed Information Collection; Comment Request; Request for Duty-Free Entry of Scientific Instrument or Apparatus

AGENCY: Enforcement and Compliance (E&C), International Trade Administration, Commerce.

ACTION: Notice.

SUMMARY: The Department of Commerce, as part of its continuing effort to reduce paperwork and respondent burden, invites the general public and other Federal agencies to take this opportunity to comment on proposed and/or continuing information collections, as required by the Paperwork Reduction Act of 1995.

DATES: Written comments must be submitted on or before March 13, 2017.

ADDRESSES: Direct all written comments to Jennifer Jessup, Departmental Paperwork Clearance Officer, Department of Commerce, Room 6616, 14th and Constitution Avenue NW., Washington, DC 20230 (or via the Internet at *JJessup@doc.gov*).

FOR FURTHER INFORMATION CONTACT: Requests for additional information or copies of the information collection instrument and instructions should be directed to Charlie Michael, Enforcement and Compliance (E&C), phone number 202–482–0596, or via the internet at *charles.michael@trade.gov.*

SUPPLEMENTARY INFORMATION:

I. Abstract

The Departments of Commerce and Homeland Security (DHS) are required to determine whether nonprofit institutions established for scientific or educational purposes are entitled to duty-free entry for scientific instruments the institutions import under the Florence Agreement. Form ITA–338P enables: (1) DHS to determine whether the statutory eligibility requirements for the institution and the instrument are fulfilled, and (2) Commerce to make a comparison and finding as to the scientific equivalency of comparable instruments being manufactured in the United States. Without the collection of the information, DHS and Commerce would not have the necessary information to carry out the responsibilities of determining eligibility for duty-free entry assigned by law.

II. Method of Collection

A copy of Form ITA–338P is provided on and downloadable from a Web site at *http://enforcement.trade.gov/sips/sipsform/ita-338p.pdf* or the potential applicant may request a copy from the Department. The applicant completes the form and then forwards it via mail to DHS.

Upon acceptance by DHS as a valid application, the application is transmitted to Commerce for further processing.

III. Data

OMB Control Number: 0625–0037.

Form Number(s): ITA–338P.

Type of Review: Regular submission.

Affected Public: State or Local government; Federal agencies; not for-profit institutions.

Estimated Number of Respondents: 65.

Estimated Time per Response: 2 hours.

Estimated Total Annual Burden Hours: 130.

Estimated Total Annual Cost to Public: $2,138.

IV. Request for Comments

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden (including hours and cost) of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

Comments submitted in response to this notice will be summarized and/or included in the request for OMB approval of this information collection; they also will become a matter of public record.

Sheleen Dumas,

PRA Departmental Lead, Office of the Chief Information Officer.

[FR Doc. 2017–00470 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–DS–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XF152

Council Coordination Committee Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of a public meeting.

SUMMARY: NMFS will host a meeting of the Council Coordination Committee (CCC), consisting of the Regional Fishery Management Council chairs, vice chairs, and executive directors on February 28–March 1, 2017. The intent of this meeting is to discuss issues of relevance to the Councils and NMFS, including issues related to the implementation of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act. Agenda items include discussions on budget allocations for FY2017 and budget planning for FY2018; an update on current joint science initiatives, including Ecosystem Based Fisheries Management; the FY2017 legislative outlook; updates on planning for the CCC Scientific Coordination Committee meeting, NMFS bycatch reduction strategy, the NMFS National Standard 1 guidance and implementation, Marine Recreational Information Program updates, stock assessment improvement plan; and other topics related to implementation of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act.

DATES: The meeting will begin at 8:30 a.m. on Tuesday, February 28, 2017, recess at 5:00 p.m. or when business is complete; and reconvene at 8:30 a.m. on Wednesday, March 1, 2017, and adjourn by 4:30 p.m. or when business is complete.

ADDRESSES: The meeting will be held at the Ritz-Carlton, Pentagon City, 1250 South Hayes Street; Arlington, VA 22202; Telephone: (703) 415–5000.

FOR FURTHER INFORMATION CONTACT: Brian Fredieu: telephone 301–427–8505 or email at *Brian.Fredieu@noaa.gov.*

SUPPLEMENTARY INFORMATION: The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act established the CCC by amending Section 302 (16 U.S.C. 1852) of the MSA. The committee consists of the chairs, vice chairs, and executive directors of each of the eight Regional Fishery Management Councils authorized by the MSA or other Council members or staff. NMFS will host this meeting and provide reports to the CCC for its information and discussion. All sessions are open to the public. Updates to this meeting will be provided in subsequent notices and additional information will be posted on *http://www.nmfs.noaa.gov/sfa/management/councils/ccc/ccc.htm* when available.

The CCC will meet as late as necessary to complete scheduled business.

Special Accommodations

This meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Brian Fredieu at 301–427–8505 at least five working days prior to the meeting.

Dated: January 9, 2017.

Alan D. Risenhoover,

Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2017–00558 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Proposed Information Collection; Comment Request; Alaska Region Crab Permits

AGENCY: National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice.

SUMMARY: The Department of Commerce, as part of its continuing effort to reduce paperwork and respondent burden, invites the general public and other Federal agencies to take this opportunity to comment on proposed and/or continuing information collections, as required by the Paperwork Reduction Act of 1995.

DATES: Written comments must be submitted on or before March 13, 2017.

ADDRESSES: Direct all written comments to Jennifer Jessup, Departmental Paperwork Clearance Officer, Department of Commerce, Room 6616, 14th and Constitution Avenue NW., Washington, DC 20230 (or via the Internet at *JJessup@doc.gov).*

FOR FURTHER INFORMATION CONTACT: Requests for additional information or copies of the information collection instrument and instructions should be directed to Sally Bibb, (907) 586–7389 or *sally.bibb@noaa.gov.*

SUPPLEMENTARY INFORMATION:

I. Abstract

This request is for extension of a currently approved information collection.

The king and Tanner crab fisheries in the exclusive economic zone of the Bering Sea and Aleutian Islands, Alaska, are managed under the Fishery Management Plan for Bering Sea and Aleutian Islands King and Tanner Crabs (FMP). The North Pacific Fishery Management Council prepared the FMP under the Magnuson-Stevens Fishery Conservation and Management Act as amended in 2006. The National Marine Fisheries Service (NMFS) manages the crab fisheries in the waters off the coast of Alaska under the FMP. Regulations implementing the FMP and all amendments to the Crab Rationalization Program (CR Program) appear at 50 CFR part 680. Program details are found at: *http://www.alaskafisheries.noaa.gov/regs/680/default.htm.*

The CR Program balances the interests of several groups who depend on the crab fisheries. The CR Program addresses conservation and management issues associated with the previous derby fishery, reduces bycatch and associated discard mortality, and increases the safety of crab fishermen by ending the race for fish. Share allocations to harvesters and processors, together with incentives to participate in fishery cooperatives, increases efficiencies, provides economic stability, and facilitates compensated reduction of excess capacities in the harvesting and processing sectors. Community interests are protected by Western Alaska Community Development Quota allocations and regional landing and processing requirements, as well as by several community protection measures.

NMFS established the CR Program as a catch share program for nine crab fisheries in the BSAI, and assigned quota share (QS) to persons and processor quota share (PQS) to processors based on their historic participation in one or more of these nine crab fisheries during a specific period. The CR Program components include QS allocation, PQS allocation, individual fishing quota (IFQ) issuance, and individual processing quota (IPQ) issuance, quota transfers, use caps, crab harvesting cooperatives, protections for Gulf of Alaska groundfish fisheries, arbitration system, monitoring, economic data collection, and cost recovery fee collection.

II. Method of Collection

Respondents have a choice of either electronic or paper forms. Methods of submittal include online, email of electronic forms, mail, and facsimile transmission of paper forms.

III. Data

OMB Control Number: 0648–0514.

Form Number: None.

Type of Review: Regular submission (extension of a currently approved collection).

Affected Public: Individuals or households; business or other for-profit organizations.

Estimated Number of Respondents: 1,993.

Estimated Time per Response: Annual application for crab IFQ permit, application for Crab IPQ permit, application to become an eligible crab community organization (ECCO), 150 minutes each; application for an Annual Crab Harvesting Cooperative IFQ Permit, Right of first refusal (ROFR) contracts and waivers, 1 hour each; annual application for Crab Converted CPO QS and CPO IFQ and application for Registered Crab Receiver (RCR) Permit, BSAI Crab Rationalization Program Quota Share Beneficiary Designation Form, 30 minutes; application for Crab IFQ Hired Master Permit and application for Federal crab vessel permit (FCVP) 21 minutes each; application for eligibility to receive crab QS/IFQ or PQS/IPQ by transfer, application for transfer of crab IFQ, application for transfer of crab QS/IFQ to or from an ECCO, Application to transfer crab QS or PQS, application for Annual Exemption from Western Aleutian Islands Golden King Crab West Region Delivery Requirements, Community Impact Report or IPQ Holder Report (North or South Response Report), 2 hours each; ECCO Annual report and appeal of denial to NMFS decisions, 4 hours each; application for transfer of IFQ between crab harvesting cooperatives, electronic, 5 minutes, non-electronic, 2 hours; application to Transfer Crab IPQ, electronic, 1 hour; non-electronic, 2 hours; CDQ notification of community representative, 5 hours; application for exemption from CR Crab North or South Region Delivery Requirements and North or South Region Delivery Exemption Report, 20 hours each.

Estimated Total Annual Burden Hours: 7,226.

Estimated Total Annual Cost to Public: $13,841 in recordkeeping/reporting costs.

IV. Request for Comments

Comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden (including hours and cost) of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

Comments submitted in response to this notice will be summarized and/or included in the request for OMB approval of this information collection; they also will become a matter of public record.

Dated: January 9, 2017.

Sarah Brabson,

NOAA PRA Clearance Officer.

[FR Doc. 2017–00557 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XF085

Marine Mammals; File Nos. 18059 and 19655

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; receipt of applications.

SUMMARY: Notice is hereby given that David Wiley, Ph.D., Stellwagen Bank National Marine Sanctuary, 175 Edward Foster Road, Scituate, MA 02066 and Adam Pack, Ph.D., University of Hawaii at Hilo, 200 West Kawili Street, Hilo, HI 96720, have applied in due form for permits to conduct scientific research on cetaceans.

DATES: Written, telefaxed, or email comments must be received on or before February 13, 2017.

ADDRESSES: The applications and related documents are available for review by selecting ''Records Open for Public Comment'' from the ''Features'' box on the Applications and Permits for Protected Species (APPS) home page, *https://apps.nmfs.noaa.gov,* and then selecting File No. 18059 or 19655 from the list of available applications.

These documents are also available upon written request or by appointment in the Permits and Conservation Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910; phone (301) 427–8401; fax (301) 713–0376.

Written comments on these applications should be submitted to the Chief, Permits and Conservation Division, at the address listed above. Comments may also be submitted by facsimile to (301) 713–0376, or by email to *NMFS.Pr1Comments@noaa.gov.* Please include the File No. in the subject line of the email comment.

Those individuals requesting a public hearing should submit a written request to the Chief, Permits and Conservation Division at the address listed above. The request should set forth the specific reasons why a hearing on these applications would be appropriate.

FOR FURTHER INFORMATION CONTACT: Sara Young or Amy Hapeman (File No. 18059), Carrie Hubard or Shasta McClenahan (File No. 19655), (301) 427–8401.

SUPPLEMENTARY INFORMATION: The subject permits are requested under the authority of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*), the regulations governing the taking and importing of marine mammals (50 CFR part 216), the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq.*), and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR 222–226).

File No. 18059: The applicant requests a five-year scientific research permit to investigate the foraging ecology, habitat use, physiology, and acoustic and social behavior of humpback (*Megaptera noveaeangliae*), fin (*Balaenoptera physalus*), minke (*B. acutorostrata*), and sei (*B. borealis*) whales in the Gulf of Maine. Up to 130 adult and juvenile humpbacks, 90 fin, 60 minke, and 70 sei whales would be approached for suction cup tagging, prey mapping, obtaining biological samples including biopsies, and photo ID. Up to 10 humpback calves, 5 fin calves, and 4 sei calves would also be approached for tagging and blow sampling. Up to 690 humpback, 480 fin, 250 minke, and 370 sei whales would be incidentally harassed during this research.

File No. 19655: The applicant proposes to study humpback whales and other cetacean species in the waters off the Hawaiian Islands and Alaska. Research methods include passive acoustics, photo-identification, photogrammetry, opportunistic collection of fecal and skin samples, and remote biopsy sampling. A subset of humpback whales would also receive suction cup tags. Other endangered species targeted for study include: Blue (*B. musculus*), bowhead (*Balaena mysticetus*), fin, North Pacific right (*Eubalaena japonica*), sei, and sperm whales (*Physeter macrocephalus*) and the Main Hawaiian Insular stock of false killer whales (*Pseudorca crassidens*). An additional 21 marine mammal species would also be studied. The objectives of the research are to continue the long-term population study of the behavior, biology, and communication systems of humpback whales and other cetaceans. Specific topics to be investigated include individual life histories, social roles, migration, habitat use, distribution, and evolution of humpback song. The permit would be valid for five years.

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), an initial determination has been made that the activities proposed are categorically excluded from the requirement to prepare an environmental assessment or environmental impact statement.

Concurrent with the publication of this notice in the **Federal Register**, NMFS is forwarding copies of the applications to the Marine Mammal Commission and its Committee of Scientific Advisors.

Dated: January 6, 2017.

Julia Harrison,

Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2017–00472 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XF084

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Rocky Intertidal Monitoring Surveys Along the Oregon and California Coasts

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received an application from the Partnership for Interdisciplinary Study of Coastal Oceans (PISCO) at the University of California (UC) Santa Cruz for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to rocky intertidal monitoring surveys. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to PISCO to incidentally take, by Level B harassment only, marine mammals during the specified activity.

DATES: Comments and information must be received no later than February 13, 2017.

ADDRESSES: Comments on the application should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is *ITP.Pauline@noaa.gov*. NMFS is not responsible for email comments sent to addresses other than the one provided here. Comments sent via email, including all attachments, must not exceed a 25-megabyte file size.

Instructions: All comments received are a part of the public record and will generally be posted to *http://www.nmfs.noaa.gov/pr/permits/incidental/research.htm* without change. All personal identifying information (*e.g.,* name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

An electronic copy of the application containing a list of the references used in this document may be obtained by writing to the address specified above, telephoning the contact listed below (see **FOR FURTHER INFORMATION**), or online at: *http://www.nmfs.noaa.gov/pr/permits/incidental/research.htm*. PISCO's 2016–17 monitoring report can also be found at this Web site. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Robert Pauline, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking, other means of effecting the least practicable impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined ''negligible impact'' in 50 CFR 216.103 as ''. . . an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.''

Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as: ''any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).''

Summary of Request

On September 23, 2016 NMFS received an application from PISCO for the taking of marine mammals incidental to rocky intertidal monitoring surveys along the Oregon and California coasts. NMFS determined that the application was adequate and complete on October 9, 2016. NMFS has previously issued four IHAs for this ongoing project (77 FR 72327, December 5, 2012; 78 FR 79403, December 30, 2013; 79 FR 73048, December 9, 2014; 81 FR 7319, February 2, 2016).

The research group at UC Santa Cruz operates in collaboration with two large-scale marine research programs: PISCO and the Multi-agency Rocky Intertidal Network (MARINe). The research group at UC Santa Cruz (PISCO) is responsible for many of the ongoing rocky intertidal monitoring programs along the Pacific coast. Monitoring occurs at rocky intertidal sites, often large bedrock benches, from the high intertidal to the water's edge. Long-term monitoring projects include Community Structure Monitoring, Intertidal Biodiversity Surveys, Marine Protected Area Baseline Monitoring, Intertidal Recruitment Monitoring, and Ocean Acidification. Research is conducted throughout the year along the California and Oregon coasts and will continue indefinitely. Most sites are sampled one to two times per year over a 4–6 hour period during a negative low tide series. This IHA, if issued, would be effective for a 12-month period. The following specific aspects of the proposed activities are likely to result in the take of marine mammals: Presence of survey personnel near pinniped haulout sites and unintentional approach of survey personnel towards hauled out pinnipeds. Take, by Level B harassment only, of individuals of California sea lions (*Zalophus californianus*), harbor seals (*Phoca vitulina richardii*), and northern elephant seals (*Mirounga angustirostris*) is anticipated to result from the specified activity.

Description of the Specified Activity

Overview

PISCO proposes to continue rocky intertidal monitoring work that has been ongoing for 20 years. PISCO focuses on understanding the nearshore ecosystems of the U.S. west coast through a number of interdisciplinary collaborations. The program integrates long-term monitoring of ecological and oceanographic processes at dozens of sites with experimental work in the lab and field. A short description of project components is found below. Additional information can be found in PISCO's application (see **ADDRESSES**).

Dates and Duration

PISCO's research is conducted throughout the year. Most sites are sampled one to two times per year over a 1-day period (4–6 hours per site) during a negative low tide series. Due to the large number of research sites, scheduling constraints, the necessity for negative low tides and favorable weather/ocean conditions, exact survey dates are variable and difficult to predict. Some sampling may occur in all months.

Specified Geographic Region

Sampling sites occur along the California and Oregon coasts. Community Structure Monitoring sites range from Ecola State Park near Cannon Beach, Oregon to Government Point located northwest of Santa Barbara, California. Biodiversity Survey sites extend from Ecola State Park south to Cabrillo National Monument in San Diego County, California. Exact locations of sampling sites can be found in Tables 1 and 2 of PISCO's application.

Detailed Description of Activities

Community Structure Monitoring involves the use of permanent photoplot quadrats which target specific algal and invertebrate assemblages (*e.g.* mussels, rockweeds, barnacles). Each photoplot is photographed and scored for percent cover. The Community Structure Monitoring approach is based largely on surveys that quantify the percent cover and distribution of algae and invertebrates that constitute these communities. This approach allows researchers to quantify both the patterns of abundance of targeted species, as well as characterize changes in the communities in which they reside. Such information provides managers with insight into the causes and consequences of changes in species abundance. There are 47 Community Structure sites, each of which is surveyed over a 1-day period during a low tide series one to two times a year.

Biodiversity Surveys are part of a long-term monitoring project and are conducted every 3–5 years across 140 established sites. Note that many, but not all, of the 47 Community Structure sites are also Biodiversity Survey sites. Thirty-eight of the Community Structure sites are utilized for Biodiversity Surveys, leaving nine sites that are only Biodiversity Survey locations. These Biodiversity Surveys involve point contact identification along permanent transects, mobile invertebrate quadrat counts, sea star band counts, and tidal height topographic measurements.

Sixteen Biodiversity Survey sites will be visited as part of this proposed IHA including Point Arena, Saunders Reef, Del Mar Landing, Gerstle Cove, Chimney Rock, Fitzgerald Marine Reserve, Ano Nuevo, Diablo, Jajolla Caves, Sea Ridge, Point Sierra Nevada, Cayucos, Hazards, Stairs, Treasure Island, and Cabrillo Zone III. Four of the Biodiversity Survey sites are also Community Structure sites, leaving 12 sites that are only Biodiversity Survey sites. As such, a total of 59 sites would be visited under the proposed IHA.

The intertidal zones where PISCO conducts intertidal monitoring are also areas where pinnipeds can be found hauled out on the shore at or adjacent to some research sites. Pinnipeds are likely to be observed at 17 out of the 59 survey sites. Accessing portions of the intertidal habitat at these locations may cause incidental Level B (behavioral) harassment of pinnipeds through some unavoidable approaches if pinnipeds are hauled out directly in the study plots or while biologists walk from one location to another. No motorized equipment is involved in conducting these surveys.

Description of Marine Mammals in the Area of the Specified Activity

Several pinniped species can be found along the California and Oregon coasts. The three that are most likely to occur at some of the research sites are California sea lion, harbor seal, and northern elephant seal. PISCO researchers have seen very small numbers (*i.e.,* five or fewer) of Steller sea lions at one of the sampling sites. However, these sightings are extremely rare.

We refer the public to Carretta *et al.* (2016) for general information on these species, which are presented below this section. The publication is available at: *http://www.nmfs.noaa.gov/pr/sars/species.htm.* Additional information on the status, distribution, seasonal distribution, and life history can also be found in PISCO's application.

Northern Elephant Seal

Northern elephant seals range widely throughout the eastern Pacific for most of the year to forage. They return to haul-out locations along the west coast of the continental United States including the Channel Islands, the central California coast, and islands off of Baja California to breed and molt. Breeding occurs from December through early spring, with males returning to haul-out locations earlier than females to establish dominance hierarchies. Molting occurs from late April to August, with juveniles and adult females returning earlier than adult males (Reeves *et al.,* 2002). Due to very little movement between colonies in Mexico and those in California, the California population is considered to be a separate stock (Carretta *et al.,* 2010).

This species was hunted by indigenous peoples for several thousand years and by commercial sealers in the 1800s. By the late 1800s the species was thought to be extinct, although several were seen on Guadalupe Island in the 1880s and a few dozen to several hundred survived off of Mexico (Stewart *et al.,* 1994). The population began increasing in the early 1900s and progressively colonized southern and central California through the 1980s (Reeves *et al.,* 2002).

According to the 2015 Pacific Marine Mammal Stock Assessment, the minimum population size of the California stock is 81,368 individuals and the estimated population size is 179,000 (Carretta *et al.,* 2016, Lowry *et al.,* 2014). This species has grown at 3.8 percent annually since 1988 (Lowry *et al.,* 2014). Northern elephant seals are not listed under the Endangered Species Act (ESA) and are not a strategic species nor considered depleted under the MMPA. The most recent monitoring report (2016) recorded four takes of elephant seals. Thirty takes were authorized under the IHA. All were recorded at Piedras Blancas.

California Sea Lions

California sea lions are distributed along the west coast of North America from British Columbia to Baja California and throughout the Gulf of California. Breeding occurs on offshore islands along the west coast of Baja California and the Gulf of California as well as on the California Channel Islands. There are three recognized California sea lion stocks (U.S. stock, Western Baja stock, and the Gulf of California stock) with the U.S. stock ranging from the U.S./Mexico border into Canada. Although there is some movement between stocks, U.S. rookeries are considered to be isolated from rookeries off of Baja California (Barlow *et al.,* 1995).

California sea lions were hunted for several thousand years by indigenous peoples and early hunters. In the early 1900s, sea lions were killed in an effort to reduce competition with commercial fisheries. They were also hunted commercially from the 1920–1940s. Following the passage of the Marine Mammal Protection Act (MMPA) in 1972, as well as limits on killing and harassment in Mexico, the population has rapidly increased (Reeves *et al.,* 2002). Declines is pup production did occur during the 1983–84, 1992–93, 1997–98, and 2003 El Niño events, but production returned to pre- El Niño levels within 2–5 years (Carretta *et al.,* 2016). In 2013, NOAA declared an Unusual Mortality Event (UME) due to the elevated number of sea lion pup strandings in southern California. The cause of this event is thought to be nutritional stress related to declines in prey availability. This UME has continued through 2016 (NMFS 2016). According to the 2015 Pacific Marine Mammal Stock Assessment, California sea lions have a minimum population

size of 153,337 individuals and the population is estimated to number 296,750 (Carretta *et al.,* 2016). This species is not listed under the ESA and is not a strategic species nor considered depleted under the MMPA.

The number of California sea lions historically found at any one of PISCO's study sites is variable, and often no California sea lions are observed during sampling. The most recent monitoring report (2016) reported 19 takes of this species. All takes occurred at Government Point. A total of 60 takes were authorized under the IHA.

Pacific Harbor Seal

Pacific harbor seals are not listed as threatened or endangered under the ESA, nor are they categorized as depleted under the MMPA. The most recent census of the California stock of harbor seals occurred in 2012 during which 20,109 hauled-out harbor seals were counted. A 1999 census of the Oregon/Washington harbor seal stock found 16,165 individuals, of which 5,735 were in Oregon (Carretta *et al.,* 2016). The population is estimated to number 30,968 individuals in California and 24,732 individuals in Oregon/Washington (Carretta *et al.,* 2016). At several sites harbor seals are often observed and have the potential to be disturbed by researchers accessing or sampling the site. The largest number of harbor seals occurs at Hopkins in Monterey, CA where often 20–30 adults and occasionally 10–15 pups are hauled-out on a small beach adjacent to the site.

The animals inhabit near-shore coastal and estuarine areas from Baja California, Mexico, to the Pribilof Islands in Alaska. Pacific harbor seals are divided into two subspecies: *P.* v. *stejnegeri* in the western North Pacific, near Japan, and *P.* v. *richardii* in the northeast Pacific Ocean. The latter subspecies, recognized as three separate stocks, inhabits the west coast of the continental U.S., including: The outer coastal waters of Oregon and Washington states; Washington state inland waters; and Alaska coastal and inland waters.

In California, over 500 harbor seal haulout sites are widely distributed along the mainland and offshore islands, and include rocky shores, beaches and intertidal sandbars (Lowry *et al.,* 2005). Harbor seals mate at sea, and females give birth during the spring and summer, although, the pupping season varies with latitude. Pups are nursed for an average of 24 days and are ready to swim minutes after being born. Harbor seal pupping takes place at many locations, and rookery size varies from a few pups to many hundreds of pups. Pupping generally occurs between March and June, and molting occurs between May and July.

At several sites, harbor seals are often observed and have the potential to be disturbed by researchers accessing or sampling the site. The most recent monitoring report (2016) described a total of 44 takes of harbor seals. A total of 183 takes had been authorized under the IHA.

Steller Sea Lion

Steller sea lions range throughout the north Pacific from Japan to the Kamchatka Peninsula, along the Aleutian Islands, into the Gulf of Alaska, and down the west coast of North America to central California. Based on distribution, population dynamics, and genotypic data, the species occurring in United States waters has been divided into two stocks, the eastern U.S. stock (east of Cape Suckling, AK) and the western U.S. stock (west of Cape Sucking, AK) (Loughlin 1997). Breeding of the eastern stock occurs in rookeries in Alaska, British Columbia, Oregon, and California.

This species was hunted by indigenous peoples for several thousand years throughout its range and as recently as the 1990s in the Aleutian Islands. Individuals from British Columbia to California were also killed in the early 1900s to reduce competition with commercial fisheries. The species dramatically declined from the 1970s to 1990s due to competition with commercial fishing and long-term environmental changes (Reeves *et al.,* 2002). There has also been a continued decrease in population numbers along the southern and central California coast possibly due to a northward shift, and subsequent southern contraction in breeding locations (Pitcher *et al.,* 2007).

According to the 2015 Alaska Marine Mammal Stock Assessment, the minimum population size of the eastern U.S stock is 59,968 and the estimated population size is between 60,131 and 74,480 individuals (Muto *et al.,* 2016). In 1990, due to accelerating declines across its range, the species was listed as threatened under the ESA. In 2013, the eastern U.S. stock was determined to be recovered and was delisted from the ESA (NMFS 2013) and is, therefore, no longer a strategic species under the MMPA.

Past monitoring reports have not typically reported Steller sea lion observations. However, in 2009 five Steller sea lions were observed at the Cape Arago, OR site.

TABLE 1—MARINE MAMMALS POTENTIALLY PRESENT IN THE VICINITY OF STUDY AREAS

Species	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]
California sea lion	*Zalophus californianus*	U.S.	-; N	296,750 (n/a; 153,337; 2011).
Steller sea lion	*Eumetopias jubatus*	Eastern U.S.	D; Y	60,131–74,448 (n/a; 36,551; 2013).
Harbor seal	*Phoca vitulina richardii*	California/Oregon/Washington.	-; N	30,968 (0.157; 27,348; 2012 [CA])/ 24,732 (n/a; n/a [OR/WA].[3]
Northern elephant seal.	*Mirounga angustirostris.*	California breeding stock.	-; N	179,000 (n/a; 81,368; 2010).

[1] ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA.

[2] CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the specie's (or similar species') life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore.

[3] The most recent abundance estimate is >8 years old, there is no current estimate of abundance available for this stock.

Other Marine Mammals in the Proposed Action Area

Guadalupe fur seals (*Arctocephalus townsendi*) and Northern fur seals (*Callorhinus ursinus*) are occasionally observed within the rage of the study areas. However, Guadalupe fur seals only known breeding colony is on Guadalupe Island, off the Mexican coast. Increasing numbers have been seen on California's Channel Islands, and in recent years, several Guadalupe fur seals have stranded along the central California coast. Northern fur seals have recently re-established a rookery on the Farallon Islands. They rarely come ashore except during pupping and breeding times and are almost never seen on mainland beaches unless they are sick. Given that the likelihood of observing these two fur seal species is quite low, they are not considered further.

Potential Effects of the Specified Activity on Marine Mammals

This section includes a summary and discussion of the ways that the types of stressors associated with the specified activity (*e.g.,* personnel presence) have been observed to impact marine mammals. This discussion may also include reactions that we consider to rise to the level of a take and those that we do not consider to rise to the level of a take. This section is intended as a background of potential effects and does not consider either the specific manner in which this activity will be carried out or the mitigation that will be implemented, and how either of those will shape the anticipated impacts from this specific activity.

The appearance of researchers may have the potential to cause Level B harassment of any pinnipeds hauled out at sampling sites. Although marine mammals are never deliberately approached by survey personnel, approach may be unavoidable if pinnipeds are hauled out in the immediate vicinity of the permanent study plots. Disturbance may result in reactions ranging from an animal simply becoming alert to the presence of researchers (*e.g.,* turning the head, assuming a more upright posture) to flushing from the haul-out site into the water. NMFS does not consider the lesser reactions to constitute behavioral harassment, or Level B harassment takes, but rather assumes that pinnipeds that flee some distance or change the speed or direction of their movement in response to the presence of researchers are behaviorally harassed, and thus subject to Level B taking. Animals that respond to the presence of researchers by becoming alert, but do not move or change the nature of locomotion as described, are not considered to have been subject to behavioral harassment (Table 2).

Numerous studies have shown that human activity can flush harbor seals off haulout sites (Allen *et al.,* 1985; Calambokidis *et al.,* 1991; Suryan and Harvey, 1999). The Hawaiian monk seal (*Neomonachus schauinslandi*) has been shown to avoid beaches that have been disturbed often by humans (Kenyon 1972). And in one case, human disturbance appeared to cause Steller sea lions to desert a breeding area at Northeast Point on St. Paul Island, Alaska (Kenyon 1962).

There are three ways in which disturbance, as described previously, could result in more than Level B harassment of marine mammals. All three are most likely to be consequences of stampeding, a potentially dangerous occurrence in which large numbers of animals succumb to mass panic and rush away from a stimulus. The three situations are (1) falling when entering the water at high-relief locations; (2) extended separation of mothers and pups; and (3) crushing of elephant seal pups by large males during a stampede.

Because hauled-out animals may move towards the water when disturbed, there is the risk of injury if animals stampede towards shorelines with precipitous relief (*e.g.,* cliffs). If disturbed, hauled-out animals in these situations may move toward the water without risk of encountering barriers or hazards that would otherwise prevent them from leaving the area. In these circumstances, the risk of injury, serious injury, or death to hauled-out animals is very low. Thus, research activity poses no risk that disturbed animals may fall and be injured or killed as a result of disturbance at high-relief locations.

Furthermore, few pups are anticipated to be encountered during the proposed monitoring surveys. A small number of harbor seal, northern elephant seal and California sea lion pups, however, have been observed during past years. Though elephant seal pups are occasionally present when researchers visit survey sites, risk of pup mortalities is very low because elephant seals are far less reactive to researcher presence than the other two species. Harbor seals are very precocious with only a short period of time in which separation of a mother from a pup could occur. Pups are also typically found on sand beaches, while study sites are located in the rocky intertidal zone, meaning that there is typically a buffer between researchers and pups. Finally, the caution used by researchers in approaching sites generally precludes the possibility of behavior, such as stampeding, that could result in extended separation of mothers and dependent pups or trampling of pups.

Anticipated Effects on Marine Mammal Habitat

The only habitat modification associated with the proposed activity is the placement of permanent bolts and other sampling equipment in the intertidal. Once a particular study has ended, the respective sampling equipment is removed. No trash or field gear is left at a site. Sampling activities are also not expected to result in any long-term modifications of haulout use or abandonment of haulouts since these sites are only visited 1–2 times per year, which minimizes repeated disturbances. During periods of low tide (*e.g.,* when tides are 0.6 m (2 ft) or less and low enough for pinnipeds to haul-out), we would expect the pinnipeds to return to the haulout site within 60 minutes of the disturbance (Allen *et al.,* 1985). The effects to pinnipeds appear at the most to displace the animals temporarily from their haul out sites, and we do not expect that the pinnipeds would permanently abandon a haul-out site during the conduct of rocky intertidal surveys. Thus, the proposed activity is not expected to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must, where applicable, set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (where relevant).

Proposed Mitigation Measures

PISCO proposes to implement several mitigation measures to reduce potential take by Level B (behavioral disturbance) harassment. Measures include the following:

- When possible, researchers will observe a site from a distance with binoculars to detect any marine mammals prior to approaching the site. Researchers will approach a site with caution (slowly and quietly) to avoid surprising any hauled-out individuals and to reduce stampeding of individuals towards the water.

• If possible to avoid pinnipeds along access ways to sites, by locating and taking a different access way, researchers will do so. Researchers will keep a safe distance from and not approach any marine mammal while conducting research, unless it is absolutely necessary to flush a marine mammal in order to continue conducting research (*i.e.* if a site cannot be accessed or sampled due to the presence of pinnipeds).

• Researches will monitor the offshore area for predators (such as killer whales and white sharks) and avoid flushing of pinnipeds when predators are observed in nearshore waters. Note that PISCO has never observed an offshore predator while researchers were present at any of the survey sites.

• Intentional flushing will be avoided if pups are present and nursing pups will not be disturbed.

• To avoid take of Steller sea lions, any site where they are present will not be approached and will be sampled at a later date. Note that observation of sea lions at survey sites is extremely rare.

• Researchers will promptly vacate sites at the conclusion of sampling.

The methodologies and actions noted in this section will be utilized and included as mitigation measures in any issued IHA to ensure that impacts to marine mammals are mitigated to the lowest level practicable. The primary method of mitigating the risk of disturbance to pinnipeds, which will be in use at all times, is the selection of judicious routes of approach to study sites, avoiding close contact with pinnipeds hauled out on shore, and the use of extreme caution upon approach. Each visit to a given study site will last for approximately 4–6 hours, after which the site is vacated and can be re-occupied by any marine mammals that may have been disturbed by the presence of researchers. By arriving before low tide, worker presence will tend to encourage pinnipeds to move to other areas for the day before they haul out and settle onto rocks at low tide.

Mitigation Conclusions

NMFS has carefully reviewed PISCO's proposed mitigation measures to ensure these measures would have the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

• The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;

• The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and

• The practicability of the measure for applicant implementation.

Any mitigation measure(s) prescribed by NMFS should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

1. Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).

2. A reduction in the numbers of marine mammals (total number or number at biologically important time or location) exposed to activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).

3. A reduction in the number of times (total number or number at biologically important time or location) individuals would be exposed to activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).

4. A reduction in the intensity of exposures (either total number or number at biologically important time or location) to activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing the severity of harassment takes only).

5. Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base, activities that block or limit passage to or from biologically important areas, permanent destruction of habitat, or temporary destruction/disturbance of habitat during a biologically important time.

6. For monitoring directly related to mitigation—an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must, where applicable, set forth ''requirements pertaining to the monitoring and reporting of such taking.'' The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for ITAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. PISCO has described their long-standing monitoring actions in Section 13 of the Application. The plan may be modified or supplemented based on comments or new information received from the public during the public comment period.

Monitoring measures proposed by the applicant or prescribed by NMFS should accomplish one or more of the following general goals:

1. An increase in our understanding of the likely occurrence of marine mammal species in the vicinity of the action, *i.e.,* presence, abundance, distribution, and/or density of species.

2. An increase in our understanding of how many marine mammals are likely to be exposed to levels of disturbance that we associate with specific adverse effects, such as behavioral harassment;

3. An increase in our understanding of how marine mammals respond to stimuli expected to result in take and how anticipated adverse effects on individuals (in different ways and to varying degrees) may impact the population, species, or stock (specifically through effects on annual rates of recruitment or survival) through any of the following methods:

▪ Behavioral observations in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);

▪ Physiological measurements in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);

▪ Distribution and/or abundance comparisons in times or areas with concentrated stimuli versus times or areas without stimuli;

4. An increased knowledge of the affected species; and

5. An increase in our understanding of the effectiveness of certain mitigation and monitoring measures.

PISCO will contribute to the knowledge of pinnipeds in California and Oregon by noting observations of: (1) Unusual behaviors, numbers, or distributions of pinnipeds, such that any potential follow-up research can be conducted by the appropriate personnel; (2) tag-bearing carcasses of pinnipeds, allowing transmittal of the information to appropriate agencies and personnel; and (3) rare or unusual species of marine mammals for agency follow-up.

Proposed monitoring requirements in relation to PISCO's rocky intertidal monitoring will include observations made by the applicant. Information recorded will include species counts (with numbers of pups/juveniles when possible) of animals present before approaching, numbers of observed disturbances, and descriptions of the disturbance behaviors during the monitoring surveys, including location, date, and time of the event. For consistency, any reactions by pinnipeds to researchers will be recorded according to a three point scale shown in Table 2. Note that only observations of disturbance Levels 2 and 3 should be recorded as takes.

TABLE 2—LEVELS OF PINNIPED BEHAVIORAL DISTURBANCE

Level	Type of response	Definition
1	Alert	Seal head orientation or brief movement in response to disturbance, which may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, changing from a lying to a sitting position, or brief movement of less than twice the animal's body length.
2	Movement	Movements away from the source of disturbance, ranging from short withdrawals at least twice the animal's body length to longer retreats over the beach, or if already moving a change of direction of greater than 90 degrees.
3	Flush	All retreats (flushes) to the water.

In addition, observations regarding the number and species of any marine mammals observed, either in the water or hauled-out, at or adjacent to a site, are recorded as part of field observations during research activities. Information regarding physical and biological conditions pertaining to a site, as well as the date and time that research was conducted are also noted. This information will be incorporated into a monitoring report for NMFS.

If at any time the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury, or mortality, PISCO shall immediately cease the specified activities and report the incident to the Office of Protected Resources, NMFS, and the Southwest Regional Stranding Coordinator, NMFS. The report must include the following information:

(1) Time and date of the incident;

(2) Description of the incident;

(3) Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, and visibility);

(4) Description of all marine mammal observations in the 24 hours preceding the incident;

(5) Species identification or description of the animal(s) involved;

(6) Fate of the animal(s); and

(7) Photographs or video footage of the animal(s).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with PISCO to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. PISCO may not resume the activities until notified by NMFS.

In the event that an injured or dead marine mammal is discovered and it is determined that the cause of the injury or death is unknown and the death is relatively recent (*e.g.,* in less than a moderate state of decomposition), PISCO shall immediately report the incident to the Office of Protected Resources, NMFS, and the Southwest Regional Stranding Coordinator, NMFS. The report must include the same information identified in the paragraph above IHA. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with PISCO to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that an injured or dead marine mammal is discovered and it is determined that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), PISCO shall report the incident to the Office of Protected Resources, NMFS, and the Southwest Regional Stranding Coordinator, NMFS, within 24 hours of the discovery. PISCO shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS. Activities may continue while NMFS reviews the circumstances of the incident.

A draft final report must be submitted to NMFS Office of Protected Resources within 60 days after the conclusion of the 2016–2017 field season or 60 days prior to the start of the next field season if a new IHA will be requested. The report will include a summary of the information gathered pursuant to the monitoring requirements set forth in the IHA. A final report must be submitted to the Director of the NMFS Office of Protected Resources and to the NMFS West Coast Regional Administrator within 30 days after receiving comments from NMFS on the draft final report. If no comments are received from NMFS, the draft final report will be considered to be the final report.

Monitoring Results From Previously Authorized Activities

PISCO complied with the mitigation and monitoring that were required under the IHA issued in December 2014. In compliance with the IHA, PISCO submitted a report detailing the activities and marine mammal monitoring they conducted. The IHA required PISCO to conduct counts of pinnipeds present at study sites prior to approaching the sites and to record species counts and any observed reactions to the presence of the researchers.

From December 17, 2014, through December 16, 2015, PISCO researchers conducted rocky intertidal sampling at numerous sites in California and Oregon (see Table 1 and 2 in PISCO's 2014–2015 monitoring report). During this time period, no injured, stranded, or dead pinnipeds were observed. Tables 7, 8, and 9 in PISCO's monitoring report (see **ADDRESSES**) outline marine mammal observations and reactions. During this period there were 44 takes of harbor seals, 19 takes of California sea lions, and 4 takes of northern elephant seals. NMFS had authorized the take of 183 harbor seals, 60 California sea lions, and 30 Northern Elephant seals under the IHA.

Based on the results from the monitoring report, we conclude that

these results support our original findings that the mitigation measures set forth in the 2014–2015 IHA effected the least practicable impact on the species or stocks. There were no stampede events this year and most disturbances were Level 1 and 2 from the disturbance scale (Table 2)—meaning the animal did not fully flush but observed or moved slightly in response to researchers. Those that did fully flush to the water did so slowly. Most of these animals tended to observe researchers from the water and then re-haulout farther upcoast or downcoast of the site within approximately 30 minutes of the disturbance.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as: Any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

All anticipated takes would be by Level B harassment, involving temporary changes in behavior. The proposed mitigation and monitoring measures are expected to minimize the possibility of injurious or lethal takes such that take by injury, serious injury, or mortality is considered remote. Animals hauled out close to the actual survey sites may be disturbed by the presence of researchers and may alter their behavior or attempt to move away from the researchers.

As discussed earlier, NMFS considers an animal to have been harassed if it moved greater than two times its body length in response to the researcher's presence or if the animal was already moving and changed direction and/or speed, or if the animal flushed into the water. Animals that became alert without such movements were not considered harassed.

For the purpose of this proposed IHA, only Oregon and California sites that are frequently sampled and have a marine mammal presence during sampling were included in calculating take estimates. Sites where only Biodiversity Surveys are conducted did not provide enough data to confidently estimate takes since they are sampled infrequently (once very 3–5 years). A small number of harbor seal, northern elephant seal and California sea lion pup takes are anticipated as pups may be present at several sites during spring and summer sampling.

Take estimates are based on marine mammal observations from each site. Marine mammal observations are done as part of PISCO site observations, which include notes on physical and biological conditions at the site. The maximum number of marine mammals, by species, seen at any given time throughout the sampling day is recorded at the conclusion of sampling. A marine mammal is counted if it is seen on access ways to the site, at the site, or immediately up-coast or down-coast of the site. Marine mammals in the water immediately offshore are also recorded. Any other relevant information, including the location of a marine mammal relevant to the site, any unusual behavior, and the presence of pups is also noted.

These observations formed the basis from which researchers with extensive knowledge and experience at each site estimated the actual number of marine mammals that may be subject to take. Take estimates for each species for which take would be authorized were based on the following equation:

Take estimate per survey site = (number of expected animals per survey site * number of survey days per survey site)

Individual species' totals for each survey site were summed to arrive at a total estimated take. In most cases the number of takes is based on the maximum number of marine mammals that have been observed at a site throughout the history of the site (1–3 observation per year for 5–10 years or more) with additional input provided by the researchers with site-specific knowledge and experience. Section 6 in PISCO's application outlines the number of visits per year for each sampling site and the potential number of pinnipeds anticipated to be encountered at each site. Tables 3, 4, 5 in PISCO's application outlines the number of potential takes per site (see **ADDRESSES**).

Harbor seals are expected to occur at 16 locations in numbers ranging from 5 to 30 per visit (Table 3 in PISCO's application). It is anticipated that there will be 220 takes of adult harbor seals and 13 takes of weaned pups. Therefore, NMFS proposes to authorize the take of up to 233 harbor seals.

California sea lions are expected to be present at five sites. Eighty-five adult and five pups are expected to be taken. Therefore, NMFS proposes to authorize the take of 90 California sea lions.

Northern elephant seals are only expected to occur at one site this year, Piedras Blancs, which will experience two separate visits. Up to 20 adult and 40 pup takes are anticipated. Therefore, NMFS proposes to authorize the take of up to 60 northern elephant seals.

PISCO researchers report that they have very rarely observed Stellers at any research sites and none have been observed over the last several years. Therefore, PISCO has not requested, and NMFS does not propose to authorize, take of any Steller sea lions.

NMFS proposes to authorize the take, by Level B harassment only, of 203 harbor seals, 90 California sea lions, and 60 northern elephant seals. These numbers are considered to be maximum take estimates; therefore, actual take may be less if animals decide to haul out at a different location for the day or animals are out foraging at the time of the survey activities.

Analysis and Preliminary Determinations

Negligible Impact Analysis

Negligible impact is ''an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival'' (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of Level B harassment takes, alone, is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' through behavioral harassment, NMFS must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, feeding, migration, etc.), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, effects on habitat, and the status of the species.

To avoid repetition, the discussion of our analyses applies generally to the three species for which take is authorized, given that the anticipated effects of these surveys on marine mammals are expected to be relatively similar in nature. Where there are species-specific factors that have been considered, they are identified below.

No injuries or mortalities are anticipated to occur as a result of PISCO's rocky intertidal monitoring, and none are proposed to be authorized. The risk of marine mammal injury, serious injury, or mortality associated

with rocky intertidal monitoring increases somewhat if disturbances occur during breeding season. These situations present increased potential for mothers and dependent pups to become separated and, if separated pairs do not quickly reunite, the risk of mortality to pups (through starvation) may increase. Separately, adult male elephant seals may trample elephant seal pups if disturbed, which could potentially result in the injury, serious injury, or mortality of the pups. The risk of either of these situations is greater in the event of a stampede; however, as described previously, stampede is not considered likely to occur.

Very few pups are anticipated to be encountered during the proposed monitoring surveys. However, a small number of harbor seal, northern elephant seal and California sea lion pups have been observed at several of the proposed monitoring sites during past years. Harbor seals are very precocious with only a short period of time in which separation of a mother from a pup could occur. Though elephant seal pups are occasionally present when researchers visit survey sites, risk of pup mortalities is very low because elephant seals are far less reactive to researcher presence than the other two species. Further, pups are typically found on sand beaches, while study sites are located in the rocky intertidal zone, meaning that there is typically a buffer between researchers and pups. Finally, the caution used by researchers in approaching sites generally precludes the possibility of behavior, such as stampeding, that could result in extended separation of mothers and dependent pups or trampling of pups. No research would occur where separation of mother and her nursing pup or crushing of pups can become a concern.

Typically, even those reactions constituting Level B harassment would result at most in temporary, short-term disturbance. In any given study season, researchers will visit sites one to two times per year for a total of 4–6 hours per visit. Therefore, disturbance of pinnipeds resulting from the presence of researchers lasts only for short periods of time and is separated by significant amounts of time in which no disturbance occurs.

Some of the pinniped species may use some of the sites during certain times of year to conduct pupping and/or breeding. However, some of these species prefer to use offshore islands for these activities. At the sites where pups may be present, PISCO has proposed to implement certain mitigation measures, such as no intentional flushing if dependent pups are present, which will avoid mother/pup separation and trampling of pups.

Of the marine mammal species anticipated to occur in the proposed activity areas, none are listed under the ESA. Taking into account the mitigation measures that are planned, effects to marine mammals are generally expected to be restricted to short-term changes in behavior or temporary abandonment of haulout sites, Pinnipeds are not expected to permanently abandon any area that is surveyed by researchers, as is evidenced by continued presence of pinnipeds at the sites during annual monitoring counts. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed mitigation and monitoring measures, NMFS preliminarily finds that the total marine mammal take from PISCO's rocky intertidal monitoring program will not adversely affect annual rates of recruitment or survival and therefore will have a negligible impact on the affected species or stocks.

Small Numbers

Table 3 presents the abundance of each species or stock, the proposed take estimates, and the percentage of the affected populations or stocks that may be taken by Level B harassment.The numbers of animals authorized to be taken would be considered small relative to the relevant stocks or populations (0.75–0.94 percent for harbor seals, and <0.01 percent for California sea lions and northern elephant seals). Because these are maximum estimates, actual take numbers are likely to be lower, as some animals may not be present on survey days.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, we preliminarily find that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

TABLE 3—POPULATION ABUNDANCE ESTIMATES, TOTAL PROPOSED LEVEL B TAKE, AND PERCENTAGE OF POPULATION THAT MAY BE TAKEN FOR THE POTENTIALLY AFFECTED SPECIES DURING THE PROPOSED ROCKY INTERTIDAL MONITORING PROGRAM

Species	Abundance *	Total proposed level B take	Percentage of stock or population
Harbor seal	[1] 30,968 [2] 24,732	233	<0.75–0.94
California sea lion	296,750	90	<0.01
Northern elephant seal	179,000	60	<0.01

* Abundance estimates are taken from the 2015 U.S. Pacific Marine Mammal Stock Assessments (Carretta *et al.,* 2016).
[1] California stock abundance estimate.
[2] Oregon/Washington stock abundance estimate from 1999–Most recent surveys.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

No species listed under the ESA are expected to be affected by these activities. Therefore, NMFS has determined that a section 7 consultation under the ESA is not required.

National Environmental Policy Act (NEPA)

In 2012, we prepared an Environmental Assessment (EA) analyzing the potential effects to the human environment from conducting

rocky intertidal surveys along the California and Oregon coasts and issued a Finding of No Significant Impact (FONSI) on the issuance of an IHA for PISCO's rocky intertidal surveys in accordance with section 6.01 of the NOAA Administrative Order 216–6 (Environmental Review Procedures for Implementing the National Environmental Policy Act, May 20, 1999). We will review activities and impacts from the 2012 EA to determine if the proposed activities fall within the scope of the EA. We will also review any public comments submitted concerning the 2012 EA.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to PISCO for conducting rocky intertidal monitoring research activities in California and Oregon between February 3, 2017 and February 2, 2018, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. The proposed IHA language is provided next.

This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

1. This IHA is valid from February 3, 2017 through February 2, 2018.

2. This IHA is valid only for specified activities associated with rocky intertidal monitoring surveys at specific sites along the U.S. California and Oregon coasts.

3. General Conditions.

a. A copy of this IHA must be in the possession of personnel operating under the authority of this authorization.

b. The incidental taking of marine mammals, by Level B harassment only, is limited to the following species along the Oregon and California coasts:

i. 203 harbor seal (*Phoca vitulina richardii*);

ii. 90 California sea lion (*Zalophus californianus*);

iii. 60 northern elephant seal (*Mirounga angustirostris*); and

c. The taking by injury (Level A harassment), serious injury, or death of any of the species listed in condition 3(b) of the IHA or any taking of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.

4. Mitigation Measures: The holder of this IHA is required to implement the following mitigation measures:

a. Researchers will observe a site from a distance with binoculars (if necessary) to detect any marine mammals prior to approaching the site. Researchers will approach a site with caution (slowly and quietly) to avoid surprising any hauled-out individuals and to reduce stampeding of individuals towards the water.

b. Researchers will avoid pinnipeds along access ways to sites, by locating and taking a different access way if possible.

c. Researchers will keep a safe distance from and not approach any marine mammal while conducting research, unless it is absolutely necessary to flush a marine mammal in order to continue conducting research (*i.e.* if a site cannot be accessed or sampled due to the presence of pinnipeds).

d. Researches will monitor the offshore area for predators (such as killer whales and white sharks) and avoid flushing of pinnipeds when predators are observed in nearshore waters.

e. Intentional flushing will be avoided if pups are present. Staff shall reschedule work at sites where pups are present, unless other means of accomplishing the work can be done without causing disturbance to mothers and dependent pups.

f. Any site where Steller sea lions are present will not be approached and will be sampled at a later date.

g. Personnel shall vacate the study area as soon as sampling of the site is completed.

5. Monitoring: The holder of this IHA is required to conduct monitoring of marine mammals present at study sites prior to approaching the sites.

a. Information to be recorded shall include the following:

i. Species counts (with numbers of pups/juveniles); and

ii. Numbers of disturbances, by species and age, according to a three-point scale of intensity including:

(1) seal head orientation or brief movement in response to disturbance, which may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, changing from a lying to a sitting position, or brief movement of less than twice the animal's body length, ''alert'';

(2) movements away from the source of disturbance, ranging from short withdrawals at least twice the animal's body length to longer retreats over the beach, or if already moving a change of direction of greater than 90 degrees, ''movement''; and

(3) all retreats (flushes) to the water, ''flush''.

iii. Observations of disturbance Levels 2 and 3 are recorded as takes.

6. Reporting: The holder of this IHA is required to:

a. Report observations of unusual behaviors, numbers, or distributions of pinnipeds, or of tag-bearing carcasses, to NMFS Southwest Fisheries Science Center (SWFSC).

b. Submit a draft monitoring report to NMFS Office of Protected Resources within 60 days after the conclusion of the 2015–2016 field season or 60 days prior to the start of the next field season if a new IHA will be requested. A final report shall be prepared and submitted within 30 days following resolution of any comments on the draft report from NMFS. This report must contain the informational elements described above, at minimum.

c. Reporting injured or dead marine mammals:

i. In the event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury, or mortality, PISCO shall immediately cease the specified activities and report the incident to the Office of Protected Resources, NMFS, and the Southwest Regional Stranding Coordinator, NMFS. The report must include the following information:

(1) Time and date of the incident;

(2) Description of the incident;

(3) Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, and visibility);

(4) Description of all marine mammal observations in the 24 hours preceding the incident;

(5) Species identification or description of the animal(s) involved;

(6) Fate of the animal(s); and

(7) Photographs or video footage of the animal(s).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with PISCO to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. PISCO may not resume the activities until notified by NMFS.

ii. In the event that an injured or dead marine mammal is discovered and it is determined that the cause of the injury or death is unknown and the death is relatively recent (*e.g.,* in less than a moderate state of decomposition), PISCO shall immediately report the incident to the Office of Protected Resources, NMFS, and the Southwest Regional Stranding Coordinator, NMFS. The report must include the same information identified in 6(c)(i) of this IHA. Activities may continue while NMFS reviews the circumstances of the

incident. NMFS will work with PISCO to determine whether additional mitigation measures or modifications to the activities are appropriate.

iii. In the event that an injured or dead marine mammal is discovered and it is determined that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), PISCO shall report the incident to the Office of Protected Resources, NMFS, and the Southwest Regional Stranding Coordinator, NMFS, within 24 hours of the discovery. PISCO shall provide photographs or video footage or other documentation of the stranded animal sighting to NMFS. Activities may continue while NMFS reviews the circumstances of the incident.

7. This IHA may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

Request for Public Comments

NMFS requests comment on our analysis, the draft authorization, and any other aspect of the Notice of Proposed IHA for PISCO's proposed rocky intertidal monitoring program. Please include with your comments any supporting data or literature citations to help inform our final decision on PISCO's request for an MMPA authorization.

Dated: January 5, 2017.

Donna S. Wieting,

Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2017–00397 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XF147

Gulf of Mexico Fishery Management Council; Public Meeting

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of a public meeting.

SUMMARY: The Gulf of Mexico Fishery Management Council (Council) will hold a four-day meeting to consider actions affecting the Gulf of Mexico fisheries in the exclusive economic zone (EEZ).

DATES: The meeting will take place on Monday, January 30 through Thursday, February 2, 2017.

ADDRESSES: The meeting will be held at the Astor Crowne Plaza hotel, located at 739 Canal Street, New Orleans, LA; telephone: (504) 962–0500.

Council address: Gulf of Mexico Fishery Management Council, 2203 N. Lois Avenue, Suite 1100, Tampa, FL 33607; telephone: (813) 348–1630.

FOR FURTHER INFORMATION CONTACT: Douglas Gregory, Executive Director, Gulf of Mexico Fishery Management Council; telephone: (813) 348–1630.

SUPPLEMENTARY INFORMATION:

Agenda

Monday, January 30, 2017; 8:30 a.m.–5:30 p.m.

The Administrative/Budget Committee will conduct a review of advisory panels; and discuss the Council's future participation at Marine Resource Educational Program (MREP) Workshops. The Data Collection Management Committee will receive a presentation update on Collection Location Satellites' (CLS) America Project. The Committee will review the Final Action—Modifications to Generic Charter Vessel and Headboat Reporting Requirements in the Gulf of Mexico; and review Final Action—South Atlantic Council's modifications to Charter Vessel and Headboat Reporting Requirements. The Migratory Species Management Committee will receive an overview of the management of Highly Migratory Species (HMS); and receive a report from the International Commission for the Conservation of Atlantic Tunas (ICCAT) meeting in Portugal. The Spiny Lobster Management Committee will discuss draft options for Framework Amendment 1. The Joint Coral/Habitat Protection & Restoration Committees will receive a presentation on the Biology of Corals; and review a revised scoping draft for Coral Amendment 7. The Shrimp Management Committee will review the public hearing draft for Shrimp Amendment 17B.

Tuesday, January 31, 2017; 8:30 a.m.–5:30 p.m.

The Reef Fish Management Committee will receive an update on the SEDAR Gag Assessment; receive a summary from the Joint Ad Hoc Red Snapper Charter Vessel and Ad Hoc Reef Fish Headboat Advisory Panels (AP) meeting. The committee will review public hearing drafts for Amendment 44—Minimum Stock Size Threshold (MSST) for Reef Fish Stocks, Public Hearing Draft of Amendment 36A—Modifications to Commercial Individual Fishing Quota (IFQ) programs, and Public Hearing Draft of Amendment 46—Gray Triggerfish Rebuilding Plan. The committee will review and discuss the Gulf Anglers Focus Group Report; receive a presentation and Scientific and Statistical Committee (SSC) report on the mechanism to carry over the unharvested Red Snapper Annual Catch Limit (ACL) to the following season; Preliminary 2016 Red Snapper For-Hire Landings Relative to ACL; receive a presentation on Amendment 36B—Commercial Reef Fish IFQ Modifications, and review Options Paper for Amendment 47—Modify Vermillion Snapper ACLs and Maximum Sustainable Yield (MSY) Proxy.

Wednesday, February 1, 2017; 8 a.m.–5:30 p.m.

The Reef Fish Management Committee will review a draft Framework Action—Mutton Snapper ACL and Management Measures and Gag Commercial Size Limit and Standing and Reef Fish SSC Summary. Under Other Business the committee will discuss the 2017 recreational fishing season for greater amberjack. The Mackerel Committee will review Final Action—CMP Amendment 29—Allocation Sharing and Accountability Measures for Gulf King Mackerel; review of CMP AP meeting and public hearing comments; and review SSC discussion of updated Gulf King Mackerel.

The Full Council will convene mid-morning (approximately 10:45 a.m.) with a Call to Order, Announcements, Introductions; Adoption of Agenda and Approval of Minutes; and review of Exempt Fishing Permit (EFPs) Applications, if any. The Council will receive presentations on revisions to National Standard 1 Guidelines, Law Enforcement Report on Fiscal 2016 Maritime Boundary Line Activities, and Commercial Fishing Vessel Classification Standards. After lunch, the Council will receive a presentation from the Louisiana Law Enforcement Agency. The Council will receive public testimony from 2:30 p.m. until 5:30 p.m. on the following agenda testimony items: Final Action on Generic Amendment to Require Electronic Reporting For-Hire Vessels in the Gulf of Mexico, Final Action on Coastal Migratory Pelagics Amendment 29: King Mackerel Allocation Sharing and Recreational Accountability Measures; and on Final Action—South Atlantic

Council's modifications to Charter Vessel and Headboat Reporting Requirements; and, hold an open public testimony period regarding any other fishery issues or concern. Anyone wishing to speak during public comment should sign in at the registration station located at the entrance to the meeting room.

Thursday, February 2, 2017; 8 a.m.–4:30 p.m.

Full Council will receive committee reports from Data Collection, Shrimp, Reef Fish, Mackerel, Administrative/Budget, Spiny Lobster, Migratory Species and Joint Coral/Habitat Protection & Restoration Management Committees; and, vote on Exempted Fishing Permit (EFP) applications, if any. The Council will receive updates from the following supporting agencies: South Atlantic Fishery Management Council; Gulf States Marine Fisheries Commission; U.S. Coast Guard; U.S. Fish and Wildlife Service; and, the Department of State.

Lastly, the Council will discuss any Other Business items.

—*Meeting Adjourns*

The timing and order in which agenda items are addressed may change as required to effectively address the issue. The latest version will be posted on the Council's file server, which can be accessed by going to the Council's Web site at *http://www.gulfcouncil.org* and clicking on FTP Server under Quick Links. For meeting materials, select the ''Briefing Books/Briefing Book 2017–01'' folder on Gulf Council file server. The username and password are both ''gulfguest''. The meetings will be webcast over the internet. A link to the webcast will be available on the Council's Web site, *http://www.gulfcouncil.org.*

Although other non-emergency issues not contained in this agenda may come before this Council for discussion, those issues may not be the subjects of formal action during this meeting. Council action will be restricted to those issues specifically listed in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Act, provided that the public has been notified of the Council's intent to take final action to address the emergency.

Special Accommodations

This meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Kathy Pereira (see **ADDRESSES**) at least 5 days prior to the meeting date.

Dated: January 6, 2017.

Tracey L. Thompson,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2017–00486 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XF101

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Seabird and Shorebird Monitoring and Research at the Eastern Massachusetts National Wildlife Refuge Complex, Massachusetts

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received an application from the Eastern Massachusetts (MA) National Wildlife Refuge (NWR) Complex, U.S. Fish and Wildlife Service (USFWS), for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment incidental to conducting seabird and shorebird monitoring and research in the Eastern MA NWR Complex (Complex). The proposed dates for this action would be April 1, 2017 through March 31, 2018. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to the USFWS to incidentally take, by Level B harassment only, marine mammals during the specified activity.

DATES: NMFS must receive comments and information on or before February 13, 2017.

ADDRESSES: Comments on the application should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is *ITP.McCue@noaa.gov.* Comments sent via email to *ITP.McCue@noaa.gov,* including all attachments, must not exceed a 25-megabyte file size. NMFS is not responsible for comments sent to addresses other than the one provided here.

Instructions: All comments received are a part of the public record and NMFS will post them to *www.nmfs.noaa.gov/pr/permits/incidental/research.htm* without change. All personal identifying information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

An electronic copy of the application may be obtained by writing to the address specified above, telephoning the contact listed below (see **FOR FURTHER INFORMATION CONTACT**), or online at: *www.nmfs.noaa.gov/pr/permits/incidental/research.htm.*

The Environmental Assessment (EA) specific to conducting seabird and shorebird monitoring and research is also available at the same internet address. Information in the EA and this notice collectively provide the environmental information related to the proposed issuance of the IHA for public review and comment. The public may also view documents cited in this notice, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Laura McCue, NMFS, Office of Protected Resources, NMFS (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(D) of the MMPA of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*) directs the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined ''negligible

impact'' in 50 CFR 216.103 as ''an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.''

Summary of Request

On March 16, 2016, NMFS received an application from the USFWS for the taking of marine mammals incidental to seabird and shorebird monitoring and research activities within the Complex. NMFS received updated applications on September 14 and December 16, 2016 with updated take numbers and mitigation measures. NMFS determined the application complete and adequate on December 29, 2016.

The USFWS proposes to conduct seabird and shorebird monitoring and research at several locations within the Complex over a varying number of days for each project. This authorization, if issued, would be valid from one year, beginning on April 1, 2017. The following specific aspects of the proposed activities would likely to result in the take of marine mammals: (1) Vessel landings; (2) research activities (*e.g.,* cannon nets, sign installation); and (3) human presence. Thus, NMFS anticipates that take, by Level B harassment only, of gray seals (*Halichoerus grypus grypus*) and harbor seals (*Phoca vitulina concolor*) could result from the specified activity.

Description of the Specified Activity

Overview

The USFWS would like to conduct biological tasks for refuge purposes at Monomoy NWR, Nantucket NWR, and Nomans Land Island NWR in MA. These three refuges are managed through the Complex as part of the NWR System of the USFWS. Complex staff census and monitor the presence and productivity of breeding and migrating shorebirds using the beaches of Monomoy, Nantucket, and Nomans Land Island NWRs for nesting from April 1–November 30, annually. Monitoring activities occur daily (on Monomoy and Nantucket) from April–August and is necessary to document the productivity (number of chicks fledged per pair) and population of protected shorebird and seabird species. Monomoy NWR also participates in several less frequent, but equally important, high priority conservation tasks to monitor for threatened and endangered species, including censusing northeastern beach tiger beetles (*Cicindela dorsalis*) and participating in a red knot (*Calidris canutus*) migration study during southward migration. Additionally, both Monomoy and Nantucket NWRs serve as vital staging grounds for migrating roseate terns (*Sterna dougallii*), where USFWS staff resight and stage counts.

Dates and Duration

The USFWS proposes to conduct the research activities at various times for each project from April 1 through November 30, 2017. Due to scheduling, time, tide constraints, and favorable weather/ocean conditions, the exact survey dates and durations are variable. The proposed IHA, if issued, would be effective from April 1, 2017 through March 31, 2018. NMFS refers the reader to the *Detailed Description of Activities* section later in this notice for more information on the scope of the proposed activities.

Specified Geographic Region

The Complex is made up of eight refuges, including its three coastal refuges: Monomoy NWR, Nantucket NWR, and Nomans NWR. The three main activity sites are NWRs managed by the USFWS and are islands located off the coast of Cape Cod, MA. Although Monomoy NWR consists of three managed barrier islands, pinnipeds are only disturbed while carrying out biological activities on the Atlantic side of South Monomoy Island where gray seals primarily haul out. Therefore, activities mentioned at Monomoy NWR will only refer to South Monomoy Island. While biological tasks performed at these three refuges differ in some regard, all activities are necessary to carry out high priority conservation work for threatened and endangered species. Each activity location is described below.

1. Monomoy NWR (N. 41.590348, -69.987432): This site refers to the Atlantic side of South Monomoy Island at Monomoy NWR. Seals use most of the ocean-facing beach of this island as a haul-out site. See Figure 1 of the USFWS's application.

2. Nantucket NWR (N. 41.391754, W. -70.050568): This site refers to Nantucket NWR located on the northeast tip of Nantucket Island. The point itself is the primary haul-out site for this location. See Figure 2 of the USFWS's application.

3. Nomans NWR (N. 41.264267, W. -70.812228): This site refers to Nomans Land Island NWR located off the coast of Martha's Vineyard. Seals here haul-out on the northeast peninsula, and sporadically along the northern shoreline. The rocks around the island are sometimes utilized as well. See Figure 3 of the USFWS's application.

4. Cape Cod National Seashore nearby beaches (see Figure 4 of the USFWS's application):

A. Coast Guard Beach (N. 41.842333, W. -69.943834): This site refers to one of the beaches located at the Cape Cod National Seashore in Eastham, MA. The seals here haul-out on the J-bars that form on the beach.

B. North Beach Island (N. 41.669441, W. -69.942765): This site refers to an island located at the Cape Cod National Seashore in Chatham, MA. The seals here haul-out on the sandbars on the southwest end of the island.

C. High Head (N. 42.066108, W. -70.111318): This site refers to a beach located at the Cape Cod National Seashore in Truro, MA.

D. Jeremy Point (N. 41.884300, W. -70.069532): This site refers to Jeremy Point located on the Cape Cod bayside at the Cape Cod National Seashore in Wellfleet, MA. The seals here haul-out on the sand flats in the waters around the point.

E. Provincetown Harbor (N. 42.022342, W. -70.178662): This site refers to the west end of the harbor in Provincetown. This is a new haul-out as of fall 2015 and has only been observed a few times by the Provincetown Center for Coastal Studies (CCS) (L. Sette, CCS, personal communication 2016).

Detailed Description of Activities

A description of each activity, based on location, is presented below. A summary of this information can also be found in Table 1.

1. Shorebird and Seabird Nest Monitoring and Research

Monomoy NWR

On January 10, 1986, the Service listed the Atlantic Coast population of piping plovers (*Charadrius melodus*) as threatened under the provisions of the U.S. Endangered Species Act (ESA) of 1973. Currently, Monomoy NWR serves as a nesting site for six percent of the breeding piping plover pairs in MA. Therefore, management and protection of the piping plover is one of the priority programs for the refuge. Many other avian species benefit from piping plover management, including the state-listed species of concern least tern (*Sternula antillarum*) and American oystercatcher (*Haematopus palliates*). Monomoy NWR has a great responsibility to follow the guidelines provided for management in the revised 1996 recovery plan for the species (USFWS 1996). The primary objective of the recovery program is to remove the Atlantic Coast piping plover population from the List of Endangered and

Threatened Wildlife and Plants by: (1) Achieving well-distributed increases in numbers and productivity of breeding pairs, and (2) providing for long-term protection of breeding and wintering plovers and their habitat. Actions needed to achieve these objectives include: (1) Manage breeding piping plovers and habitat to maximize survival and productivity, (2) monitor and manage wintering and migration areas to maximize survival and recruitment into the breeding population, (3) undertake scientific investigations that will facilitate recovery efforts, and (4) develop and implement public information and education programs, and (5) review progress towards recovery annually and revise recovery efforts as appropriate (USFWS 1996).

The piping plover recovery efforts at the Complex correspond closely to management recommendations in the Piping Plover Recovery Plan. In order to monitor the productivity (number of chicks fledged per pair) of piping plovers at Monomoy NWR, it is necessary to identify suitable nesting habitat for the species. At Monomoy, piping plovers generally select areas that are sandy with some cobble on the beach face and occasionally nest in dense vegetation or behind primary dunes. The same can be said for least terns and American oystercatcher pairs which also nest on South Monomoy Island. These nesting areas are adjacent to known gray seal haul-out sites.

Piping plovers begin returning to their Atlantic Coast nesting beaches in mid-March. The first nest is generally laid in mid-April and eggs will continue to be present on the beach until late July. During this time, nests are located by USFWS staff by looking for a number of signs; continuous presence of adult birds, courtship and territorial behavior in a certain area, large concentrations of tracks, and scrapes (nests or nest attempts). Methods for finding nests include waiting for a disturbed bird to return to its nest or covering probable nesting areas by searching the ground for signs of scrapes and zig-zagging the whole area to make sure the entire habitat is covered. Methods for finding nests can sometimes lead to seal disturbance. Nests are visited 4–5 times a week and confirmation of adult presence and incubation is confirmed at a distance when possible to prevent disturbance. Nests hatch after 28 days of incubation and chicks will remain with one or both parents until they fledge at 25–35 days of age. Depending on the date of hatching, flightless chicks may be present on refuge beaches from mid-May until late August. Chicks are monitored until they fledge and may move hundreds of yards from the nest site to feed. Feeding areas include intertidal areas along the ocean and sound sides of South Monomoy Island as well as washover areas.

Similar activities are performed when searching and monitoring American oystercatchers nests and broods. No American oystercatcher pairs nested near seal haul out sites in 2015, but have nested on the ocean side of South Monomoy Island in previous years. In 2001, the American oystercatcher was warranted special attention from the U.S. Shorebird Conservation Plan after the population severely declined to under 11,000 individuals. Monomoy NWR has the largest concentration of nesting American oystercatchers on Cape Cod and nesting success at this site is important to the survival of the species. The nesting season occurs from the end of April until mid-August. Monomoy NWR also serves as an important staging site for resting migrants, and bands are often read and reported to the American Oystercatcher Working Group. Staging American oystercatcher will sometimes roost near seal haul-out sites.

Least terns nest in small groups around South Monomoy Island. Productivity is not measured throughout the season, but nesting pairs are censused during a 2–3 day period in mid-June. Least terns are censused using the line-sweep method throughout the extent of the nesting colonies and checked by staff weekly to gauge productivity.

USFWS staff install symbolic fencing (sign posts with ''area closed'' and ''beach closed'' informational signs) around nest sites of piping plovers, American oystercatchers, and least terns to inform the public about the bird's presence and protect critical habitat from human disturbance. These areas are adjacent to known seal haul out sites and are regularly monitored throughout the season.

Nantucket NWR

Similar biological activities are carried out on Nantucket NWR as Monomoy NWR. Piping plover, least tern, and American oystercatcher are known species to use Nantucket NWR and nearby lands for nesting from the end of April until mid-August. Beach nesting birds are monitored following similar methods and protocols as Monomoy NWR and areas of nesting are posted with closed signs. Signs are placed at least 150 feet from known seal haul-out areas on Nantucket NWR, which predominately occurs at the north tip of the Refuge. These posts help protect those areas from public disturbance. Nesting beach birds generally do not nest within the closed area for seals, but instead nest adjacent to the haul outs. If need be, staff will briefly enter the closed area to check nests, but otherwise stay outside of the closed area, greater than 150 feet from seal haul outs. Seabirds and shorebirds do not nest on the Complex every year; in 2015, no beach birds nested on Nantucket NWR.

Nomans Land Island NWR

Nomans NWR is closed to the public and is only visited 1–3 times a year by USFWS staff. During these visits, the presence of shorebirds and seabirds are noted for record. Shorebirds and seabirds are inventoried by scoping suitable nesting and feeding habitat on the island. The greatest potential for marine mammal disturbance occurs in safe boat landing zones, because these areas often overlap with hauled out seals. Every precautionary measure is taken to reduce disturbance to seals on Nomans Land Island NWR, but staff will land a boat or walk within 50 yards (yd) of seal haul outs if safety reasons prevail. A 25 foot Parker is used to travel to and from Nomans NWR.

2. Roseate Tern Staging Counts and Resighting

Monomoy NWR

On November 2, 1987, the Service listed the northeastern breeding population of the roseate terns as federally endangered. Monomoy NWR serves as an important nesting and staging site for the species. Monomoy NWR has a great responsibility to follow the guidelines provided for management in the Roseate Tern Recovery Plan for the Northeast population (USFWS 1998). The primary objective of the roseate tern recovery program is to promote an increase in breeding population size, distribution, and productivity so as to warrant reclassification to threatened status and eventual delisting. Actions needed to attain this objective include: (1) Oversee breeding roseate terns and their habitat to help increase survival and productivity including the physical maintenance, expansion, and enhancement of nesting habitat; (2) develop a management plan for monitoring wintering and migration areas; (3) secure unprotected sites through acquisition and easements; (4) develop outreach materials and implement education programs; (5) conduct scientific investigations that will facilitate recovery efforts; (6) review progress of recovery annually and revise

recovery efforts as needed (USFWS 1998). While breeding roseate terns prefer nesting habitat far from seal haul out sites, migrating terns use areas adjacent to the beach edge. Cape Cod and the surrounding islands as a whole serves as an important staging ground for common terns (*Sterna hirundo*) and roseate terns. In fact, the entire northeast population of roseate terns stage in this area prior to migrating to Central and South America. The USFWS conduct staging tern counts to document the importance of Monomoy NWR relative to other sites and to record changes in use over time by gathering baseline data on the numbers of roseate terns staging on the Complex and adjacent beaches as well as the causes and duration of disturbances to staging terns. This is in compliance with the recovery plan to conduct scientific investigations that will facilitate recovery efforts (USFWS 1998).

In August, USFWS staff traverse areas of suitable staging habitat, including sand flats and open sand beaches, and make quick estimates of the number of staging terns. The terns are counted using binoculars and spotting scopes from a distance that does not disturb the birds. Color bands, field readable bands, and any tagged or banded birds are identified for reporting purposes. Observations on behavior and disturbance are also documented. Depending on the size of the flock, these surveys can last anywhere between one to three hours.

Nantucket NWR

Staging tern counts are carried out on Nantucket NWR following similar methods and protocols mentioned for Monomoy NWR.

Nomans Land Island NWR

Staging tern counts are not performed on Nomans NWR.

3. Red Knot Stopover Study

Monomoy NWR and Nearby Beaches in Chatham, Orleans, and Eastham

On December 11, 2014, the USFWS listed the rufa subspecies of the red knot as Federally threatened under the ESA. As noted in the State of the Birds 2014 report, the knot's status is representative of the steep declines represented in shorebirds that migrate long distances (NABCI 2014). Threats to shorebirds have become more diverse and widespread in recent decades, requiring coordinated conservation efforts across their vast ranges. Protection of breeding, migration, and wintering habitat is critical to this species' recovery (Niles *et al.,* 2008).

Southeastern MA, Monomoy NWR and surrounding beaches in Chatham, Orleans, and Eastham in particular, likely provide one of the most important areas for adult and juvenile red knots during their southward migration (Koch and Paton 2009, Harrington *et al.,* 2010a, Harrington *et al.,* 2010b). Research has shown that this region supports red knots bound for different winter destinations, including red knots wintering as far south as Patagonia (Harrington *et al.,* 2010b). Currently, there is little information on migration routes, and no information on wintering sites of juvenile red knots.

The red know stop over study is not conducted on Nantucket NWR or Nomans NWR.

4. Northeastern Beach Tiger Beetle Census

In August of 1990, the USFWS listed the northeastern beach tiger beetle as threatened under the ESA. Currently northeastern beach tiger beetle can be found at only two sites in MA: One on the south shore of Martha's Vineyard and one on South Monomoy Island and Nauset/South Beach in Chatham, MA (USFWS 1994, USFWS 2015). Searches on Monomoy in the 1980s failed to locate the northeastern beach tiger beetle, but the structure of the habitat seemed favorable, making Monomoy the leading candidate as an introduction site. The first beetle larvae transplant occurred in May 2000. Since 2004, tiger beetle larvae have not been transferred to Monomoy (USFWS 2015). However, through continued adult tiger beetle monitoring, the annual presence of tiger beetles has been documented on the refuge. Annual monitoring confirms successful survival and production of tiger beetles through all stages of life, and gives a firm indication of a new self-sustaining population at Monomoy NWR.

Northeastern beach tiger beetle live their entire life on the beach, and prefer medium to medium-coarse sand. Adults occur on the beach from June through September and often congregate around the water's edge on warm days (USFWS 2011). On Monomoy NWR, the population occurs in habitat on the Atlantic side of South Monomoy Island on the water's edge and in the wrack line. Several index counts of the tiger beetle population are completed by USFWS staff during July and August each year. Counts are conducted by slowly walking the water's edge at a width of 2–3 people across and tallying adults seen on the surface of the beach until the extent of suitable habitat is covered.

Northeastern beach tiger beetle surveys are not conducted on Nantucket NWR or Nomans Land Island NWR.

5. Coastal Shoreline Change Survey

Since 2011, Monomoy has participated in a long-term coastal shoreline monitoring project in collaboration with Rutgers's University and the National Park Service (NPS) protocol. The annual shoreline surveys are conducted twice a year to gain a finer understanding of the rate of shoreline change and to provide baseline information for sea level rise. Two 1-day surveys are conducted at most sites, one in the spring and one in the fall. Surveys are only conducted in the fall at Monomoy NWR, typically between September and November, consequent to the large number of seals using the area in the spring. To document accurate data on shoreline change, a handheld Trimble device is used to GPS the neap high tide swash line around the ocean-facing extent of South Monomoy Island by walking the beach at a normal pace. The survey takes approximately one day to complete.

Shoreline surveys are not conducted on Nantucket NWR or Nomans NWR.

TABLE 1—SITE LOCATION AND DURATION OF THE FIVE PROJECTS IN THE EASTERN MASSACHUSETTS NATIONAL WILDLIFE REFUGE

Activity	Time of year	Site location and duration		
		Monomoy NWR	Nantucket NWR	Nomans NWR
Shorebird and Seabird Monitoring & Research.	April–August	17 weeks, 2 days/week, 6–8 hours/day.	17 weeks*, 2 days/month, <1 hour/day.	1–3 days/year, ~1 hours/day.
Roseate Tern Staging Counts & Resighting.	mid July–September	3 weeks, 1–2 days/week, 1–3 hours/day.	6–8 weeks, 2 days/month, 1–3 hours/day.	N/A.

TABLE 1—SITE LOCATION AND DURATION OF THE FIVE PROJECTS IN THE EASTERN MASSACHUSETTS NATIONAL WILDLIFE REFUGE—Continued

Activity	Time of year	Site location and duration		
		Monomoy NWR	Nantucket NWR	Nomans NWR
Red Knot Stopover Study	August–October	Two trapping windows, 5–10 days in combination with CACO beaches, 6–12 hours/day.	N/A	N/A.
Northeastern Beach Tiger Beetle Census.	July–September	1–3 days/year, 6–8 hours/day.	N/A	N/A.
Coastal Shoreline Change Survey.	September–October	Once/year 8 hour day	N/A	N/A.

* Shorebird and Seabird Monitoring & Research on Nantucket is contingent on the presence of nesting beach birds. In 2015, no Shorebirds or seabirds nested on Nantucket NWR.

Sound Sources and Sound Characteristics

NMFS does not expect that acoustic stimuli to result from human presence, and will therefore not have the potential to harass marine mammals, incidental to the conduct of the proposed activities. One activity (cannon nets) may have an acoustic component, but we believe take from this activity can be avoided.

This section includes a brief explanation of the sound measurements frequently used in the discussions of acoustic effects in this notice. Sound pressure is the sound force per unit area, and is usually measured in micropascals (μPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level (SPL) is the ratio of a measured sound pressure and a reference level. The commonly used reference pressure is 1 μPa for under water, and the units for SPLs are dB re: 1 μPa. The commonly used reference pressure is 20 μPa for in air, and the units for SPLs are dB re: 20 μPa.

SPL (in decibels (dB)) = 20 log (pressure/reference pressure).

SPL is an instantaneous measurement expressed as the peak, the peak-peak, or the root mean square (rms). Root mean square is the square root of the arithmetic average of the squared instantaneous pressure values. All references to SPL in this document refer to the root mean square unless otherwise noted. SPL does not take into account the duration of a sound.

Research Activities Sound Characteristics

Activities that may have an acoustic component (*e.g.,* cannon nets) are not expected to reach the thresholds for Level B harassment. Cannon nets could be an airborne source of noise, and have a measured SL of 128 dB at one meter (m) (estimated based on a measurement of 98.4 dB at 30 m; L. Niles, pers. comm., December 2016); however, the SPL is expected to be less than the thresholds for airborne pinniped disturbance (*e.g.* 90 dB for harbor seals, and 100 dB for all other pinnipeds) at 80 yd from the source. The USFWS proposes to stay at least 100 yd from all pinnipeds if cannon nets are to be used for research purposes.

Description of Marine Mammals in the Area of the Specified Activity

Table 2 provides the following information: All marine mammal species with possible or confirmed occurrence in the proposed activity area; information on those species' regulatory status under the MMPA and the ESA of 1973 (16 U.S.C. 1531 *et seq.*); abundance; occurrence and seasonality in the activity area. NMFS refers the public the draft 2016 NMFS Marine Mammal Stock Assessment Report available online at: *http://www.nmfs.noaa.gov/pr/sars/* for further information on the biology and distribution of these species.

TABLE 2—GENERAL INFORMATION ON MARINE MAMMALS THAT COULD POTENTIALLY HAUL OUT ON NORTHWEST SEAL ROCK, NOVEMBER 2015 THROUGH NOVEMBER 2016

Species	Stock	Regulatory status [1] [2]	Stock abundance (CV, N_{min}, most recent abundance survey) [3]	PBR	Occurrence and seasonality
Gray seal (*Halichoerus grypus grypus*).	Western North Atlantic.	MMPA—NC ESA—NL	505,000 (unk; unk; unk)*.	unk	Year-round presence.
Harbor seal (*Phoca vitulina concolor*).	Western North Atlantic.	MMPA—NC ESA—NL	75,834 (0.15; 66,884; 2012).	2,006	Occasional.

[1] MMPA: D = Depleted, S = Strategic, NC = Not Classified.
[2] ESA: EN = Endangered, T = Threatened, DL = Delisted, NL = Not listed.
[3] 2016 draft NMFS Stock Assessment Reports: Carretta *et al.* (2016).
* The Western North Atlantic stock of gray seals is comprised of the Canadian and U.S. populations. The U.S. population abundance estimate is unknown, but the Canadian population abundance estimate is 505,000. The 2016 draft SAR states that the western North Atlantic stock is equivalent to the Canada population.

Gray Seal

There are three major populations of gray seals found in the world; eastern Canada (western North Atlantic stock), northwestern Europe and the Baltic Sea. The gray seals that occur in the project area belong to the western North Atlantic Stock, which ranges from New Jersey to Labrador. Current estimates of the total western North Atlantic gray seal population are not available, although portions of stock have been

calculated for select time periods. Models estimate that the total minimum Canadian gray seal population is at 505,000 individuals (Waring *et al.,* 2016). Present data are insufficient to calculate the minimum population estimate for U.S. waters; however, based on genetic analyses from the Canadian and U.S. populations, all individuals were placed into one population providing further evidence that this stock is one interbreeding population (Wood et al., 2011). Current population trends show that gray seal abundance is likely increasing in the U.S. Atlantic Exclusive Economic Zone (Waring *et al.,* 2016). Although the rate of increase is unknown, surveys conducted since their arrival in the 1980s indicate a steady increase in abundance in both Maine and Massachusetts (Waring *et al.,* 2016). It is believed that recolonization by Canadian gray seals is the source of the U.S. population (Waring *et al.,* 2016). Gray seals are not listed under the ESA and the stock is not considered strategic or depleted under the MMPA.

Monomoy NWR is the largest haul-out site for gray seals on the U.S. Atlantic seaboard, and one of only two consistent sites in Massachusetts (the other being Muskeget Island, west of Nantucket) where gray seals pup (USFWS 2015). Gray seals are known to use Monomoy NWR and Nantucket NWR land and water year round, with higher numbers accumulating during the winter and spring when pupping and molting occur. While gray seal pupping grounds are historically further north on Sable Island in Nova Scotia and in the Gulf of St. Lawrence in Canada, there has been a year-round breeding population on Cape Cod and the islands since the late 1990s (NOAA 2015a, USFWS 2015).

Gray seals start to group up in fall and pupping generally occurs from mid-December to early February (USFWS 2015). Gray seal pupping on Monomoy NWR was limited in the past but has been increasing rapidly in recent years. By early spring, upwards of 19,000 gray seals can be found hauled out on Monomoy NWR (B. Josephson, NOAA, personal communication). While many of these seals use Monomoy NWR for breeding, others make their way to the refuge to molt. By late spring, gray seal abundance continues to taper until the fall.

Gray seal pupping information for Nantucket NWR and Nomans Land Island NWR is limited, but evidence suggests that a small number of pups are born on the latter. Aerial images and evidence do not show that pups are born on Nantucket NWR, although speculations persist (S. Wood, NOAA, personal communication). Similar trends in distribution at Monomoy NWR occur at Nomans and Nantucket NWRs, but in significantly less numbers. Gray seals are most abundant at the activity sites from late fall until spring, and less frequent during the summer months when most activity is occurring. Raw counts of gray seal counts from 2015 are summarized in Table 3.

TABLE 3—RAW COUNT OF THE MAXIMUM NUMBER OF INDIVIDUAL GRAY SEALS USING MONOMOY NWR LANDS AND SURROUNDING WATERS IN 2015 BASED ON NOAA UNPUBLISHED DATA

[B. Josephson, NOAA, personal communication]

Gray Seals	
Month	Raw count
January	4435.
February	6047.
March	16764.
April	18098.
May	19166.
June	8764.
July	978.
August	1206.
September	658.
October	1113.
November	2379.
December	not calculated.

Harbor seal

Harbor seals found on the project area are included in the Western North Atlantic Stock, which ranges from the Canadian Arctic to Southern New England and New York, and occasionally to the Carolinas (Waring *et al.,* 2016). Based on available counts along the Maine coast in 2012, the minimum population estimate is 75,834 (Waring *et al.,* 2016). Harbor seals are not listed under the ESA and the stock is not considered strategic or depleted under the MMPA.

Harbor seals occur seasonally in the Complex, and generally arrive in early September and remain through May (Waring *et al.,* 2016). Numbers of these seals increase slowly through this time period and then quickly drop off in March as they make their northward movement from southern New England to Maine and eastern Canada, where they breed in mid-May (USFWS 2015). Gray seals seem to be displacing harbor seals to some extent, but the two species will haul out together, with gray seals occupying the upper beach and harbor seals staying closer to the water (D. Waring, personal communication). Pupping generally occurs between mid-May through June off the coast of Maine; however recent evidence suggests that some pupping may occur as far south as Manomet, MA, but does not occur in the project area.

It is unclear how many harbor seals use the Complex. Harbor seals are seen infrequently and only occur seasonally. USFWS staff estimate that of all of the seals they observe in the Complex, approximately five percent are harbor seals.

Potential Effects of the Specified Activities on Marine Mammals and Their Habitat

This section includes a summary and discussion of the ways that components (*e.g.,* personnel presence) of the specified activity, including mitigation, may impact marine mammals and their habitat. The *Estimated Take by Incidental Harassment* section later in this document will include a quantitative analysis of the number of individuals that are expected to be taken during this activity. The *Negligible Impact Analysis* section will include the analysis of how this specific activity would impact marine mammals and will consider the content of this section, the *Estimated Take by Incidental Harassment* section, and the *Proposed Mitigation* section to draw conclusions regarding the likely impacts of this activity on the reproductive success or survivorship of individuals and from that consideration, the likely impacts of this activity on the affected marine mammal populations or stocks.

Acoustic and visual stimuli generated by: (1) Vessel landings; (2) research activities (*e.g.,* cannon nets, sign installation) and (3) human presence may have the potential to cause behavioral disturbance of pinnipeds.

Vessel Presence and Noise

Pinnipeds have the potential to be disturbed by underwater noise generated by the engine of the vessel (Born *et al.,* 1999; Richardson *et al.,* 1995). Data on underwater TTS-onset in pinnipeds exposed to pulses are limited to a single study which exposed two California sea lions to single underwater pulses from an arc-gap transducer and found no measurable TTS following exposures up to 183 dB re: 1 μPa (peak-to-peak) (Finneran *et al.,* 2003).

Researchers have demonstrated temporary threshold shift (TTS) in certain captive odontocetes and pinnipeds exposed to strong sounds (reviewed in Southall *et al.,* 2007). In 2004, researchers measured auditory fatigue to airborne sound in harbor seals, California sea lions, and Northern elephant seals after exposure to non-pulse noise for 25 minutes (Kastak *et al.,*

2004). In the study, the harbor seal experienced approximately six dB of TTS at 99 dB re: 20 μPa. The authors identified onset of TTS in the California sea lion at 122 dB re: 20 μPa. The northern elephant seal experienced TTS-onset at 121 dB re: 20 μPa (Kastak *et al.,* 2004).

As a general statement from the available information, pinnipeds exposed to intense (approximately 110 to 120 dB re: 20 μPa) non-pulse sounds often leave haulout areas and seek refuge temporarily (minutes to a few hours) in the water (Southall *et al.,* 2007).

It is likely that the initial vessel approach would cause a subset, or all of the marine mammals hauled out to flush into the water. The physical presence of the vessel could also lead to non-auditory effects on marine mammals involving visual or other cues. Noise from the vessel would not be expected to cause direct physical effects but have the potential to affect behavior. The primary factor that may influence abrupt movements of animals is engine noise, specifically changes in engine noise. Responses by mammals could include hasty dives or turns, change in course, or flushing from a haul out site.

If pinnipeds are present on Nomans NWR when the vessel approaches, it is likely that the vessel would cause some number of the pinnipeds to flush; however, the USFWS staff would approach in a slow and controlled manner, as far away as possible from haul outs to prevent or minimize flushing. Staff would also avoid or proceed cautiously when operating boats in the direct path of swimming seals that may be present in the area as far from hauled out seals as possible.

Human Presence

The appearance of USFWS personnel may have the potential to cause Level B harassment of marine mammals hauled out on the beaches in the proposed action area. Disturbance includes a variety of effects, including subtle to conspicuous changes in behavior, movement, and displacement. Disturbance may result in reactions ranging from an animal simply becoming alert to the presence of the USFWS's staff (*e.g.,* turning the head, assuming a more upright posture) to flushing from the haul out site into the water. NMFS does not consider the lesser reactions to constitute behavioral harassment, or Level B harassment takes, but rather assumes that pinnipeds that move greater than two body lengths to longer retreats over the beach, or if already moving, a change of direction of greater than 90 degrees in response to the presence of surveyors, or pinnipeds that flush into the water, are behaviorally harassed, and thus subject to Level B taking. NMFS uses a three-point scale (Table 4) to determine which disturbance reactions constitute take under the MMPA. Levels two and three (movement and flush) are considered take, whereas Level one (alert) is not.

TABLE 4—DISTURBANCE SCALE OF PINNIPED RESPONSES TO IN-AIR SOURCES TO DETERMINE TAKE

Level	Type of response	Definition
1	Alert	Seal head orientation or brief movement in response to disturbance, which may include turning head towards the disturbance, craning head and neck while holding the body rigid in a u-shaped position, changing from a lying to a sitting position, or brief movement of less than twice the animal's body length.
2*	Movement	Movements in response to the source of disturbance, ranging from short withdrawals at least twice the animal's body length to longer retreats over the beach, or if already moving a change of direction of greater than 90 degrees.
3*	Flush	All retreats (flushes) to the water.

*Only Levels 2 and 3 are considered take, whereas Level 1 is not.

Reactions to human presence, if any, depend on species, state of maturity, experience, current activity, reproductive state, time of day, and many other factors (Richardson *et al.,* 1995; Southall *et al.,* 2007; Weilgart, 2007). These behavioral reactions from marine mammals are often shown as: Changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior; avoidance of areas; and/or flight responses (*e.g.,* pinnipeds flushing into the water from haul-outs or rookeries). If a marine mammal does react briefly to human presence by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or population. However, if visual stimuli from human presence displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.,* Lusseau and Bejder 2007; Weilgart 2007).

Disturbances resulting from human activity can impact short- and long-term pinniped haul out behavior (Renouf *et al.,* 1981; Schneider and Payne 1983; Terhune and Almon 1983; Allen *et al.,* 1984; Stewart 1984; Suryan and Harvey 1999; and Kucey and Trites, 2006). Numerous studies have shown that human activity can flush harbor seals off haul out sites (Allen *et al.,* 1984; Calambokidis *et al.,* 1991; and Suryan and Harvey 1999;) or lead Hawaiian monk seals (*Neomonachus schauinslandi*) to avoid beaches (Kenyon 1972). In one case, human disturbance appeared to cause Steller sea lions to desert a breeding area at Northeast Point on St. Paul Island, Alaska (Kenyon 1962).

In cases where vessels actively approached marine mammals (*e.g.,* whale watching or dolphin watching boats), scientists have documented that animals exhibit altered behavior such as increased swimming speed, erratic movement, and active avoidance behavior (Acevedo 1991; Trites and Bain 2000; Williams *et al.,* 2002; Constantine *et al.,* 2003), reduced blow interval (Richter *et al.,* 2003), disruption of normal social behaviors (Lusseau 2003; 2006), and the shift of behavioral activities which may increase energetic costs (Constantine *et al.,* 2003; 2004).

In 1997, Henry and Hammil (2001) conducted a study to measure the impacts of small boats (*i.e.,* kayaks, canoes, motorboats and sailboats) on harbor seal haul out behavior in Metis Bay, Quebec, Canada. During that study, the authors noted that the most frequent disturbances (n=73) were caused by lower speed, lingering kayaks, and canoes (33.3 percent) as opposed to motorboats (27.8 percent) conducting high-speed passes. The seal's flight reactions could be linked to a surprise factor by kayaks and canoes, which approach slowly, quietly, and low on the water making them look like

predators. However, the authors note that once the animals were disturbed, there did not appear to be any significant lingering effect on the recovery of numbers to their pre-disturbance levels. In conclusion, the study showed that boat traffic at current levels has only a temporary effect on the haul out behavior of harbor seals in the Metis Bay area.

In 2004, Acevedo-Gutierrez and Johnson (2007) evaluated the efficacy of buffer zones for watercraft around harbor seal haul out sites on Yellow Island, Washington. The authors estimated the minimum distance between the vessels and the haul-out sites; categorized the vessel types; and evaluated seal responses to the disturbances. During the course of the seven-weekend study, the authors recorded 14 human-related disturbances which were associated with stopped powerboats and kayaks. During these events, hauled out seals became noticeably active and moved into the water. The flushing occurred when stopped kayaks and powerboats were at distances as far as 453 and 1,217 ft (138 and 371 m) respectively. The authors note that the seals were unaffected by passing powerboats, even those approaching as close as 128 ft (39 m), possibly indicating that the animals had become tolerant of the brief presence of the vessels and ignored them. The authors reported that on average, the seals quickly recovered from the disturbances and returned to the haul out site in less than or equal to 60 minutes. Seal numbers did not return to pre-disturbance levels within 180 minutes of the disturbance less than one quarter of the time observed. The study concluded that the return of seal numbers to pre-disturbance levels and the relatively regular seasonal cycle in abundance throughout the area counter the idea that disturbances from powerboats may result in site abandonment (Acevedo-Gutierrez and Johnson 2007). As a general statement from the available information, pinnipeds exposed to intense (approximately 110 to 120 decibels re: 20 μPa) non-pulsed sounds often leave haul out areas and seek refuge temporarily (minutes to a few hours) in the water (Southall *et al.,* 2007).

Stampede

There are other ways in which disturbance, as described previously, could result in more than Level B harassment of marine mammals. They are most likely to be consequences of stampeding, a potentially dangerous occurrence in which large numbers of animals succumb to mass panic and rush away from a stimulus. These situations are: (1) Falling when entering the water at high-relief locations; (2) extended separation of mothers and pups; and (3) crushing of pups by large males during a stampede. However, NMFS does not expect any of these scenarios to occur from the USFWS's research activities. There is the risk of injury if animals stampede towards shorelines with precipitous relief (*e.g.,* cliffs). However, there are no cliffs on any of the haul out locations in the Complex. If disturbed, the small number of hauled-out adult animals may move toward the water without risk of encountering barriers or hazards that would otherwise prevent them from leaving the area. Moreover, seals may flush into the water, but would not have the potential to crush other seals like sea lions do during a stampede. They may bump each other, but this is not expected to have lethal consequences. Thus, in this case, NMFS considers the risk of injury, serious injury, or death to hauled out animals as very low.

Anticipated Effects on Marine Mammal Habitat

The only habitat modification associated with the proposed activity is installation of signs on beaches where haul outs are located. Thus, NMFS does not expect that the proposed activity would have any effects on marine mammal habitat and NMFS expects that there will be no long- or short-term physical impacts to pinniped habitat in the Complex.

The proposed activities are not expected to result in any permanent impact on habitats used by marine mammals, including prey species and foraging habitat. The main impact associated with the proposed activity will be direct effects on marine mammals from human presence at haul outs (*i.e.,* the potential for temporary abandonment of the site), previously discussed in this notice.

NMFS does not anticipate that the proposed restoration activities would result in any permanent effects on the habitats used by the marine mammals in the proposed area, including the food sources they use (*i.e.,* fish and invertebrates). Based on the preceding discussion, NMFS does not anticipate that the proposed activity would have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, ''and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking'' for certain subsistence uses. NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat (50 CFR 216.104(a)(11)).

Time and Frequency: The USFWS would conduct research activities throughout the course of the year between April 1 and November 30, 2017.

Vessel Approach and Timing Techniques: The USFWS would ensure that its vessel approaches to beaches with pinniped haul outs would be conducted so as to not disturb marine mammals as most practicable. To the extent possible, the vessel should approach the beaches in a slow and controlled approach, as far away as possible from haul outs to prevent or minimize flushing. Staff would also avoid or proceed cautiously when operating boats in the direct path of swimming seals that may be present in the area.

Avoidance of Acoustic Impacts from Cannon nets: Cannon nets have a measured SL of 128 dB at one meter (m) (estimated based on a measurement of 98.4 dB at 30 m; L. Niles, pers. comm., December 2016); however, the SPL is expected to be less than the thresholds for airborne pinniped disturbance (*e.g.* 90 dB for harbor seals, and 100 dB for all other pinnipeds) at 80 yd from the source. The USFWS proposes to stay at least 100 yd from all pinnipeds if cannon nets are to be used for research purposes.

Avoidance of Visual and Acoustic Contact with People: The USFWS would instruct its members and research staff to avoid making unnecessary noise and not expose themselves visually to pinnipeds whenever practicable. USFWS staff would stay at least 50 yd from hauled out pinnipeds, unless it is absolutely necessary to approach seals closer, or potentially flush a pinniped, in order to continue conducting endangered species conservation work. When disturbance is unavoidable, staff will work quickly and efficiently to minimize the length of disturbance. Researchers and staff will do so by proceeding in a slow and controlled

manner, which allows for the seals to slowly flush into the water. Staff will also maintain a quiet working atmosphere, avoiding loud noises, and using hushed voices in the presence of hauled-out pinnipeds. Pathways of approach to the desired study or nesting site will be chosen to minimize seal disturbance if an activity event may result in the disturbance of seals. USFWS staff will scan the surrounding waters near the haul outs, and if predators (*i.e.,* sharks) are seen, seals will not be flushed by USFWS staff.

Researchers, USFWS staff, and volunteers will be properly informed about the MMPA take prohibitions, and will educate the public on the importance of not disturbing marine mammals, when applicable. Staff at Nantucket NWR will remain present on the beaches utilized by pinnipeds to prevent anthropogenic disturbance during times of high public use (late spring-early fall). Staff at Monomoy NWR will also be present on beaches utilized by seals during the same time of year, and will inform the public to keep a distance from haul outs if an issue is noticed. Similar to the USFWS, the NPS also takes precautionary mitigation to help prevent seal take by the public. In August and on the weekends in September, staff and volunteers are present on the National Seashore beaches to share with the public the importance of preventing disturbance to seals by keeping people at a proper viewing distance of at least 50 yd.

The presence/proximity of seal haul outs and the loud sound created by the firing of cannon nets are taken into consideration when selecting trapping sites for the Red Knot Stopover Study. Trapping sites are decided based on the presence of red knots, the number of juveniles located within roosts, and the observation of birds with attached geolocators and flags. Sites are not trapped on if there is a strong possibility of disturbing seals (*i.e.,* closer than 100 yd). The Red Knot Stopover Study occurs during the time of year (July–Sept) when the least number of seals are present at the activity sites.

Mitigation Conclusions

NMFS has carefully evaluated the USFWS's proposed mitigation measures in the context of ensuring that we prescribe the means of affecting the least practicable impact on the affected marine mammal species and stocks and their habitat. The evaluation of potential measures included consideration of the following factors in relation to one another:

- The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;
- The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and
- The practicability of the measure for applicant implementation.

Any mitigation measure(s) prescribed by NMFS should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed here:

1. Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).
2. A reduction in the numbers of marine mammals (total number or number at biologically important time or location) exposed to vessel or visual presence that NMFS expects to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).
3. A reduction in the number of times (total number or number at biologically important time or location) individuals exposed to vessel or visual presence that NMFS expects to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).
4. A reduction in the intensity of exposures (either total number or number at biologically important time or location) to vessel or visual presence that NMFS expects to result in the take of marine mammals (this goal may contribute to a, above, or to reducing the severity of harassment takes only).
5. Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base, activities that block or limit passage to or from biologically important areas, permanent destruction of habitat, or temporary destruction/disturbance of habitat during a biologically important time.
6. For monitoring directly related to mitigation—an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on the evaluation of the USFWS's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Proposed Monitoring

In order to issue an incidental take authorization for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth ''requirements pertaining to the monitoring and reporting of such taking.'' The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that NMFS expects to be present in the proposed action area.

The USFWS submitted a marine mammal monitoring plan in Section 13 and Appendix A of their IHA application. NMFS or the USFWS may modify or supplement the plan based on comments or new information received from the public during the public comment period.

Monitoring measures prescribed by NMFS should accomplish one or more of the following general goals:

1. An increase in our understanding of the likely occurrence of marine mammal species in the vicinity of the action, (*i.e.,* presence, abundance, distribution, and/or density of species).
2. An increase in our understanding of the nature, scope, or context of the likely exposure of marine mammal species to any of the potential stressor(s) associated with the action (*e.g.,* sound or visual stimuli), through better understanding of one or more of the following: the action itself and its environment (*e.g.,* sound source characterization, propagation, and ambient noise levels); the affected species (*e.g.,* life history or dive pattern); the likely co-occurrence of marine mammal species with the action (in whole or part) associated with specific adverse effects; and/or the likely biological or behavioral context of exposure to the stressor for the marine mammal (*e.g.,* age class of exposed animals or known pupping, calving or feeding areas).
3. An increase in our understanding of how individual marine mammals respond (behaviorally or physiologically) to the specific stressors associated with the action (in specific contexts, where possible, *e.g.,* at what distance or received level).
4. An increase in our understanding of how anticipated individual responses, to individual stressors or anticipated combinations of stressors, may impact either: The long-term fitness

and survival of an individual; or the population, species, or stock (*e.g.* through effects on annual rates of recruitment or survival).

5. An increase in our understanding of how the activity affects marine mammal habitat, such as through effects on prey sources or acoustic habitat (*e.g.,* through characterization of longer-term contributions of multiple sound sources to rising ambient noise levels and assessment of the potential chronic effects on marine mammals).

6. An increase in understanding of the impacts of the activity on marine mammals in combination with the impacts of other anthropogenic activities or natural factors occurring in the region.

7. An increase in our understanding of the effectiveness of mitigation and monitoring measures.

8. An increase in the probability of detecting marine mammals (through improved technology or methodology) to better achieve the above goals.

As part of its IHA application, the USFWS proposes to conduct marine mammal monitoring, in order to implement the mitigation measures that require real-time monitoring, and to satisfy the monitoring requirements of the proposed IHA. These include:

Monitoring seals as project activities are being conducted. Proposed monitoring requirements in relation to the USFWS's proposed activities would include species counts, numbers of observed disturbances, and descriptions of the disturbance behaviors during the research activities, including location, date, and time of the event. In addition, the USFWS would record observations regarding the number and species of any marine mammals either observed in the water or hauled out. Behavior of seals will be recorded on a three point scale (1 = alert reaction; not considered harassment, 2 = moving at least 2 body lengths, or change in direction >90 degrees, 3 = flushing) (Table 4). USFWS staff would also record and report all observations of sick, injured, or entangled marine mammals on Monomoy NWR to the International Fund for Animal Welfare (IFAW) marine mammal rescue team, and will report to NOAA if injured seals are found at Nantucket NWR and Nomans NWR. Tagged or marked marine mammals will also be recorded and reported to the appropriate research organization or federal agency, as well as any rare or unusual species of marine mammal. Photographs will be taken when possible. This information will be incorporated into a report for NMFS at the end of the season. The USFWS will also coordinate with any university, state, or federal researchers to attain additional data or observations that may be useful for monitoring marine mammal usage at the activity sites.

If at any time injury, serious injury, or mortality of the species for which take is authorized should occur, or if take of any kind of any other marine mammal occurs, and such action may be a result of the USFWS's activities, the USFWS would suspend research activities and contact NMFS immediately to determine how best to proceed to ensure that another injury or death does not occur and to ensure that the applicant remains in compliance with the MMPA.

Proposed Reporting

The USFWS would submit a draft report to NMFS' Office of Protected Resources no later than 90 days after the expiration of the proposed IHA, if issued. The report will include a summary of the information gathered pursuant to the monitoring requirements set forth in the proposed IHA. The USFWS will submit a final report to the NMFS within 30 days after receiving comments from NMFS on the draft report. If the USFWS receives no comments from NMFS on the report, NMFS will consider the draft report to be the final report.

The report will describe the operations conducted and sightings of marine mammals near the proposed project. The report will provide full documentation of methods, results, and interpretation pertaining to all monitoring. The report will provide:

1. A summary and table of the dates, times, and weather during all research activities.

2. Species, number, location, and behavior of any marine mammals observed throughout all monitoring activities.

3. An estimate of the number (by species) of marine mammals exposed to human presence associated with the USFWS's activities.

4. A description of the implementation and effectiveness of the monitoring and mitigation measures of the IHA and full documentation of methods, results, and interpretation pertaining to all monitoring.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the authorization, such as an injury (Level A harassment), serious injury, or mortality (*e.g.,* stampede), USFWS personnel shall immediately cease the specified activities and immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the Northeast Regional Stranding Coordinator. The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Description and location of the incident (including water depth, if applicable);
- Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

The USFWS shall not resume its activities until NMFS is able to review the circumstances of the prohibited take. We will work with the USFWS to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The USFWS may not resume their activities until notified by us via letter, email, or telephone.

In the event that the USFWS discovers an injured or dead marine mammal, and the marine mammal observer determines that the cause of the injury or death is unknown and the death is relatively recent (*i.e.,* in less than a moderate state of decomposition as we describe in the next paragraph), the USFWS will immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the Northeast Regional Stranding Coordinator. The report must include the same information identified in the paragraph above this section. Activities may continue while NMFS reviews the circumstances of the incident. NMFS would work with the USFWS to determine whether modifications in the activities are appropriate.

In the event that the USFWS discovers an injured or dead marine mammal, and the lead visual observer determines that the injury or death is not associated with or related to the authorized activities (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the USFWS will report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the Northeast Regional Stranding Coordinator within 24 hours of the discovery. The USFWS personnel will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to us. The USFWS can continue their survey

activities while NMFS reviews the circumstances of the incident.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines ''harassment'' as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

All anticipated takes would be by Level B harassment, involving temporary changes in behavior. NMFS expects that the proposed mitigation and monitoring measures would minimize the possibility of injurious or lethal takes. NMFS considers the potential for take by injury, serious injury, or mortality as remote. NMFS expects that the presence of the USFWS personnel could disturb animals hauled out on beaches near research activities and that the animals may alter their behavior or attempt to move away from the USFWS personnel.

As discussed earlier, NMFS assumes that pinnipeds that move greater than two body lengths to longer retreats over the beach, or if already moving, a change of direction of greater than 90 degrees in response to the presence of surveyors, or pinnipeds that flush into the water, are behaviorally harassed, and thus subject to Level B taking (Table 4). NMFS estimates that 39,666 gray seals will be taken, by Level B harassment, over the course of the IHA (Table 5).

This estimate is based on the number of seals observed in past research years that have been flushed during research activities. USFWS biologists used their knowledge of the number of seals that use the haul outs near their research activities, and how many of those may be taken (Levels 2 and 3 on the disturbance scale). The majority of takes will occur on Monomoy NWR, which is one of the main haul outs for gray seals in the country. While the average number of gray seals present (in regards to Monomoy NWR) from April until August is less than what is reflected in Table 3, not every hauled-out seal on the beach is impacted from each activity and not all seals are impacted from every activity event. This is especially true for Monomoy NWR because the seal haul out stretches across over four miles of beach. For example, the gray seal counts on Monomoy NWR are very high, but the beaches are very large, and most of the work takes place on the upper berm close to the dune (farther away from seals). During April and May when seals are hauled out in very large numbers on the refuge, they may be present at beaches of varying width, between 30 m and 300 m. In narrower areas, all of the seals may be flushed; in mid-width areas, some of the younger and smaller seals may flush, but large males may remain on the beach; and in the widest area, USFWS activities may have no impact at all on the hauled out seals. Also, the amount of disturbance to seals may vary based on staff activities (*e.g.,* if project activities require staff to walk quickly through an area versus spending more time in one area close to seals). Take numbers were estimated from the number of seals using the refuge and the times that the activity might overlap with seal use areas. For example, most of the staging counts are not done in areas where seals haul out so the number of disturbances is very low during this task. Group size also played into the estimates. USFWS staff would impact a smaller number of seals during times of the year when group sizes are smaller (*e.g.,* outside of April and May). The knowledge of USFWS staff who have conducted these activities for multiple years is the best information available to us about the number of takes these activities may cause. In this proposed IHA, we have included monitoring requirements that should inform our take numbers in future years.

The take numbers for gray seals is thought to be conservative, and likely an overestimate. USFWS staff believe these estimates are realistic and do not expect to exceed the take numbers.

TABLE 5—ESTIMATED NUMBER OF GRAY SEAL TAKES PER ACTIVITY AT MONOMOY, NANTUCKET, AND NOMANS LAND ISLAND NWRS

Gray Seal			
Age: all		Sex: male & female	
	Number takes/event [a]	Number events/activity [b]	Total takes
Shorebird and Seabird Monitoring & Research.	1000 (Monomoy)	34 (Monomoy)	34,430
	50 (Nantucket)	8 (Nantucket)	
	10 (Nomans)	3 (Nomans)	
Roseate Tern Staging Counts & Resighting.	10 (Monomoy)	6 (Monomoy)	100
	10 (Nantucket)	4 (Nantucket)	
Red Knot Stopover Study	250 (Monomoy)	5 (Monomoy)	2,000
	150 (CACO)	5 (CACO)	
Northeastern beach tiger beetle Census	750 (Monomoy)	3 (Monomoy)	2,250
Coastal Shoreline Change Survey	500 (Monomoy)	1 (Monomoy)	500
			39,280

[a] Number of takes/event are estimates based on NOAA unpublished data (Table 3) and USFWS field observations.
[b] Number of events/activity were calculated using the numbers in Table 1 for each site location and duration.

NMFS estimates that 1,983 harbor seals could be potentially affected by Level B behavioral harassment over the course of the IHA. USFWS staff estimate that of all of the seals hauled out in mixed species haul outs, approximately five percent are harbor seals. We estimated our number of level B takes of harbor seals by taking five percent of the total takes of gray seals (*i.e.,* five percent of 39,280 is 1,964). These incidental harassment take numbers represent less than three percent of the affected stocks of harbor seals and less than eight percent of the stock of gray seals (Table 6). However, actual take may be slightly less if animals decide to haul out at a different location for the day or if animals are foraging at the time of the survey activities. The number of individual seals taken is also assumed to be less than the take estimate since these species show high philopatry (Waring *et al.,* 2016; Wood *et al.,* 2011).

We expect the take numbers to represent the number of exposures, but assume that the same seals may be behaviorally harassed over multiple days, and the likely number of individual seals that may be harassed would be less. For example, the maximum number of seals observed hauled out on Monomoy NWR during the year is 19,166 (Table 3); therefore, we expect the actual number of individual takes to be closer to that number for activities at Monomoy NWR. Raw counts are not available for Nantucket NWR and Nomans NWR.

TABLE 6—THE PERCENTAGE OF STOCK AFFECTED BY THE NUMBER OF TAKES PER SPECIES

Species	Take number	Stock abundance	Percent of stock
Gray seal (*Halichoerus grypus grypus*)	39,280	* 505,000	7.78
Harbor seal (*Phoca vitulina concolor*)	1,964	75,834	2.59

* The Western North Atlantic stock of gray seals is comprised of the Canadian and U.S. populations. The U.S. population abundance estimate is unknown, but the Canadian population abundance estimate is 505,000. The 2016 draft SAR states that the western North Atlantic stock is equivalent to the Canada population.

Because of the required mitigation measures and the likelihood that some pinnipeds will avoid the area, NMFS does not expect any injury, serious injury, or mortality to pinnipeds to occur and NMFS has not authorized take by Level A harassment for this proposed activity.

Analysis and Preliminary Determinations

Negligible Impact

Negligible impact is ''an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival'' (50 CFR 216.103). The lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population level effects) forms the basis of a negligible impact finding. An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' through behavioral harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.,* intensity, duration), the context of any responses (*e.g.,* critical reproductive time or location, migration), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat.

Although the USFWS's survey activities may disturb a small number of marine mammals hauled out on beaches in the Complex, NMFS expects those impacts to occur to a localized group of animals. Marine mammals would likely become alert or, at most, flush into the water in reaction to the presence of the USFWS's personnel during the proposed activities. Much of the disturbance will be limited to a short duration, allowing marine mammals to reoccupy haul outs within a short amount of time. Thus, the proposed action is unlikely to result in long-term impacts such as permanent abandonment of the area because of the availability of alternate areas for pinnipeds to avoid the resultant acoustic and visual disturbances from the research activities

The USFWS's activities would occur during the least sensitive time (*e.g.,* April through November, outside of the pupping season) for hauled out pinnipeds in the Complex. Thus, pups or breeding adults would not be present during the proposed activity days.

Moreover, the USFWS's mitigation measures regarding vessel approaches and procedures that attempt to minimize the potential to harass the seals would minimize the potential for flushing and large-scale movements. Thus, the potential for large-scale movements and flushing leading to injury, serious injury, or mortality is low.

In summary, NMFS anticipates that impacts to hauled-out pinnipeds during the USFWS's proposed research activities would be behavioral harassment of limited intensity (*i.e.,* temporary flushing at most). NMFS does not expect stampeding, and therefore does not expect injury or mortality to occur (see *Proposed Mitigation* for more details). Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the USFWS's proposed survey activities will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers

As mentioned previously, NMFS estimates that the USFWS's proposed activities could potentially affect, by Level B harassment only, two species of marine mammal under our jurisdiction. For each species, these estimates are small numbers (less than three percent of the affected stock of harbor seals and less than eight percent of the stock of gray seals) relative to the population size (Table 6). As stated before, the number of individual seals taken is also assumed to be less than the take estimate (number of exposures) since we assume that the same seals may be behaviorally harassed over multiple days.

Based on the analysis contained in this notice of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, NMFS preliminarily finds that the USFWS's proposed activities would take small numbers of marine mammals relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

NMFS does not expect that the USFWS's proposed research activities would affect any species listed under the ESA. Therefore, NMFS has determined that a section 7 consultation under the ESA is not required.

National Environmental Policy Act (NEPA)

To meet our NEPA requirements for the issuance of an IHA to the USFWS, NMFS has prepared an EA specific to conducting research activities in the

Complex. The EA, titled ''Issuance of an Incidental Harassment Authorization to Take Marine Mammals by Harassment Incidental to Conducting Seabird and Shorebird Monitoring and Research at the Eastern Massachusetts National Wildlife Refuge Complex, Massachusetts,'' evaluated the impacts on the human environment of our authorization of incidental Level B harassment resulting from the specified activity in the specified geographic region. An electronic copy of the EA for this activity is available on the Web site at: *www.nmfs.noaa.gov/pr/permits/incidental/research.htm.*

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes issuing an IHA to the USFWS for conducting research activities at the Eastern MA NWR locations, from April 1, 2017 through November 30, 2017, provided they incorporate the previously mentioned mitigation, monitoring, and reporting requirements.

Draft Proposed Authorization

This section contains the draft text for the proposed IHA. NMFS proposes to include this language in the IHA, if issued.

Proposed Authorization Language

The United States Fish and Wildlife Service, Eastern Massachusetts National Wildlife Refuge Complex (USFWS), 73 Weir Hill Road, Sudbury, MA 01776, is hereby authorized under section 101(a)(5)(D) of the MMPA (16 U.S.C. 1371(a)(5)(D)) and 50 CFR 216.107, to harass marine mammals incidental to conducting research activities in the Eastern Massachusetts National Wildlife Refuge Complex (Complex).

1. This Incidental Harassment Authorization (IHA) is valid from April 1, 2017 through March 31, 2018.

2. This IHA is valid only for activities associated with research activities and human presence (See items 2(a)—(d)) in the Complex.

a. The use of a small vessel to transit to Nomans NWR;

b. Research activities (*e.g.,* shorebird and seabird nest monitoring and research; Roseate Tern (*Sterna dougallii*), staging count and resighting; Red knot (*Calidris canutus)* stopover study; Northeastern beach tiger beetle (*Cicindela dorsalis*) census; and coastal shoreline change survey)) conducted at the Complex;

c. Human presence.

3. General Conditions.

a. A copy of this IHA must be in the possession of the USFWS, its designees, and work crew personnel operating under the authority of this IHA.

b. The species authorized for taking are the gray seal (*Halichoerus grypus grypus*) and the Harbor seal (*Phoca vitulina concolor*).

c. The taking, by Level B harassment only, is limited to the species listed in condition 3(b). Authorized take: gray seal (39,280); and harbor seal (1,964).

d. The taking by Level A harassment, injury or death of any of the species listed in item 3(b) of the IHA or the taking by harassment, injury or death of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.

4. Cooperation.

The holder of this IHA is required to cooperate with the NMFS and any other Federal, state, or local agency authorized to monitor the impacts of the activity on marine mammals.

5. Mitigation Measures.

In order to ensure the least practicable impact on the species listed in condition 3(b), the holder of this IHA is required to:

a. Conduct research activities in the Complex between April 1, 2017 and November 30, 2017.

b. Ensure that vessel approaches to Nomans NWR will be such that the techniques are least disturbing to marine mammals. To the extent possible, the vessel should conduct a slow and controlled approach to the island as far away as possible from haul outs. USFWS staff will avoid or proceed cautiously when operating boats in the direct path of swimming seals that may be present in the area.

c. Provide instructions to USFWS staff and team members, and if applicable, to tourists, on appropriate conduct when in the vicinity of hauled-out marine mammals. The USFWS research teams will maintain a quiet working atmosphere by avoiding making unnecessary noise and by using hushed voices while near hauled out seals; will remain at least 50 yd from seals when possible; and will choose pathways to study sites that will minimize disturbance to seals.

d. Ensure cannon nets will not be used closer than 100 yd from seals.

e. Ensure that the waters surrounding the haul outs are free of predators (*e.g.,* sharks) before USFWS staff flush seals from the haul outs.

6. Monitoring.

The holder of this IHA is required to:

a. Monitor seals when research activities are conducted in the presence of marine mammals.

b. Record the date, time, and location (or closest point of ingress) of each of the research activities in the presence of marine mammals.

c. Collect the following information for each visit:

i. Information on the numbers (by species) of marine mammals observed during the activities, by age and sex, if possible;

ii. The estimated number of marine mammals (by species) that may have been harassed during the activities based on the 3-point disturbance scale;

iii. Any behavioral responses or modifications of behaviors that may be attributed to the specific activities (*e.g.,* flushing into water, becoming alert and moving, rafting);

iv. The date, location, and start and end times of the event; and

v. Information on the weather, including the tidal state and horizontal visibility.

vi. Observations of sick, injured, or entangled marine mammals, and any tagged or marked marine mammals. Photographs will be taken when possible.

7. Reporting Requirements.

Final Report: The holder of this IHA is required to submit a draft monitoring report to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, 1315 East West Highway, 13th Floor, Silver Spring, MD 20910 no later than 90 days after the project is completed. The report must contain the following information:

a. A summary of the dates, times, and weather during all research activities.

b. Species, number, location, and behavior of any marine mammals, observed throughout all monitoring activities.

c. An estimate of the number (by species) of marine mammals that are known to have been exposed to visual and acoustic stimuli associated with the research activities.

d. A description of the implementation and effectiveness of the monitoring and mitigation measures of the IHA and full documentation of methods, results, and interpretation pertaining to all monitoring.

8. Reporting Prohibited Take.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury (Level A harassment), serious injury, or mortality (*e.g.,* stampede, etc.), the USFWS shall immediately cease the specified activities and immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the

Assistant Westcoast Regional Stranding Coordinator.

The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Water depth;
- Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

The USFWS shall not resume its activities until we are able to review the circumstances of the prohibited take. We shall work with the USFWS to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The USFWS may not resume their activities until notified by us via letter, email, or telephone.

9. Reporting an Injured or Dead Marine Mammal with an Unknown Cause of Death.

In the event that the USFWS discovers an injured or dead marine mammal, and the observer determines that the cause of the injury or death is unknown and the death is relatively recent (*i.e.,* in less than a moderate state of decomposition as we describe in the next paragraph), the USFWS will immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, and the Assistant Westcoast Regional Stranding Coordinator. The report must include the same information identified in the paragraph above this section. Activities may continue while we review the circumstances of the incident. We will work with the USFWS to determine whether modifications in the activities are appropriate.

The report must include the same information identified in the paragraph above. Activities may continue while we review the circumstances of the incident. We will work with the USFWS to determine whether modifications in the activities are appropriate.

10. Reporting an Injured or Dead Marine Mammal not Related to the USFWS's Activities:

In the event that the USFWS discovers an injured or dead marine mammal, and the lead visual observer determines that the injury or death is not associated with or related to the authorized activities (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the USFWS will report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, and the Assistant Westcoast Regional Stranding Coordinator, within 24 hours of the discovery.

The USFWS's staff will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to us.

11. This IHA may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein, or if the authorized taking is having a more than a negligible impact on the species or stock of affected marine mammals.

Request for Public Comments

NMFS requests comments on our analysis, the draft IHA, and any other aspect of this notice of proposed IHA for the proposed activities. Please include any supporting data or literature citations with your comments to help inform our final decision on the USFWS's request for an IHA.

Dated: January 6, 2017.

Donna S. Wieting

Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2017–00540 Filed 1–11–17; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Notice and Request for Comment on Two New Categories of Special Use Permits Related to the Operation of Desalination Facilities Producing Potable Water for Consumption

AGENCY: Office of National Marine Sanctuaries (ONMS), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA).

ACTION: Notice; request for public comments.

SUMMARY: In accordance with a requirement of Public Law 106–513 (16 U.S.C. 1441(b)), NOAA hereby gives public notice of and requests public comment on whether the Office of National Marine Sanctuaries should adopt two new special use permit (SUP) categories pursuant to the requirements of Section 310 of the National Marine Sanctuaries Act (16 U.S.C. 1441). The two new SUP categories would be: (1) The continued presence of a pipeline transporting seawater to or from a desalination facility; and (2) the use of sediment to filter seawater for desalination. This notice includes background information on the use of desalination in California national marine sanctuaries, ONMS regulations applicable to activities that disturb submerged lands or discharge into sanctuaries, as well as how NOAA would examine the environmental impacts of such activities. While most current desalination activity in sanctuaries is occurring in California, the SUP categories are intended to apply across the national marine sanctuary system.

DATES: Comments must be received on or before February 13, 2017.

ADDRESSES: You may submit comments, identified by docket ID NOAA–NOS–2016–0027 by one of the following methods:

- *Electronic submissions:* Submit all electronic public comments via the Federal eRulemaking Portal. Go to *http://www.regulations.gov/#!docketDetail;D=NOAA-NOS-2016-0027,* click the ''Comment Now!'' icon, complete the required fields, and enter or attach your comments.
- *Mail:* Submit all written comments to Bridget Hoover, Monterey Bay National Marine Sanctuary, 99 Pacific Street, Bldg. 455A, Monterey, CA 93940.

Instructions: Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NOAA. All comments received are a part of the public record and will be posted to *http://www.regulations.gov* without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information. ONMS will accept anonymous comments (for electronic comments submitted through the Federal eRulemaking Portal, enter N/A in the required fields if you wish to remain anonymous).

FOR FURTHER INFORMATION CONTACT: Bridget Hoover, Monterey Bay National Marine Sanctuary, 99 Pacific Street, Bldg. 455A, Monterey, CA 93940.

SUPPLEMENTARY INFORMATION: This **Federal Register** document is also accessible via the Internet at: *http://montereybay.noaa.gov.*

I. Background

Introduction to Desalination Projects in Sanctuaries

There is a growing public concern about ensuring adequate water resources to support populations along the California coast. Communities have been working together to develop strategies for addressing the long-term drought California is currently experiencing and the resulting water scarcity. In the Monterey Bay area, desalination has been identified as one of the essential components of water resource portfolios. While NOAA is currently reviewing proposals for the construction of desalination plants located in California, the management alternatives described in this notice are intended to be applied across the National Marine Sanctuary System.

Desalination is the process by which salts and other minerals are removed from seawater or brackish water to produce potable fresh water. The installation and operation of desalination facilities near a national marine sanctuary may involve access to and use of sanctuary resources and include activities prohibited by a sanctuary's regulations. One potentially applicable prohibition is for activities that cause the alteration of, or placement of structures on or in the seabed. For example, installation of certain desalination facility structures such as an intake or outfall pipeline on or beneath the ocean floor would be prohibited by sanctuary regulations and could only occur with sanctuary approval. Another prohibition potentially applicable to desalination projects is discharging or depositing any material or matter from within or into sanctuaries. The disposal of brine effluent, and in some cases other materials, into sanctuary waters would be prohibited unless approved by the sanctuary.

Multiple federal, state and local permits are typically required for any construction and operation of desalination facilities near a national marine sanctuary. In 2010, NOAA in collaboration with the California Coastal Commission, California Central Coast Regional Water Quality Control Board, published specific guidelines for new desalination plants in a report titled *Guidelines for Desalination Plants in Monterey Bay National Marine Sanctuary* (MBNMS 2010, *http://montereybay.noaa.gov/resourcepro/resmanissues/pdf/050610desal.pdf*). These non-regulatory guidelines were developed to help ensure that any future desalination plants in or adjacent to Monterey Bay National Marine Sanctuary would be sited, designed, and operated in a manner that results in minimal impacts to the marine environment. Although they were developed for a specific sanctuary, the guidelines would likely apply to potential desalination facilities near any national marine sanctuaries. These guidelines address numerous issues associated with desalination including site selection, construction and operational impacts, plant discharges, and intake systems. The guidelines encourage the use of subsurface intake systems and associated pipelines, which have less potential to cause environmental harm to sensitive marine organisms. Open water intakes have the potential to trap organisms on the intake screens (impingement) or impact organisms small enough to pass through the screen during the processing of the saltwater (entrainment). Subsurface intakes have the potential to minimize or eliminate impingement and entrainment impacts (Chambers Group Memo 2010). When subsurface intakes are not feasible, and a new pipeline for an open water intake is necessary, placement should be thoroughly evaluated to minimize disturbances to biological resources. In addition, the guidelines encourage co-location with existing facilities (*e.g.,* sewage treatment plants) to dilute brine by blending it with existing effluent for ocean discharges.

The guidelines also examine which statutory and regulatory authorities would apply to desalination projects located near national marine sanctuaries. The guidelines explain that NOAA could potentially allow the construction and operation of desalination facilities through sanctuary authorization of other state and federal permits, such as the State of California's Coastal Development Permit and National Pollution Discharge Elimination System (NPDES) permit.

Authorizations vs. Special Use Permit (SUP)

Depending on the type of activity or project proposed, NOAA has various regulatory mechanisms it can use to allow otherwise prohibited activities to occur within national marine sanctuaries. Two of these mechanisms are authorizations and special use permits.

Authorizations allow a person to conduct an activity prohibited by sanctuary regulations if such activity is specifically authorized by any valid Federal, State, or local lease, permit, license, approval, or other authorization issued after the effective date of sanctuary regulation (15 CFR 922.49). SUPs can only be issued for activities that are needed (1) to establish conditions of access to and use of any sanctuary resources; or (2) to promote public use and understanding of a sanctuary resource (16 U.S.C. 1441(a)). In addition, the activities must be compatible with the purposes for which the sanctuary is designated and with protection of sanctuary resources (16 U.S.C. 1441(c)). SUPs must require that activities carried out under the permit be conducted in a manner that does not destroy, cause the loss of, or injure sanctuary resources. Six [1] national marine sanctuaries currently have regulations enabling them to issue authorizations while all of the sanctuaries have authority to issue SUPs.

When a desalination project is proposed in or near a national marine sanctuary and would involve activities prohibited by national marine sanctuary regulations, the project can only occur if NOAA has the regulatory mechanism to approve such activities. For example, a desalination project may include various activities such as: Installation, maintenance, and removal of a pipeline on or within the submerged lands of a national marine sanctuary; discharge of brine into a national marine sanctuary; presence of a pipeline transporting seawater to or from a desalination facility; and use of sediment to filter seawater for desalination. A national marine sanctuary that has regulatory authority to issue authorizations [2] would use authorizations to consider whether it can approve the pipeline installation, maintenance, and removal, and brine discharge within the national marine sanctuary, because these activities are prohibited by most sanctuary regulations regarding discharges and disturbance of the seabed and cannot occur without proper authorization from NOAA. Brine discharges would also not be covered by a SUP, but by authorization of another permit. However, an authorization would not take into account the continued use of sanctuary resources by the pipeline because those activities would not violate sanctuary regulations, uses which may require continued monitoring and management by NOAA.

[1] The following national marine sanctuaries currently have regulations enabling them to issue authorizations: Florida Keys, Flower Garden Banks, Monterey Bay, Olympic Coast, Stellwagen Bank, and Thunder Bay. However, Florida Keys and Olympic Coast NMSs are the only ones adjacent to land where desalination facilities could be placed.

[2] A national marine sanctuary needs to have regulatory authority to issue authorizations in order to approve construction and operations of a desalination facility. This regulatory authority is described at 15 CFR 922.49.

In the case of a proposal for a desalination project, NOAA has found that there is a much larger burden on staff to review the environmental analysis and process an authorization application for this type and scale of project. The National Marine Sanctuaries Act (NMSA) calls for a special category of permits (called ''special use permits or SUPs'') to establish conditions of use of any sanctuary resources and to promote public use of a sanctuary resource (16 U.S.C. 1441(a)). The NMSA gives NOAA authority to develop categories of SUP in order to assess fees related to issuing and administering permits and for expenses of managing national marine sanctuaries (16 U.S.C. 1441(d)(3)). This includes the processing of applications, preparation and review of environmental analysis as well as long-term monitoring of the impacts of the activity to sanctuary resources. As such, a SUP would be the appropriate mechanism for NOAA to approve the continued presence of a pipeline transporting seawater to or from a desalination facility and use of sediment to filter seawater for desalination, should the proposed project be carried out in a manner that is consistent with Section 310 of the NMSA.[3]

This **Federal Register** notice proposes to add two new SUP categories that could apply to proposed desalination projects. These categories are: (1) The continued presence of a pipeline transporting seawater to or from a desalination facility; and (2) the use of sediment to filter seawater for desalination.

In May 2013, NOAA clarified that simply being consistent with one of the categories does not guarantee approval of an SUP for any given activity. Applications are reviewed for consistency with the SUP requirements in section 310(c) of the NMSA, as well as the published description of the category. Of particular importance, SUPs may only be issued for activities NOAA determines can be conducted in a manner that does not destroy, cause the loss of, or injure sanctuary resources (NMSA section 310(c)(3)). Individual SUP applications are also reviewed with respect to all other pertinent regulations and statutes, including NEPA and any required consultations, permits or authorizations. NOAA would assess whether activities associated with proposed desalination projects are appropriate for one or both of these new SUP categories on a case-by-case basis, and as part of the federal environmental review process required by the National Environmental Policy Act (NEPA). NOAA would take into consideration whether the activity can meet the findings in Section 310(c) of the NMSA (16 U.S.C. 1441(c)). Under NEPA, NOAA would analyze the environmental impacts of the entire proposed federal action (*i.e.,* the desalination project) including the issuance of any SUPs and sanctuary authorizations.

While NOAA could conceivably propose new SUP categories for other types of pipelines, utility lines, or use of sediment associated with activities other than desalination (*e.g.,* sewage treatment, or power generating facilities), NOAA selected to limit the focus on these two new SUP categories to desalination activities. Desalination is a current issue on the West Coast and may become an issue across the country in the future. There is enough information on the types of activities associated with desalination to make a determination that under certain conditions, such as if correctly sited and compliant with *MBNMS Desalination Guidelines,* they are not likely to result in injury to sanctuary resources, which is a requirement for SUPs. It would be too speculative at this point for NOAA to analyze impacts of other types of pipelines, or other project impacts in the absence of a more clearly defined need or proposal for such activities.

NMSA Special Use Permits

Congress first granted NOAA the authority to issue SUPs for the conduct of specific activities in national marine sanctuaries in the 1988 Amendments to the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1431 *et seq.*) (Pub. L. 100–627). NMSA section 310 allows NOAA to issue SUPs to establish conditions of access to and use of any sanctuary resource or to promote public use and understanding of a sanctuary resource. In the National Marine Sanctuaries Amendments Act of 2000 (Pub. L. 106–513), Congress added a requirement that prior to requiring a SUP for any category of activity, NOAA shall give appropriate public notice. NMSA section 310(b) states that ''[NOAA] shall provide appropriate public notice before identifying any category of activity subject to a special use permit under subsection (a).'' On January 30, 2006, NOAA published a list of five categories for which the requirements of SUPs would be applicable (71 FR 4898). NOAA further refined this list of categories for which an SUP could be issued on May 3, 2013 (78 FR 25957), so that it now includes seven categories of SUPs as follows:

1. The placement and recovery of objects associated with public or private events on non-living substrate of the submerged lands of any national marine sanctuary.
2. The placement and recovery of objects related to commercial filming.
3. The continued presence of commercial submarine cables on or within the submerged lands of any national marine sanctuary.
4. The disposal of cremated human remains within or into any national marine sanctuary.
5. Recreational diving near the USS *Monitor.*
6. Fireworks displays.
7. The operation of aircraft below the minimum altitude in restricted zones of national marine sanctuaries.

Pursuant to NMSA section 310(d), NOAA may assess three types of fees associated with the conduct of any activity under an SUP: (1) Administrative costs, (2) implementation and monitoring costs; and (3) fair market value (FMV) of the use of the sanctuary resource (16 U.S.C. 1441(d)). On November 19, 2015, NOAA published a **Federal Register** notice finalizing the methods, formulas and rationale for the calculations it uses to assess fees associated with the existing seven SUP categories (80 FR 72415).

NOAA proposes to use the same methods previously established in the **Federal Register** for assessing an application fee, administrative costs, and implementation and monitoring costs of these two new SUP categories. NOAA would require a non-refundable $50 application fee. The labor costs assessed as part of administrative costs would be based on a Federal regional labor rate that will be updated every year to account for staff changes as well as inflation. Administrative costs would include any environmental analyses and consultations associated with evaluating the SUP application and issuing the permit; equipment used in permit review and issuance (*e.g.,* vessels, dive equipment, and vehicles), and general overhead. NOAA may also assess a fee for costs associated with the conduct or implementation of a permitted activity as well as the costs of monitoring the activity. The latter costs would cover the expenses of monitoring the impacts of a permitted activity and compliance with the terms and conditions of the permit. Examples of implementation and monitoring costs can include the cost of site preparation, site examination, and the use of vessels and

[3] This management approach has been applied with respect to submarine fiber optic cables in a sanctuary where the installation of the infrastructure is considered via a separate authorization and the continued presence of the infrastructure is addressed through an SUP (ONMS 2002).

aircraft. Lastly, NOAA can assess a fee for fair market value for use of sanctuary resources. NOAA is proposing and seeking public comment on specific methods for assessing FMV for the two new categories of SUPs, which are described in subsequent sections of this **Federal Register** notice.

II. Summary of Proposed New Special Use Permit Categories

NOAA proposes to add two new categories of SUPs: (1) The continued presence of a pipeline transporting seawater to or from a desalination facility; and (2) the use of sediment to filter seawater for desalination.

1. The continued presence of a pipeline transporting seawater to or from a desalination facility.

NOAA is proposing that pipelines transporting seawater for purposes of onshore desalination, that have been laid on or drilled or bored within the submerged lands of a national marine sanctuary, may, after appropriate environmental review, application of best management practices, and compliance with *MBNMS Desalination Guidelines,* could remain in place without causing injury to sanctuary resources. Therefore, NOAA establishment of a SUP category is appropriate. For purposes of this rule, NOAA is using ''transporting seawater to or from a desalination facility'' to mean seawater being pumped from a sanctuary into a facility and/or concentrated brine water being pumped out of a facility through a pipe and into a national marine sanctuary (brine discharge is addressed below).

In order to avoid or minimize impacts to the marine environment due to the presence of the pipeline, the best management practices (BMP) from the *MBNMS Desalination Guidelines* will be employed to ensure proper siting, sizing, engineering, and configuration of intake and outfall pipelines. New desalination pipelines are manufactured with high tensile stainless steel to avoid breakage or corrosion in seawater and would be monitored annually to evaluate their continued integrity. Submerged pipelines should have little propensity for movement or shifting. There are many pipelines associated with power plants and wastewater facilities that have been in existence for more than 50 years with no adverse impacts due to their presence on the seafloor (MLML 2006; MRWPCA 2014).

Existing pipelines installed prior to the publication of the final **Federal Register** notice for these two proposed new SUP categories would be exempt from this SUP category. Moreover, existing pipelines that would not fall under the purview of this SUP category include sewage treatment plant, power plant and aquaculture facility pipes.

2. The use of sediment to filter seawater for desalination.

Nearly all seawater intake systems carry out initial filtration of seawater to remove particulate matter and living organisms. The *2010 Guidelines for Desalination Projects in Monterey Bay National Marine Sanctuary* promote the use of subsurface seawater intakes that bring in seawater filtered through natural sand beds within a sanctuary. To attain in-situ filtration, a pipeline is typically drilled or bored from an upland location into the natural sand deposits within submerged lands. Latent seawater is then drawn into the pipe and seawater collection system, incurring the benefit of natural filtration through the in-situ sand deposits. Four types of sanctuary resources may be affected by seawater filtration using subsurface intakes: Sand, biological resources (marine organisms), water, and minerals. For the purposes of this notice, NOAA refers to ''sediment'' as sand, silt, clay or any combination thereof that could be used to filter seawater. For most coastal desalination facilities the most sought after sediment is typically sand.

Sand is a natural filter media and used in many systems to remove particulate matter from water; examples include private swimming pool systems to large aquarium filtration systems. Sand is naturally-occurring in many areas on the ocean floor and, in the right conditions, seawater will naturally infiltrate the seabed into underlying aquifers. In a 2010 study, infiltration rates at a site in Southern California, based on a 30 MGD intake, were calculated between 5.1×10^{-5} ft/sec to 7.8×10^{-7} ft/sec depending on distance from the slant well (Williams, Jenkins 2010). This study reported that the ocean would have to become perfectly still in order for nano and net-plankton and other freely drifting micro-organisms to become impinged or trapped on the seabed by the vertical pull induced by the slant well field. This indicates that the substrate would not be fouled or degraded by particulate matter traveling through it with the seawater. In addition, the California American test slant well in Marina, CA was sampled for multiple constituents including Total Suspended Solids (TSS) and turbidity. The associated NPDES Start Up report indicated that TSS were not detected and the turbidity concentration was 1.6 Nephelometric Turbidity Units (NTU).[4] This result confirms very little particulate matter traveling with the seawater through the test well (Geoscience 2015). Based on these previous analyses, NOAA believes that the use of an in-situ natural resource of a national marine sanctuary—the natural sand deposits—may take place with no harm to the natural sand deposits (Williams, Jenkins 2010).

As described above, the subsurface seawater intake methodology greatly reduces the incidental intake and mortality of small marine organisms including larvae and young life stages of fish and invertebrates in a sanctuary's waters. A separate evaluation for a project in Southern California reported that benthic organisms typically live in the top two feet of the sediment, and most of them in the top two inches (Chambers Group 2010). The distance between the marine life in the seafloor sediments and the intake of the slant wells will most likely be greater than 50 feet. If subsurface intake systems are deep enough, there is typically very little biological activity at deeper depths in natural sand beds. Thus the impacts to living natural resources would not be considered, in general, to be substantial (Chambers Group 2010; Geoscience 2010).

Seawater contains approximately 35 grams of salt to one liter of water. To extract salt to make drinking water, desalination facilities use a process called reverse osmosis. Permeable membranes are used to filter out the salt as they allow only a certain size molecule or ion to pass through, thereby creating a freshwater stream and a dense brine stream. Most systems are less than 50% effective so the resulting effluent is approximately half brine (concentrated salt water) and half fresh water. The salt particles would be returned to the ocean in the form of brine, resulting in minimal net loss of salt from the ocean. The impacts of any ONMS-authorized brine discharge from a desalination project would be analyzed pursuant to NEPA as part of the authorization required for a discharge. They are not relevant to this notice's specific focus on the two new SUP categories, which are not meant to encompass brine discharges.

Water is a vast and vital resource as it provides habitat, recreation, sustenance, and transportation to name a few examples. Historically, we have believed that water supplies were limitless, which may be the case depending on the beneficial use that it provides. With the recent drought in California, as well as regulatory decisions that remove public water supplies such as dam removal, drinking

[4] CA Ocean Plan Maximum is 225 NTU.

water supplies have been severely restricted, thus increasing the interest in desalination. The Northern Pacific Ocean is estimated to contain 331,000,000 km^3 of water (NOAA). Power plants draw hundreds of millions of gallons (MGD) of seawater each day for cooling. A medium sized desalination plant would extract approximately 20 MGD. In reality, over half of the water gets returned to the ocean. For desalination projects, approximately 50% or more of the seawater withdrawn will be returned to the ocean. Therefore NOAA believes the extraction of the ocean water, following appropriate environmental reviews, compliance with the MBNMS Desalination Guidelines, and application of appropriate BMPS, would not injure sanctuary resources and establishment of a SUP category is appropriate.

III. Assessing Fair Market Value Fees for the Two Proposed New SUP Categories

NOAA proposes to use the same methods previously established in the **Federal Register** for assessing an application fee, administrative costs, and implementation and monitoring costs of these two new SUP categories (November 19, 2015; 80 FR 72415).

Fair market value (FMV) fees are specific to each category of SUP. As such, NOAA is requesting public comment on the following proposed set of FMV fees:

1. The fair market value of the continued presence of a pipeline transporting seawater to or from a desalination facility.

Fair Market Value Calculation

The proposed annual fair market value would be calculated by assessing the volume of the pipeline in cubic inches multiplied by a value of $0.02 per cubic inch. The annual FMV equation would therefore be:

$$\text{Annual FMV} = ((V \times \$0.02/in^3) \times N)/yr$$

Where:

V = volume of the pipeline (in^3) = ($\pi r^2 \times L$);
π = 3.14159;
r = radius of the pipeline (in); and
L = average length of the pipeline(in) for the portion within the sanctuary.
N = number of pipelines

FMV costs would be paid as annual rent for the duration of the permit. In developing the proposed FMV calculation for this SUP category, NOAA examined: A conceptually similar SUP category for the continued presence of submarine cables; the California State Lands Commission (CSLC) lease process for pipelines, conduit, or fiber optic cables; and offset requirements established by CSLC for an open water desalination project in Southern California.

NOAA's FMV calculation for the continued presence of submarine cables in a national marine sanctuary uses the overall linear distance (length) the infrastructure occupies on or within the seafloor within the sanctuary in assessing FMV (''Fair Market Value Analysis for a Fiber Optic Cable Permit in National Marine Sanctuaries''; 67 FR 55201). The proposed FMV methodology to assess a fee for the presence of a pipeline uses the volume of the pipeline, which includes both its length (linear distance) and area, thus accounting for its total presence on or within the submerged lands.

In addition, NOAA surveyed comparable fees assessed by the State of California for the issuance of leases in submerged lands of the state for pipelines, conduits or fiber optic cables. The value of $0.02 per cubic inch of pipeline would be established because NOAA considers this to be a similar metric (*i.e.,* a state lease for allowing pipelines) to one of the options the CSLC uses to calculate the cost of the issuance of leases in submerged lands of the state for pipelines, conduits or fiber optic cables (CCR Title 2. Division 3. Chapter 1. Article 2 CCR 2003. (Rent and other considerations)(a)(4)). In order to calculate the cost, the CSLC uses one of three approaches: a cost based on a linear value (cost per diameter inch per lineal foot of pipe, cable, conduit); a case by case rate to process an environmental impact report which is paid upfront; or 9% of the appraised value of the leased land. In order to calculate the FMV of the continued presence of a pipeline, NOAA selected to use a mathematical approach based on the size and footprint of the project pipelines. Therefore, NOAA's monetary multiplier is based on the first approach used by the CSLC.

Example

In the FMV example provided below, a special use permit for a desalination plant project includes one, 100-foot long seawater intake pipelines with a 15-inch radius to be bored into the submerged lands of a sanctuary.

$$\text{Annual FMV} = ((V \times \$0.02/in^3) \times N)/yr$$

$V = (\pi r^2 \times L)$
π = 3.14159
r = 15 in
L = (100 ft) × (12 in/ft) = 1200 in
$V = 3.14159 \times (15\ in)^2 \times 1200\ in = 848{,}230\ in^3$
N = number of pipelines = 1
Annual FMV = $((848{,}230\ in^3 \times \$0.02/in^3) \times 1)/yr$
Annual FMV for one, or for each pipeline = $16,964/yr

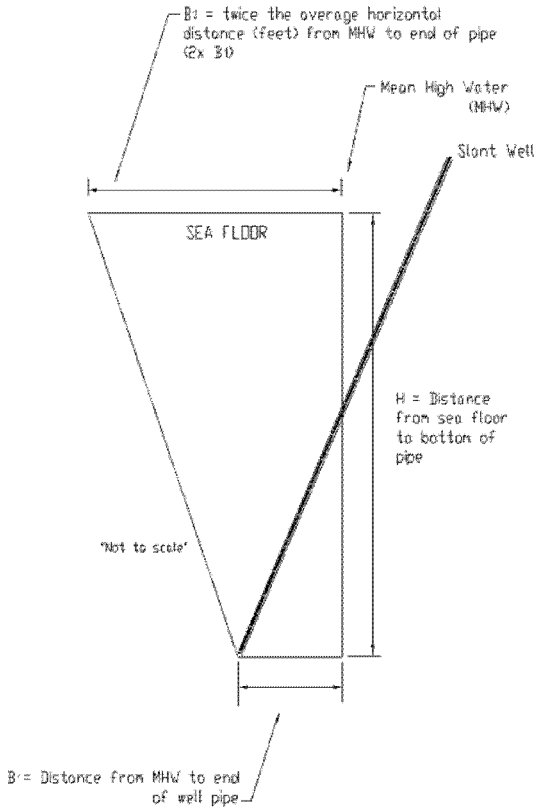
This annual cost would be applicable for the length of the permit.

2. The fair market value of non-consumptive use of sediment substrate within the submerged lands of any national marine sanctuary for the purpose of in-situ filtration of seawater intake.

Fair Market Value Calculation

The proposed FMV fee value for this SUP category is based on determining the amount of sand substrate within an active filtration area surrounding the pipeline. NOAA recognizes there are many factors that influence filtration rates, such as grain size and pumping distance. For transparency and clarity, NOAA proposes to calculate the volume of sand used for in-situ filtration as the area of a trapezoid determined by the depth of the pipeline and horizontal length into the sanctuary multiplied by a length along the shoreline. This geometric form is based on the area within the sanctuary jurisdiction beginning at mean high water and extending seaward along the sea floor twice the distance of the pipe. As documented in the Geosciences report (2010), as the distance increases from the well, the infiltration rate becomes slower through the seabed. We used a distance for the base of the trapezoid, equaling the average distance from mean high water to the terminus of the slant well pipes, and doubled it for the seafloor distance to represent the slower infiltration rate the farther you get from the well. Because every situation will be different, and there may not always be groundwater modeling available, we selected a conservative estimate of total volume of sediment that would provide the in-situ filtration. The proposed FMV would be calculated by assessing the volume of sand substrate within the sanctuary used for filtration for a desalination facility multiplied by a value of $0.003 per cubic foot of sand. NOAA researched the cost of commercial sand and learned that cost is primarily driven by processing, packaging and especially shipping, due to the weight. The proposed value is based on available information and the deduction of these estimated added costs. Total FMV costs would be paid on an annual basis for the duration of the permit. To calculate the cross section area of sediment used for in-situ filtration, NOAA proposes that the shoreward boundary would be the mean high water (MWH) mark. The formula to calculate the area of a trapezoid is: $A = h[\frac{1}{2} \times (b_1 + b_2)]$, where b_1 and b_2 are the lengths of each base, and h is the height

of the trapezoid. See the following figure:



The height of the trapezoid would be equal to the depth of the pipeline below the seafloor within the sanctuary at MHW. The first base (b_1) would be the horizontal distance from MHW to the extent of the pipeline, averaged over the number of pipelines proposed. The other base (b_2) would be equal to two times that average horizontal distance. This is a conservative approach as the filtration rate could extend much further seaward. Length equals 200 feet for one pipeline. If there were more than one pipeline, length would equal 200 feet multiplied by the number of pipelines. For multiple pipelines closer than 200 feet apart, we would use the actual distance between pipelines. In a real world application, the calculation would be altered to meet the actual specifications of the individual project. Given the above parameters, the annual FMV cost would be equal to:

Annual FMV = $L \times A \times \$0.003/ft^3$

L = length (ft) equals 200 ft (100 ft on either side of the pipeline) of sand for filtration of seawater. If there is more than one pipeline, then L will be multiplied by the number of pipelines.

A = area of the trapezoid (ft^2) = $h[\frac{1}{2} \times (b_1 + b_2)]$

h = height (ft) = vertical distance from seafloor at MHW to the depth of the bottom of the pipeline

b_1 = $base_1$ (ft) = horizontal distance between MHW to the end of pipeline

b_2 = $base_2$ (ft) = $(2 \times b_1)$

Example

A special use permit for a desalination project that includes calculations for one pipeline. The calculation is for one pipeline that extends 100 feet horizontally into the sanctuary (b_1) and the well terminates 325 feet below the surface of the seafloor calculated at MHW (h).

Annual FMV = $L \times A \times \$0.003/ft^3$

Where:

L = 200 ft

A = $h(\frac{1}{2}(b_1 + b_2)) = 325(\frac{1}{2}(100 + 200)) = 48{,}750\ ft^2$

h = 325 ft

b_1 = 100 ft

$b_2 = 2 \times 100$ ft = 200 ft

Volume of sand = 200 ft $\times$ 48,750 ft^2 = 9,750,000 ft^3

Annual FMV for one, or for each pipeline: 9,750,000 $ft^3 \times \$0.003/ft^3$ = $29,250/yr

This annual cost would be applicable for the length of the permit.

Using the above example, a configuration for ten pipelines would have annual FMV of $292,500/yr (10 × $29,250/yr). This arrangement could be used for a desalination facility that would produce approximately 10 MGD or 3.65 billion gallons of water per year. Thus, the example of the FMV for in-situ sand filtration for 10 pipelines within a national marine sanctuary would add a cost of $0.00008/gallons/yr or 1 cent for every 150 gallons of freshwater produced. This figure is obtained by dividing the FMV for in-situ sand filtration by 10 million and multiplying it by 365, since the examples assume a 10 million gallon per day capacity. The calculation is: ($292,500/year)/(10,000,000 million gallons/day)/(365 days/year) = $0.00008/gallons/year.

While both SUP categories may or may not be applied to one project, the average FMV for a project which does includes both SUP categories mentioned above, would be obtained by adding the cost of both examples, dividing it by 10 million and multiplying it by 365, since the examples assume a 10 million gallon per day capacity. The calculation is: ($292,500/year + $169,646/yr)/(10,000,000 million gallons/day)/(365 days/year) = $0.00013/gallons/year.

Cost Comparison for Pre-Treatment for an Onshore Desalination Facility

As mentioned above, NOAA surveyed fees assessed by other federal, state, and

local agencies for similar activities but could find no other example of FMV for the use or value of in-situ sand for filtering seawater. Therefore, for comparison purposes to determine a fair market value for the in-situ use of sand as a filter for desalination, NOAA used a 2008 report produced by the Department of Interior Bureau of Reclamation (USBR) that analyzed actual costs for land-based reverse osmosis plants that produce potable water as the next best alternative to an offshore facility (USBR 2008).

Pretreatment is considered the portion of the filtration where water is cleared of impurities in preparation for reverse osmosis. For the purpose of finding a comparative FMV with NOAA's in-situ sediment filtration, we determined that it would be reasonable to compare the FMV of pretreatment at a land-based facility producing 25 MGD with the FMV of pretreatment in-situ for a hypothetical 10 MGD facility similar to one currently proposed on California's Central Coast. The pretreatment cost for the land-based facility is based on annual operating and maintenance costs.

In the land-based example from the USBR study, using the microfiltration method with ultraviolet disinfection, the cost of annual operations and maintenance for land-based pretreatment for a 25 MGD facility would be $3.3M as described in the study (estimating a cost variation for reverse osmosis of +30% to −15% to reflect the confidence interval related to $3.3M). NOAA estimated that this would be equal to a cost of $0.0003616/gal/year.

For the purpose of comparison, NOAA compared the cost of the USBR study site to a hypothetical coastal project that produced 10 MGD, which seems to be a reasonable scale for a future proposed project on the West Coast. The result of this comparison shows that the fees NOAA is proposing for FMV for in-situ sand filtration would be 35% of the costs of pretreatment for a land based facility ($0.0003616 gals/yr) (give or take confidence interval of +30% to −15%), which is the next best alternative.

Cost Comparison for Open Water Intake Desalination Facility

In addition to the comparison method described above for charging for the volume of the pipeline in cubic inches, NOAA also looked at a similar open water pipeline project in Southern California that uses desalination to provide drinking water in order to estimate the magnitude of costs of regulatory compliance (not fair market value) associated with the permitting of desalination facilities in a real-world setting. This open water pipeline project was proposed by Cabrillo, LLC and Poseidon, LLC and received a permit by the California Coastal Commission in 2008. The California State Lands Commission required the project to invest in various offset and restoration efforts to mitigate the impacts of the facility, such as obtaining 25,000 tons of carbon offsets for the construction and operational impacts. In that project, the average offset price from 2011 to 2016 was $14.87 per ton of carbon offset, for a total of $371,750. In addition, the facility was required to restore a minimum of 37 acres of wetlands (up to 55.4 acres) with a non-cancelable deposit of $3.7 million and to provide a deposit of $25,000 to the CSLC to reimburse staff expenses incurred to monitor compliance with the terms of the lease. While these costs associated with environmental compliance are not directly comparable with the FMV proposed for these two SUP categories, they provide context for the scale of costs required by various agencies to permit or authorize large coastal projects such as a desalination plant.

3. Conclusion.

NOAA's application of the alternative methods in this analysis ensures fair market value fee proposals do not make the desalination method using in-situ sand filtration cost-prohibitive relative to other methods. Based on the comparison analysis, the fees that NOAA proposes to charge are comparative, not prohibitively expensive, and less than the existing reasonable alternatives for sand filtration. For a proposed project that would require both SUP category types, NOAA considered the annual costs of the proposed fees based on the examples presented in this notice, and converted them to a dollar per gallon figure that can be applied to future proposed projects of varying size and scale. NOAA determined that the total cost of the fair market value using both SUP category types would amount to approximately $0.00013/gal for a facility of a scale similar to the example used in this notice (*i.e.,* ten 100-foot pipelines for a 10 MGD facility). As stated above, this would be in addition to the potential administrative cost associated with the environmental review, and application review of an SUP.

IV. Request for Comments

NOAA is requesting public comments on whether the addition of two new categories to the requirements of special use permits pursuant to the requirements of Section 310 of the National Marine Sanctuaries Act (16 U.S.C. 1441), which would apply to all coastal national marine sanctuaries with authorization authority, is the appropriate mechanism to allow activities associated with a desalination project. The two new SUP categories would be: (1) The continued presence of a pipeline transporting seawater to or from a desalination facility; and (2) the use of sediment to filter seawater for desalination. NOAA is also requesting comments on the proposed methods to calculate the FMV costs of the use of sanctuary resources.

V. Classification

A. National Environmental Policy Act

NOAA has concluded that this action will not have a significant effect, individually or cumulatively, on the human environment. This action is categorically excluded from the requirement to prepare an Environmental Assessment or Environmental Impact Statement in accordance with Section 6.03c3(i) of NOAA Administrative Order 216–6. Specifically, this action is a notice of an administrative and legal nature. This action would only establish the two new special use permit categories and the methods for calculating fair market value for applicable projects. It does not commit the outcome of any particular federal action taken by NOAA. Furthermore, individual permit actions taken by ONMS will be subject to additional case-by-case analysis, as required under NEPA, which will be completed as new permit applications are submitted for specific projects and activities. In addition, NOAA may, in certain circumstances, combine its special use permit authority with other regulatory authorities to allow activities not described above that may result in environmental impacts and thus require the preparation of an environmental assessment or environmental impact statement. In these situations, NOAA will ensure that the appropriate NEPA documentation is prepared prior to taking final action on a permit or making any irretrievable or irreversible commitment of agency resources. The NEPA analysis would describe the impacts of the full project (*i.e.,* both construction (allowed with an authorization) and operations (allowed with an SUP)).

B. Paperwork Reduction Act

Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject

to the requirements of the Paperwork Reduction Act (PRA), 44 U.S.C. 3501 *et seq.,* unless that collection of information displays a currently valid Office of Management and Budget (OMB) control number. Applications for the special use permits discussed in this notice involve a collection-of information requirement subject to the requirements of the PRA. OMB has approved this collection-of-information requirement under OMB control number 0648–0141. The collection-of-information requirement applies to persons seeking special use permits and is necessary to determine whether the proposed activities are consistent with the terms and conditions of special use permits prescribed by the NMSA. Public reporting burden for this collection of information is estimated to average twenty four (24) hours per response (application, annual report, and financial report), including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This estimate does not include additional time that may be required should the applicant be required to provide information to NOAA for the preparation of documentation that may be required under NEPA.

Authority: 16 U.S.C. 1431 *et seq.*

Dated: January 3, 2017.

John Armor,

Director, Office of National Marine Sanctuaries.

References

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2. ONMS Fair Market Value Analysis for a Fiber Optic Cable Permit in National Marine Sanctuaries, Aug 2002.
3. NOAA Final Notice of Applicability of Special Use Permit Requirements to Certain Categories of Activities Conducted Within the National Marine Sanctuary System; May 2013, online: *http://sanctuaries.noaa.gov/management/fr/78fr25957.pdf.*
4. Moss Landing Marine Lab, Ecological Effects of the Moss Landing Powerplant Thermal Discharge; June 2006.
5. Ballard Marine Construction report prepared for Monterey Regional Water Pollution Control Agency; 2014.
6. Geoscience Technical Memo; South Orange Coastal Ocean Desalination Project—Vertical Infiltration Rate of Ocean Water Migrating Through the Seafloor in the Vicinity of the Slant Well Intake System; 2010.
7. Geoscience NPDES Start-up Report: Marina Slant Test Well Water Discharge to the Monterey Regional Water Pollution Control Agency (MRWPCA) Pacific Ocean Outfall; 2015.
8. Jenkins Consulting Memo, Potential Impacts on Wave and Current Transport Processes Due to Infiltration Rates Induced by the South Orange Coastal Ocean Desalination Project; 2010.
9. Chambers Group Memo: Pretreatment and Design Considerations for Large-Scale Seawater Facilities; 2010, online: *http://www.mwdoc.com/cms2/ckfinder/files/files/Evaluation%20of%20Potential%20Impacts%20%20to%20Marine%20Life%20by%20Slant%20Wells%20-%20MLPA%20DEIR%20Comment%202010-10-13.pdf.*
10. Bureau of Reclamation Report: Pretreatment and Design Considerations for Large-Scale Seawater Facilities, online: *https://www.usbr.gov/research/AWT/reportpdfs/report137.pdf.*
11. NOAA National Centers for Environmental Information Web site; Table 1; online: *https://www.ngdc.noaa.gov/mgg/global/etopo1_ocean_volumes.html.*

[FR Doc. 2017–00515 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–NK–P

DEPARTMENT OF COMMERCE

Patent and Trademark Office

[Docket No. PTO–P–2016–0054]

Request for Comments Regarding the Continuation of the Accelerated Examination Program

AGENCY: United States Patent and Trademark Office, Commerce.

ACTION: Request for comments.

SUMMARY: The United States Patent and Trademark Office (USPTO) is requesting comments from its stakeholders on whether the accelerated examination program should be retained. In an August 16, 2016 notice updating the program to reflect changes in the law and examination practice, the USPTO indicated that the number of accelerated examination requests has been quite low. In particular, in each of the fiscal years 2012–2015, fewer than 250 applications were accepted into the accelerated examination program. Accordingly, the USPTO seeks feedback from its stakeholders on whether the accelerated examination program provides a sufficient benefit to the public to justify the cost of implementation.

Comment Deadline: To be ensured of consideration, written comments must be received on or before March 13, 2017. No public hearing will be held.

Addresses for Comments: Written comments should be sent by electronic mail addressed to *AEcomments2016@uspto.gov.* Comments may also be submitted by mail addressed to: Mail Stop Comments—Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313–1450, marked to the attention of Pinchus Laufer, Senior Legal Advisor, Office of Patent Legal Administration, Office of the Deputy Commissioner for Patent Examination Policy. Although comments may be submitted by mail, the USPTO prefers to receive comments via the Internet.

The comments will be available for public inspection at the Office of the Commissioner for Patents, located in Madison East, Tenth Floor, 600 Dulany Street, Alexandria, Virginia, and will be available via the USPTO Internet Web site at *http://www.uspto.gov.* Because comments will be available for public inspection, information that is not desired to be made public, such as an address or phone number, should not be included in the comments.

FOR FURTHER INFORMATION CONTACT: Pinchus M. Laufer, Senior Legal Advisor ((571) 272–7726) or Matthew Sked, Legal Advisor ((571) 272–7627), Office of Patent Legal Administration, Office of the Deputy Commissioner for Patent Examination Policy.

SUPPLEMENTARY INFORMATION: In August 2006, the USPTO implemented the accelerated examination program under which an application will be advanced out of turn for examination if the applicant files a petition to make special with the appropriate showing. *See Changes to Practice for Petitions in Patent Applications To Make Special and for Accelerated Examination,* 71 FR 36323 (June 26, 2006). The program proved to be relatively popular as it was one of the few options an applicant had to expedite examination. The program was recently updated on August 16, 2016, to reflect changes in the law and examination practice. *See Changes in Accelerated Examination Practice,* 81 FR 54564 (August 16, 2016).

On September 26, 2011, the USPTO implemented the prioritized examination program (referred to as ''Track One''), provided for in the Leahy-Smith America Invents Act (AIA). *See Changes to Implement the Prioritized Examination Track (Track I) of the Enhanced Examination Timing Control Procedures under the Leahy-Smith America Invents Act,* 76 FR 59050 (September 23, 2011). Track One also provides the ability to advance an application out of turn, but without an applicant having to meet the requirements of the accelerated examination program, such as performing a pre-examination search. Under Track One, applicants simply pay

an additional fee. In each of the past few fiscal years since Track One was implemented (fiscal years 2012–2015), fewer than 250 applications have met the requirements to take advantage of the accelerated examination program. In contrast, Track One has become a much more popular program than accelerated examination in that the number of requests approaches 10,000 annually over this same time.

Additionally, over this period, the overall first action pendency for newly filed applications has dropped incrementally each year. In particular, the overall first action pendency in fiscal year 2015 was approximately 17 months. A lower first action pendency and lower accelerated examination numbers seem to indicate that applicants have less need for as many programs that expedite patent examination.

Due to the low usage of the accelerated examination program, the reduction in overall first action pendency, the popularity of the Track One program, and the inconvenience to practitioners and the USPTO of retaining a seemingly redundant program with its own special handling procedures (See MPEP 708.02(a)), it is unclear whether the accelerated examination program still provides a sufficient benefit to the public to justify the cost of implementation. Accordingly, the USPTO seeks comments from the public on whether the accelerated examination program should be retained or discontinued.

Dated: January 9, 2017.

Michelle K. Lee,

Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office.

[FR Doc. 2017–00568 Filed 1–11–17; 8:45 am]

BILLING CODE 3510–16–P

CORPORATION FOR NATIONAL AND COMMUNITY SERVICE

Information Collection; Submission for OMB Review, Comment Request

AGENCY: Corporation for National and Community Service.

ACTION: Notice.

SUMMARY: The Corporation for National and Community Service (CNCS) has submitted a public information collection request (ICR) entitled ''Independent Living Performance Measures Aggregation Tool'' for review and approval in accordance with the Paperwork Reduction Act of 1995, Public Law 104–13, (44 U.S.C. Chapter 35). Copies of this ICR, with applicable supporting documentation, may be obtained by calling the Corporation for National and Community Service, Jill Sears, at 202–606–7577 or email to *jsears@cns.gov.* Individuals who use a telecommunications device for the deaf (TTY–TDD) may call 1–800–833–3722 between 8:00 a.m. and 8:00 p.m. Eastern Time, Monday through Friday.

DATES: Comments may be submitted, identified by the title of the information collection activity, by February 13, 2017.

ADDRESSES: Comments may be submitted, identified by the title of the information collection activity, to the Office of Information and Regulatory Affairs, Attn: Ms. Sharon Mar, OMB Desk Officer for the Corporation for National and Community Service, by any of the following two methods within 30 days from the date of publication in the **Federal Register**:

(1) *By fax to:* 202–395–6974, Attention: Ms. Sharon Mar, OMB Desk Officer for the Corporation for National and Community Service; or

(2) *By email to: smar@omb.eop.gov.*

SUPPLEMENTARY INFORMATION: The OMB is particularly interested in comments which:

- Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of CNCS, including whether the information will have practical utility;
- Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
- Propose ways to enhance the quality, utility, and clarity of the information to be collected; and
- Propose ways to minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Comments

A 60-day Notice requesting public comment was published in the **Federal Register** on May 19, 2016 at 81 FR 97. This comment period ended July 18, 2016. No public comments were received from this Notice.

Description: Senior Companion Program grantees are required to use the currently cleared surveys to solicit outcome data from clients and caregivers served by Senior Companion volunteers.

Type of Review: Renewal.

Agency: Corporation for National and Community Service.

Title: Independent Living Performance Measures Aggregation Tool and Independent Living and Respite Surveys.

OMB Number: 3045–0152.

Agency Number: None.

Affected Public: Senior Companion Program grantees.

Total Respondents: 53,470.

Frequency: Once.

Average Time per Response: 30 minutes.

Estimated Total Burden Hours: 26,735 hours.

Total Burden Cost (capital/startup): None.

Total Burden Cost (operating/maintenance): None.

Dated: January 6, 2017.

Erin McGrath,

Senior Corps Deputy Director.

[FR Doc. 2017–00569 Filed 1–11–17; 8:45 am]

BILLING CODE 6050–28–P

DEPARTMENT OF DEFENSE

Defense Acquisition Regulations System

Early Engagement Opportunity: Implementation of National Defense Authorization Act for Fiscal Year 2017

AGENCY: Department of Defense (DoD).

ACTION: Notice.

SUMMARY: DoD announces an early engagement opportunity regarding implementation of the National Defense Authorization Act for Fiscal Year 2017 within the acquisition regulations.

DATES: Early inputs should be submitted in writing to the address shown below on or before February 13, 2017.

ADDRESSES: Submit early inputs via the Defense Acquisition Regulations System (DARS) Web site at *http://www.acq.osd.mil/dpap/dars/index.html.*

FOR FURTHER INFORMATION CONTACT: Send inquiries via email to Ms. Jennifer Hawes at *osd.dfars@mail.mil* and reference ''Early Engagement Opportunity: Implementation of National Defense Authorization Act for Fiscal Year 2017'' in the subject line.

SUPPLEMENTARY INFORMATION: DoD is providing an opportunity for the public to provide early inputs on implementation of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2017 within the acquisition regulations. The public is invited to submit early inputs on sections of the NDAA for FY 2017 via the DARS Web

site at *http://www.acq.osd.mil/dpap/dars/index.html.* The Web site will be updated when early inputs will no longer be accepted. Please note, this venue does not replace or circumvent the rulemaking process; DARS will engage in formal rulemaking, in accordance with 41 U.S.C. 1303, when it has been determined that rulemaking is required to implement a section of the NDAA for FY 2017 within the acquisition regulations.

Jennifer L. Hawes,

Editor, Defense Acquisition Regulations System.

[FR Doc. 2017–00571 Filed 1–11–17; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF DEFENSE

Office of the Secretary

Board of Regents, Uniformed Services University of the Health Sciences; Notice of Federal Advisory Committee Meeting

AGENCY: Department of Defense; Uniformed Services University of the Health Sciences (''the University'').

ACTION: Quarterly meeting notice.

SUMMARY: The Department of Defense is publishing this notice to announce the following meeting of the Board of Regents, Uniformed Services University of the Health Sciences (''the Board'').

DATES: Thursday, February 2, 2017, from 2:00 p.m. to 4:05 p.m. (Open Session) and 4:10 p.m. to 4:40 p.m. (Closed Session).

ADDRESSES: The Emily Morgan Hotel, 705 East Houston Street, San Antonio, Texas 78205.

FOR FURTHER INFORMATION CONTACT: Jennifer Nuetzi James, Designated Federal Officer, 4301 Jones Bridge Road, A1020, Bethesda, Maryland 20814; telephone 301–295–3066; email *jennifer.nuetzi-james@usuhs.edu.*

SUPPLEMENTARY INFORMATION: This meeting notice is being published under the provisions of the Federal Advisory Committee Act of 1972 (5 U.S.C., Appendix, as amended), the Government in the Sunshine Act of 1976 (5 U.S.C. 552b, as amended), and 41 CFR 102–3.150.

Purpose of the Meeting: The purpose of the meeting is to provide advice and recommendations to the Secretary of Defense, through the Under Secretary of Defense for Personnel and Readiness, on academic and administrative matters critical to the full accreditation and successful operation of the University. These actions are necessary for the University to pursue its mission, which is to educate, train and comprehensively prepare uniformed services health professionals, officers, scientists and leaders to support the Military and Public Health Systems, the National Security and National Defense Strategies of the United States, and the readiness of our Uniformed Services.

Agenda: The actions scheduled to occur include the review of the minutes from the Board meeting held on November 1, 2016; recommendations regarding the awarding of post-baccalaureate degrees; recommendations regarding the approval of faculty appointments and promotions; and recommendations regarding award nominations. The University President will provide a report on recent actions affecting academic and operational aspects of the University. There will be reports from the University Vice President for Research, the University Vice President for Finance and Administration, and the University Vice President for Information and Education. There will be a report on the University Interprofessional Education, and the meeting will conclude with a report on the University Defense Health Horizons. A closed session will be held, after the open session, to discuss active investigations and personnel actions.

Meeting Accessibility: Pursuant to Federal statutes and regulations (5 U.S.C. Appendix, 5 U.S.C. 552b, and 41 CFR 102–3.140 through 102–3.165) and the availability of space, the meeting is open to the public from 2:00 p.m. to 4:05 p.m. Seating is on a first-come basis. Members of the public wishing to attend the meeting should contact Jennifer Nuetzi James no later than five business days prior to the meeting, at the address and phone number noted in the **FOR FURTHER INFORMATION CONTACT** section.

Pursuant to 5 U.S.C. 552b(c)(2, 5–7), the Department of Defense has determined that the portion of the meeting from 4:10 p.m. to 4:40 p.m. shall be closed to the public. The Under Secretary of Defense (Personnel and Readiness), in consultation with the Office of the Department of Defense General Counsel, has determined in writing that this portion of the Board's meeting will be closed as the discussion will disclose sensitive personnel information, will include matters that relate solely to the internal personnel rules and practices of the agency, will involve allegations of a person having committed a crime or censuring an individual, and may disclose investigatory records compiled for law enforcement purposes.

Written Statements: Pursuant to section 10(a)(3) of the Federal Advisory Committee Act of 1972 and 41 CFR 102–3.140, the public or interested organizations may submit written comments to the Board about its approved agenda pertaining to this meeting or at any time regarding the Board's mission. Individuals submitting a written statement must submit their statement to the Designated Federal Officer at the address listed in the **FOR FURTHER INFORMATION CONTACT** contact. Written statements that do not pertain to a scheduled meeting of the Board may be submitted at any time. However, if individual comments pertain to a specific topic being discussed at the planned meeting, then these statements must be received at least 5 calendar days prior to the meeting, otherwise, the comments may not be provided to or considered by the Board until a later date. The Designated Federal Officer will compile all timely submissions with the Board's Chair and ensure such submissions are provided to Board Members before the meeting.

Dated: January 9, 2017.

Aaron Siegel,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 2017–00524 Filed 1–11–17; 8:45 am]

BILLING CODE 5001–06–P

DEPARTMENT OF ENERGY

[FE Docket No. 16–144–LNG]

Driftwood LNG, LLC; Application for Long-Term, Multi-Contract Authorization To Export Liquefied Natural Gas to Non-Free Trade Agreement Nations

AGENCY: Office of Fossil Energy, DOE.

ACTION: Notice of application.

SUMMARY: The Office of Fossil Energy (FE) of the Department of Energy (DOE) gives notice of receipt of an application (Application), filed on September 28, 2016, by Driftwood LNG, LLC (Driftwood LNG), requesting long-term, multi-contract authorization to export domestically produced liquefied natural gas (LNG) in a volume equivalent to 1,496.5 billion cubic feet per year (Bcf/yr) of natural gas (4.1 Bcf per day). Driftwood LNG seeks authorization to export the LNG by vessel from the proposed Driftwood LNG Facility to be located in Calcasieu Parish, Louisiana, approximately five miles south of the town of Carlyss, Louisiana. Driftwood LNG requests authorization to export LNG to any nation with which the United States does not have a free trade

agreement (FTA) that requires national treatment for trade in natural gas and with which trade is not prohibited by U.S. law or policy (non-FTA countries) for a 20-year term to commence on the earlier of the date of first export or seven years from the date the requested authorization is issued. Driftwood LNG seeks to export this LNG on its own behalf and as agent for other entities who hold title to the LNG at the time of export. The Application was filed under section 3 of the Natural Gas Act (NGA). Additional details can be found in the Application, posted on the DOE/FE Web site at: *http://www.energy.gov/fe/downloads/driftwood-lng-llc-fe-dkt-16-144-lng.* Protests, motions to intervene, notices of intervention, and written comments are invited.

DATES: Protests, motions to intervene or notices of intervention, as applicable, requests for additional procedures, and written comments are to be filed using procedures detailed in the Public Comment Procedures section no later than 4:30 p.m., Eastern time, March 13, 2017.

ADDRESSES:

Electronic Filing by email: fergas@hq.doe.gov.

Regular Mail: U.S. Department of Energy (FE–34), Office of Regulation and International Engagement, Office of Fossil Energy, P.O. Box 44375, Washington, DC 20026–4375.

Hand Delivery or Private Delivery Services (*e.g.,* FedEx, UPS, etc.) U.S. Department of Energy (FE–34), Office of Regulation and International Engagement, Office of Fossil Energy, Forrestal Building, Room 3E–042, 1000 Independence Avenue SW., Washington, DC 20585.

FOR FURTHER INFORMATION CONTACT:

Kyle W. Moorman or Larine Moore, U.S. Department of Energy (FE–34) Office of Regulation and International Engagement, Office of Fossil Energy, Forrestal Building, Room 3E–042, 1000 Independence Avenue SW., Washington, DC 20585, (202) 586–7970; (202) 586–9578.

Cassandra Bernstein, U.S. Department of Energy (GC–76) Office of the Assistant General Counsel for Electricity and Fossil Energy, Forrestal Building1000 Independence Avenue SW., Washington, DC 20585, (202) 586–9793.

SUPPLEMENTARY INFORMATION: In the Application, Driftwood LNG also requests authorization to export the same cumulative volume of LNG to any country that currently has, or in the future may enter into, a FTA requiring national treatment for trade in natural gas, and with which trade is not prohibited by U.S. law or policy (FTA countries) for a term of 30 years. DOE/FE will review that request separately pursuant to section 3(c) of the Natural Gas Act, 15 U.S.C. 717b(c). The requested volumes in the FTA portion and NFTA portion of the Application are not additive.

DOE/FE Evaluation

The Application will be reviewed pursuant to section 3(a) of the NGA, 15 U.S.C. 717b(a), and DOE will consider any issues required by law or policy. To the extent determined to be relevant, these issues will include the domestic need for the natural gas proposed to be exported, the adequacy of domestic natural gas supply, and U.S. energy security. DOE may also consider other factors bearing on the public interest, including the impact of the proposed exports on the U.S. economy and international considerations, and whether the authorization is consistent with DOE's policy of promoting competition in the marketplace by allowing commercial parties to freely negotiate their own trade arrangements. As part of this analysis, DOE will consider the following two studies examining the cumulative impacts of exporting domestically produced LNG:

- *Effect of Increased Levels of Liquefied Natural Gas on U.S. Energy Markets,* conducted by the U.S. Energy Information Administration upon DOE's request (2014 EIA LNG Export Study);[1] and
- *The Macroeconomic Impact of Increasing U.S. LNG Exports,* conducted jointly by the Center for Energy Studies at Rice University's Baker Institute for Public Policy and Oxford Economics, on behalf of DOE (2015 LNG Export Study).[2]

Additionally, DOE will consider the following environmental documents:

- *Addendum to Environmental Review Documents Concerning Exports of Natural Gas From the United States, 79 FR 48132 (Aug. 15, 2014);*[3] and
- *Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States,* 79 FR 32260 (June 4, 2014).[4]

Parties that may oppose this Application should address these issues in their comments and/or protests, as well as other issues deemed relevant to the Application.

The National Environmental Policy Act (NEPA), 42 U.S.C. 4321 *et seq.,* requires DOE to give appropriate consideration to the environmental effects of its proposed decisions. No final decision will be issued in this proceeding until DOE has met its environmental responsibilities.

Public Comment Procedures

In response to this Notice, any person may file a protest, comments, or a motion to intervene or notice of intervention, as applicable. Due to the complexity of the issues raised by the Applicant, interested persons will be provided 60 days from the date of publication of this Notice in which to submit comments, protests, motions to intervene, or notices of intervention.

Any person wishing to become a party to the proceeding must file a motion to intervene or notice of intervention. The filing of comments or a protest with respect to the Application will not serve to make the commenter or protestant a party to the proceeding, although protests and comments received from persons who are not parties will be considered in determining the appropriate action to be taken on the Application. All protests, comments, motions to intervene, or notices of intervention must meet the requirements specified by the regulations in 10 CFR part 590.

Filings may be submitted using one of the following methods: (1) Emailing the filing to *fergas@hq.doe.gov,* with FE Docket No. 16–144–LNG in the title line; (2) mailing an original and three paper copies of the filing to the Office of Regulation and International Engagement at the address listed in **ADDRESSES**; or (3) hand delivering an original and three paper copies of the filing to the Office of Regulation and International Engagement at the address listed in **ADDRESSES**. All filings must include a reference to FE Docket No. 16–144–LNG. PLEASE NOTE: If submitting a filing via email, please include all related documents and attachments (*e.g.,* exhibits) in the original email correspondence. Please do not include any active hyperlinks or password protection in any of the documents or attachments related to the filing. All electronic filings submitted to DOE must follow these guidelines to ensure that all documents are filed in a timely manner. Any hardcopy filing submitted greater in length than 50 pages must also include, at the time of the filing, a digital copy on disk of the entire submission.

A decisional record on the Application will be developed through responses to this notice by parties,

[1] The 2014 EIA LNG Export Study, published on Oct. 29, 2014, is available at: *https://www.eia.gov/analysis/requests/fe/.*

[2] The 2015 LNG Export Study, dated Oct. 29, 2015, is available at: *http://energy.gov/sites/prod/files/2015/12/f27/20151113_macro_impact_of_lng_exports_0.pdf.*

[3] The Addendum and related documents are available at: *https://energy.gov/fe/addendum-environmental-review-documents-concerning-exports-natural-gas-united-states.*

[4] The Life Cycle Greenhouse Gas Report is available at: *http://energy.gov/fe/life-cycle-greenhouse-gas-perspective-exporting-liquefied-natural-gas-united-states.*

including the parties' written comments and replies thereto. Additional procedures will be used as necessary to achieve a complete understanding of the facts and issues. If an additional procedure is scheduled, notice will be provided to all parties. If no party requests additional procedures, a final Opinion and Order may be issued based on the official record, including the Application and responses filed by parties pursuant to this notice, in accordance with 10 CFR 590.316.

The Application is available for inspection and copying in the Office of Regulation and International Engagement docket room, Room 3E–042, 1000 Independence Avenue SW., Washington, DC 20585. The docket room is open between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays.

The Application and any filed protests, motions to intervene or notice of interventions, and comments will also be available electronically by going to the following DOE/FE Web address: *http://www.fe.doe.gov/programs/gasregulation/index.html.*

Issued in Washington, DC, on January 6, 2017.

John A. Anderson,

Director, Office of Regulation and International Engagement, Office of Oil and Natural Gas.

[FR Doc. 2017–00531 Filed 1–11–17; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Orders Granting Authority To Import and Export Natural Gas, To Import and Export Liquefied Natural Gas, and Vacating Authority During November 2016

AGENCY: Office of Fossil Energy, Department of Energy.

ACTION: Notice of orders.

	FE Docket Nos.
CONSTELLATION ENERGY SERVICES, INC	15–40–NG
CNE GAS SUPPLY, LLC	15–76–NG
CNE GAS SUPPLY, LLC	16–14–NG
BG ENERGY MERCHANTS, LLC	16–74–NG
MAGNOLIA LNG, LLC	13–132–LNG
NORTHWESTERN CORPORATION d/b/a NORTHWESTERN ENERGY	16–142–NG
ENERGIA DE CHIHUAHUA, S.A. DE C.V	6–159–NG
GDF SUEZ ENERGY MARKETING NA, INC	16–161–NG
ALLIANCE PIPELINE L.P	16–149–NG
ACCESS GAS SERVICES (ONTARIO) INC	16–148–NG
BOSTON GAS CO. d/b/a NATIONAL GRID	16–150–NG
NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID	16–155–NG
SEMCO ENERGY, INC., d/b/a SEMCO ENERGY GAS COMPANY	16–143–NG
UGI ENERGY SERVICES	16–145–NG
VITOL INC.	16–160–NG
MEXICANA DE COBRE, S.A. DE C.V	16–163–NG
COLONIAL GAS COMPANY d/b/a NATIONAL GRID	16–151–NG
THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID	16–152–NG
KEYSPAN GAS EAST CORPORATION d/b/a NATIONAL GRID	16–154–NG
THE BROOKLYN UNION GAS COMPANY d/b/a NATIONAL GRID	16–153–NG
ENERGIA DE BAJA CALIFORNIA, S. de R.L. DE C.V	16–162–NG
SEQUENT ENERGY MANAGEMENT, L.P	16–158–NG
EXELON GENERATION COMPANY, LLC	16–166–NG
SPECTRUM LNG LLC	16–186–LNG
CARIB ENERGY	16–98–LNG
POWEREX CORP.	16–170–NG
BP ENERGY COMPANY	16–171–NG
HUSKY MARKETING AND SUPPLY COMPANY	16–179–NG
STAND ENERGY CORPORATION	16–168–NG
CENTRAL GENERADORA ELECTRICA HUINALA, S. DE R.L. DE C.V.	16–172–NG
FERUS NATURAL GAS FUELS (CNG), LLC	16–169–NG
CASTLETON COMMODITIES MERCHANT TRADING L.P.	16–175–NG
DIRECT ENERGY BUSINESS MARKETING, LLC	16–174–NG
MC GLOBAL GAS CORPORATION	16–167–LNG
UNITED ENERGY TRADING, LLC	16–185–NG
MPOWER ENERGY	16–184–NG
MANSFIELD POWER AND GAS, LLC	16–183–NG
TRANSALTA ENERGY MARKETING CORP	16–180–NG

SUMMARY: The Office of Fossil Energy (FE) of the Department of Energy gives notice that during November 2016, it issued orders granting authority to import and export natural gas, to import and export liquefied natural gas (LNG), and vacating authority. These orders are summarized in the attached appendix and may be found on the FE Web site at *http://energy.gov/fe/listing-doefe-authorizationsorders-issued-2016.*

They are also available for inspection and copying in the U.S. Department of Energy (FE–34), Division of Natural Gas Regulation, Office of Regulation and International Engagement, Office of Fossil Energy, Docket Room 3E–033,

Forrestal Building, 1000 Independence Avenue SW., Washington, DC 20585, (202) 586–9478. The Docket Room is open between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays.

Issued in Washington, DC, on January 6, 2017.

John A. Anderson,

Director, Office of Regulation and International Engagement, Office of Oil and Natural Gas.

Appendix

DOE/FE ORDERS GRANTING IMPORT/EXPORT AUTHORIZATIONS

3619–A	11/18/16	15–40–NG	Constellation Energy Services, Inc.	Order 3619–A vacating blanket authority to import natural gas from Canada.
3653–A	11/10/16	15–76–NG	CNE Gas Supply, LLC	Order 3653–A vacating blanket authority to import natural gas from Canada.
3790–A	11/10/16	16–14–NG	CNE Gas Supply, LLC	Order 3790–A vacating blanket authority to import natural gas from Canada.
3841–A	11/10/16	16–74–NG	BG Energy Merchants, LLC	Order 3841–A vacating blanket authority to import/export natural gas from/to Canada/Mexico.
3909	11/30/16	13–132–LNG	Magnolia LNG, LLC	Opinion and Order 3909 granting Long-term Multi-contract authority to export LNG by vessel from the Proposed Magnolia LNG Terminal to be Constructed in Lake Charles, Louisiana, to Non-free Trade Agreement Nations.
3918	11/04/16	16–142–NG	Northwestern Corporation d/b/a Northwestern Energy.	Order 3918 granting blanket authority to import/export natural gas from/to Canada.
3919	11/04/16	16–159–NG	Energia Chihuahua, S.A. de C.V.	Order 3919 granting blanket authority to export natural gas to Mexico.
3920	11/04/16	16–161–NG	GDF Suez Energy Marketing NA, Inc.	Order 3920 granting blanket authority to export natural gas to Mexico.
3921	11/04/16	16–149–NG	Alliance Pipeline L.P.	Order 3921 granting blanket authority to import natural gas from Canada.
3922	11/10/16	16–148–NG	Access Gas Services (Ontario) Inc.	Order 3922 granting blanket authority to import/export natural gas from/to Canada.
3923	11/10/16	16–150–NG	Boston Gas Co. (National Grid).	Order 3923 granting blanket authority to import/export natural gas from/to Canada.
3924	11/10/16	16–155–NG	Niagara Mohawk Power Corporation d/b/a National Grid.	Order 3924 granting blanket authority to import/export natural gas from/to Canada.
3925	11/14/16	16–143–NG	SEMCO Energy, Inc., d/b/a SEMCO Energy Gas Company.	Order 3925 granting blanket authority to import/export natural gas from/to Canada.
3926	11/14/16	16–145–NG	UGI Energy Services	Order 3926 granting blanket authority to import natural gas from Canada by pipeline and to import/export LNG from/to Canada by truck.
3927	11/14/16	16–160–NG	Vitol Inc.	Order 3927 granting blanket authority import/export natural gas from/to Canada.
3928	11/14/16	16–163–NG	Mexicana de Cobre, S.A. de C.V.	Order 3928 granting blanket authority to export natural gas to Mexico.
3929	11/14/16	16–151–NG	Colonial Gas Company d/b/a National Grid.	Order 3929 granting blanket authority to import/export natural gas from/to Canada.
3930	11/14/16	16–152–NG	The Narragansett Electric Company d/b/a National Grid.	Order 3930 granting blanket authority to import/export natural gas from/to Canada.
3931	11/15/16	16–154–NG	KeySpan Gas East Corporation d/b/a National Grid.	Order 3931 granting blanket authority to import/export natural gas from/to Canada.
3932	11/15/16	16–153–NG	The Brooklyn Union Gas Company d/b/a National Grid.	Order 3932 granting blanket authority to import/export natural gas from/to Canada.
3933	11/15/16	16–162–NG	Energia de Baja California, S. de R.L. de C.V.	Order 3933 granting blanket authority to export natural gas to Mexico.
3934	11/15/16	16–158–NG	Sequent Energy Management, L.P.	Order 3934 granting blanket authority to import natural gas from Mexico and to export natural gas to Canada.
3935	11/17/16	16–166–NG	Exelon Generation Company, LLC.	Order 3935 granting blanket authority to import/export natural gas from/to Canada.
3936	11/17/16	16–186–LNG	Spectrum LNG LLC	Order 3936 granting blanket authority to export LNG to Mexico by truck.
3937	11/17/16	16–98–LNG	Carib Energy	Opinion and Order 3937 Long-term Multi-contract authority to export LNG by vessel from the Proposed Magnolia LNG Terminal to be Constructed in Lake Charles, Louisiana, to Non-free Trade Agreement Nations; and also Record of Decision.
3938	11/28/16	16–170–NG	Powerex Corp.	Order 3938 granting blanket authority to import/export natural gas from/to Canada/Mexico.
3939	11/28/16	16–171–NG	BP Energy Company	Order 3939 granting blanket authority to import/export natural gas from/to Canada/Mexico.

DOE/FE ORDERS GRANTING IMPORT/EXPORT AUTHORIZATIONS—Continued

3940	11/28/16	16–179–NG	Husky Marketing and Supply Company.	Order 3940 granting blanket authority to import/export natural gas from/to Canada.
3941	11/28/16	16–168–NG	Stand Energy Corporation	Order 3941 granting blanket authority to import/export natural gas from/to Canada/Mexico.
3943	11/28/16	16–172–NG	Central Generadora Electrica Huinala, S. de R.L. de C.V.5.	Order 3943 granting blanket authority to export natural gas to Mexico.
3944	11/28/16	16–169–NG	Ferus Natural Gas Fuels (CNG), LLC.	Order 3944 granting blanket authority to import/export natural gas from/to Canada.
3945	11/28/16	16–175–NG	Castleton Commodities Merchant Trading L.P.	Order 3945 granting blanket authority to import/export natural gas from/to Canada/Mexico.
3946	11/28/16	16–174–NG	Direct Energy Business Marketing, LLC.	Order 3946 granting blanket authority to import/export natural gas from/to Canada.
3947	11/28/16	16–167–NG	MC Global Gas Corporation	Order 3947 granting blanket authority to import LNG from various international sources by vessel.
3948	11/29/16	16–185–NG	United Energy Trading, LLC	Order 3948 granting blanket authority to import/export natural gas from/to Canada.
3949	11/29/16	16–184–NG	MPower Energy	Order 3949 granting blanket authority to import/export natural gas from/to Canada.
3950	11/29/16	16–183–NG	Mansfield Power and Gas, LLC.	Order 3950 granting blanket authority to import/export natural gas from/to Canada.
3951	11/29/16	16–180–NG	TransAlta Energy Marketing Corp.	Order 3951 granting blanket authority to import/export natural gas from/to Canada.

[FR Doc. 2017–00528 Filed 1–11–17; 8:45 am]
BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Energy Information Administration

CIPSEA Confidentiality Pledge Revision Notice

AGENCY: U.S. Energy Information Administration (EIA), Department of Energy

ACTION: Notice of Revision of Confidentiality Pledges under the Confidential Information Protection and Statistical Efficiency Act

SUMMARY: EIA is announcing revisions to the confidentiality pledge(s) it provides to its respondents under the Confidential Information Protection and Statistical Efficiency Act. These revisions are required by the passage and implementation of provisions of the Federal Cybersecurity Enhancement Act of 2015 which permit and require the Secretary of the Department of Homeland Security (DHS) to provide Federal civilian agencies' information technology systems with cybersecurity protection for their Internet traffic.

DATES: These revisions become effective upon publication of this notice in the **Federal Register**.

ADDRESSES: Questions about this notice should be addressed to Jacob Bournazian, U.S. Energy Information Administration, 1000 Independence Avenue SW., Washington, DC 20585 or by fax at 202–586–3045 or by email at *jacob.bournazian@eia.gov.*

FOR FURTHER INFORMATION CONTACT: Jacob Bournazian, U.S. Energy Information Administration, 1000 Independence Avenue SW., Washington, DC 20585, phone: 202–586–5562 (this is not a toll-free number), email: *jacob.bournazian@eia.gov.* Because of delays in the receipt of regular mail related to security screening, respondents are encouraged to use electronic communications.

SUPPLEMENTARY INFORMATION: Under 44 U.S.C. 3506(e), and 44 U.S.C. 3501 (note), EIA is revising the confidentiality pledge(s) it provides to its respondents under the Confidential Information Protection and Statistical Efficiency Act (44 U.S.C. 3501 (note)) (CIPSEA). These revisions are required by provisions of the Federal Cybersecurity Enhancement Act of 2015 (Pub. L. 114–11, Division N, Title II, Subtitle B, Sec. 223), which permit and require the Secretary of the Department of Homeland Security (DHS) to provide Federal civilian agencies' information technology systems with cybersecurity protection for their Internet traffic. Federal statistics provide key information that the Nation uses to measure its performance and make informed choices about budgets, employment, health, investments, taxes, and a host of other significant topics. The overwhelming majority of Federal surveys are conducted on a voluntary basis. Respondents, ranging from businesses to households to institutions, may choose whether or not to provide the requested information. Many of the most valuable Federal statistics come from surveys that ask for highly sensitive information such as proprietary business data from companies or particularly personal information or practices from individuals. Strong and trusted confidentiality and exclusively statistical use pledges under the Confidential Information Protection and Statistical Efficiency Act (CIPSEA) and similar statistical confidentiality pledges are effective and necessary in honoring the trust that businesses, individuals, and institutions, by their responses, place in statistical agencies.

Under CIPSEA and similar statistical confidentiality protection statutes, many Federal statistical agencies make statutory pledges that the information respondents provide will be seen only by statistical agency personnel or their sworn agents, and will be used only for statistical purposes. CIPSEA and similar statutes protect the confidentiality of information that agencies collect solely for statistical purposes and under a pledge of confidentiality. These acts protect such statistical information from administrative, law enforcement, taxation, regulatory, or any other non-statistical use and immunize the information submitted to statistical agencies from legal process. Moreover, many of these statutes carry criminal penalties of a Class E felony (fines up to $250,000, or up to five years in prison, or both) for conviction of a knowing and willful unauthorized disclosure of covered information.

As part of the Consolidated Appropriations Act for Fiscal Year 2016 signed on December 17, 2015, the Congress included the Federal Cybersecurity Enhancement Act of 2015 (Pub. L. 114–11, Division N, Title II,

Subtitle B, Sec. 223). This Act, among other provisions, permits and requires DHS to provide Federal civilian agencies' information technology systems with cybersecurity protection for their Internet traffic. The technology currently used to provide this protection against cyber malware is known as Einstein 3A; it electronically searches Internet traffic in and out of Federal civilian agencies in real time for malware signatures.

When such a signature is found, the Internet packets that contain the malware signature are moved to a secured area for further inspection by DHS personnel. Because it is possible that such packets entering or leaving a statistical agency's information technology system may contain a small portion of confidential statistical data, statistical agencies can no longer promise their respondents that their responses will be seen only by statistical agency personnel or their sworn agents. However, they can promise, in accordance with provisions of the Federal Cybersecurity Enhancement Act of 2015, that such monitoring can be used only to protect information and information systems from cybersecurity risks, thereby, in effect, providing stronger protection to the integrity of the respondents' submissions.

The DHS cybersecurity program's objective is to protect Federal civilian information systems from malicious malware attacks. The Federal statistical system's objective is to ensure that the DHS Secretary performs those essential duties in a manner that honors the Government's statutory promises to the public to protect their confidential data. Given that the Department of Homeland Security is not a Federal statistical agency, both DHS and the Federal statistical system worked to balance both objectives and achieve these mutually reinforcing objectives.

Accordingly, DHS and Federal statistical agencies, in cooperation with their parent departments, developed a Memorandum of Agreement for the installation of Einstein 3A cybersecurity protection technology to monitor their Internet traffic. However, EIA's current CIPSEA statistical confidentiality pledge promises that respondents' data will be seen only by statistical agency personnel or their sworn agents. Since it is possible that DHS personnel could see some portion of those confidential data in the course of examining the suspicious Internet packets identified by Einstein 3A sensors, EIA needs to revise its confidentiality pledge to reflect this process change.

Therefore, EIA is providing this notice to alert the public of this revision in its confidentiality pledge in an efficient and coordinated fashion. Below is a listing of EIA's current Paperwork Reduction Act OMB numbers and information collection titles and their associated revised confidentiality pledge(s) for the Information Collections whose confidentiality pledges will change to reflect the statutory implementation of DHS' Einstein 3A monitoring for cybersecurity protection purposes.

The following EIA statistical confidentiality pledge will now apply to the Information Collections whose Paperwork Reduction Act Office of Management and Budget numbers and titles are listed below.

The information you provide on Form EIA–XXX will be used for statistical purposes only and is confidential by law. In accordance with the Confidential Information Protection and Statistical Efficiency Act of 2002 and other applicable Federal laws, your responses will not be disclosed in identifiable form without your consent. Per the Federal Cybersecurity Enhancement Act of 2015, Federal information systems are protected from malicious activities through cybersecurity screening of transmitted data. Every EIA employee, as well as every agent, is subject to a jail term, a fine, or both if he or she makes public ANY identifiable information you reported.

OMB No: 1905–0174 Petroleum Marketing Program
- Form EIA–863, ''Petroleum Product Sales Identification Survey''
- Form EIA–878, ''Motor Gasoline Price Survey''
- Form EIA–888, ''On-Highway Diesel Fuel Price Survey''

OMB No: 1905–0175 Natural Gas Data Collection Program
- Form EIA–910, ''Monthly Natural Gas Marketers Survey''
- Form EIA–912, ''Weekly Underground Natural Gas Storage Report''

OMB No: 1905–0205 Monthly Natural Gas Production Report
- Form EIA–914, ''Monthly Crude Oil, Lease Condensate, and Natural Gas Production Report''

OMB No: 1905–0160 Uranium Data Program
- Form EIA–851Q, ''Domestic Uranium Production Report—Quarterly''
- Form EIA–851A, ''Domestic Uranium Production Report—Annual''
- Form EIA–858, ''Uranium Marketing Annual Survey''

OMB No: 1905–0145 Commercial Buildings Energy Consumption Survey
- Form EIA–871, ''Commercial Buildings Energy Consumption Survey''

OMB No. 1905–0092 Residential Energy Consumption Survey
- Form EIA–457, ''Residential Energy Consumption Survey''

The pledge provided to respondents over the telephone is shorter for the respondents to Forms EIA–878 and EIA–888. The statistical confidentiality pledge for collecting information over the telephone reads:

The information you provide on Form EIA–xxx will be used for statistical purposes only. Your responses will be kept confidential and will not be disclosed in identifiable form. Per the Federal Cybersecurity Enhancement Act of 2015, Federal information systems are protected from malicious activities through cybersecurity screening of transmitted data. By law, every EIA employee, as well as every agent, is subject to a jail term, a fine, or both if he or she makes public ANY identifiable information you reported.

Issued in Washington, DC, on December 28, 2016.

Nanda Srinivasan,

Director, Office of Survey Development and Statistical Integration, U.S. Energy Information Administration.

[FR Doc. 2016–31974 Filed 1–11–17; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. OR17–4–000]

QEP Field Services, LLC; Notice of Request for Temporary Waiver

Take notice that on January 5, 2017, pursuant to Rule 204 of the Federal Energy Regulatory Commission's (Commission) Rules of Practice and Procedure, 18 CFR 385.204, QEP Field Services, LLC (Petitioner) filed a petition for temporary waiver of the tariff filing and reporting requirements of sections 6 and 20 of the Interstate Commerce Act and parts 341 and 357 of the Commission's regulations for the Belfield Gathering System, as more fully explained in the petition.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. Such notices, motions, or protests must be filed on or before the comment date. Anyone filing a motion to intervene or protest must serve a copy of that document on the Petitioner.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov.* Persons unable to file electronically should submit an original and 5 copies

of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov,* using the ''eLibrary'' link and is available for review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov,* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Comment Date: 5:00 p.m. Eastern time on January 26, 2017.

Dated: January 6, 2017.

Kimberly D. Bose,

Secretary.

[FR Doc. 2017–00560 Filed 1–11–17; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #2

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER10–2507–010.
Applicants: Westar Energy, Inc.
Description: Notice of Non-Material Change in Status of Westar Energy, Inc.
Filed Date: 1/6/17.
Accession Number: 20170106–5116.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER16–2190–003; ER16–2191–003; ER16–2453–004.
Applicants: Brady Wind, LLC, Brady Wind II, LLC, Brady Interconnection, LLC.
Description: Notice of Non-material Change in Status of Brady Wind, LLC, et. al.
Filed Date: 1/6/17.
Accession Number: 20170106–5093.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–752–000.
Applicants: PJM Interconnection, L.L.C.
Description: Notice of Cancellation of First Revised Service Agreement No. 2359, Queue No. U3–003 of PJM Interconnection, L.L.C.
Filed Date: 1/6/17.
Accession Number: 20170106–5057.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–753–000.
Applicants: PJM Interconnection, L.L.C.
Description: § 205(d) Rate Filing: Revisions to OATT Schedule 12—Appendix A re: RTEP Projects Approved in Dec 2016 to be effective 4/6/2017.
Filed Date: 1/6/17.
Accession Number: 20170106–5061.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–754–000.
Applicants: Southern California Edison Company.
Description: § 205(d) Rate Filing: GIA and Distribution Service Agmt Lendlease California City Solar LLC to be effective 1/7/2017.
Filed Date: 1/6/17.
Accession Number: 20170106–5067.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–755–000.
Applicants: Midcontinent Independent System Operator, Inc.
Description: § 205(d) Rate Filing: 2017–01–06_MISO Tariff Clean-up filing to be effective 1/7/2017.
Filed Date: 1/6/17.
Accession Number: 20170106–5078.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–756–000.
Applicants: Midcontinent Independent System Operator, Inc.
Description: § 205(d) Rate Filing: 2017–01–06_SA 2884 Otter Tail-Crowned Ridge 1st Rev GIA (G736) to be effective 1/7/2017.
Filed Date: 1/6/17.
Accession Number: 20170106–5085.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–756–000.
Applicants: Midcontinent Independent System Operator, Inc.
Description: § 205(d) Rate Filing: 2017–01–06_SA 2884 Otter Tail-Crowned Ridge 1st Rev GIA (G736) to be effective 1/7/2017.
Filed Date: 1/6/17.
Accession Number: 20170106–5086.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–757–000.
Applicants: Duke Energy Carolinas, LLC.
Description: § 205(d) Rate Filing: Amendment to NCEMC NITSA SA 210 to be effective 1/1/2017.
Filed Date: 1/6/17.
Accession Number: 20170106–5147.
Comments Due: 5 p.m. ET 1/27/17.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: January 6, 2017.

Kimberly D. Bose,

Secretary.

[FR Doc. 2017–00564 Filed 1–11–17; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 13102–003]

Birch Power Company; Notice of Technical Meeting

a. *Date and Time of Meeting:* January 23, 2017 at 2:00 p.m. Eastern Standard Time (1:00 p.m. Central Standard Time).

b. *Place:* Telephone conference.

c. *FERC Contact:* Adam Peer at *adam.peer@ferc.gov,* or (202) 502–8449.

d. *Purpose of Meeting:* Commission Staff is hosting a technical meeting to discuss the details of Birch Power's proposed Spoils Disposal Plan filed on May 21, 2014.

e. A summary of the meeting will be prepared and filed in the Commission's public file for the project.

f. All local, state, and federal agencies, Indian tribes, and other interested parties are invited to participate by phone. Please call Adam Peer at (202) 502–8449 by January 17, 2017, to RSVP and to receive specific instructions on how to participate.

Dated: January 6, 2017.

Kimberly D. Bose,

Secretary.

[FR Doc. 2017–00562 Filed 1–11–17; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 1494–437; Oklahoma]

Grand River Dam Authority; Notice of Availability of Draft Environmental Assessment

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory

Commission's (Commission or FERC's) regulations, 18 Code of Federal Regulations (CFR) Part 380, the Office of Energy Projects has reviewed an application filed by the Grand River Dam Authority (GRDA) to permanently amend the reservoir elevation rule curve contained in Article 401 of the license for the Pensacola Hydroelectric Project No. 1494. The amendment would allow GRDA to keep water levels in the project's reservoir, Grand Lake O' the Cherokees (Grand Lake), up to two feet higher August 16 through October 31 each year. The project is located on the Grand (Neosho) River in Craig, Delaware, Mayes, and Ottawa Counties, Oklahoma.

Staff prepared a draft environmental assessment (EA) for the application which analyzes the potential environmental effects of approving the requested permanent change to the Article 401 rule curve and concludes that such an approval, with specified environmental protection measures, would not constitute a major federal action that would significantly affect the quality of the human environment.

A copy of the draft EA is available for review at the Commission's Public Reference Room or may it be viewed on the Commission's Web site at *www.ferc.gov* using the ''eLibrary'' link. Enter the docket number P–1494 in the docket number field to access the document. For assistance, contact FERC Online Support at *FERCOnlineSupport@ferc.gov* or toll-free at 1–866–208–3676, or for TTY, 202–502–8659.

You may register online at *www.ferc.gov/docs-filing/esubscription.asp* to be notified via email of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

Any comments on the draft EA should be filed by February 6, 2017. Comments may be filed electronically via the Internet. See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's Web site at *http://www.ferc.gov/docs-filing/efiling.asp.* Commenters can also submit brief comments up to 6,000 characters, without prior registration, using the eComment system at *http://www.ferc.gov/docs-filing/ecomment.asp.* You must include your name and contact information at the end of your comments. For assistance, please contact FERC Online Support. Although the Commission strongly encourages electronic filing, documents may also be paper-filed. To paper-file, mail a paper copy to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426. The first page of any filing should include the docket number P–1494–437.

For further information, contact B. Peter Yarrington at (202) 502–6129 or *peter.yarrington@ferc.gov,* or contact Jeremy Jessup at (202) 502–6779 or *Jeremy.jessup@ferc.gov.*

Dated: January 6, 2017.

Kimberly D. Bose,

Secretary.

BILLING CODE 6717–01–P

DRAFT ENVIRONMENTAL ASSESSMENT

AMENDMENT OF ARTICLE 401 TO MODIFY RESERVOIR ELEVATION RULE CURVE

PENSACOLA HYDROELECTRIC PROJECT
FERC No. 1494-437
Oklahoma

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, N.E.
Washington, DC 20426

January 2017

BILLING CODE 6717–01–C

Table of Contents

List of Figures iv
List of Tables iv
Acronyms v
1.0 Application 1
2.0 Purpose of Action and Need for Power 1
3.0 Background 2
3.1 Pensacola Project Description 2
3.2 Project Operation and Article 401 Rule Curve 4
4.0 Proposed Action and Alternatives 5
4.1 Proposed Action 5
4.1.1 Rule Curve Modification 6
4.1.2 Storm Adaptive Management Plan 7
4.1.3 Drought Adaptive Management Plan 8
4.2 Other Action Alternatives 9
4.3 No-Action Alternative 10
5.0 Consultation and Compliance 10
5.1 Background and GRDA's Pre-Filing Consultation 10
5.2 Responses to Commission's Additional Information Request 11
5.3 Public Notice and Responses 11
5.4 Comments on Flooding and the Scope of this Environmental Assessment 16
5.5 Government-to-Government Consultation 17
5.6 Statutory Compliance 17
5.6.1 Section 401 Water Quality Certification 17
5.6.2 Endangered Species Act 18
5.6.3 National Historic Preservation Act 18
6.0 Environmental Analysis 19
6.1 Scope of the Analysis 19
6.2 General Description of the Project Area 19
6.3 Geology and Soils 19
6.3.1 Affected Environment 19
6.3.2 Environmental Effects 20
6.4 Water Quantity and Flows 20
6.4.1 Affected Environment 20
6.4.2 Environmental Effects 22
6.5 Water Quality 28
6.5.1 Affected Environment 28
6.5.2 Environmental Effects 30
6.6 Fisheries and Other Aquatic Resources 31
6.6.1 Affected Environment 31
6.6.2 Environmental Effects 33
6.7 Terrestrial Resources 34
6.7.1 Affected Environment 34
6.7.2 Environmental Effects 36
6.8 Wetlands and Riparian Resources 36
6.8.1 Existing Environment 36
6.8.2 Environmental Effects 37
6.9 Threatened and Endangered Species 37
6.9.1 Existing Environment 37
6.9.2 Environmental Effects 38
6.10 Cultural and Historic Resources 39
6.10.1 Existing Environment 39
6.10.2 Environmental Effects 39
6.11 Recreation 41
6.11.1 Affected Environment 41
6.11.2 Environmental Effects 42
6.12 Land Use and Aesthetics 43
6.12.1 Affected Environment 43
6.12.2 Environmental Effects 43
7.0 Conclusions and Recommendations 44
7.1 Comprehensive Development and Staff-Recommended Measures 44
7.1.1 Staff-Recommended Measures 46
7.2 Consistency with Comprehensive Plans 47
8.0 Finding of No Significant Impact 47
9.0 Literature Cited 48
10.0 List of Preparers 49

List of Figures

Figure 1. Location Map of the Pensacola Hydroelectric Project 3
Figure 2. Proposed Changes to Article 401 Reservoir Rule Curve Elevations 6

List of Tables

Table 1. Responses to Public Notice of GRDA's Amendment Application 11
Table 2. Grand Lake Elevation and Surface Area 21

Acronyms

ACER U.S. Department of the Interior, Bureau of Reclamation, Assistant Commissioner, Engineering and Research Technical Memorandum No. 11
BIA Bureau of Indian Affairs, Department of the Interior
°C degrees Celsius
cfs cubic feet per second
CWA Clean Water Act
Commission or FERC Federal Energy Regulatory Commission
Corps U.S. Army Corps of Engineers
Drought Plan Drought Adaptive Management Plan
DO dissolved oxygen
EA environmental assessment
EAP Emergency Action Plan
ESA Endangered Species Act
FEMA Federal Emergency Management Act
FPA Federal Power Act
FWS U.S. Fish and Wildlife Service
GIS Geographic Information System
Grand Lake Grand Lake O' the Cherokees
GRDA Grand River Dam Authority; licensee
HPMP Historic Properties Management Plan
incremental increase change in water surface elevation under proposed amendment
Interior Department of the Interior
mg/l milligrams/liter
National Register National Register of Historic Places
NDMC National Drought Mitigation Center
NGVD National Geodetic Vertical Datum
NHPA National Historic Preservation Act
Oklahoma AS Oklahoma Archaeological Survey
Oklahoma DEQ Oklahoma Department of Environmental Quality
Oklahoma DWC Oklahoma Department of Wildlife Conservation
Oklahoma WRB Oklahoma Water Resources Board
Oklahoma SHPO Oklahoma State Historic Preservation Officer
PD Pensacola Datum; PD is 1.07 feet higher than NGVD
Storm Plan Storm Adaptive Management Plan
Section 106 Section 106 of the National Historic Preservation Act
Section 401 Section 401 of the Clean Water Act
Section 7 Section 7 of the Endangered Species Act
USGS U.S. Geological Survey
401 certification Water Quality Certification under Section 401 of the Clean Water Act

ENVIRONMENTAL ASSESSMENT

Federal Energy Regulatory Commission; Office of Energy Projects; Division of Hydropower Administration and Compliance; Washington, DC

Pensacola Hydroelectric Project; FERC No. 1494–437

1.0 Application

Application Type: Amendment of Article 401 reservoir elevation rule curve.

Date Filed: May 6, 2016, supplemented June 2, 2016, and June 30, 2016.

Applicant's Name: Grand River Dam Authority.

Water Body: Neosho (Grand) River.

County and State: Craig, Delaware, Mayes, and Ottawa counties, Oklahoma.

Federal Lands: The project does not occupy any federal lands.

2.0 Purpose of Action and Need for Power

Grand River Dam Authority (GRDA), licensee for the Pensacola Hydroelectric Project, requests a permanent amendment of the reservoir operating rule curve stipulated in Article 401 of the project license.[1] The Article 401 rule curve specifies seasonal water surface elevations that are to be targeted at the project reservoir (Grand Lake) during project operation. GRDA's request involves changes to the rule curve during the period of August 16 through October 31 to reduce the risk of vessel groundings in late summer, improve recreation during the summer/fall peak recreation season and provide storage of additional water to assist in making releases for maintenance of dissolved oxygen concentrations in the river downstream.

3.0 Background

3.1 Pensacola Project Description

The Commission issued a license for the Pensacola Project to GRDA on April 24, 1992.[2] The project is located on the Grand (Neosho) River in Craig, Delaware, Mayes, and Ottawa counties, Oklahoma (Figure 1). Features of the Pensacola Project include: (1) A reinforced-concrete dam consisting of a 4,284-foot-long multiple arch section, an 861-foot-long spillway containing 21 Tainter or radial gates, a 451-foot-long non-overflow gravity section, and two non-overflow abutments, comprising an overall length of 5,950 feet and maximum height of 147 feet; (2) two auxiliary spillways about one mile east of the dam, a 505-foot-long concrete gravity middle spillway containing 11 Tainter gates and a 464-foot-long concrete gravity east spillway containing 10 Tainter gates; (3) a reservoir known as Grand Lake O' the Cherokees (Grand Lake) having a surface area of 46,500 acres and a storage capacity of 1,680,000 acre-feet at a water surface elevation of 745 feet Pensacola Datum (PD);[3] (4) six 15-foot-diameter and one 3-foot-diameter steel penstocks supplying flow to six turbine-generators of 14.4-megawatt capacity each and one turbine-generator of 500-kilowatt capacity located in a powerhouse immediately below the dam; (5) a tailrace about 300 feet wide and a spillway channel about 850 feet wide, both about 1.5 miles long; and (6) appurtenant facilities.

[1] In its request, GRDA also asked that, if the Commission could not process its permanent amendment by August 15, 2016, that it be granted a temporary variance for the period of August 15, 2016, through October 31, 2016, while the Commission processed its request for a permanent amendment. A temporary variance for 2016 was granted in an order issued August 12, 2016. *Grand River Dam Authority,*156 FERC ¶ 61,106 (2016).

[2] The project was originally licensed in 1939 and was relicensed in 1992. *Grand River Dam Authority,* 59 FERC ¶ 62,073 (1992).

[3] Pensacola Datum (PD) is 1.07 feet higher than National Geodetic Vertical Datum (NGVD) which is a national standard for measuring elevations above sea level. Elevations discussed in this EA are in PD values unless otherwise stated.

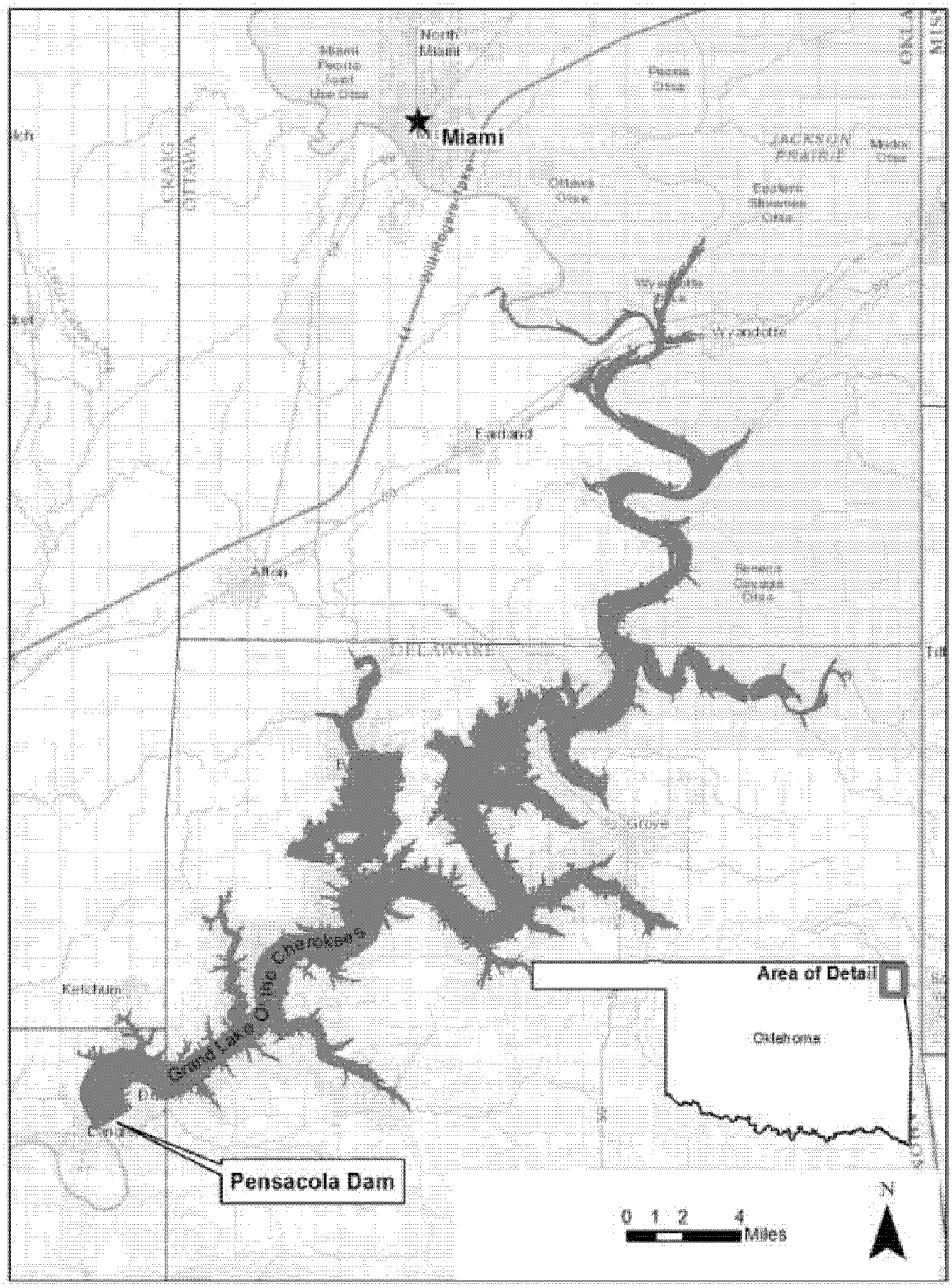

Figure 1. Location Map of the Pensacola Hydroelectric Project (source: U.S. Geological Survey (USGS) and Environmental Systems Research Institute: Geographic Information Systems (ESRI-GIS), 2016).

3.2 Project Operation and Article 401 Rule Curve

Grand Lake is used for multiple purposes including power generation, recreation, wildlife enhancement, and flood control. Dedicated flood storage (the flood pool) is provided between elevations 745 and 755 feet. When reservoir elevations are within the limits of the flood pool, the Tulsa District of the U.S. Army Corps of Engineers (Corps) directs water releases from the dam under the terms of a 1992 Letter of Understanding and Water Control Agreement between the Corps and GRDA that addresses flooding both upstream and downstream of Grand Lake.

When reservoir elevations are below the limits of the flood pool, GRDA operates the project pursuant to Article 401 of the project license, as amended in an order issued December 3, 1996.[4] Article 401 requires GRDA to operate the project to maintain, to the extent practicable, the following target reservoir surface elevations (the set of elevations known as a rule curve), except as necessary for the Corps to provide flood protection:

Period	Reservoir elevation, in feet (Pensacola datum)
May 1 through May 31	Raise elevation from 742 to 744.
June 1 through July 31	Maintain elevation at 744.
August 1 through August 15	Lower elevation from 744 to 743.
August 16 through August 31	Lower elevation from 743 to 741.
September 1 through October 15	Maintain elevation at 741.
October 16 through October 31	Raise elevation from 741 to 742.
November 1 through April 30	Maintain elevation at 742.

Since issuance of the 1996 order, GRDA has filed eight requests for either temporary variances from, or permanent amendments of, the elevations specified in the Article 401 rule curve. Six of those applications were withdrawn by GRDA, denied, or dismissed by the Commission.[5] In July 2012, GRDA filed an application for a temporary variance so that it could operate the project to vary from the rule curve in late summer and early fall in order to alleviate effects of an ongoing regional drought. That application was approved in an order issued August 15, 2012.[6] In July 2015, GRDA applied for a temporary variance primarily to enhance recreational boating in late summer and early fall. That application, which involved the same changes to the rule curve elevations being requested in this proceeding, was approved in an order issued August 14, 2015.[7] As referenced above, a temporary variance for late summer and early fall 2016 was granted August 12, 2016.

4.0 Proposed Action and Alternatives

4.1 Proposed Action

GRDA requests a permanent amendment of the Pensacola Project's Article 401 rule curve that would be followed each year through the remainder of the current license period.[8] GRDA seeks the rule curve change to reduce the risk of vessel grounding at Grand Lake in late summer, improve recreation during the summer/fall peak recreation season, better balance competing stakeholder interests, and provide additional water storage, if necessary, to assist in maintaining DO concentrations in the tailrace and river below the project, and below its Markham Ferry Project (No. 2183), located immediately downstream.[9] GRDA's proposal also includes a Storm Adaptive Management Plan (Storm Plan) and a Drought Adaptive Management Plan (Drought Plan), which provide frameworks for communication and operational decision-making when major weather events may affect GRDA's ability to target elevations on the rule curve.

4.1.1 Rule Curve Modification

Under GRDA's proposal, the Pensacola Project's Article 401 rule curve would be permanently amended for the remainder of the current license period. The elevations along the rule curve would only be changed for the period of August 16 through October 31. Between August 16 and September 15 each year, the project would be operated to target an elevation of 743 feet, which is up to two feet higher than the current rule curve. Between September 16 and September 30, the elevation target would be lowered from 743 to 742 feet. Between October 1 and October 31, operation would target an elevation of 742 feet, which is up to one foot higher than the current rule curve. After October 31, reservoir elevations would follow the project's existing rule curve. GRDA would operate the project to target the elevations along the rule curve at all times, except as provided by the Storm Plan or the Drought Plan, or as necessary for the Corps to provide flood protection. GRDA's proposed rule curve change is shown in Figure 2.

[4] *Grand River Dam Authority,* 77 FERC ¶ 61,251 (1996).

[5] *See* June 26, 2015, Commission staff letter dismissing, for lack of adequate information, May 28, 2015 request for temporary variance to enhance recreational boating and tailwater dissolved oxygen management; July 3, 2013 Commission order denying March 20, 2013 request for temporary variance based on drought forecasts, *Grand River Dam Authority,* 144 FERC ¶ 61,007 (2013), and August 2, 2013 letter denying request for reconsideration; July 25, 2011 Commission staff letter dismissing, for lack of adequate information, April 6, 2011 request for a temporary (two-year) variance to enhance recreational boating; April 4, 2006 Commission staff letter denying March 13, 2006 request for temporary variance to respond to drought conditions, on basis that variance not warranted based on forecasted conditions; June 17, 2004 letter from GRDA withdrawing January 26, 2004 request to permanently amend Article 401 rule curve to enhance recreation, water quality, and wildlife habitat; and August 16, 1999 letter from GRDA withdrawing June 2, 1999 request for temporary variance (for calendar year 1999) to allow for alternative plan for millet seeding.

[6] *Grand River Dam Authority,* 140 FERC ¶ 62,123 (2012).

[7] *Grand River Dam Authority,* 152 FERC ¶ 61,129 (2015) (August 14, 2015 order).

[8] The current license for the Pensacola Project expires in April 2022.

[9] In addition to the temporary variance granted in 2016, in a separate proceeding in 2015, the Commission granted the same temporary variance for the period of August 15, 2015 through October 31, 2015. *Grand River Dam Authority,* 152 FERC ¶ 61,129 (2015).

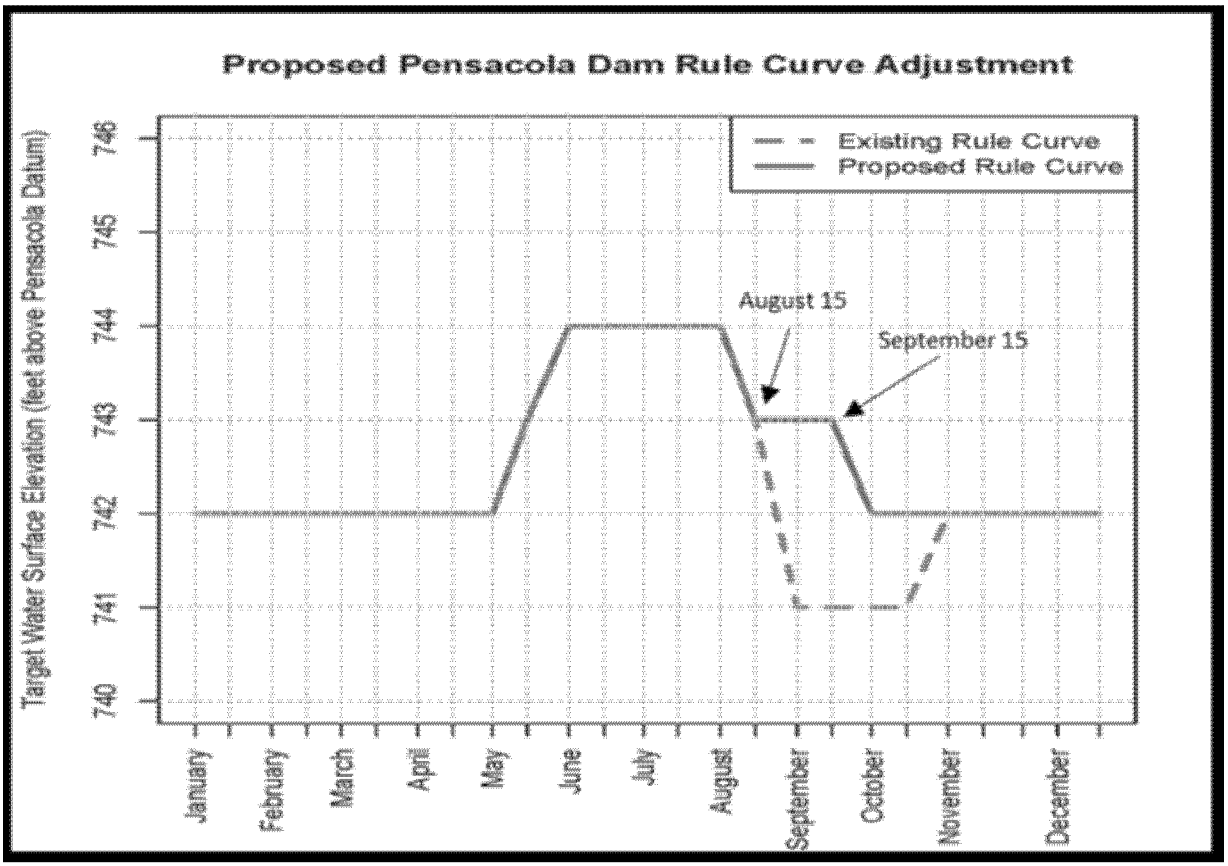

Figure 2. Proposed Changes to Article 401 Reservoir Rule Curve Elevations (source: GRDA, 2016).

4.1.2 Storm Adaptive Management Plan

As part of its permanent amendment request, GRDA proposes to implement a Storm Plan that would be used year-round in anticipation of and during major precipitation events within the Grand/Neosho River basin that might result in high water conditions upstream or downstream of Grand Lake. A Storm Plan was in place during the 2015 and 2016 temporary variance periods. During the 2015 temporary variance period, weekly conference calls between all participants took place to keep all participants informed of potential flood conditions in the river basin. Based on the success of the weekly calls in 2015 and discussions during the December 2015 technical conference,[10] the Storm Plan GRDA includes in its permanent amendment request includes year-round monitoring, with activation of the Storm Plan notifications and conference calls at any time during the year when there is a probability of high water conditions in the Grand/Neosho River basin.

According to the Storm Plan, GRDA would review, at a minimum, on a daily basis the following information: (1) Weather forecasts in the watershed; (2) Grand Lake surface elevation data; (3) data from the USGS gages upstream and downstream of the project; (4) surface elevations at the Corps' upstream John Redmond flood control reservoir and downstream Lake Hudson (part of GRDA's Markham Ferry Project); and (5) other relevant information affecting surface elevations at Grand Lake during the potential flood period.

If GRDA's daily review of the information indicates a probability of high water conditions in the Grand/Neosho River basin in the vicinity of the project, GRDA would immediately provide the information to federal and state resource agencies, local government officials, Commission staff, Tribes, and other interested stakeholders.[11] In conjunction with the distribution of the information, GRDA would also schedule a conference call. Prior to the conference call, GRDA would consult with the Corps to determine whether any reservoir management actions could be taken to avoid, reduce, or minimize high water levels upstream or downstream of the project. During the conference call, GRDA would then notify the participants of any proposal to take action. Participants will then have an opportunity during the teleconference to explore alternative solutions to respond to the forecasted high-flow event, recognizing the Corps' jurisdiction to direct flood control releases for

[10] A Technical Conference was held at the University of Oklahoma in Tulsa, Oklahoma on December 16, 2015, which included GRDA staff, FERC staff, resource agencies, local government entities, and Tribes to discuss modeling needs related to the rule curve amendment.

[11] The Storm Plan contact list includes: GRDA; the Commission; Corps; National Weather Service, Tulsa Forecast Office; Oklahoma Secretary of Energy and Environment; Oklahoma Department of Wildlife Conservation; Oklahoma Water Resources Board; Oklahoma Office of Emergency Management; U.S. Fish and Wildlife Service; City of Miami; Ottawa County Office of the County Commissioner; Ottawa County Emergency Management; Modoc Tribe; United Keetoowah Band of Cherokees; Quapaw Tribe of Indians; Oklahoma State Historic Preservation Office; and Oklahoma Archeological Survey.

purposes of flood risk management once the reservoir elevation is forecasted to exceed a flood pool elevation of 745 feet. GRDA would continue regular communications with all participants during each event in order to keep them informed of prevailing conditions.

GRDA notes that, although the protocols contained in the Storm Plan are separate and distinct from the protocols in its Emergency Action Plan (EAP) for the project, the Storm Plan complements the EAP and involves many of the same entities. According to the Storm Plan, if the EAP is triggered, the communication protocols in the EAP would supersede those included in the Storm Plan until the emergency is resolved.

The Storm Plan also includes provisions regarding historic properties in the project area that could be adversely affected by high water levels. As discussed in Section 6.9 *Cultural and Historic Resources,* the plan specifies that, if the Oklahoma State Historic Preservation Office (Oklahoma SHPO) concludes that any actions to address high water levels at Grand Lake would adversely affect any archaeological site or other cultural resource in the project area, GRDA would consult with the Oklahoma SHPO to develop a site-specific plan for protection or mitigation of the site. The plan also includes a provision for the unanticipated discovery of unidentified burial sites in the project area.

4.1.3 Drought Adaptive Management Plan

As part of its permanent amendment request, GRDA would institute its proposed Drought Plan during any period in which the National Drought Mitigation Center's (NDMC) U.S. Drought Monitor identifies a severe to exceptional drought within the Grand/Neosho River basin. The plan would help guide project operations and flow releases during drought conditions. It's the same plan used in 2016 and is similar to the plan used in 2015. As noted earlier, GRDA must maintain DO concentrations below the Pensacola Project and below its downstream Markham Ferry Project. GRDA states that, during periods of drought, adherence to the Article 401 rule curve could prevent it from releasing water necessary to maintain DO concentrations in these areas. Adherence to the rule curve could also prevent it from maintaining reservoir elevations in the Markham Ferry Project's Lake Hudson, which are necessary to operate GRDA's Salina Pumped Storage Project (No. 2524) as well as meeting other water supply needs.

Under the plan, GRDA would monitor information from the NDMC's U.S. Drought Monitor and information from other generally accepted sources of drought information applicable to the basin. Based on this information, if GRDA determines that drought conditions appear imminent, GRDA would begin weekly teleconferences with, in general, the same federal and state resource agencies, local government officials, Commission staff, Indian Tribes, and other interested stakeholders GRDA intends to consult with under the Storm Plan.[12] In the teleconferences, GRDA would keep these parties informed of prevailing conditions and any plans to begin additional releases in the event the NDMC U.S. Drought Monitor declares a severe to exceptional drought.

Under the plan, if the NMDC U.S. Drought Monitor declares a severe to exceptional drought for the Grand/Neosho River basin, GRDA may, at its discretion and based on input received during the weekly teleconferences, commence additional releases from Pensacola Dam, regardless of the prevailing levels at Grand Lake and Article 401 rule curve target elevations. Such releases would not exceed a rate equal to 0.06 feet of reservoir elevation per day, which is equivalent to approximately 837 cubic feet per second (cfs) per hour over a 24-hour period.

During the drought, GRDA would conduct weekly teleconferences to discuss project operations and would address the following issues in each teleconference: (1) Current and forecasted drought conditions and planned project operation; (2) maintenance of water levels and flows sufficient to maintain downstream DO concentrations for water quality and to prevent fish kills; (3) maintenance of reservoir elevations at the Markham Ferry Project's Lake Hudson sufficient to operate its Salina Pumped Storage Project for system reliability; and (4) based on available information, when the severe to exceptional drought period is expected to end. When severe to exceptional drought conditions are over, GRDA would cease releases under the plan, return to operating the project to target Article 401 rule curve elevations, and notify federal and state resource agencies and other stakeholders involved in the teleconference.

[12] The only participant not listed for both plans is the National Weather Service, Tulsa Forecast Office, which is only included in the Storm Plan.

4.2 Other Action Alternatives

No reasonable action alternatives to GRDA's proposal have been presented by GRDA, identified by Commission staff, or suggested by entities commenting in this proceeding.

4.3 No-Action Alternative

Under the no-action alternative, GRDA's request to permanently amend the Pensacola Project's Article 401 rule curve would be denied. GRDA would therefore continue to operate the project to target elevations along the current rule curve, except as directed by the Corps for flood control, for the remainder of the current license period. Also, GRDA's Storm and Drought Plans would not be approved by the Commission. Environmental resources in the project area would remain the same as they are initially described in *Environmental Analysis* below.

5.0 Consultation and Compliance

5.1 Background and GRDA's Pre-Filing Consultation

GRDA's pre-filing consultation included both its application for a permanent amendment to the Article 401 rule curve and its request for a temporary variance for 2016. GRDA distributed a draft of its application to federal and state resource agencies, Indian Tribes, local governmental authorities, and interested members of the public on March 15, 2016. On that same day, GRDA filed a request to shorten the normal 60-day pre-filing comment period to 30 days to help expedite processing. The Commission approved a reduced pre-filing comment period on April 5, 2016.

GRDA received comments on the draft application from the Delaware County Floodplain Administration, the Oklahoma Water Resources Board (Oklahoma WRB), the Oklahoma Department of Wildlife Conservation (Oklahoma DWC), the Modoc Tribe of Oklahoma, the City of Miami, Oklahoma (City of Miami), plaintiffs in two civil cases,[13] Mr. N. Larry Bork (on behalf of citizens and businesses located in Ottawa County, Oklahoma), the U.S. Fish and Wildlife Service (FWS), and the Oklahoma SHPO. GRDA included copies of these comments and addressed them in a comment/response table.

Substantive issues raised in pre-filing consultation included: (1) The extent and frequency of flooding of upstream areas and interpretation of recent flood studies; (2) progress in recent

[13] The two cases are *City of Miami* v. *GRDA,* Case No. CJ–08–690 (Okla. Dist. Ct.) and *Asbell, et al.* v. *GRDA,* Case No. CJ–01–381 (Okla. Dist. Ct.).

consultation between resource agencies and GRDA on mitigation for fish and wildlife under the current rule curve; and (3) protection of historic properties and archaeological sites. Almost all of the issues raised in pre-filing consultation were relevant to a permanent rule curve change and almost all were repeated in the responses to the Commission's public notice of GRDA's final application, as described below. All substantive issues raised in pre-filing consultation are treated in the resource sections of this environmental assessment (EA).

GRDA also included in its application a summary report on a hydraulic modeling technical conference held December 16, 2015, at the University of Oklahoma, and copies of letters from the University of Oklahoma and the Corps regarding recent flood studies relative to the amendment request.

5.2 Responses to Commission's Additional Information Request

On May 18, 2016, Commission staff issued a letter asking GRDA to provide additional information regarding fisheries and aquatic resources and the results of flooding studies on property and structures. GRDA filed additional information on these issues on June 2 and 30, 2016, respectively.

5.3 Public Notice and Responses

The Commission issued public notice of GRDA's application for a permanent amendment of the Article 401 rule curve on September 22, 2016, which was published in the **Federal Register** on September 29, 2016.[14] The notice established a 30-day deadline for submitting comments, motions to intervene, and protests. The notice was also published in five newspapers in the project area. Responses to the notice are listed in the following table and summarized below. On November 8, 2016, GRDA filed an answer to the comments made in response to the notice. Issues raised in these filings are addressed in this EA.

TABLE 1—RESPONSES TO PUBLIC NOTICE OF GRDA'S AMENDMENT APPLICATION

Entity	Filing date	Filing type
Modoc Tribe of Oklahoma	March 31, 2016	protest and comments[15].
Oklahoma DWC	April 6, 2016	comments[14].
Al Newkirk	October 10, 2016	comments.
U.S. Department of the Interior (Interior), Office of the Secretary, Albuquerque, New Mexico.	October 21, 2016	comments[16].
Interior, Office of the Solicitor	October 21, 2016	notice of intervention.
N. Larry Bork	October 24, 2016	protest and comments.
City of Miami	October 24, 2016	motion to intervene, protest, and comments.
Miami Tribe of Oklahoma, Wyandotte Nation, Ottawa Tribe of Oklahoma, Peoria Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Seneca-Cayuga Nation (jointly, the Tribes).	October 24, 2016	motion to intervene and protest.
Oklahoma Archaeological Survey	November 7, 2016	Comments.

Al Newkirk

Al Newkirk states that his house and commercial pecan grove are located across the Neosho River from the City of Miami. Mr. Newkirk indicates that the frequency and duration of flooding of his property have increased over the years, with flooding in the pecan grove already occurring three times this year, and with floods previously lasting a day or two but now extending to a week to 10 days. Mr. Newkirk indicates that approximately 20 acres of his land cannot be accessed when the lake is at an elevation of 744 feet and there are flows of 5,000 to 6,000 cfs in the river. Mr. Newkirk writes that flooding results in financial harm to him and other people in the area. Regarding the timing of the annual lake drawdown in the fall, Mr. Newkirk indicates that boat traffic on the lake drops off significantly by September 15, and higher levels are not needed for safety past that time.

U.S. Department of the Interior

Interior reviewed the role of its Bureau of Indian Affairs (BIA) in working with federally recognized American Indian Tribes stating that it is clear that higher water elevations would affect Tribal lands and resources. Interior indicated that the Inter-Tribal Council[17] and several of its member Tribes informed the BIA that backwater flooding is affecting Tribal lands, communities, financial enterprises, infrastructure, and cultural resources. Interior indicated that these Tribes are concerned that amending the rule curve may increase adverse impacts. Interior noted that there is currently no agreement on the level of effects on Tribal lands and resources and until information to support appropriate mitigation for adverse effects is identified, Commission action on GRDA's amendment application would be premature.

Interior indicated that, as currently defined, the project boundary does not occupy Indian lands, but that BIA is in the process of establishing the boundaries and legal definitions of all affected Indian lands in the project area, with a number of Tribes having documented impacts to Tribally-owned lands and resources. Interior stated that it intends to more fully evaluate the project boundary issue during relicensing.[18] Interior also stated that lands and resources held in trust by the federal government are subject to its jurisdiction under section 4(e) of the Federal Power Act (FPA) and to restitution under FPA section 10(e).

Interior indicated that the relicensing process is the appropriate forum to discuss these and all other issues associated with continued project operation. Interior and BIA object to the amendment until project impacts and mitigation can be evaluated and negotiated during the re-licensing

[14] 81 FR 66,957 (Sept. 29, 2016).

[15] Filings made in response to the Commission's March 16, 2016, public notice of GRDA's request to reduce the public comment period from 60 to 30 days on GRDA's March 15, 2016 draft application.

[16] Interior indicated in its comments that its letter superseded a letter it had filed October 19, 2016.

[17] The Inter-Tribal Council is a Tribal intergovernmental body that is comprised of nine sovereign Tribal governments whose seat of government is located in and around Ottawa County, Oklahoma: the Miami Tribe of Oklahoma, the Wyandotte Nation, the Ottawa Tribe of Oklahoma, the Peoria Tribe of Oklahoma, the Eastern Shawnee Tribe of Oklahoma, the Shawnee Tribe, Modoc Tribe, Quapaw Tribe, and the Seneca-Cayuga Tribe.

[18] GRDA must file its Notice of Intent and Pre-Application Document to begin the relicensing process no later than March 31, 2017.

process, and jurisdictional issues between the Corps and the Commission are better understood.

Indian Tribes

The Tribes, which comprise six of the nine sovereign, federally-recognized Tribal governments whose respective seats of government are located in and around Ottawa County, Oklahoma, state that operation of the project has adversely affected their lands, facilities, and resources. In their comments, and during Government-to-Government Consultation with the Commission (discussed below), the Tribes assert that flooding due to project operation has increased in elevation, frequency, and duration, resulting in extensive property damage, closure of Tribal business enterprises and facilities, and impairment to essential services. The Tribes write that the proposed amendment would increase risks to health and human safety. The Tribes state that the Commission cannot determine what constitutes an ''incremental'' increase in flood effects and evaluate the impacts of such an increase, where the Commission has not yet evaluated the impacts of current operations.

The Tribes indicate that they oppose GRDA's proposal and urge the Commission to deny it based on unauthorized project-related flooding of federal trust lands. The Tribes believe that the Commission should defer any action pertaining to the rule curve until project relicensing and indicate that, alternatively, the Commission should condition any approval on GRDA's prior fulfillment of a series of requirements, including: (1) completing comprehensive upstream and downstream flood routing studies; (2) acquiring all necessary property rights within 12 months of completing studies; (3) investigating and reporting the extent of its use and occupancy of Tribal trust lands and filing an amendment application for authorization for any such occupancy as required under sections 4(e), 10(a), and 10(e) of the FPA; (4) identifying, in consultation with the Tribes and the Oklahoma SHPO, any archaeological sites, historic properties, or Tribal cultural properties that could be adversely impacted by the project, including those outside the current project boundary and above existing flowage easements; (5) conducting surveys of any such sites to determine eligibility for inclusion on the National Register of Historic Places (National Register); and (6) developing, in consultation with the Tribes and the Oklahoma SHPO, a plan for protection of, or mitigation of damage to, such sites, and submitting it to the Commission after approval by the Tribes.

N. Larry Bork

N. Larry Bork, in comments on behalf of 493 citizens and businesses in Ottawa County, asks the Commission to deny the amendment application. Mr. Bork asserts that the Commission is allowing GRDA to violate its license when unauthorized flooding occurs, and asks the Commission to ensure that GRDA purchases necessary easements before approving any amendment to the rule curve. Mr. Bork references recent studies finding a decrease in the flood storage capacity of Grand Lake caused by accumulation of sediments over time, and gives examples of times Grand Lake was below an elevation of 743 feet and high flows still flooded the City of Miami. Mr. Bork also provides a list of legal actions related to flooding upstream of the project.

Additionally, Mr. Bork asserts that past increases in the rule curve have led to flooding and economic decline of the City of Miami. Also, he indicates that backwater flooding can increase exposure to contaminants from the closed Tar Creek Superfund Site and Spring River. Lastly, Mr. Bork expressed concern that higher water levels would cause more pressure on Pensacola Dam, when 907 earthquakes occurred in Oklahoma last year.

City of Miami

The City of Miami asks the Commission to deny the permanent amendment to the rule curve, or in the alternative, condition any approval by requiring a comprehensive upstream and downstream flood routing study followed by the acquisition of all necessary property rights. Citing recently-completed flood studies, the City states that project operations have resulted in increased flooding in the City and surrounding region. The City believes that GRDA's failure to acquire necessary flowage easements makes unauthorized flooding illegal under the project license and state and local laws, and that it puts the health and safety of people and property at risk. The City indicates that the proposed rule curve amendment would only make this situation worse.

The City of Miami does not believe that analyzing only the incremental effects of the proposal is appropriate and that the Commission cannot and should not ignore existing conditions in rendering a decision on the amendment. The City says the Commission has a responsibility to ensure that GRDA operates the project in the public interest and references prior cases in support of the Commission not ignoring existing conditions. The city also references the Commission's authority under the license and under the FPA related to the protection of life, health, and property.

Finally, the City of Miami believes that the Commission must evaluate flooding in its EA, including impacts and the adverse socioeconomic impacts from unauthorized project-related flooding, and impacts to Tribal lands and resources that have been identified through consultations with the Inter-Tribal Council. The City also requests that the Commission consider the Inter-Tribal Council's concerns prior to issuing a decision on the rule curve proposal.

Oklahoma Archaeological Survey

The Oklahoma AS states that, although the Commission did not require GRDA to develop a project-wide Historic Properties Management Plan (HPMP) for the temporary variance, as recommended by the Oklahoma SHPO, the Commission should require a HPMP for the permanent amendment. The Oklahoma AS is concerned that changes in reservoir elevations have the potential to substantially impact historic properties, including archaeological sites, that are located along and near the shore of Grand Lake, by eroding the sites and by exposing them to looting and vandalism. Further, the Oklahoma AS does not accept the premise that GRDA's HPMP for the Markham Ferry Project is an adequate framework for the Pensacola Project since Markham Ferry has its own project setting and cultural resources. Therefore, the Oklahoma AS requests that a HPMP be developed specifically for the Pensacola Project's proposed rule curve amendment.

GRDA's Answer to Interventions and Comments

On November 8, 2016, GRDA filed an answer to the comments filed by Interior, the Tribes, Mr. Bork, and the City of Miami regarding flood effects, indicating that these entities' comments are without merit and outside the scope of the Commission's statutory responsibilities. GRDA argues that it and the Commission are not authorized to address flood control and flowage rights at Pensacola Dam because flood control is not a project purpose under the FPA, and Congress has tasked the Corps with these responsibilities. GRDA next states that during the temporary variances in 2015 and 2016, its Storm Plan successfully reduced the risk of flooding at the project. Lastly, GRDA states that the Tribe's allegation that the

Commission has failed to meet its responsibilities under section 106 of the National Historic Preservation Act (NHPA) are without merit. GRDA avers that it has consulted with the appropriate agencies and Tribes and that water levels under its proposal would not be outside the range of the current rule curve, and that any impacts to historic properties from flood control are beyond the scope of the undertaking and the Commission's jurisdiction. GRDA indicated that, while the Tribes have asserted that project operation is causing flooding of Tribal trust lands, the Tribes have not identified properties listed or eligible for listing in the National Register that would be affected by the proposed action.

5.4 Comments on Flooding and the Scope of This Environmental Assessment

The majority of the comments filed in response to the Commission's public notice concern flooding in the upper reaches of Grand Lake. These comments, summarized above, primarily focus on the degree to which the presence of the project and GRDA's operation of the project has contributed to the frequency, duration, and magnitude of flooding. In addition, comments were filed on the effects of the proposed rule curve change on flooding, the accuracy of the project boundary, and the adequacy of GRDA's property easements in relation to flooding. Commenters also address the adequacy of input data and the methodology of several flood routing studies presented by GRDA, the City of Miami, Commission staff, and others in this and earlier proceedings. Further, commenters questioned the accuracy and interpretation of the results of those studies.

These same issues were raised in the Commission's 2015 and 2016 proceedings for GRDA's temporary variances. In those proceedings, staff carefully examined hydraulic modeling studies and the results of those studies and summarized its findings which were then addressed in the Commission's orders issued August 14, 2015 and August 12, 2016. In the *Water Quantity and Flows* section of this EA, staff summarizes those studies and results as needed, in order to address the flood-related comments received in this proceeding.

In their comments, Interior, the Tribes, Mr. Bork, and the City of Miami raise the issue of flooding and adverse socioeconomic effects to property in the City of Miami and Tribal trust lands and resources. The extent to which the proposed amendment would aggravate flooding and affect property is discussed in the *Water Quantity and Flows* section. The information in that section includes modeled effects to areas and structures in the City and surrounding lands. Pursuant to our statutory responsibilities under section 106 of the NHPA, we address comments specific to Tribal lands and resources in the *Cultural and Historic Resources* section and in the summary of our Government-to-Government consultation with the Inter-Tribal Council. To the extent the above commenters address flooding concerns that are not related to the pending amendment, the Commission will perform a comprehensive review of the project and any proposed future operation in the upcoming relicensing proceeding. That proceeding is the appropriate forum to identify and address issues that are separate from GRDA's amendment application.

5.5 Government-to-Government Consultation

Commission staff met with the Inter-Tribal Council on August 3, 2016, in Miami, Oklahoma to hear the Council's concerns and gather any additional information the Council or its member Tribes wish to present for Commission consideration. In summary, the Inter-Tribal Council reiterated its concerns that the project already floods Tribal trust lands and other areas in the Miami region. The Inter-Tribal Council provided more detailed information concerning the whereabouts of individual Tribal lands and facilities affected by flooding, their desire to be compensated for flooding effects, and their concerns about the project in general. Commission staff's August 3rd meeting with the Inter-Tribal Council and its member Tribes was transcribed and the transcripts were filed with the Commission's Secretary. All comments presented at the August 3, 2016 meeting have been made a part of this proceeding and are publicly available. Further information concerning cultural and historic resources and the Commission's consultation with the Tribes is discussed in Section 6.9 *Cultural and Historic Resources.*

5.6 Statutory Compliance

5.6.1 Section 401 Water Quality Certification

The Clean Water Act (CWA) gives authority to each state to issue a section 401 Water Quality Certification (401 certification) for any FERC-licensed project that requires a permit pursuant to section 404 of the CWA. Additionally, an applicant must obtain a 401 certification for any activity that may result in a new discharge into navigable waters. The 401 certification is a verification by the state that a proposed project would not violate water quality standards.

On June 30, 2016, the Oklahoma Department of Environmental Quality (Oklahoma DEQ) issued a 401 certification for GRDA's permanent amendment request, subject to four conditions: (1) The certification does not authorize any discharge or dredging; (2) the reservoir will be maintained between elevations 742 and 744 feet as requested by GRDA; (3) emergency and routine maintenance will be as permitted by the Corps; and (4) the results of ongoing testing of DO mitigation measures under the project license shall be submitted annually to Oklahoma DEQ. These conditions are included in our analysis of effects to water quality in Section 6.4 *Water Quality.*

5.6.2 Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of federally listed threatened or endangered species, or result in the destruction or adverse modification of the critical habitat of such species. Several federally listed species are known to use the Pensacola Project area. The gray bat (*Myotis grisescens*) and the Neosho mucket (*Lampsilis rafinesqueana*) are listed as endangered, while the Ozark cavefish (*Amblyopsis rosae*) and the Neosho madtom (*Noturus placidus*) are listed as threatened.

In its April 21, 2016 comments on GRDA's application, FWS states that GRDA's proposal would not adversely affect any listed species. Information on listed species is discussed further in Section 6.8, *Threatened and Endangered Species.* However, in summary, no further consultation pursuant to the ESA is required for this proceeding.

5.6.3 National Historic Preservation Act

Under section 106 of the NHPA,[19] and its implementing regulations,[20] federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. GRDA's proposed amendment would not cause Grand Lake to exceed its normal

[19] 54 U.S.C. 300101 *et seq.* (2014).

[20] 36 CFR part 800 (2011).

maximum (or minimum) water surface elevations under the rule curve specified by Article 401. Water levels would remain within existing fluctuation limits within the rule curve. Also, the proposed amendment does not involve any land-clearing or land-disturbing activities. Therefore, we find that the proposed amendment would not affect cultural resources and historic properties. Further information is discussed in Section 6.9 *Cultural and Historic Resources.*

6.0 Environmental Analysis

6.1. Scope of the Analysis

The geographic scope of this analysis is Grand Lake, its shoreline areas, and flows immediately upstream and downstream. As appropriate, discussions of cumulative environmental effects are incorporated into the resource sections in this document.

The temporal scope of this environmental analysis focuses on the period from now until when the current project license expires in April 2022. The environmental effects of any proposed rule curve changes made during the relicensing period will be evaluated as part of the relicensing docket.

6.2 General Description of the Project Area

The Pensacola Project and its reservoir, Grand Lake, are located on the Neosho River in the northeast corner of Oklahoma, in Craig, Delaware, Mayes, and Ottawa counties. Downstream of the project, the Neosho River is locally known as the Grand River. Much of the land surrounding Grand Lake is privately owned and many areas along its shorelines have become highly developed with commercial resorts, private homes and condominiums, municipal and state parks, marinas, and private docks.

6.3 Geology and Soils

6.3.1 Affected Environment

Limestone bluffs and steep rocky beaches characterize much of the southern and eastern shorelines at Grand Lake. Soils in these areas are mostly cherty material that is not highly erodible. In contrast, the northern and western areas of the lake are surrounded mostly by rolling plains with occasional hills and ridges with gentle slopes. These shorelines generally feature more erodible loamy soils with mud substrates, silt deposits, and wetlands at inlets and coves associated with numerous small tributaries. These mud substrates and silt deposits provide good conditions for the growth of certain wetland vegetation (FERC 1996; FERC 2009 (SMP EA)).

6.3.2 Environmental Effects

Under the proposed rule curve, water levels would not be lowered three feet from elevation 744 to 741 feet in August, as is currently done. Instead, the draw down would stop after one foot at elevation 743 feet until September 15, then drop an additional foot to elevation 742 feet, and remain at that level until October 31 (see Figure 2). This stepped reduction in water levels, combined with eliminating the last foot of drawdown from September 15 to October 31, would likely result in only minor changes in erosion patterns that occur under the current rule curve. These changes would likely include minor decreases in shoreline erosion, although erosion from wind and waves at the waterline would be expected to continue regardless of water levels. Reductions in erosion rates over sequential years could enhance revegetation of some shallow water, near-shore areas over time, leading to increases in substrate and soil stabilization that could be beneficial.

6.4 Water Quantity and Flows

6.4.1 Affected Environment

Grand Lake is impounded by Pensacola Dam on the Neosho River, which has a basin covering 12,110 square miles in Kansas, Oklahoma, Missouri, and Arkansas. The Neosho River originates in the Flint Hills of east central Kansas, then flows southeasterly and easterly until it enters the 66-mile-long Grand Lake. Below Pensacola Dam, the Neosho flows approximately 77 miles to its confluence with the Arkansas River. Significant tributaries of the lake include Spring River, Elk River, Tar Creek, and Duck Creek.

Flows in the Neosho River downstream of Pensacola Dam to the head of Lake Hudson are controlled by operation of the Pensacola Dam. USGS gage 07190500, Neosho River Near Langley, OK, is located approximately 3.6 miles below the dam, and has been in operation 1939. According to records collected at that gage for water years 1940 through 2015, the historic highest daily mean flow was 287,000 cfs, recorded May 20, 1943. The lowest daily mean flow for that period was 9 cfs, recorded March 25, 1940, four days after initial filling of Grand Lake began. The historic annual mean flow was 7,601 cfs. In water year 2015, the highest daily mean flow of 86,900 cfs was recorded at the gage on May 30, and the lowest daily mean flow of 84 cfs was recorded November 20, with an annual mean flow of 9,169 cfs (USGS, 2016).

Grand Lake is one of the largest lakes in Oklahoma with approximately 522 miles of shoreline. At the time of project was relicensed in 1992, Grand Lake was recorded as having a surface area of approximately 46,500 acres at elevation 745 feet. At elevation 745.1 feet, the mean depth of the reservoir is about 36 feet while the maximum depth is 164 feet (FERC, 2007; FERC 2009). As shown in Table 2, results of recent surveys have updated the calculation of the surface area of Grand Lake at an elevation of 745 feet, as well as the surface area at other elevations relevant in this EA.

Except during flood events, when releases are directed by the Corps for flood control, GRDA operates the Pensacola Project to target seasonal water elevations at Grand Lake varying from elevation 741 to 744 feet in accordance with the Article 401 rule curve. As shown in Figure 2, a lake elevation of 742 feet is maintained November 1 through April 30. In May, the lake is raised to a summer elevation of 744 feet. In August, the level is then reduced to a low point of 741 feet and then held there for six weeks from September 1 through October 15. It is then returned to an elevation of 742 feet by November 1. While targeting the elevations on the rule curve, GRDA also manages releases to provide water to operate GRDA's downstream Markham Ferry Project and its Salina Pumped Storage Project. In addition, during summer and fall, calculated releases are made to help maintain DO concentrations in the tailrace and downstream river, as discussed further under *Water Quality* below.

Grand Lake is also a significant local water supply. GRDA indicates in its application that approximately 25 wholesale customers currently withdraw water from Grand Lake and that the lake is used by approximately 21,000 residential households and 500 commercial customers. GRDA issues yearly permits for domestic water use.

TABLE 2—GRAND LAKE ELEVATION AND SURFACE AREA

[Source: Oklahoma WRB, 2009]

Surface elevation (feet PD[21])	Surface area (thousands of acres)
740	36.58
741	37.52
742	38.83
743	39.98

[21] Elevations converted from NGVD to PD.

TABLE 2—GRAND LAKE ELEVATION AND SURFACE AREA—Continued

[Source: Oklahoma WRB, 2009]

Surface elevation (feet PD[21])	Surface area (thousands of acres)
744	40.60
745	41.11

6.4.2 Environmental Effects

Project operation using the proposed rule curve would increase the elevation, volume, and surface area of Grand Lake in late summer and early fall. It would therefore, allow GRDA to store more water each year during that period for the duration of the current license term. As shown in Figure 2, water levels would no longer be lowered all the way from elevation 744 to 741 feet in August, but instead would be reduced to 743 feet and held at that elevation from August 16 through September 15. The elevation would then be lowered to 742 feet, eliminating the deepest part of the drawdown, and held at that elevation until the following spring. Also, as shown in Figure 2, the overall length of the drawdown period between summer and winter elevations would be reduced from 12 to 8 weeks. GRDA would continue to target the rule curve at all times, except as necessary for the Corps to provide flood protection, or during any periods in which the proposed Storm or Drought Plans might be utilized.

The increase in lake elevations under the proposed rule curve would primarily benefit boating on Grand Lake in late summer and early fall each year, as described in *Recreation* below. The increase in storage would also provide a buffer for local entities that utilize Grand Lake for water supply, because more storage would be available during what is typically the hottest and driest time of the year. This coincides with the season when the population around the lake is highest, with the highest local water demand. The higher reservoir elevation in late summer and fall would also help ensure GRDA has sufficient water for releases to maintain downstream DO in hot and dry years, as described further in *Water Quality,* and would decrease the chances of Grand Lake water levels falling below the rule curve during periods of drought. If drought conditions cause water to fall below elevations on the rule curve, GRDA would, under its proposed Drought Plan, regardless of reservoir elevations, make releases that would not exceed a flow rate equal to 0.06 feet of reservoir elevation per day, which is equivalent to approximately 837 cfs per hour over a 24-hour period.

The reduction in the total drawdown depth and the stepped reduction to winter elevations should also provide some benefits to other resources, primarily near-shore and shoreline habitat for fish and wildlife, as described in sections below.

Flooding Impacts

There have been several hydraulic studies prepared that assess the affects the proposed rule curve amendment would have on flooding. Key studies, as well as submitted reviews of those studies, were evaluated for this environmental analysis, they include:

- A 2014 study performed by Alan C. Dennis (2014 Dennis Study);[22]
- an independent modeling analysis performed by Commission staff as part of its review of GRDA's 2015 temporary variance request (2015 Staff Analysis);[23]
- a hydraulic modeling study conducted by Tetra Tech dated February 3, 2016 (2016 Tetra Tech Study);[24]
- a May 2016 review by Mead & Hunt of the 2016 hydraulic modeling study conducted by Tetra Tech;
- letters dated July 23, 2015 and May 2, 2016 from the University of Oklahoma regarding the 2014 Dennis Study and the differences between the 2014 Dennis, 2015 Staff, and 2016 Tetra Tech studies;
- a letter dated February 20, 2015 from the Corps regarding the 2014 Dennis Study; and
- a summary report on a hydraulic modeling technical conference held December 16, 2016 in Tulsa, Oklahoma.[25]

In support of its permanent amendment request, GRDA relies primarily on the 2014 Dennis Study which analyzed the upstream flooding impacts, particularly in the area of Miami, which would occur as a result of the proposed rule curve modification. The study determined that the proposed rule curve modification would have a minimal impact on upstream flooding; concluding that the incremental[26] increase in water surface elevations would be less than 0.2 foot[27] at Miami.

In review of the GRDA 2015 temporary variance request, Commission staff performed an independent analysis on the potential flooding impacts of the rule curve change. Commission staff gathered available pertinent data, including but not limited to, stream flows, reservoir elevations, spillway gate operations, and other data from historic storms to build the input files for the independent verification model which also extended downstream to assess potential flooding impacts from Pensacola Dam to the USGS Gage No. 07190500, Neosho River near Langley, Oklahoma (Langley gage).

While the 2014 Dennis Study only considered storm events from August 15 to September 15, Commission staff reviewed historic storms during the August 16 to October 31 time period for its independent analysis. Staff selected the October 1986, September 1993, and October 2009 storms for use in the hydraulic model because they are large historic storms from the time of year corresponding to the proposed change in the rule curve. Staff concluded that historic large spring or early summer storms were not appropriate for this analysis since they occur outside of the proposed rule curve amendment period.[28] Using flow data from USGS Gage No. 07185000, Neosho River near Commerce, Oklahoma (Commerce gage), along with the Federal Emergency Management Act (FEMA) flood frequency curve prepared for that gage,[29] Commission staff determined that the flow recurrence intervals for the Neosho River for the October 1986, September 1993, and October 2009 storms are 17-year, 8-year, and 3-year events, respectively. The results of the Commission staff independent analysis concluded that the maximum incremental increase is approximately 0.1 foot if the reservoir starting elevation is raised from 741 to 742 feet and approximately 0.2 foot if the reservoir starting elevation is raised from 741 to

[22] The 2014 Dennis Study is a graduate thesis submitted to the University of Oklahoma graduate program in 2014 by Alan C. Dennis. *Floodplain Analysis of the Neosho River Associated with Proposed Rule Curve Modifications for Grand Lake O' the Cherokees,* Docket No. P–1494–432 (filed May 29, 2015).

[23] Commission staff's independent analysis performed for GRDA's temporary variance request was filed under Docket No. P–1494–432 on August 31, 2015.

[24] The 2016 Tetra Tech Study was completed for the City of Miami, Oklahoma. *Hydraulic Analysis of the Effects of Proposed Rule Curve Change at Pensacola Dam on Neosho River Flooding in the Vicinity of Miami, Oklahoma,* Docket No. P–1494–433 filed April 14, 2016 and July 22, 2016 (2016 Tetra Tech Study).

[25] Attendees of the conference included representatives from GRDA and its consultants, Commission staff, the City of Miami, the Corps, the Modoc Tribe of Oklahoma, and the University of Oklahoma.

[26] In this document, incremental refers to the change in water surface elevation due to the proposed rule curve amendment.

[27] 0.2 foot is equivalent to 2.4 inches.

[28] Generally, storm intensity and duration vary seasonally throughout the year with larger events occurring in the spring and early summer for this river basin.

[29] FEMA, Task Order HSFE06–11–J–0001 for Grand Lake O' the Cherokees Watershed (Nov. 15, 2013).

743 feet. However, a precise number of additional structures impacted by the maximum incremental increase of 0.2 foot in the vicinity of Miami could not be determined due to the lack of surveyed structure data (*e.g.*, first floor elevation or lowest adjacent grade to the structure) and the coarseness of the available topographic data. Staff's review of aerial photographic data in the vicinity of Miami indicated that there would be increased flooding of 11 structures already inundated with a reservoir starting elevation of 741 feet. An additional 22 structures that are located within a 30-foot horizontal buffer of the inundation zone could also be impacted. Nonetheless, many inundated structures are located at the edge of the inundated area where flood depths are minor and the incremental flooding impacts are minimal.

The maximum incremental increase in water surface elevation downstream of Pensacola Dam, at the Langley gage, also occurs during the October 2009 storm event and is approximately 0.3 foot if the reservoir starting elevation is raised from 741 to742 feet and approximately 0.7 foot if the reservoir starting elevation is raised from 741 to 743 feet.[30] With the same topographic limitations found in the vicinity of Miami, a specific number of additional structures impacted by the maximum incremental increase of 0.7 foot could not be determined. Review of aerial photographic data indicated that there would be increased flooding of 12 structures already inundated with a reservoir starting elevation of 741 feet. An additional 7 structures that are located within a 30-foot horizontal buffer of the inundation zone could also be impacted. If GRDA is proactive in its adaptive management procedures, using technical experts to continually assess the potential for storm events and reacting quickly when necessary by notifying downstream residents using EAP procedures that have been developed for the project, there would be at most minimal increases in incremental flooding.

The City of Miami filed comments on July 22, 2016, which included a new study performed by Tetra Tech dated April 26, 2016, that evaluated the effects of the proposed rule curve change on structure inundation (2016 Tetra Tech Study). The 2016 Tetra Tech Study evaluated the effects of the proposed rule curve on flooding upstream of Grand Lake, specifically in the vicinity of Miami, that would occur during the October 1986, September 1993, and October 2009 historic storm events. The study was performed using a HEC–RAS hydraulic model and incorporated new bathymetric survey data to account for sedimentation that has occurred in the Neosho River channel upstream of the reservoir. The 2016 Tetra Tech Study indicates that the water surface elevations at Miami during the modeled historic flood events are higher than determined in the 2015 Staff Analysis for both the 741 and 743 feet Grand Lake elevations. The study confirmed that during the three modeled storm events, the maximum incremental increase in water surface elevation at Miami, which occurs during the October 2009 storm, is less than 0.2 foot if the Grand Lake reservoir elevation is raised from 741 to 743 feet. The 2016 Tetra Tech Inundation Study concluded that the 2015 Staff Analysis underestimated the number of structures inundated under the current rule curve, due to the staff's lower computed water surface elevations, but that no additional structures would be impacted by the proposed rule curve change.

On June 30, 2016, GRDA filed a response to Commission staff's May 18, 2016 request for additional information. The response included a review, prepared by GRDA's consultant Mead & Hunt, of the 2016 Tetra Tech Study and an evaluation of the effects to property, structures, and human life as a result of the higher water surface elevations indicated in the 2016 Tetra Tech Study. Mead & Hunt found that all three of the most recent hydraulic model studies of the Neosho River upstream of Pensacola Dam conducted by Tetra Tech, FERC, and Dennis agree that the incremental change in water surface elevations due to the requested variance is 0.2 feet (2.4 inches) or less at the Miami gage. The difference in water surface elevations at the Miami gage between the latest Tetra Tech model and the FERC model are primarily due to a difference in the downstream boundary conditions/starting water surface elevations, and the bathymetry data gathered in April 2015 that results in higher predicted channel elevations. Mead & Hunt concluded that the Tetra Tech modeling cannot be relied upon for future studies until it has been verified that the model configuration, parameters, calibration results, and overall results are accurate and recommended that further investigation be completed before relying on the higher water surface elevations determined in the study.

In order to determine the effects to property and structures that could result from the higher water surface elevations indicated in the 2016 Tetra Tech Study, Commission staff also requested that GRDA evaluate the impact to structures that would occur with and without the proposed rule curve change for the three historic storm events (October 1986, September 1993, and October 2009) modeled in the 2016 Tetra Tech Study and 2015 Staff Analysis. Even though Mead & Hunt recommended further investigation before relying on the 2016 Tetra Tech Study results, it prepared inundation mapping for the three historic storm events based on the elevations in the 2016 Tetra Tech Study. The results of the inundation mapping, which used the 2016 Tetra Tech Study water surface elevations, show no additional structures would be impacted by the proposed rule curve change.

To quantify any increased physical danger to residents due to the incremental increase in inundation as a result of higher water surface elevations computed by Tetra Tech's model, Mead & Hunt conducted a hazard analysis for the three historic storm events using the ACER 11 procedure.[31] The analysis indicates that there would be no increased danger under October 1986 and October 2009 storm conditions. Under September 1993 storm conditions, two structures, a commercial building and a recreational building, may experience an increase in danger. For the commercial building, the ACER 11 danger zone would change from the low danger zone to the judgment zone; however, the hazard increase is due to a slight increase in flood depth of 0.1 foot. For the recreational building, the ACER 11 danger zone would change from the judgment zone to the high danger zone; however, the hazard increase is due to a slight increase in flood depth of 0.1 foot. Therefore, despite the change in danger zone classification for these two structures, the actual change in hazard is insignificant and there would be no increased risk to human life.

In addition to Mead & Hunt, others reviewed and commented on the three separate hydraulic analyses. University of Oklahoma professors, who were on Mr. Dennis' thesis committee, issued a letter on July 23, 2015, that responded to comments directly related to his Master's thesis work. The professors commented on the modeling protocols, the boundary conditions, and the time frame of modeling for the 2014 Dennis Study. In addition, the professors stated that the 2014 Dennis Study used the

[30] 0.3 and 0.7 foot are equivalent to 3.6 and 8.4 inches, respectively.

[31] U.S. Department of the Interior, Bureau of Reclamation, Assistant Commissioner, Engineering and Research Technical Memorandum No. 11 (ACER 11), Downstream Hazard Classification Guidelines (December 1988). The ACER 11 procedure describes the danger posed to inundated structures based on flood depth and velocity.

most current bathymetric and topographic information that was available. In particular, the lake bathymetry, which was called into question by the City of Miami in their June 26, 2015 letter, is based on data collected by the Oklahoma Water Resources Board in 2009, so it would certainly represent sedimentation that occurred between construction of the dam and 2009. Then, in a letter filed May 2, 2016, the same University of Oklahoma professors commented on the 2014 Dennis Study, the 2015 Staff Analysis, and the 2016 Tetra Tech Study and stated that the three different studies, each using different approaches, have all reached a nearly identical result, and that the predicted difference is within the expected bounds of model accuracy due to numerical errors and parameterization of physical processes.

The Corps, Tulsa District reviewed the 2014 Dennis Study and found the study to be of high quality and consistent with previous studies that were completed by the Tulsa District (1998) and Dr. Forrest Holly (2004). The Corps said that although a more diverse set of calibration storms would have been preferable, the results of this study are consistent with previous efforts, and the Corps concurred with the findings that were presented. In a July 24, 2015 letter, the Corps states that it had performed an analysis of the 2015 temporary variance request and determined that the variance would have negligible impacts on downstream flooding. Furthermore, the Corps states that its model results showed a discharge of around 100,000 cfs while adverse impacts (*i.e.,* flooding) did not begin until 130,000 cfs at the Highway 82 Bridge. The Corps also notes that properties outside of existing flowage easements are not affected until the discharge exceeds 230,000 cfs.

The City of Miami's July 22, 2016 comments argue that the 2015 Staff Analysis underestimates the number of structures impacted during the historic storm events. Although both the 2016 Tetra Tech Study and the inundation mapping conducted by Mead & Hunt show a greater number of structures impacted, both studies also determined that no additional structures would be impacted by increased flooding due to the proposed rule curve change. Further, as discussed above, the Mead & Hunt hazard analysis using the 2016 Tetra Tech Study found no additional risk to human life.

Finally, Mr. Bork commented regarding the capability of GRDA to timely open spill gates in advance of a predicted storm event. According to the Supporting Technical Information Document for the project that is filed with the Commission, the time required to position a gate hoist above a spillway gate and then raise or lower that gate is typically in the range of 15 to 20 minutes, which is adequate to respond to storm events. Mr. Bork also expressed concern regarding the number of earthquakes in Oklahoma and the additional pressure that higher water levels would place on Pensacola Dam. Because the proposed rule curve change does not include any water levels higher than those on the current rule curve, and because there is no reason to expect that the rule curve change would significantly affect high-water events, we do not anticipate any dam safety concerns regarding GRDA's proposed amendment.

6.5 Water Quality

6.5.1 Affected Environment

Grand Lake

The designated beneficial uses for Grand Lake include public and private water supply, fish and wildlife propagation as a warm water aquatic community, Class 1 irrigation, and primary body contact recreation (GRDA, 2008b). Oklahoma state water quality standards require the following in order to protect the warm water aquatic community designation: Dissolved oxygen (DO) concentrations maintained at or above 6.0 milligrams per liter (mg/l) at 25 degrees Celsius (°C) from April 1 to June 15 (for fish early life stages); at or above 5.0 mg/l at 32 °C from June 16 to October 15 (summer conditions); and at or above 5.0 mg/l at 18 °C from October 16 to March 31 (winter conditions) (GRDA 2008b).

Grand Lake was recently listed on Oklahoma's 303(d) list for organic enrichment/low DO levels and color.[32] Water quality in the lake is affected primarily by heavy recreational use and shoreline development, but also by heavy metal contamination from acid mine drainage originating upstream along the Neosho River and Spring River, and possibly by trace metal contamination from local surface mining (GRDA 2008a). These sources include the Tar Creek Superfund Site, a former mining area known to release acid mine drainage containing heavy metals such as lead, cadmium, and zinc into the Tar Creek system, the Neosho River and Grand Lake (Oklahoma WRB, 2012).

Generally, surface water temperatures in Grand Lake range from between 4 and 28 °C annually. The reservoir typically begins to exhibit thermal stratification in May, with anoxic conditions forming in the deep waters of the hypolimnion several weeks later. Across Grand Lake, the extent of stratification varies, with downstream portions of the reservoir exhibiting stronger stratification than the upstream sections of the reservoir. Sampling conducted in 2003 and 2004 found that stratification was strongest during the summer, with approximately 38 percent of the water column having DO concentrations below 2.0 mg/l in the lower portion of the reservoir (GRDA, 2008a).

GRDA currently works to mitigate water quality issues through lake-wide sanitation regulations, shoreline use classifications and management of shoreline development, water quality monitoring, and other measures included in its approved Shoreline Management Plan.

Downstream

The Oklahoma WRB has designated the Neosho River below the project as a warm-water aquatic community, with minimum DO standards of 6.0 mg/l from October 16 through June 15, and 5.0 mg/l from June 16 through October 15. A 1.0 mg/l DO deficit is allowed for not more than 8 hours in a 24-hour period April 1 through October 15.

Water quality in the project tailrace and the river downstream is dependent on releases through generation. The powerhouse draws water from relatively deep in the reservoir where water can have very low DO concentrations when the lake stratifies in summer and into the fall. In the past, release of this DO-deficient water, combined with the hot and dry conditions that regularly occur in late summer and fall, has led to violations of Oklahoma water quality standards and fish kills. GRDA now manages downstream releases during this period to maintain water quality criteria for DO pursuant to plans approved under license Article 403.[33]

6.5.2 Environmental Effects

Grand Lake

Normal project operation under the proposed rule curve would not have any significant negative effects on water quality in Grand Lake and may provide some minor benefits to water quality by reducing the magnitude of water level changes that may contribute to exposure

[32] Under section 303(d) of the CWA, states are required to develop lists of impaired waters that don't meet the state's water quality standards for their designated beneficial uses.

[33] *See Grand River Dam Authority,* 151 FERC ¶ 62,098 (2015) (Order Modifying and Approving Dissolved Oxygen Mitigation Plan Pursuant to Article 403).

of shallow substrates, rates of shoreline erosion, resuspension of sediments, and near-shore turbidity. Reduction in substrate exposure and erosion rates would also reduce resuspension of pollutants, such as heavy metals, where they are present in substrates in the lake. Mr. Bork raised the issue of backwater flooding under the proposed rule curve change allowing increased exposure to contaminants from the Tar Creek Superfund Site or Spring River. Based on the discussion of flooding effects above in the *Water Quantity and Flows* section, we do not believe the proposed rule curve change would cause any measurable changes in release of, or exposure to, contaminants from those sources.

Downstream

The additional water that would be stored in Grand Lake under the proposed rule curve would help ensure water is available for making releases to maintain downstream DO concentrations during late summer and fall. Additionally, the proposed Drought Plan would help GRDA to maintain downstream DO concentrations in the event that a severe to exceptional drought is declared for the river basin and reservoir elevations fall below the elevations on the rule curve.

GRDA indicates that releasing water pursuant to the Drought Plan should also help ensure that it has sufficient water for DO maintenance in the river below its downstream Markham Ferry Project, while maintaining lake elevations at that project's Lake Hudson necessary for operation of its Salina Pumped Storage Project, which is important to local electric system reliability.

Water quality downstream of the project could be negatively affected if the higher water levels on the proposed rule curve lead to any increase in upstream flood conditions and therefore more flood flow releases. Increases in flood flow releases could increase rates of downstream river bank erosion, resulting in increases in water turbidity. However, based on studies to date, it is unlikely any such effects to downstream flows and erosion would be significant, or predictable in frequency or severity.

Oklahoma DEQ's 401 certification for GRDA's permanent amendment request includes a condition requiring GRDA to provide it with annual reports of the results of ongoing testing of downstream DO mitigation measures performed under plans that have been approved under license Article 403. The Commission included this requirement as a condition of its approval of GRDA's temporary variance for 2016. The Commission added a requirement that GRDA notify Oklahoma DEQ at the same time it notifies other agencies pursuant to the plan of any significant DO deficiencies or DO mitigation, so that Oklahoma DEQ can track GRDA's progress in maintaining state water quality standards. Inclusion of the same requirement in any approval of a permanent amendment would allow Oklahoma DEQ to continue to track GRDA's progress in maintaining state water quality standards through the remainder of the current license period, and help ensure water quality below the project is protected.

Based on our review, operation using the proposed rule curve modification would not result in any material adverse impacts to water quality.

6.6 Fisheries and Other Aquatic Resources

6.6.1 +Affected Environment

Grand Lake

Grand Lake supports a robust warm water fishery for largemouth and smallmouth bass, white bass, striped bass and hybrid striped bass, crappie, several species of sunfish and catfish, and paddlefish. It also supports populations of a number of species of suckers, minnows, and darters. Gizzard and threadfin shad are important forage species that help sustain the sport fishery in Grand Lake. Grand Lake is one of the top bass fishing destinations in the nation, consistently attracting national fishing tournaments (FERC, 1996; GRDA 2016).

Largemouth bass and many other fishes present in Grand Lake spawn in springtime in relatively shallow waters. Through the summer and fall, the young of these fishes then use shallow areas with aquatic and emergent vegetation or other structure as primary nursery habitat and for cover and feeding as they mature (FERC, 1991; FERC, 1996).

Water level fluctuations that occur under the current rule curve, which was approved in the order issued December 3, 1996, do not allow the establishment of significant areas of shallow-water emergent and submergent aquatic plants. Juvenile fishes that would use such areas for cover and feeding in summer and fall therefore utilize other types of cover, including woody debris and other natural features, and man-made structure such as docks, and artificial reefs. Current work on artificial reefs is described below.

Fish Habitat Mitigation for Effects of Current Rule Curve

A significant amount of effort has been expended to mitigate the effects of water level fluctuations under the rule curve on shallow-water fish habitat at Grand Lake. The Article 401 rule curve in the 1992 license included a stepped 15-week drawdown and partial refill in late summer and fall, with a low-elevation of 741 feet that was maintained for a period of 8 weeks. The drawdown over that period was intended, in part, to enhance fish habitat by exposing mudflats for natural revegetation, and revegetation through annual millet seeding. When the rule curve was amended to its current form in a Commission order issued December 3, 1996, the drawdown was reduced to 12 weeks, and the period of lowest drawdown was reduced to 6 weeks. The Commission acknowledged that the shortened drawdown period would reduce the effectiveness of annual millet seeding and negatively affect fish and waterfowl. Therefore, Article 411 was added to the license to require a Fish and Waterfowl Habitat Management Plan, to include establishment of a mitigation fund and formation of a technical committee to administer the fund to design, implement, and evaluate work to enhance fish and wildlife habitat. GRDA's Article 411 plan was approved, and the requirement to seed millet every year was deleted, in an order issued May 22, 2003.[34] Work under the plan can include, at the technical committee's discretion, seeding of at least 1,000 acres of millet, at a rate of 15 pounds per acre in any given year for which favorable conditions were forecast. However, millet seeding was seldom performed under the plan because the reduced duration of the drawdown period prevented germination over large enough areas to provide significant benefits.[35]

Since approval of the mitigation plan in 2003, the primary shallow-water fish habitat work completed has been the deployment of approximately 14,000 ''spider block'' artificial reef structures. These structures attract adult gamefish for the purpose of improved sport fishing. They may also provide rearing and feeding habitat for fry and fingerlings and cover from predators.

Downstream

The tailrace area below the Pensacola Project and the reach of river

[34] *Grand River Dam Authority,* 103 FERC ¶ 62,102 (2003) (Order Approving Fish and Waterfowl Habitat Management plan Under Article 411 and Deleting Article 404).

[35] Since 2003, millet seeding under the plan has only been attempted several times, most recently in 2011. Seeding has resulted in limited germination and plant growth adequate to benefit fish and waterfowl habitat.

downstream to Lake Hudson supports a popular fishery that includes many of the species found in Grand Lake. As explained above in *Water Quality,* water in these areas can be low in DO, especially in late summer and fall, which has led to fish kills below the dam. However, GRDA is currently successful in mitigating this problem through managed releases under an approved DO mitigation plan.

6.6.2 Environmental Effects

Grand Lake

On an annual basis, maintaining higher water surface elevations in Grand Lake from August 15 and October 31 using the proposed rule curve would result in less fluctuation during late summer and early fall, providing young fishes, and other aquatic organisms, with more stable shallow-water habitat and cover. The decrease in fluctuation should allow better colonization of emergent and submerged vegetation in these areas, further improving habitat for young fishes. Over the remainder of the license term, this should allow aquatic vegetation to more successfully colonize and return to suitable areas, increasing shallow-water habitat and benefitting young fishes and the macroinvertebrates they prey upon.

The proposed rule curve change should not affect any fish habitat mitigation work under the Article 411 mitigation plan over the remaining term of the project license. As described above, annual millet seeding is no longer performed under the plan and GRDA is pursuing other mitigation options (*i.e.,* land acquisitions) under the Article 411 plan beyond continuing placement of artificial reef structures. Therefore, we cannot review any other fish habitat mitigation work at Grand Lake at this time, although we assume that any such work would take the effects of the water elevations under the proposal into account.

It is not possible to predict the effects to fisheries and aquatic resources from any changes to frequency or intensity of periods of high water, or periods of low water resulting from drought, that may occur under the proposed rule curve, or any mitigative effects of the proposed Storm and Drought Plans. However, there is no reason to expect that there would be any significant effects on these resources in Grand Lake.

Based on the above, the proposed rule curve change should have minor positive effects on fisheries and aquatic resources in Grand Lake.

Downstream

As described above under *Water Quality,* the proposed rule curve would allow GRDA to store more water during late summer and early fall, increasing the volume of water available for release to maintain DO concentrations in the tailrace and river downstream. This would help to protect fisheries and other aquatic resources in downstream areas in years when inflows are low and reservoir levels may be difficult to maintain. Further, as also described under *Water Quality,* the proposed Drought Plan would help to ensure water is available for maintenance of DO concentrations and fish protection in the event that drought conditions cause reservoir elevations to fall below the rule curve. It is not possible to predict effects to downstream aquatic resources that could occur from any increases in flooding under GRDA's proposal, or effects of GRDA's proposed Storm Plan.

Based on the above, the proposed rule curve change would have positive effects to fisheries downstream of the project during late summer and fall by helping to ensure maintenance of DO concentrations, and use of the Drought Plan would help to avoid fish kills in the event of significant drought conditions.

6.7 Terrestrial Resources

6.7.1 Affected Environment

Vegetation

Grand Lake is located in a transitional zone between the Ozark Highlands and Central Irregular Plain eco-regions of northeast Oklahoma. In the Ozark Highlands eco-region, which characterizes most of the project area, oak-hickory and oak-hickory-pine are the primary forest types. Typical canopy species on dry uplands and ridgetops include black oak, white oak, blackjack oak, post oak, winged elm, and numerous hickories. Shortleaf pine also occurs in oak-hickory-pine stands. Mesic forests containing sugar maple, white oak, and northern red oak are typical of north-facing slopes and ravines of more rugged, deeply dissected sites. Willows, bottomland oaks, maples, hickories, birch, American elm, and sycamore are typical on floodplains and low terraces. Most level sites in the region have been converted to haylands or pasturelands.

In the extreme northern portion of project, primarily the Neosho River arm of Grand Lake, the oak hickory forests of the Ozark Highlands give way to the tall grass prairies of the Central Irregular Plains. Typical dominants of tall grass prairie sites include big bluestem, little bluestem, switchgrass, and indiangrass. Dry upland forests, similar to the oak-hickory forests of the Ozark Highlands to the south and east, are common on the low rocky hills of the region. Most of this habitat, approximately 61,462 acres, occurs above 755 feet. Riparian corridors typically are forested, with canopy dominants that include American elm, oaks, hackberry, black walnut, sycamore, and pecan. Much of this region has been converted for agriculture, with rangeland occupying steeper slopes and croplands on nearly level plains. Common crops include sorghum, alfalfa hay, wheat, and soybeans.

Wildlife

Raptors, such as barred owl, red-tailed hawk, and red-shouldered hawk occur in both upland and bottomland forests. Song birds of the wooded lots include tanagers, nuthatches, warblers, and woodpeckers typical of the eastern deciduous forests. Grassland birds present in the prairie habitat include horned lark, grasshopper sparrow, meadowlark, dickcissel, and bobolink. Predatory birds in the grasslands consist of short-eared owl, northern harrier, and rough-legged hawk. Bald eagles over-winter at Grand Lake. Game birds found at Grand Lake include bobwhite quail, wild turkey, mourning dove, and waterfowl.

Grand Lake is also important as an over-wintering and migratory stop for shorebirds and waterfowl; however, the over-wintering habitat is limited by the lack of submerged aquatic vegetation. Cormorants, pelicans, egrets, and herons are among the non-game birds that seasonally inhabit the Grand Lake area. A diverse array of game waterfowl such as geese and dabbling, diving, perching, sea, and stiff-tailed ducks also occur on Grand Lake during migration. Mallards are the only dabbling duck that over-winter on Grand Lake. Mallards are the most abundant duck seen on the reservoir with numbers peaking in December. Canada geese and wood ducks live on the reservoir throughout the year.

Common mammals in the project area include white-tailed deer, striped skunk, raccoon, fox squirrel, Virginia opossum, eastern cottontail, armadillo, and red fox. These species inhabit the upland deciduous forest surrounding the project. The bottomland forests contain all of these species, plus muskrat and beaver. Common species associated with the grassland/savannah are the least shrew, deer mouse, black-tailed jack rabbit, and badger. Bats are of ecological concern in the area and the endangered gray bat is particularly notable (discussed under Threatened and Endangered Species).

A variety of frogs, toads, salamanders, lizards, turtles, and snakes comprise the

local herpetofauna. The amphibians include species such as the American toad, spadefoot toad, and tree frogs. The turtle community includes snapping turtles, mud turtles, softshell turtles, and a diversity of slider, map, and box turtles. With the exception of the box turtles, most of the turtle community is highly aquatic. Representative lizard species include the western slender glass lizard, collard lizard, Texas horned lizard, and diversity of skinks. Common snakes include species such as rat snakes, water snakes, bull snakes, and venomous snakes such as copperheads, western cottonmouths, timber rattlesnakes, and western pygmy rattlesnakes.

Grand Lake is an important wintering area for bald eagles. Most of the wintering eagles use a large communal roost located on a small island near Twin Bridges State Park at the north end of the reservoir. Blackbirds represent a large part of the diet for eagles wintering on Grand Lake due to presence of a large blackbird roost near Twin Bridges State Park. The bald eagle can be expected to forage throughout the project area.

6.7.2 Environmental Effects

The proposed permanent amendment of rule curve would not impact vegetation or wildlife resources located above normal reservoir rule curve elevations. The change would not likely cause any negative impacts to vegetation and wildlife resources located at and below normal reservoir rule curve elevations, because water levels would remain within the range of the current rule curve.

In its letter dated March 29, 2016, the Oklahoma DWC states that it supports the amendment request and agrees that no additional mitigation for fish and wildlife resources be required through the remainder of this license. The Oklahoma DWC indicated that its support is based on a recently-finalized Interagency Agreement between Oklahoma DWC and GRDA in which mitigation for wildlife resources would be addressed through adjacent-site restoration and management.

6.8 Wetlands and Riparian Resources

6.8.1 Existing Environment

Grand Lake and the surrounding areas contain numerous wetlands. Wetlands are most abundant along the upper, shallow reaches of the reservoir. In the reservoir's lower reaches, shoreline areas consist primarily of limestone bluffs, with wetlands restricted to coves and backwaters of inundated tributaries. The project supports about 18,318 acres of wetland habitats, primarily at elevations of 735 to 745 feet. Wetland habitat areas have been broken down by type, resulting in the following approximations: Palustrine forested, 11,649 acres; mudflats, 5,662 acres; scrub/shrub, 526 acres; ponded water, 247 acres; and emergent, 234 acres (GRDA 2008a).

As described under Fisheries and Aquatic Resources above, GRDA may, in some years, seed millet on mudflat areas in Grand Lake to benefit shallow-water waterfowl and fish habitat in accordance with its approved Article 411 Fish and Waterfowl Habitat Management Plan. This is performed in the late summer and fall when lake elevations are at their lowest point along the current rule curve. However, because millet seeding under the plan is seldom attempted or successful, it is not a significant factor in the natural resources of Grand Lake.

6.8.2 Environmental Effects

Implementation of the proposed rule curve would not likely cause any negative impacts to existing wetland resources at Grand Lake because water levels would remain within the range of the current rule curve. The change may provide minor benefits by reducing the water level fluctuations that occur under the current rule curve, allowing some degree of increased growth and establishment of riparian and shallow-water vegetation, which could benefit both fish and wildlife that utilize these areas. The change would eliminate the deepest part of the annual drawdown, a six-week period from September 1 through October 15 when elevations are held at 741 feet, reducing or eliminating exposure of mudflat areas previously used for millet seeding in some years. However, as noted, millet seeding is not currently a significant factor in Grand Lake's natural resources.

In its letter dated March 29, 2016, the Oklahoma DWC states that it approves of GRDA's request to amend its rule curve for the remainder of its license. The Oklahoma DWC granted its support because of a recently-finalized Interagency Agreement between Oklahoma DWC and GRDA in which mitigation for wildlife resources would be addressed through adjacent-site restoration and management, thereby negating the need to lower the lake level to seed mudflats for millet.

6.9 Threatened and Endangered Species

6.9.1 Existing Environment

Several species listed under the ESA have been identified in the Pensacola Project area. The gray bat (*Myotis grisescens*) and the Neosho mucket (*Lampsilis rafinesqueana*) are listed as endangered, while the Ozark cavefish (*Amblyopsis rosae*) and the Neosho madtom (*Noturus placidus*) are listed as threatened.

Gray bats use two caves that are located in the Grand Lake project area: Beaver Dam Cave and Twin Cave. The Beaver Dam Cave is located adjacent to Drowning Creek, a tributary of Grand Lake and the Twin Cave is located more than a mile from Grand Lake and at an elevation of 840 feet. Of these, only the Beaver Dam Cave is affected by Grand Lake levels. Inundation of the cave begins when Grand Lake reaches 746 feet and the cave entrance is completely blocked when Grand Lake reaches 751 feet. Between elevations 756 and 757 feet Grand Lake levels cause water to reach the ceiling of the cave, drowning any bats inside. Bats in the cave can only survive one or two days without food due to the high energy demands of raising young from May through August. Further, if adults are trapped out of the cave then the young will die. The stress of being trapped may also result in aberrant behavior, causing bats to fall into the water. However, this concern has been addressed in that the Nature Conservancy and GRDA enlarged two high passage areas near the entrance of Beaver Dam Cave in 2008 and 2013. This work allows bats to access Beaver Dam Cave during periods of high water although the exact elevation of complete inundation is not in any records filed with the Commission.

Annual surveys of the gray bat population have been conducted at caves within the project area including Beaver Dam Cave since 2007. Based on these surveys, most bats vacate the cave by mid-August. Only in one survey conducted in 2007 have bats remained in the cave through August and into September.

The Neosho mucket is a freshwater mussel native to streams and rivers, which lives in nearshore habitat and does not occur in inundated areas, *i.e.,* lakes and ponds. Critical habitat for this species has been designated in the Elk River and in the vicinity of Grand Lake; however, areas designated as critical habitat occur only in stream channels and not in areas inundated by lakes or reservoirs.

The Ozark cavefish is a small fish with no eyes or pigmentation and lives strictly in subterranean waters. Cave ecosystems depend on bats (especially gray bats) as a source of energy and nutrients. The Ozark cavefish is found in Jailhouse Cave and Twin Cave near Grand Lake.

The Neosho madtom is a small catfish that feeds at night on the bottom of rivers and streams. The madtom only occurs within a 14-mile reach of the Neosho River well upstream of Grand Lake near the Oklahoma/Kansas state line. Neosho madtom habitat is periodically affected by the operation of several Corp's flood control structures on the Neosho River.

6.9.2 Environmental Effects

None of the threatened and endangered species identified at the project would be affected by the rule curve change. In its April 21, 2016 comments on GRDA's application, FWS states that GRDA's proposal would not adversely affect any listed species. FWS further explained that the increased risk of flooding at Beaver Dam Cave is not a concern because listed bats are not using the cave at that time. Therefore, no further consultation is needed pursuant to the ESA.

6.10 Cultural and Historic Resources

6.10.1 Existing Environment

Native Americans in the historic period and Euro-American settlers in the modern period leading up to Oklahoma's statehood have made extensive use of the Grand River Valley as a place of settlement and transportation. This pattern of use creates a high probability within the project area for intact cultural resources dating from prehistoric eras, periods of early European contact, the nineteenth century, and the Civil War. In addition to historical evidence supporting the likelihood of intact archeological deposits, the topography of the region lends itself to the preservation of archaeological resources. While much of the land in the downstream portion of the project near the dam rises in steep bluffs from the shoreline, the upriver portions of Grand Lake feature a shallow, more riverine topography that has the potential to contain intact archaeological resources. In addition, there are a number of tributaries that feed into Grand Lake that have a high potential for intact resources (GRDA, 2008).

GRDA maintains data supplied by the Oklahoma SHPO and the Oklahoma Historical Society that has identified potential and significant cultural resource sites in the project area. Approximately 50 cultural sites are known to exist within the project area (GRDA, 2008).

Currently there is risk of exposure of archaeological resources and potential historic properties during drawdown and drought. In addition to the discovery provisions in the Storm Plan and Drought Plans discussed in Section 5.5.3, Article 409 of the project license requires GRDA to immediately cease work and to develop a cultural resource management plan in consultation with the Oklahoma SHPO if GRDA discovers previously unidentified archeological or historic properties during the course of constructing or developing project works or other facilities. The plan must include a description of each discovered property indicating whether it is listed on or eligible to be listed on the National Register, a description of the potential effect on each discovered property, proposed measures for avoiding or mitigating effects, documentation of the nature and extent of consultation, and a schedule for mitigating effects and for conducting any needed additional studies.

6.10.2 Environmental Effects

Operation under the proposed amendment would maintain Grand Lake from August 16 through October 31 at levels that are neither higher nor lower than maximum and minimum levels currently experienced throughout the year. GRDA is not proposing to change maximum water surface levels and therefore, no new lands would be affected by the amendment.

On March 15, 2016, GRDA provided the Oklahoma SHPO a draft copy of its application containing its draft Storm Plan and draft Drought Plan. In an April 22, 2016 letter to GRDA, the Oklahoma SHPO recommended GRDA develop an HPMP to address potential impacts to archeological sites located along and near shorelines and recommended GRDA add the Oklahoma SHPO to the list of consulting parties for the Storm Plan and Drought Plan. GRDA added the Oklahoma SHPO to the consulting party lists for both plans and, rather than developing an HPMP, added provisions in each plan for consulting with the Oklahoma SHPO about potential impacts to cultural resources when the plans are in effect. On April 29, 2016, GRDA provided updated versions of both plans to the Oklahoma SHPO for review and comment.

In an email to GRDA dated May 2, 2016, the Oklahoma SHPO reiterated its recommendation for a project-wide HPMP saying GRDA's proposal to develop an HPMP during a storm or drought event, as described in the revised plans, would be difficult. The Oklahoma SHPO also recommended adding the Oklahoma AS to the consulting party lists for both plans and recommended GRDA include a provision for addressing any unanticipated discoveries of human remains or burials in accordance with state law. GRDA incorporated these additional recommendations into its two plans and stated that it would be able to handle potential difficulties arising from an emergency situation by using the Commission-approved HPMP for its Markham Ferry Project as a framework to address any effects to historic properties.

Furthermore, GRDA agreed that if Oklahoma SHPO or Oklahoma AS determines that reservoir conditions during the rule curve amendment period adversely affect historic properties, GRDA would develop a site-specific plan to address these agencies' concerns. This provision for a site-specific plan, along with the consultation and unanticipated discovery provisions added to the Storm and Drought Plans, provides additional protection.

Because GRDA's amendment would keep Grand Lake within existing fluctuation limits and given the additional consultation and site-specific provisions added to the Storm Plan and Drought Plan, we do not recommend developing a project-wide HPMP at this time. Both the Oklahoma SHPO and Oklahoma AS raised concerns that it would be difficult to develop site-specific plans during a storm or drought event. GRDA responded that it would use the approved HPMP for the Markham Ferry project as a framework for the agencies and GRDA to jointly address any effects to historic properties during such an event for the proposed amendment period. The Oklahoma AS also pointed out that the Pensacola project has a different project setting and different cultural resources than the Markham Ferry project. However the Markham Ferry HPMP does contain provisions for inadvertent discovery of cultural resources and human remains that could be equally applied in an appropriate timeframe during a storm or drought event that would help avoid or minimize effects to cultural resources.

At the Commission's August 3, 2016 Tribal consultation meeting and in their filings with the Commission, the Tribes asserted that any rule curve change, whether temporary or permanent, would increase flooding and adversely affect Tribal lands, including cultural properties. The Tribes stated that backwater flooding from the project, which they said occurs throughout the year, would be exacerbated by the proposed rule curve change. The Tribes also stated that flooding has impaired access to important Tribal facilities, including ceremonial grounds, educational and assistance services, recreational facilities, Tribal

government offices, and casinos, and has had negative social and economic impacts on Tribal communities. In addition, the Tribes have stated that GRDA's consultation for this amendment, which included sending the draft application for Tribal review and comment, is inadequate and that they support others' recommendations for a project-wide HPMP for the proposed amendment.

As stated above, GRDA's proposed changes are within Grand Lake's normal maximum and minimum fluctuation limits, therefore, no new lands would likely be affected and we do not recommend an HPMP. If anything, the proposed changes would reduce fluctuating water levels within Grand Lake and cultural and historic properties located on or near the shoreline would be less affected and would not be subject to additional exposure, looting, or vandalism, as asserted by the Oklahoma AS. Moreover, sites are vulnerable to erosion at any level, but approval of this amendment does not exacerbate those effects since the difference in water elevations would be smaller during this period.

Concerning flooding of Tribal lands, the Pensacola project boundary, as currently defined, does not occupy federal Tribal lands held in trust. Moreover, the proposed amendment would not change the overall range of water surface elevations currently approved for project operations. However, regardless of the current boundary or range of operations, the socio-economic impacts identified by the Tribes at the consultation meeting and in their filings are an important consideration in the Commission's comprehensive review of the project. We believe the upcoming relicensing proceeding is the appropriate forum to review any flood effects cause by current operations and to evaluate any new information that shows there are Tribal lands held in trust within the project boundary.

6.11 Recreation

6.11.1 Affected Environment

Grand Lake is a major recreation resource in northeastern Oklahoma, providing over a million recreation user days during 2014. Boating, fishing, and waterfowl hunting are popular recreation activities conducted on the lake. Recreational access to Grand Lake is provided through public, commercial, and private facilities such as boat ramps, marinas, and boat docks. Grand Lake has 5 state parks and approximately 14 municipal parks, which collectively provide approximately 22 public boat ramps. In addition, there are approximately 439 private boat ramps, 53 commercial boat ramps, 4,021 commercial boat slips for rent, and 7,761 permitted private boat slips on the lake (GRDA, 2015).

Boating on Grand Lake occurs year-round, although the primary recreation season extends from April 1 until October 1. Fishing is a year-round activity on Grand Lake and an average of 117 fishing tournaments were held on the lake each year between 2009 and 2014. Waterfowl hunting occurs from September through January primarily in the riverine (*i.e.,* uppermost) sections of the lake (GRDA, 2015).

GRDA indicated in its application that hazards that lead to boats running aground exist more often at lower lake levels. For example, nearly 80 percent of all boat groundings during the high recreation season (May 1 until September 30) in 2013–2014 occurred while the lake was being drawn down pursuant to the rule curve or maintained at elevation 741 feet. GRDA reports that, in contrast, despite more boats using the lake in 2015 than in 2014,[36] substantially fewer boats ran aground during the August 16 to October 31, 2015 timeframe during the 2015 temporary variance compared to the same timeframe in 2013 and 2014 (GRDA, 2016).[37]

6.11.2 Environmental Effects

Operation under the proposed rule curve would increase water elevations at Grand Lake by one to two feet from August 15 to October 31 each year over the remainder of the current license period. These higher elevations would greatly improve public and private access at numerous boat ramps and docks around Grand Lake, and increase the total water surface area available for boating, significantly enhancing recreation opportunities during the popular late summer/early fall recreation season.[38] Higher reservoir elevations would also likely decrease boating hazards in Grand Lake. Based on the information provided by GRDA, the vast majority of boat groundings in 2013 and 2014 occurred during the tail end of the high recreation season when high recreational boating use coincided with periods of lowest water elevations pursuant to the current rule curve. Such a pattern did not occur in 2015, when Grand Lake was held to 742 feet or above. Therefore, operation using the proposed rule curve in 2017 and future years should contribute to a decrease in boat groundings at Grand Lake in the late summer early fall.

6.12 Land Use and Aesthetics

6.12.1 Affected Environment

Grand Lake has approximately 522 miles of irregular shoreline, which is characterized by narrow channels and many coves. The shoreline of Grand Lake ranges from forested areas with a mixture of vegetative cover types to contiguous manicured lawns, residential housing, and commercial development. The lands adjacent to the northern and western shores of the project consist primarily of rolling plains with occasional hills and ridges and gently sloping shoreline. The lands adjacent to the southern and eastern shores are characterized by deep ravines and narrow valleys separated by broad, gently rolling uplands, with shorelines consisting primarily of steep rocky beaches and bluffs. The upper section of Grand Lake is primarily undeveloped with a more natural aesthetic, while the majority of the shoreline of the lower section of Grand Lake is primarily highly developed.

About 50 percent of land within the project boundary comprises deciduous forest, followed by cropland and pasture lands comprising about 35 percent of the project lands. Residential, commercial, and other development accounts for about 11 percent of total land area within the project boundary. The Grand Lake area is popular for recreation and residential development, particularly summer homes. GRDA manages the reservoir's shorelines via a permitting system and operates a lake patrol to monitor and inspect permitted shoreline uses and enforce its boating regulations (FERC, 2009).

6.12.2 Environmental Effects

Operation under the proposed rule curve would allow GRDA to maintain higher reservoir elevations from August 15 to October 31, which would increase the amount of project lands under water by up to approximately 2,000 acres during this timeframe compared to current project operations.[39] As noted

[36] GRDA's aerial boat counts on Labor Day weekend counted nearly 2,000 boats during Labor Day weekend 2015 compared with fewer than 500 boats during Labor Day weekend 2014.

[37] In 2013 and 2014 combined, 75 percent (*i.e.,* 24 of 32 reported incidents) of all reported boat groundings throughout the year occurred during the August 16 to October 31 timeframe. In 2015, 29 percent (*i.e.,* 2 of 7 reported incidents) of all reported boat groundings throughout the year occurred during the August 16 to October 31 timeframe.

[38] In its December 23, 1985 license application for the Pensacola Project, GRDA estimated that each additional foot of water surface elevation would result in an additional 1,000 acres of surface area.

[39] In its December 23, 1985 license application for the Pensacola Project, GRDA estimated that each

above under *Recreation,* the higher water levels would increase the amount of area available for boating in the reservoir and improve public and private access to numerous boat ramps and docks located at the project, which would result in moderate benefits to these land uses adjacent to the project.

In addition, the higher water levels under the proposed rule curve would likely improve the scenic quality of the areas of reservoir shoreline that would have otherwise been dewatered and devoid of vegetation during this timeframe. Such beneficial effects on aesthetics of the project would be minor.

7.0 Conclusions and Recommendations

7.1 Comprehensive Development and Staff-Recommended Measures

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. Therefore, when we review a hydropower application, we consider power and non-power development, to include the protection of, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and other aspects of environmental quality. In deciding whether, and under what conditions, to approve hydropower applications, we must determine that the project would be best adapted to a comprehensive plan for improving or developing the waterway. This section summarizes our findings in this EA and reviews our recommendations for conditions to be included in any approval of the proposed permanent amendment.

Based on our independent review of the licensee's proposed amendment, agency and public comments filed on the licensee's proposal, and our review of environmental effects, we believe approval of GRDA's proposal, with Oklahoma DEQ's mandatory WQC conditions, is the preferred alternative. We recommend this alternative because, based on the information reviewed and analysis performed in this EA, it would provide several significant benefits with few measurable negative impacts.

Operation of the Pensacola Project using the proposed rule curve would allow more water to be stored in Grand Lake, with less fluctuation in water levels, from August 15 through October 31 each year for the remainder of the current license term. Operation under the proposed rule curve would likely result in minor reductions in shoreline erosion rates and could promote revegetation of some shallow shoreline areas that could further reduce erosion over time. This change would not result in any material adverse impacts to water quality. In hot dry years, higher water levels in late summer and early fall would make more water available for releases to maintain downstream DO and avoid fish kills. During any periods of declared severe to exceptional drought, GRDA's proposed Drought Plan would provide additional protection for downstream water quality. A reduction in water level fluctuations in Grand Lake should have positive effects on fisheries and other aquatic resources by providing more stable shallow-water habitat and cover, especially for juvenile fishes, and through increased plant growth and establishment in wetland areas, including emergent and submerged vegetation. Fish occupying the project tailwater and river downstream would likely benefit from water quality improvements in hot, dry years and during any declared severe to exceptional drought as discussed above.

Higher elevations at Grand Lake in late summer and early fall would provide a significant benefit to recreation by increasing the water surface area available for boating, improving access at public and private launching facilities, and likely decreasing shallow-water boating hazards. Higher seasonal water elevations would likely provide minor aesthetic improvements in some areas that were dewatered and devoid of vegetation in the past.

While we have not identified any definitive significant short-term or long-term negative effects to resources that would likely occur with operation under the proposed rule curve, commenters have expressed concern regarding flooding effects and affects to cultural and historic resources.

Flood-related issues. As discussed earlier, most flood-related issues raised by commenters in this proceeding were reviewed during the Commission's processing of GRDA's temporary variance requests in 2015 and 2016 which involved the same changes in reservoir elevations. Staff's findings on the flood-related issues were presented in the temporary variance orders. In the *Water Quantity* section above, staff summarizes those findings that would allow the same rule curve change each year for the remaining term of the license. To the extent commenters address flooding concerns that are not related to the pending amendment, the Commission will perform a comprehensive review of the project and any proposed future operation in the upcoming relicensing proceeding. That proceeding is the appropriate forum to identify and address issues that are separate from GRDA's amendment application.

Cultural and historic resource protection. We found in our analysis that the proposed permanent rule curve change would occur within the project's existing fluctuation limits and therefore, would be unlikely to affect any new lands. No land-clearing or land-disturbing activities would be required for this amendment. In addition, less fluctuating water levels should reduce the chances of erosion affecting cultural or historic resources in near-shore areas. Cultural and historic properties located on or near the shoreline would potentially be inundated for a longer period during the amendment, providing more cover and helping to prevent exposure. If anything, keeping water levels higher during the late summer and early fall period, when more people are present, would reduce the potential for artifact collection or looting. GRDA's agreement to prepare specific plans in consultation with the Oklahoma SHPO and Oklahoma AS if either agency determines that historic properties might be affected would further protect cultural and historic resources.

7.1.1 Staff-Recommended Measures

Along with its proposed changes to the rule curve, GRDA proposes a Storm Plan that would provide for assessment of risks of upstream and downstream flooding during high precipitation events and a process to proactively and collaboratively manage these events. A Storm Plan was in place during the 2015 and 2016 temporary variance periods, and was successful in aiding communication related to high precipitation events within the basin and managing project facilities during those events. Under the current proposal, the Storm Plan would be in effect each year for the remainder of the license period. We recommend that any approval of GRDA's proposed amendment incorporate the Storm Plan.

GRDA also proposes a Drought Plan that would help protect downstream water quality and fisheries, as well as generation at its downstream Markham Ferry Project and Salina Pumped Storage Project if a severe to exceptional drought is declared and reservoir elevations fall below the rule curve. The Drought Plan would be in effect each year for the remainder of the license period. We recommend that any approval of GRDA's proposal incorporate the Drought Plan.

additional foot of water surface elevation would result in an additional 1,000 acres of surface area.

We recommend that any approval of GRDA's proposal incorporate the annual reporting requirement that is a condition of Oklahoma DEQ's June 30, 2016 401 certification. The requirement should mirror paragraph (E) of the Commission's August 12, 2016 order approving the temporary rule curve variance for 2016, which required GRDA to notify Oklahoma DEQ, at the same time it notifies other agencies pursuant to DO mitigation plans approved under Article 403, of any significant DO deficiencies or DO mitigation, so that Oklahoma DEQ can track GRDA's progress in maintaining state water quality standards. In addition to Oklahoma DEQ's ongoing annual reporting requirement, Oklahoma DEQ also included three other mandatory WQC conditions: (1) that the certification does not authorize any discharge or dredging; (2) that the reservoir be maintained between elevations 742 and 744 feet as requested by GRDA; and (3) that emergency and routine maintenance will be as permitted by the Corps. We have no objections to these conditions being added to the license in any order approving the proposed amendment.

7.2 Consistency With Comprehensive Plans

Section 10(a)(2) of the FPA, 16 U.S.C. 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. We reviewed 6 qualifying comprehensive plans that are applicable to the proposed action at the Pensacola Project No. 1494, located in Oklahoma. The proposed action is consistent with all of the reviewed comprehensive plans.

Oklahoma

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Oklahoma Department of Wildlife Conservation. U.S. Fish and Wildlife Service. 1989. Eastern Oklahoma wetlands plan: Lower Mississippi Valley joint venture—North American waterfowl management plan. Oklahoma City, Oklahoma. August 1989.

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Oklahoma Water Resources Board. 2002. Oklahoma's water quality standards and implementation of Oklahoma's water quality standards. Oklahoma Administrative Code, Title 785, Chapters 45 and 46 effective July 1, 2002. Oklahoma City, Oklahoma.

Oklahoma Tourism & Recreation Department. 2001 Statewide Comprehensive Outdoor Recreation Plan (SCORP): The public recreation estate. Oklahoma City, Oklahoma.

United States

U.S. Fish and Wildlife Service. 1989. Fisheries USA: The recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, DC.

8.0 Finding of No Significant Impact

Based on information, analysis, and evaluations contained in this EA, we find that approval of the proposed rule curve amendment, to include the mandatory conditions stipulated by Oklahoma DEQ in its 401 certification, would not constitute a major federal action significantly affecting the quality of the human environment.

9.0 Literature Cited

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FERC. 1996. Environmental Assessment for application for amendment of license to modify rule curve, issued December 3, 1996. Federal Energy Regulatory Commission, Washington, DC.

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GRDA (Grand River Dam Authority). 2016. Application for non-capacity amendment of license, including possible temporary variance for 2016 for the Pensacola Project. Dated and filed May 6, 2016.

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GRDA. 2008b. Environmental assessment of habitable structures on Grand Lake. Filed December 23, 2008; as cited in FERC 2009.

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USGS (United States Geological Survey). 2016. Data collected at USGS gage 07190500 Neosho River Near Langley, OK. Available at: *http://nwis.waterdata.usgs.gov/ok/nwis/uv?site_no=07190500.* Accessed November 28, 2016.

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Environmental Systems Research Institute: Geographic Information Systems (ESRI–GIS). 2016. National Hydrography Dataset. Available at: *http://nhd.usgs.gov/.* Accessed November 25, 2016.

10.0 List of Preparers

Mark Carter—Recreation, Land Use and Aesthetics (Environmental Biologist; B.S. Fisheries Science; M.S. Natural Resources and Environmental Sciences)

Jeremy Jessup, PE—Water Quantity and Flows (Civil Engineer; B.S. and M.S. Civil and Infrastructure Engineering)

Rebecca Martin—Terrestrial Resources, Wetlands, and Endangered Species (Environmental Biologist; B.S. Environmental Earth Science; M.S. Biology)

Kurt Powers—Cultural and Historic Resources (Wildlife Biologist; B.A. Environmental Science and Foreign Affairs; M.S. Environmental Science and Engineering)

James Puglisi, PE—Water Quantity and Flows (Senior Civil Engineer; B.S. and M.S. Civil Engineering)

B. Peter Yarrington–Water Quantity and Quality, Fisheries and Aquatic Resources (Fisheries Biologist; B.S. Aquatic Ecology, M.S. Fisheries Science and Taxonomy)

[FR Doc. 2017–00566 Filed 1–11–17; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Combined Notice of Filings #1

Take notice that the Commission received the following exempt wholesale generator filings:

Docket Numbers: EG17–42–000.
Applicants: Cotton Plains Wind I, LLC.
Description: Notice of Self-Certification of Exempt Wholesale Generator Status of Cotton Plains Wind I, LLC.
Filed Date: 1/5/17.
Accession Number: 20170105–5166.
Comments Due: 5 p.m. ET 1/26/17.

Docket Numbers: EG17–43–000.
Applicants: Old Settler Wind, LLC.
Description: Notice of Self-Certification of Exempt Wholesale Generator Status of Old Settler Wind, LLC.
Filed Date: 1/5/17.
Accession Number: 20170105–5169.
Comments Due: 5 p.m. ET 1/26/17.

Take notice that the Commission received the following electric rate filings:

Docket Numbers: ER17–424–001.
Applicants: Footprint Power Salem Harbor Development.
Description: Tariff Amendment: Amendment to Application for MBR to be effective 11/30/2016.
Filed Date: 1/6/17.
Accession Number: 20170106–5021.
Comments Due: 5 p.m. ET 1/27/17.

Docket Numbers: ER17–751–000.
Applicants: PJM Interconnection, L.L.C.
Description: § 205(d) Rate Filing: Queue Position AA1–047, Service Agreement No. 4598 to be effective 12/7/2016.
Filed Date: 1/6/17.
Accession Number: 20170106–5050.
Comments Due: 5 p.m. ET 1/27/17.

The filings are accessible in the Commission's eLibrary system by clicking on the links or querying the docket number.

Any person desiring to intervene or protest in any of the above proceedings must file in accordance with Rules 211 and 214 of the Commission's Regulations (18 CFR 385.211 and 385.214) on or before 5:00 p.m. Eastern time on the specified comment date. Protests may be considered, but intervention is necessary to become a party to the proceeding.

eFiling is encouraged. More detailed information relating to filing requirements, interventions, protests, service, and qualifying facilities filings can be found at: *http://www.ferc.gov/docs-filing/efiling/filing-req.pdf.* For other information, call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Dated: January 6, 2017.

Kimberly D. Bose,

Secretary.

[FR Doc. 2017–00563 Filed 1–11–17; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Project No. 2337–077]

PacifiCorp Energy; Notice of Application Tendered for Filing With the Commission and Establishing Procedural Schedule for Licensing and Deadline for Submission of Final Amendments

Take notice that the following hydroelectric application has been filed with the Commission and is available for public inspection.

a. *Type of Application:* New Major License.
b. *Project No.:* 2337–077.
c. *Date Filed:* December 30, 2016.
d. *Applicant:* PacifiCorp Energy.
e. *Name of Project:* Prospect No. 3 Hydroelectric Project.
f. *Location:* On the South Fork Rogue River, in Jackson County, Oregon. The project occupies 38.1 acres of United States lands within the Rogue River-Siskiyou National Forest under the jurisdiction of the U.S. Forest Service (Forest Service).
g. *Filed Pursuant to:* Federal Power Act, 16 U.S.C. 791(a)–825(r).
h. *Applicant Contact:* Steve Albertelli, Relicensing Project Manager, PacifiCorp Energy, 925 South Grape Street, Building 5, Medford, OR 97501; (541) 776–6676 or email at *steve.albertelli@pacificorp.com.*
i. *FERC Contact:* Dianne Rodman at (202) 502–6077 or email at *dianne.rodman@ferc.gov.*
j. This application is not ready for environmental analysis at this time.
k. *Project Description:* The existing project consists of: (1) A 24-foot-high, 172-foot-long concrete diversion dam with an integrated 98-foot-long ungated, uncontrolled ogee spillway section; (2) a 1-acre reservoir that extends 550 feet upstream from the dam with a gross storage capacity of 19 acre-feet at normal full pool elevation of 3,375 feet above sea level; (3) an 18-foot-wide intake structure at the north end of the dam on the right bank with trash rack; (4) a 15,894-foot-long flow conveyance system (project waterway) consisting of: A 273-foot-long concrete-lined canal fitted with a 25-foot-long, 9.75-foot-wide fish screen; a 66-inch-diameter, 5,448-foot-long woodstave pipe; a 5,805-foot-long concrete-lined canal; a 5-foot-wide, 6.5-foot-high, 698-foot-long concrete-lined horseshoe-shaped tunnel; a 416-foot-long canal to the forebay with a 2,486-foot-long side channel spillway discharging to Daniel Creek; and a 66-inch to 48-inch-diameter, 3,254-foot-long riveted steel penstock; (5) a powerhouse containing one vertical-shaft Francis-type turbine with an installed capacity of 7.2 megawatts; (6) a 20-foot-long, 20-foot-wide, 5-foot-deep concrete tailrace; (7) a 66-inch-diameter, 887-foot-long wood-stave inverted siphon that routes flow from the tailrace to the non-project Middle Fork Canal; (8) a 6.97-mile-long, 69-kilovolt transmission line interconnecting at the Prospect Central substation; (9) an 86-foot-long, 15-pool concrete pool-and-weir ladder to provide upstream fish passage past the dam; and (10) appurtenant facilities. The project produces an average of 35.05 gigawatt-hours annually.

PacifiCorp proposes to: Improve fish ladder function by constructing an auxiliary bypass flow system, realigning and extending the existing fish bypass return pipe, and narrowing the weir notches; replace the existing woodstave pipe and inverted wooden siphon with steel structures to eliminate leakage; rehabilitate the temporary vehicle-access bridge over the new steel pipe to meet current Forest Service standards; construct a road spur to facilitate pass-through of materials dredged from the reservoir to the bypassed reach; upgrade the six existing wildlife crossings of the project waterway's canal by widening the crossings and constructing five new wildlife crossings; and install a communications link on the U.S. Geological Survey's South Fork Rogue gage.

PacifiCorp also proposes to increase the project's minimum flow releases and ramping rates limits, as well as extending the project boundary to include the inverted siphon and access roads.

l. *Locations of the Application:* A copy of the application is available for review at the Commission in the Public Reference Room or may be viewed on the Commission's Web site at *http://www.ferc.gov* using the ''eLibrary'' link. Enter the docket number excluding the last three digits in the docket number field to access the document. For assistance, please contact FERC Online

Support at *FERCOnlineSupport @ferc.gov,* (866) 208–3676 (toll free), or (202) 502–8659 (TTY). A copy is also available for inspection and reproduction at the address in item (h) above.

m. You may also register online at *http://www.ferc.gov/docs-filing/esubscription.asp* to be notified via email of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

n. *Procedural Schedule:*

The application will be processed according to the following preliminary Hydro Licensing Schedule. Revisions to the schedule may be made as appropriate.

Milestone	Target date
Notice of Acceptance/Notice of Ready for Environmental Analysis	March 2017.
Filing of recommendations, preliminary terms and conditions, and fishway prescriptions	April 2017.
Commission issues Environmental Assessment (EA)	October 2017.
Comments on EA	November 2017.
Modified terms and conditions	January 2018.

o. Final amendments to the application must be filed with the Commission no later than 30 days from the issuance date of the notice of ready for environmental analysis.

Dated: January 6, 2017.

Kimberly D. Bose,

Secretary.

[FR Doc. 2017–00561 Filed 1–11–17; 8:45 am]

BILLING CODE 6717–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. EL17–36–000]

Advanced Energy Management Alliance v. PJM Interconnection, L.L.C.; Notice of Complaint

Take notice that on January 5, 2017, pursuant to sections 206 and 306 of the Federal Power Act, 16 U.S.C. 824e and 825e and Rules 206 and 212 of the Federal Energy Regulatory Commission's (Commission) Rules of Practice and Procedure, 18 CFR 385.206 and 385.212, Advanced Energy Management Alliance (AEMA or Complainant) filed a formal complaint against PJM Interconnection, L.L.C. (PJM or Respondent) alleging that certain provisions of PJM's Open Access Transmission Tariff and its Reliability Assurance Agreement are unjust, unreasonable and unduly discriminatory, all as more fully explained in the complaint.

The AEMA certifies that a copies of the complaint were served on the contacts for PJM as listed on the Commission's list of Corporate Officials.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. The Respondent's answer and all interventions, or protests must be filed on or before the comment date. The Respondent's answer, motions to intervene, and protests must be served on the Complainants.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the ''eFiling'' link at *http://www.ferc.gov.* Persons unable to file electronically should submit an original and 5 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street NE., Washington, DC 20426.

This filing is accessible on-line at *http://www.ferc.gov,* using the ''eLibrary'' link and is available for electronic review in the Commission's Public Reference Room in Washington, DC. There is an ''eSubscription'' link on the Web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email *FERCOnlineSupport@ferc.gov,* or call (866) 208–3676 (toll free). For TTY, call (202) 502–8659.

Comment Date: 5:00 p.m. Eastern Time on January 25, 2017.

Dated: January 6, 2017.

Kimberly D. Bose,

Secretary.

[FR Doc. 2017–00565 Filed 1–11–17; 8:45 am]

BILLING CODE 6717–01–P

ENVIRONMENTAL PROTECTION AGENCY

[FRL 9958–25–OA]

Notice of Meeting of the EPA Children's Health Protection Advisory Committee (CHPAC)

AGENCY: Environmental Protection Agency.

ACTION: Notice of meeting.

SUMMARY: Pursuant to the provisions of the Federal Advisory Committee Act, Public Law 92–463, notice is hereby given that the next meeting of the Children's Health Protection Advisory Committee (CHPAC) will be held February 1 and 2, 2017, at Georgetown University Hotel and Conference Center, 3800 Reservoir Road NW., Washington, DC 20057.

The CHPAC advises the Environmental Protection Agency on science, regulations, and other issues relating to children's environmental health.

DATES: February 1, 2017, from 1:00 p.m. to 5:30 p.m. and February 2, 2017, from 9:00 a.m. to 4:00 p.m.

ADDRESSES: 3800 Reservoir Road NW., Washington, DC 20057.

FOR FURTHER INFORMATION CONTACT: Martha Berger, Office of Children's Health Protection, USEPA, MC 1107T, 1200 Pennsylvania Avenue NW., Washington, DC 20460, (202) 564–2191 or *berger.martha@epa.gov.*

SUPPLEMENTARY INFORMATION: The meetings of the CHPAC are open to the public. An agenda will be posted to *epa.gov/children.*

Access and accommodations: For information on access or services for individuals with disabilities, please contact Martha Berger at 202–564–2191 or *berger.martha@epa.gov.*

Dated: January 9, 2017.

Martha Berger,

Designated Federal Official.

[FR Doc. 2017–00547 Filed 1–11–17; 8:45 am]

BILLING CODE 6560–50–P

FEDERAL COMMUNICATIONS COMMISSION

[OMB 3060–0057]

Information Collection Being Submitted for Review and Approval to the Office of Management and Budget

AGENCY: Federal Communications Commission.

ACTION: Notice and request for comments.

SUMMARY: As part of its continuing effort to reduce paperwork burdens, and as required by the Paperwork Reduction Act (PRA) of 1995, the Federal Communications Commission (FCC or Commission) invites the general public and other Federal agencies to take this opportunity to comment on the following information collections. Comments are requested concerning: Whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; the accuracy of the Commission's burden estimate; ways to enhance the quality, utility, and clarity of the information collected; ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology; and ways to further reduce the information collection burden on small business concerns with fewer than 25 employees. The FCC may not conduct or sponsor a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the PRA that does not display a valid OMB control number.

DATES: Written comments should be submitted on or before February 13, 2017. If you anticipate that you will be submitting comments, but find it difficult to do so within the period of time allowed by this notice, you should advise the contacts below as soon as possible.

ADDRESSES: Direct all PRA comments to Kimberly R. Keravuori, OMB, via email *Kimberly_R_Keravuori@omb.eop.gov;* and to Nicole Ongele, FCC, via email *PRA@fcc.gov* and to *Nicole.Ongele@fcc.gov.* Include in the comments the OMB control number as shown in the **SUPPLEMENTARY INFORMATION** section below.

FOR FURTHER INFORMATION CONTACT: For additional information or copies of the information collection, contact Nicole Ongele at (202) 418–2991. To view a copy of this information collection request (ICR) submitted to OMB: (1) Go to the Web page <*http://www.reginfo.gov/public/do/PRAMain*>, (2) look for the section of the Web page called ''Currently Under Review,'' (3) click on the downward-pointing arrow in the ''Select Agency'' box below the ''Currently Under Review'' heading, (4) select ''Federal Communications Commission'' from the list of agencies presented in the ''Select Agency'' box, (5) click the ''Submit'' button to the right of the ''Select Agency'' box, (6) when the list of FCC ICRs currently under review appears, look for the OMB control number of this ICR and then click on the ICR Reference Number. A copy of the FCC submission to OMB will be displayed.

SUPPLEMENTARY INFORMATION:

OMB Control Number: 3060–0057.

Title: Application for Equipment Authorization, FCC Form 731.

Form Number: FCC Form 731.

Type of Review: Revision of a currently approved collection.

Respondents: Business or other for-profit entities, and state, local, or tribal government.

Number of Respondents and Responses: 3,740 respondents; 22,250 responses.

Estimated Time per Response: 35 hours.

Frequency of Response: On occasion reporting requirement and third party disclosure requirement.

Obligation to Respond: Required to obtain or retain benefits. Statutory authority for these collections are contained in Sections 4(i), 301, 302, 303(e), 303(f), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 302, 303(e), 303(f), and 303(r).

Total Annual Burden: 778,750 hours.

Total Annual Cost: No cost.

Privacy Impact Assessment: No impact(s).

Nature and Extent of Confidentiality: There is no need for confidentiality with this collection of information.

Needs and Uses: Commission rules require that manufacturers of certain radio frequency (RF) equipment file FCC Form 731 to obtain approval prior to marketing their equipment. Manufacturers may then market their RF equipment based on a showing of compliance with technical standards established in the FCC Rules for each type of equipment or device operated under the applicable FCC Rule part. The following types of equipment are regulated (a) the RF equipment is regulated under certain rule sections of 47 CFR part 15 and Part 18, and (b) in addition, rules governing certain RF equipment operating in the licensed services also require equipment authorization as established in the procedural rules in 47 CFR part 2. The RF equipment manufacturers comply with the information collection requirements by (a) Filing FCC Form 731 electronically with the Commission, or (b) Submitting the information to a Telecommunications Certification Body (TCB), which acts on behalf of the FCC to issue grants of certification and may issue grants more expeditiously than the FCC. The TCBs have flexibility in the format in which they require the collection of information (i) TCBs may require applicants to submit the required information in FCC Form 731 format or in another format selected by the TCB, but (ii) whatever the information collection method, the information required is governed by the procedural rules in 47 CFR part 2 and a showing of compliance with the FCC technical standards for the specific type of equipment. RF manufacturer applicants for equipment certification may also request ''expedited authorization'' to market their equipment by: (a) Choosing to pay the fee levied by a TCB, and (b) submitting their request to a TCB in order for expedited authorization to market. The TCB processes the RF equipment manufacturer's application as follows: (i) The TCB receives and reviews the RF manufacturer's information submission/application; and (ii) the TCB enters the information into the FCC Equipment Authorization System database using an interface that provides the TCB with the tools to issue a standardized Grant of Equipment Authorization. Whichever method the RF manufacturers choose to submit their information—via either the FCC on FCC Form 731 or the TCB, FCC Rules require that applicants supply the following data: (a) Demographic information including Grantee name and address, contact information, etc.; (b) information specific to the equipment including FCC Identifier, equipment class, technical specifications, etc.; and (c) attachments that demonstrate compliance with FCC Rules that may include any combination of the following based on the applicable Rule parts for the equipment for which

authorization is requested: (1) Identification of equipment (*47 CFR 2.925*); (2) attestation statements that may be required for specific equipments; (3) external photos of the equipment for which authorization is requested; (4) block diagram of the device; (5) schematics; (6) test report; (7) test setup photos; (8) Users Manual; (9) Internal Photos; (10) Parts List/Tune Up Information; (11) RF Exposure Information; (12) Operational Description; (13) Cover Letters; and, (14) Software Defined Radio/Cognitive Radio Files.

In general, an applicant's submission is as follows: (a) FCC Form 731 includes approximately two pages covering the demographic and equipment identification information; and (b) applicants must supply additional documentation and other information, as described above, demonstrating conformance with FCC Rules, which may range from 100–1,000 pages. The supplemental information is essential to control potential interference to radio communications, which the FCC may use, as is necessary, to investigate complaints of harmful interference. In response to new technologies and in allocating spectrum, the Commission may establish new technical operating standards: (a) RF equipment manufacturers must meet the new standards to receive an equipment authorization, and (b) RF equipment manufacturers must still comply with the Commission's requirements in FCC Form 731 and demonstrate compliance as required by 47 CFR part 2 of FCC Rules. Thus, this information collection applies to a variety of RF equipment: (a) That is currently manufactured, (b) that may be manufactured in the future, and (c) that operates under varying technical standards. On July 8, 2004, the Commission adopted a Report and Order, *Modification of Parts 2 and 15 of the Commission's Rules for Unlicensed Devices and Equipment Approval, ET Docket No. 03–201, FCC 04–165.* The change requires that all paper filings required in *47 CFR Sections 2.913, 2.926(c), 2.929(c),* and *2.929(d)* of the rules are outdated and now must be filed electronically via the Internet on FCC Form 731. The Commission believes that electronic filing speeds up application processing and supports the Commission in further streamlining to reduce cost and increase efficiency. Information on the procedures for electronically filing equipment authorization applications can be obtained from the Commission's rules, and from the Internet at: *http://transition.fcc.gov/oet/ea/ea-app-info.htm.*

On October 26, 2014, the Federal Communications Commission released a *Report and Order,* FCC 14–172, PS Docket 13–87, that modified Sections 2.1033 and 90.548 of the rules and effectively required equipment manufacturers to demonstrate compliance with the Interoperability Technical Standards contained in Section 90.548 of the Commission's rules as a condition for FCC certification of equipment designed to operate on the 700 MHz narrowband interoperability channels. One method of demonstrating this requirement is documenting compliance with the Project 25 Compliance Assessment Program (P25 CAP). CAP is a program that establishes an independent compliance assessment process to ensure that communications equipment conforms to Project 25 standards and is interoperable across vendors. Alternatively, a manufacturer may submit a document describing how it determined compliance with Section 90.548 and that its equipment is interoperable across vendors.

On August, 22, 2016, the Federal Communications Commission released an *Order on Reconsideration,* FCC 16–111, PS Docket No. 13–87 (see attached) that modified Part 2 and Part 90 of the Rules for equipment approval and Private Land Mobile Radio Services. See 81 FR 66830 (Sept. 29, 2016). The amended rule requires all Wireless Communications Equipment Manufacturers who manufacture 700 MHz narrowband equipment capable of operating on the interoperability channels to demonstrate compliance with the Commission's Interoperability Technical Standards in 90.548. The *Order on Reconsideration* prescribes two methods for showing compliance with Section 90.548 after equipment authorization application approval and before the marketing and sale of equipment capable of operating on the 700 MHz narrowband interoperability channels. Specifically, the Commission modified Section 2.1033(c)(20) to provide that:

Before equipment operating under part 90 of this chapter and capable of operating on the 700 MHz interoperability channels (See § 90.531(b)(1) of this chapter) may be marketed or sold, the manufacturer thereof shall have a Compliance Assessment Program Supplier's Declaration of Conformity and Summary Test Report or, alternatively, a document detailing how the manufacturer determined that its equipment complies with § 90.548 of this chapter and that the equipment is interoperable across vendors. Submission of a 700 MHz narrowband radio for certification will constitute a representation by the manufacturer that the radio will be shown, by testing, to be interoperable across vendors before it is marketed or sold.

The Commission also modified Section 90.548(c) of the Commission's rules to provide:

Transceivers capable of operating on the interoperability channels listed in § 90.531(b)(1) shall not be marketed or sold unless the transceiver has previously been certified for interoperability by the Compliance Assessment Program (CAP) administered by the U.S. Department of Homeland Security; provided, however, that this requirement is suspended if the CAP is discontinued. Submission of a 700 MHz narrowband radio for certification will constitute a representation by the manufacturer that the radio will be shown, by testing, to be interoperable across vendors before it is marketed or sold. In the alternative, manufacturers may employ their own protocol for verifying compliance with Project 25 standards and determining that their product is interoperable among vendors. In the event that field experience reveals that a transceiver is not interoperable, the Commission may require the manufacturer thereof to provide evidence of compliance with this § 90.548.

To effectively implement the provisions of the new Rules, no modifications to the existing FCC Form 731 Application for Equipment Authorization are required. The changes are intended to simplify the filing process, ensure equipment complies with Project 25 standards and is interoperable across vendors. The following specific methods are proposed to ensure compliance with Section 90.548 and simplify filing processes for equipment manufacturers:

(1) The *Order on Reconsideration* establishes that before the marketing or sale of equipment designed to operate on the 700 MHz narrowband interoperability channels, manufacturers shall have a Compliance Assessment Program Supplier's Declaration of Conformity and Summary Test Report or, alternatively, a document detailing how the manufacturer determined that its equipment complies with § 90.548 and that the equipment is interoperable across vendors. OMB has approved the information collections associated with

P25 CAP compliance under OMB Control No. 1640–0015.[1]

(2) In the event that field experience reveals that a transceiver is not interoperable, the Commission may require the manufacturer thereof to provide evidence of compliance with § 90.548.

The modified rules provide a benefit to public safety licensees by ensuring that only equipment that has been tested for interoperability in a vendor-neutral environment before equipment can be marketed or sold to public safety. This will provide the additional benefit of engendering competition in the public safety equipment marketplace by eliminating system compatibility as a gating factor when evaluating equipment purchases. The *Order on Reconsideration* reduces the burden on equipment manufacturers by allowing them to meet this standard by demonstrating compliance with the P25 CAP or manufacturers' interoperability testing protocol. Compliance with the P25 CAP program is already a requisite for grant eligibility and agency purchasing standards, consequently any new burden imposed by this requirement would be minimal.

Federal Communications Commission.

Marlene H. Dortch,

Secretary, Office of the Secretary.

[FR Doc. 2017–00478 Filed 1–11–17; 8:45 am]

BILLING CODE 6712–01–P

[1] Congressional direction for a P25 compliance assessment program can be found in the *COPS Law Enforcement Technologies and Interoperable Communications Program* section of the Conference Report to Public Law 109–148, as well as the *Science & Technology Management and Administration* section of Division E of the Conference Report to Public Law 110–161.

FEDERAL MARITIME COMMISSION

Notice of Agreements Filed

The Commission hereby gives notice of the filing of the following agreements under the Shipping Act of 1984. Interested parties may submit comments on the agreements to the Secretary, Federal Maritime Commission, Washington, DC 20573, within twelve days of the date this notice appears in the **Federal Register**. Copies of the agreements are available through the Commission's Web site (*www.fmc.gov*) or by contacting the Office of Agreements at (202)–523–5793 or *tradeanalysis@fmc.gov.*

Agreement No.: 008493–031.

Title: Trans-Pacific American Flag Berth Operators Agreement.

Parties: American President Lines, Ltd. and A.P. Moller-Maersk A/S.

Filing Party: Eric Jeffrey, Esq; Nixon Peabody; 799 9th Street NW., Suite 500; Washington, DC 20001.

Synopsis: The amendment adds Matson Navigation Company as a member of the Agreement.

Agreement No.: 012067–017.

Title: U.S. Supplemental Agreement to HLC Agreement.

Parties: BBC Chartering Carriers GmbH & Co. KG and BBC Chartering & Logistic GmbH & Co. KG, as a single member; Chipolbrok (Chinese-Polish Joint Stock Shipping Company); Hanssy Shipping Pte. Ltd.; Industrial Maritime Carriers, L.L.C.; MACS Maritime Carrier Shipping GmbH & Co.; and Rickmers-Linie GmbH & Cie. KG.

Filing Party: Wade S. Hooker, Esq.; 211 Central Park W; New York, NY 10024.

Synopsis: The amendment changes the number of members of the Executive Committee of the worldwide Heavy Lift Club (''HLC'') from thirty-five percent of the HLC members to four or five HLC members, and updates the membership of the HLC. There is no change in the parties to the U.S. Agreement.

Agreement No.: 012426–001.

Title: The OCEAN Alliance Agreement.

Parties: COSCO SHIPPING Lines Co., Ltd.; CMA CGM S.A.; Evergreen Marine Corporation (Taiwan) Ltd. acting on its own behalf and/or on behalf of other members of the Evergreen Line Joint Service Agreement (ELJSA); and Orient Overseas Container Line Limited and OOCL (Europe) Limited, acting as one party.

Filing Party: Robert K. Magovern, Esq.; Cozen O'Connor; 1200 Nineteenth St. NW., Washington DC 20036.

Synopsis: This Amendment revises Article 2 of the Agreement to reflect a recently implemented name change of one of the parties, COSCO Container Lines Co., Ltd., to COSCO SHIPPING Lines Co., Ltd.

Agreement No.: 012452.

Title: CMA CGM/HLAG U.S.-West Med Slot Sale Arrangement.

Parties: CMA CGM S.A. and Hapag-Lloyd AG.

Filing Party: Heather M. Spring, Esq.; CMA CGM (America) LLC; 5701 Lake Wright Drive; Norfolk, VA 23502.

Synopsis: The agreement authorizes CMA CGM to charter space to Hapag Lloyd on a single voyage from Spain and Italy to the U.S. Gulf Coast.

Agreement No.: 012453.

Title: MOL/NMCC/WLS/KL Space Charter Agreement.

Parties: Mitsui O.S.K. Lines, Ltd.; Nissan Motor Car Carrier Co., Ltd.; World Logistics Services (U.S.A.), Inc.; and Kawasaki Kisen Kaisha, Ltd.

Filing Party: Eric Jeffrey, Esq; Nixon Peabody; 799 9th Street NW., Suite 500; Washington, DC 20001.

Synopsis: The agreement authorizes the parties to charter space to one another on an as needed, as available, basis for the carriage of vehicles and other Ro-Ro cargo in the trades between the United States and all foreign countries.

By Order of the Federal Maritime Commission.

Dated: January 6, 2017.

Rachel E. Dickon,

Assistant Secretary.

[FR Doc. 2017–00471 Filed 1–11–17; 8:45 am]

BILLING CODE 6731–AA–P

FEDERAL RESERVE SYSTEM

Formations of, Acquisitions by, and Mergers of Bank Holding Companies

The companies listed in this notice have applied to the Board for approval, pursuant to the Bank Holding Company Act of 1956 (12 U.S.C. 1841 *et seq.*) (BHC Act), Regulation Y (12 CFR part 225), and all other applicable statutes and regulations to become a bank holding company and/or to acquire the assets or the ownership of, control of, or the power to vote shares of a bank or bank holding company and all of the banks and nonbanking companies owned by the bank holding company, including the companies listed below.

The applications listed below, as well as other related filings required by the Board, are available for immediate inspection at the Federal Reserve Bank indicated. The applications will also be available for inspection at the offices of the Board of Governors. Interested persons may express their views in writing on the standards enumerated in the BHC Act (12 U.S.C. 1842(c)). If the proposal also involves the acquisition of a nonbanking company, the review also includes whether the acquisition of the nonbanking company complies with the standards in section 4 of the BHC Act (12 U.S.C. 1843). Unless otherwise noted, nonbanking activities will be conducted throughout the United States.

Unless otherwise noted, comments regarding each of these applications must be received at the Reserve Bank indicated or the offices of the Board of Governors not later than February 8, 2017.

A. *Federal Reserve Bank of Dallas* (Robert L. Triplett III, Senior Vice President) 2200 North Pearl Street, Dallas, Texas 75201–2272:

1. *Independent Bank Group, Inc., McKinney, Texas;* to acquire 100 percent

of Carlile Bancshares, Inc., Fort Worth, Texas, and indirectly acquire Northstar Bank, Denton, Texas. Independent Bank Group, Inc., McKinney, Texas also has applied to acquire Carlile Capital, LLC., Fort Worth, Texas, Washington Investment Company, Denver, Colorado, and Colorado Front Range Holdings, Inc., Denver, Colorado, and thereby engage in activities relating to asset management, servicing, and collection activities, pursuant to Section 225.28(b)(2)(vi) of Regulation Y.

Board of Governors of the Federal Reserve System, January 9, 2017.

Yao-Chin Chao,

Assistant Secretary of the Board.

[FR Doc. 2017–00543 Filed 1–11–17; 8:45 am]

BILLING CODE 6210–01–P

GENERAL SERVICES ADMINISTRATION

[OMB Control No. 3090–0304]; [Docket No. 2016–0001; Sequence No. 6]

Submission for OMB Review; USA.gov and All Related Subdomains

AGENCY: The Technology Transformation Service, General Services Administration (GSA).

ACTION: Notice of request for comments regarding an extension to an existing OMB clearance.

SUMMARY: Under the provisions of the Paperwork Reduction Act, the Regulatory Secretariat Division will be submitting to the Office of Management and Budget (OMB) a request for comments regarding an existing OMB clearance concerning *USA.gov* and all related subdomains.

DATES: Submit comments on or before February 13, 2017.

ADDRESSES: Submit comments identified by Information Collection 3090–0304; *USA.gov* and All Related Subdomains by any of the following methods:

• *Regulations.gov: http://www.regulations.gov.* Submit comments via the Federal eRulemaking portal by searching the OMB control number 3090–0304. Select the link ''Comment Now'' that corresponds with ''Information Collection 3090–0304; *USA.gov* and All Related Subdomains''. Follow the instructions provided at the ''Submit a Comment'' screen. Please include your name, company name (if any), and ''Information Collection 3090–0304; *USA.gov* and All Related Subdomains'' on your attached document.

• *Mail:* General Services Administration, Regulatory Secretariat Division (MVCB), 1800 F Street NW., Washington, DC 20405. ATTN: Ms. Flowers/ IC 3090–0304; *USA.gov* and All Related Subdomains.

Instructions: Please submit comments only and cite Information Collection 3090–0304; *USA.gov* and All Related Subdomains, in all correspondence related to this collection. Comments received generally will be posted without change to *http://www.regulations.gov,* including any personal and/or business confidential information provided. To confirm receipt of your comment(s), please check *www.regulations.gov,* approximately two to three days after submission to verify posting (except allow 30 days for posting of comments submitted by mail).

FOR FURTHER INFORMATION CONTACT: John Yuda, Federal Citizen Information Center, GSA, telephone 202–306–9046 or via email at *john.yuda@gsa.gov.*

SUPPLEMENTARY INFORMATION:

A. Purpose

USA.gov and All Related Subdomains (*https://www.USA.gov*) provides an account to a user that gives them control over their interactions with government agencies and how Government uses and accesses their personal information. Users have the option of creating a personal profile that can be reused across government to personalize interactions and streamline common tasks such as filling out forms. Government agencies can build applications that can request permission from the user to access their account and read their personal profile.

The information in the system is contributed voluntarily by the user and cannot be accessed by the Government without explicit consent of the user; information is not shared between government agencies, except when the user gives explicit consent to share his or her information, and as detailed in the *USA.gov* and All Related Subdomains System of Records Notice (SORN), published in the **Federal Register** at 81 FR 4664 on July 18, 2016.

The information collected is basic profile information, and may include: Name, email address, home address, phone number, date of birth, gender, marital status and basic demographic information such as whether the individual is married, a veteran, a small business owner, a parent or a student. Use of the system, and contribution of personal information, is completely voluntary.

B. Annual Reporting Burden

Respondents: 10,000.
Responses per Respondent: 1.
Total Annual Responses: 10,000.
Hours per Response: .05.
Total Burden Hours: 500.

C. Public Comments

Public comments are particularly invited on: Whether this collection of information is necessary and whether it will have practical utility; whether our estimate of the public burden of this collection of information is accurate, and based on valid assumptions and methodology; ways to enhance the quality, utility, and clarity of the information to be collected.

Obtaining Copies of Proposals: Requesters may obtain a copy of the information collection documents from the General Services Administration, Regulatory Secretariat Division (MVCB), 1800 F Street NW., Washington, DC 20405, telephone 202–501–4755.

Please cite OMB Control No. 3090–0304, *USA.gov* and All Related Subdomains, in all correspondence.

Dated: January 4, 2017.

David A. Shive,

Chief Information Officer.

[FR Doc. 2017–00482 Filed 1–11–17; 8:45 am]

BILLING CODE 6820–34–P

GENERAL SERVICES ADMINISTRATION

[OMB Control No. 3090–00XX; Docket No. 2016–0001; Sequence 11]

Submission for OMB Review; Alliant2 Greenhouse Gas Disclosure

AGENCY: Federal Acquisition Service (FAS), General Services Administration (GSA).

ACTION: Notice of request for comments regarding a new request for an OMB clearance.

SUMMARY: Under the provisions of the Paperwork Reduction Act, the Regulatory Secretariat Division will be submitting to the Office of Management and Budget (OMB) a request to review and approve a new information collection requirement regarding OMB Control No: 3090–00XX; Alliant2 Greenhouse Gas Disclosure. A notice was published in the **Federal Register** at 81 FR 57911 on August 24, 2016. Three comments were received.

DATES: Submit comments on or before February 13, 2017.

ADDRESSES: Submit comments identified by Information Collection 3090–00xx; Alliant2 Greenhouse Gas Disclosure by any of the following methods:

• *Regulations.gov: http://www.regulations.gov.* Submit comments

via the Federal eRulemaking portal by searching for ''Information Collection 3090–00xx; Alliant2 Greenhouse Gas reporting''. Select the link ''Submit a Comment'' that corresponds with ''Information Collection 3090–00xx; Alliant2 Greenhouse Gas Disclosure''. Follow the instructions provided at the ''Submit a Comment'' screen. Please include your name, company name (if any), and ''Information Collection 3090–00xx; Alliant2 Greenhouse Gas Disclosure'' on your attached document.

• *Mail:* General Services Administration, U.S. General Services Administration, Regulatory Secretariat Division (MVCB), 1800 F Street NW., Washington, DC 20405. ATTN: Ms. Flowers/IC 3090–00XX, Alliant2 Greenhouse Gas Disclosure.

Instructions: Please submit comments only and cite Information Collection 3090–00XX; Alliant2 Greenhouse Gas Disclosure, in all correspondence related to this collection. Comments received generally will be posted without change to *http://www.regulations.gov,* including any personal and/or business confidential information provided. To confirm receipt of your comment(s), please check *www.regulations.gov,* approximately two to three days after submission to verify posting (except allow 30 days for posting of comments submitted by mail).

FOR FURTHER INFORMATION CONTACT: Dana Arnold, Director, Federal Acquisition Service Office of Acquisition Management, Special Programs Branch, at telephone 703–605–0534, or via email to *dana.arnold@gsa.gov.*

SUPPLEMENTARY INFORMATION:

A. Purpose

President Obama has made Greenhouse Gas (GHG) Emissions reduction nationwide and in the Federal community a priority. The President's Executive Order 13693, *Planning for Federal Sustainability in the Next Decade,* published in the **Federal Register** at 80 FR 15871, on March 25, 2015, requires the seven largest procuring agencies to implement procurements that take into consideration contractor GHG emissions and GHG management practices.

GSA has selected the Alliant2 Government-wide Acquisition Contract (GWAC) acquisition for inclusion of contractor GHG emissions disclosure requirements. Alliant, GSA's premier enterprise GWAC, provides flexible access to customized IT solutions from a large, diverse pool of industry partners. Alliant2 will offer both large and small contractors. It is GSA's intent to require the large (unrestricted) Alliant2 contractors to inventory and publicly disclose their operational GHG emissions, set targets for reducing those emissions, and disclose progress toward meeting their targets. Of the current Alliant contractors, approximately 40 percent already publicly disclose their GHG emissions in response to requests from their non-government customers, investors, insurers, and corporate sustainability policies.

Public disclosure of GHG emissions and GHG reduction goals or targets has become standard practice in many industries, and companies are increasingly asking their own suppliers about their GHG management practices. More than 4,000 companies provided public disclosure through third-party organization CDP (formerly the Carbon Disclosure Project) in 2015. Performing a GHG inventory provides insight into operations and opportunities for energy and operational savings that can result in both environmental and financial benefits.

The Allliant2 GHG disclosure requirement will require the unrestricted (large and medium-sized) Alliant2 contractors to inventory, and publicly disclose their operational GHG emissions, set targets for reducing those emissions, and report progress toward meeting their targets. This will be an annual requirement.

B. Discussion and Analysis

GSA received three comments from one individual and one industry association.

Comment: A commenter noted that contracting law with respect to GHG disclosures should be established in the Federal Acquisition Regulation, not an individual acquisition.

Response: E.O. 13693 requires the seven largest purchasing agencies to include GHG management in five acquisitions annually. As one of the seven agencies, GSA selected the Alliant2 contract as one of its five acquisitions for FY2017.

Comment: A commenter stated that requirements for GHG disclosure should be limited to the reporting on the existence of a GHG inventory and targets for reductions, with the corresponding provision of a URL to a publicly available Web site where this information has already been disclosed.

Response: GSA believes that simply reporting that GHG emissions information has been disclosed through a third-party portal or a corporate Web site is not enough. Rather, the sharing of information about GHG management will be useful to the Alliant2 contractors, particularly to provide best practices proven to increase energy efficiency and reduce costs. GSA can review the disclosures for best practices and share them with the Alliant2 community.

Comment: The commenter supports the approach to GHG disclosure laid out by the Alliant2 contracting office, noting that it is the least invasive and should be the pattern across government as additional GHG inventory and disclosure requirements become more prevalent. The Alliant2 awardees should be required to disclose whether they have a GHG inventory and goals or targets, and if so where they make the inventory and goals or targets publicly available. The commenter believes that a Paperwork Reduction Act waiver is not necessary.

Response: GSA thanks the commenter for the comment.

Comment: The commenter stated that the estimated annual reporting burden was too low and estimated that for large companies operating globally the burden could exceed 200 hours annually.

Response: The Alliant2 contractors under the unrestricted contract will be a mix of large and medium-sized businesses, not all of whom operate globally. Taking into account the new information provided by the commenter, previous research, as well as its own experience conducting a GHG inventory across a large set of buildings, GSA is increasing the estimated burden to 120 hours per respondent annually.

C. Annual Reporting Burden

Respondents: 60.
Responses per Respondent: 1.
Total Annual Responses: 60.
Hours per Response: 120.
Total Burden Hours: 7,200.

Public comments are particularly invited on: Whether this collection of information is necessary, whether it will have practical utility; whether our estimate of the public burden of this collection of information is accurate, and based on valid assumptions and methodology; ways to enhance the quality, utility, and clarity of the information to be collected; and ways in which we can minimize the burden of the collection of information on those who are to respond, through the use of appropriate technological collection techniques or other forms of information technology.

Obtaining Copies of Proposals: Requesters may obtain a copy of the information collection documents from the General Services Administration, Regulatory Secretariat Division (MVCB),

1800 F Street NW., Washington, DC 20405, telephone 202–501–4755.

Please cite OMB Control No. 3090–00XX, Alliant2 Greenhouse Gas Disclosure, in all correspondence.

Dated: January 4, 2017.

David A. Shive,

Chief Information Officer.

[FR Doc. 2017–00483 Filed 1–11–17; 8:45 am]

BILLING CODE 6820–34–P

GOVERNMENT ACCOUNTABILITY OFFICE

Request for Medicaid and CHIP Payment and Access Commission Nominations

AGENCY: U.S. Government Accountability Office (GAO).

ACTION: Request for letters of nomination and resumes.

SUMMARY: The Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) established the Medicaid and CHIP Payment and Access Commission (MACPAC) to review Medicaid and CHIP access and payment policies and to advise Congress on issues affecting Medicaid and CHIP. CHIPRA gave the Comptroller General of the United States responsibility for appointing MACPAC's members. GAO is now accepting nominations to MACPAC that will be effective May 1, 2017. Letters of nomination and resumes should be submitted no later than February 24, 2017 to ensure adequate opportunity for review and consideration of nominees prior to appointment of new members. Nominations should be sent to the email or mailing address listed below. Acknowledgement of submissions will be provided within a week of submission. Please contact Will Black at (202) 512–6482 if you do not receive an acknowledgement.

ADDRESSES:

Email: MACPACappointments@gao.gov.

Mail: U.S. GAO, Attn: MACPAC Appointments, 441 G Street NW., Washington, DC 20548.

FOR FURTHER INFORMATION CONTACT:

GAO: Office of Public Affairs, (202) 512–4800. Public Law 111–3, Section 506; 42 U.S.C. 1396.

Gene L. Dodaro,

Comptroller General of the United States.

[FR Doc. 2017–00044 Filed 1–11–17; 8:45 am]

BILLING CODE 1610–02–M

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Agency for Healthcare Research and Quality

Request for Information—Learning Healthcare Systems

AGENCY: Agency for Healthcare Research and Quality (AHRQ), HHS.

ACTION: Request for Information.

SUMMARY: The Agency for Healthcare Research and Quality (AHRQ) is seeking information from healthcare delivery organizations about current challenges they are facing and solutions they are implementing as they seek to become learning healthcare systems. AHRQ is also seeking to identify opportunities such organizations see for the Agency to assist them in this work—for example by summarizing best practices, creating training materials, developing standardized metrics, and/or convening learning networks.

DATES: Submission deadline on or before February 28, 2017.

ADDRESSES:

Email submissions: *LearningHealthSystem@AHRQ.hhs.gov.*

Mailing Address: Learning Healthcare Systems, Office of the Director, Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857.

FOR FURTHER INFORMATION CONTACT: Brigid Russell, Office of the Director, *LearningHealthSystem@AHRQ.hhs.gov, 301–427–1886.*

SUPPLEMENTARY INFORMATION: The mission of the Agency for Healthcare Research and Quality (AHRQ) is to produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable, and to work within the U.S. Department of Health and Human Services and with other public and private partners to make sure that the evidence is understood and used. The Agency strives to meet this mission by investing in research and generating needed evidence that supports disseminating tested practices, creating materials to teach and train health care systems and professionals to catalyze improvements in care, and developing measures and data used to track and improve performance. To learn more about the Agency, visit *AHRQ.gov.*

The National Academy of Medicine (formerly the Institute of Medicine or IOM) has described a learning healthcare system as an organization that ''is designed to generate and apply the best evidence for the collaborative healthcare choices of each patient and provider; to drive the process of discovery as a natural outgrowth of patient care; and to ensure innovation, quality, safety, and value in health care.'' [1]

Several trends within healthcare delivery are increasing the potential for the development of learning healthcare systems including the consolidation of ambulatory, in-patient, and post-acute care settings of care into integrated delivery systems, the evolution of health information systems, and increased attention to population health management. AHRQ is interested in understanding how healthcare professionals and organizations in the United States are currently working to become learning healthcare systems and in identifying high-leverage opportunities for the Agency to support this transformation.

Healthcare delivery organizations, both small and large, can function as learning healthcare systems, systematically gathering and creating evidence and applying the most promising evidence-based practices to improve their care delivery. AHRQ wants to better understand the process by which organizations and professionals select evidence to implement and the strategies used to move evidence into everyday practice. AHRQ is interested in hearing from the full range of healthcare delivery organizations including individual ambulatory practices, community health center networks, hospitals, individual components (such as departments) within larger organizations, networks of practices, accountable care organizations, and integrated delivery systems.

Specific questions of interest to the Agency include, but are not limited to:

- How are learning healthcare systems utilizing their own data to inform clinical and organizational improvements in healthcare delivery, design, and efficiency?
- Are learning healthcare systems using their own data to inform strategies to address population health and healthcare disparities?
- What methodological and/or data quality issues have been encountered by the health care delivery organizations in generating evidence utilizing their own data?
- How do learning healthcare systems ensure that evidence either generated from their own data and/or adopted from external research is applied in a

[1] Institute of Medicine/National Academy of Medicine. *The Learning Healthcare System: Workshop Summary.* Olsen L, Aisner D, McGinnis JM, eds. Washington, DC: National Academies Press; 2007.

consistent manner throughout the organization, including across different specialties, levels of care, and clinical sites?

- What metrics are learning healthcare systems utilizing to:
- Understand the degree to which they are functioning as a system?
- Monitor progress on their rate of moving clinical evidence into practice?
- Evaluate the consistency of application of evidence across the organization?
- How do these metrics relate to health care delivery organization goal setting, individual employee performance review and internal compensation linked to performance?
- How are learning healthcare systems involving patients and families in their efforts?
- What evidence, tools, training, methods, data, or measures could AHRQ develop or provide that would have a significant impact on the ability of health care delivery organizations to utilize their own data, use externally produced data and evidence, and meet their own quality and safety goals?

AHRQ will use the information it receives to assist in developing future initiatives. These initiatives may include but are not limited to developing research grant opportunities to advance this field, investing in the creation of tools and training materials for health professionals and healthcare delivery organizations, the development of quality improvement measures, and/or convening learning collaboratives focused on accelerating the development of learning healthcare system capabilities within healthcare delivery organizations.

Healthcare professionals and organizations are encouraged to respond to this RFI by submitting materials to the email address listed above by February 28, 2017. While AHRQ is interested in all of the specific questions listed above, respondents are welcome to include answers to as many or few as they choose as well as addressing additional areas of interest not listed. AHRQ encourages respondents to include a description of their healthcare delivery organization at the beginning of their response to provide context for the information they provide. Respondents are also encouraged to share supporting materials, such as charters for quality and safety improvement committees, data use agreements for learning collaboratives, population health metrics and reports, or guidelines for the use of evidence-based practices, that they believe will help the Agency better understand how they are working to become learning healthcare systems.

This RFI is for planning purposes only and should not be construed as a policy, solicitation for applications, or as an obligation on the part of the Government to provide support for any ideas identified in response to it. AHRQ will use the information submitted in response to this RFI at its discretion and will not provide comments to any responder's submission. However, responses to the RFI may be reflected in future solicitation(s). The information provided will be analyzed and may appear in reports. Respondents will not be identified in any published reports. Respondents are advised that the Government is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted. No proprietary, classified, confidential, or sensitive information should be included in your response. The Government reserves the right to use any non-proprietary technical information in any resultant solicitation(s).

Andrew B. Bindman,

Director.

[FR Doc. 2017–00548 Filed 1–11–17; 8:45 am]

BILLING CODE P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Administration for Children and Families

Proposed Information Collection Activity; Comment Request

Title: Health Profession Opportunity Grant (HPOG) program: Third Follow-Up Data Collection.

OMB No.: 0970–0394.

Description: The Administration for Children and Families (ACF), U.S. Department of Health and Human Services (HHS) is proposing data collection activities as part of the Health Profession Opportunity Grant (HPOG) program. The proposed data collection activities are for the Impact Study of the first round of HPOG grants (HPOG-Impact). The goal of HPOG-Impact is to evaluate the effectiveness of approaches used by 20 of the 27 non-tribal HPOG grantees to provide TANF recipients and other low-income individuals with opportunities for education, training, and advancement within the healthcare field. It is also intended to evaluate variation in participant impact that may be attributable to different HPOG program components and models.

HPOG-Impact is one project within the broader portfolio of research that the ACF Office of Planning, Research, and Evaluation (OPRE) is utilizing to assess the success of career pathways programs and models. This strategy includes a multi-pronged research and evaluation approach for the HPOG program to better understand and assess the activities and their results as well as the Pathways for Advancing Careers and Education (PACE) project. In order to maximize learning across the portfolio, survey development for the HPOG and PACE baseline and follow-up surveys has been coordinated, and the majority of the data elements collected in these surveys are similar. (See OMB Control #0970–0397 for PACE data collection.)

Four data collection efforts have been approved for HPOG research: One for approval of a Performance Reporting System (PRS) (approved September 2011); a second for collection of baseline data (approved October 2012); a third for a follow-up survey of participants administered approximately 15 months after random assignment and for implementation study data collection (approved August 2013); and a fourth for a second follow-up survey of participants administered 36 months after random assignment (approved December 2014).

This **Federal Register** Notice provides the opportunity to comment on a proposed new information collection activity for HPOG-Impact—a third follow-up survey for HPOG-Impact participants approximately 72 months after program enrollment. The purpose of the survey is to follow-up with study participants to document their education and training experiences; employment experiences including their advancement in their career; economic well-being; student debt and repayment status; and parenting practices and child outcomes for participants with children. Previously approved collection activities under 0970–0394 will continue under this new request, specifically the 36-Month Follow-Up Survey and the Follow-Up Survey Contact Information Update Letters.

Respondents: Random sample of individuals enrolled in the HPOG-Impact Study.

Instrument	Total number of respondents	Annual number of respondents	Number of responses per respondent	Average burden hours per response	Annual burden hours
72-Month Follow-Up Survey	2,000	667	1	0.75	500

Estimated Total Annual Burden Hours: 500.

In compliance with the requirements of Section 3506(c)(2)(A) of the Paperwork Reduction Act of 1995, the Administration for Children and Families is soliciting public comment on the specific aspects of the information collection described above. Copies of the proposed collection of information can be obtained and comments may be forwarded by writing to the Administration for Children and Families, Office of Planning, Research, and Evaluation, 330 C Street SW., Washington, DC 20201, Attn: OPRE Reports Clearance Officer. Email address: *OPREinfocollection@acf.hhs.gov.* All requests should be identified by the title of the information collection.

The Department specifically requests comments on (a) whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information; (c) the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology. Consideration will be given to comments and suggestions submitted within 60 days of this publication.

Mary Jones,

ACF/OPRE Certifying Officer.

[FR Doc. 2017–00570 Filed 1–11–17; 8:45 am]

BILLING CODE 4184–72–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

[Docket No. FDA–2017–N–0001]

Joint Meeting of the Ophthalmic Devices Panel of the Medical Devices Advisory Committee and the Risk Communication Advisory Committee; Notice of Meeting

AGENCY: Food and Drug Administration, HHS.

ACTION: Notice.

SUMMARY: The Food and Drug Administration (FDA) announces a forthcoming public advisory committee meeting of the Ophthalmic Devices Panel of the Medical Devices Advisory Committee and the Risk Communication Advisory Committee. The general function of the committee is to provide advice and recommendations to the Agency on FDA's regulatory issues. The meeting will be open to the public.

DATES: The meeting will be held on March 17, 2017, from 7:30 a.m. to 4 p.m.

ADDRESSES: Hilton Washington, DC North/Gaithersburg, Salons A, B, C, and D, 620 Perry Pkwy., Gaithersburg, MD 20877. The hotel's phone number is 301–977–8900. Answers to commonly asked questions including information regarding special accommodations due to a disability, visitor parking, and transportation may be accessed at: *http://www.fda.gov/AdvisoryCommittees/AboutAdvisoryCommittees/ucm408555.htm.*

FOR FURTHER INFORMATION CONTACT: Aden S. Asefa, Center for Devices and Radiological Health, Food and Drug Administration, 10903 New Hampshire Ave., Bldg. 66, Rm. G642, Silver Spring, MD 20993–0002, *Aden.Asefa@fda.hhs.gov,* 301–796–0400, or FDA Advisory Committee Information Line, 1–800–741–8138 (301–443–0572 in the Washington, DC area). A notice in the **Federal Register** about last minute modifications that impact a previously announced advisory committee meeting cannot always be published quickly enough to provide timely notice. Therefore, you should always check the Agency's Web site at *http://www.fda.gov/AdvisoryCommittees/default.htm* and scroll down to the appropriate advisory committee meeting link, or call the advisory committee information line to learn about possible modifications before coming to the meeting.

SUPPLEMENTARY INFORMATION:

Agenda: On March 17, 2017, the committee will discuss and make recommendations regarding the potential risks of misuse of peroxide-based contact lens products. Specific issues to be discussed include adequate labeling and packaging of these over-the-counter products.

FDA intends to make background material available to the public no later than 2 business days before the meeting. If FDA is unable to post the background material on its Web site prior to the meeting, the background material will be made publicly available at the location of the advisory committee meeting, and the background material will be posted on FDA's Web site after the meeting. Background material is available at *http://www.fda.gov/AdvisoryCommittees/Calendar/default.htm.* Scroll down to the appropriate advisory committee meeting link.

Procedure: Interested persons may present data, information, or views, orally or in writing, on issues pending before the committee. Written submissions may be made to the contact person on or before March 2, 2017. Oral presentations from the public will be scheduled between approximately 1 p.m. and 2 p.m. Those individuals interested in making formal oral presentations should notify the contact person and submit a brief statement of the general nature of the evidence or arguments they wish to present, the names and addresses of proposed participants, and an indication of the approximate time requested to make their presentation on or before February 22, 2017. Time allotted for each presentation may be limited. If the number of registrants requesting to speak is greater than can be reasonably accommodated during the scheduled open public hearing session, FDA may conduct a lottery to determine the speakers for the scheduled open public hearing session. The contact person will notify interested persons regarding their request to speak by February 23, 2017.

Persons attending FDA's advisory committee meetings are advised that the Agency is not responsible for providing access to electrical outlets.

FDA welcomes the attendance of the public at its advisory committee meetings and will make every effort to accommodate persons with disabilities. If you require accommodations due to a disability, please contact AnnMarie Williams at *AnnMarie.williams@fda.hhs.gov* or 301–796–5966 at least 7 days in advance of the meeting.

FDA is committed to the orderly conduct of its advisory committee meetings. Please visit our Web site at *http://www.fda.gov/AdvisoryCommittees/AboutAdvisoryCommittees/*

ucm111462.htm for procedures on public conduct during advisory committee meetings.

Notice of this meeting is given under the Federal Advisory Committee Act (5 U.S.C. app. 2).

Dated: January 6, 2017.

Janice M. Soreth,

Associate Commissioner, Special Medical Programs.

[FR Doc. 2017–00496 Filed 1–11–17; 8:45 am]

BILLING CODE 4164–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Food and Drug Administration

[Docket No. FDA–2017–N–0001]

Vaccines and Related Biological Products Advisory Committee; Notice of Meeting

AGENCY: Food and Drug Administration, HHS.

ACTION: Notice.

SUMMARY: The Food and Drug Administration (FDA) announces a forthcoming public advisory committee meeting of the Vaccines and Related Biological Products Advisory Committee. The general function of the committee is to provide advice and recommendations to the Agency on FDA's regulatory issues. The meeting will be open to the public.

DATES: The meeting will be held on March 9, 2017, from 8:30 a.m. to 3 p.m.

ADDRESSES: National Institutes of Health (NIH), Fishers Lane Conference Center, 5635 Fishers Lane, Rockville, MD 20852. Enter through the main front entrance on Fishers Lane. Take the elevators down to the T-Terrace Level. Follow the short hallway towards the elevators and the Conference Center glass doors are straight ahead near the elevators.

For those unable to attend in person, the meeting will also be Web cast and will be available at the following link: *https://videocast.nih.gov/.* Answers to commonly asked questions including information regarding special accommodations due to a disability, visitor parking, and transportation may be accessed at: *http://www.fda.gov/AdvisoryCommittees/AboutAdvisoryCommittees/ucm408555.htm.*

FOR FURTHER INFORMATION CONTACT: Prabhakara Atreya or Rosanna Harvey, Center for Biologics Evaluation and Research, Food and Drug Administration, 10903 New Hampshire Ave., Bldg. 71, Rm. 6306, Silver Spring, MD 20993–0002, at 240–402–8006, *prabhakara.atreya@fda.hhs.gov* and 240–402–8072, *rosanna.harvey@fda.hhs.gov,* or FDA Advisory Committee Information Line, 1–800–741–8138 (301–443–0572 in the Washington, DC area). A notice in the **Federal Register** about last minute modifications that impact a previously announced advisory committee meeting cannot always be published quickly enough to provide timely notice. Therefore, you should always check the Agency's Web site at *http://www.fda.gov/AdvisoryCommittees/default.htm* and scroll down to the appropriate advisory committee meeting link, or call the advisory committee information line to learn about possible modifications before coming to the meeting.

SUPPLEMENTARY INFORMATION:

Agenda: On March 9, 2017, the committee will meet in open session to discuss and make recommendations on the selection of strains to be included in the influenza virus vaccines for the 2017–2018 influenza season.

FDA intends to make background material available to the public no later than 2 business days before the meeting. If FDA is unable to post the background material on its Web site prior to the meeting, the background material will be made publicly available at the location of the advisory committee meeting, and the background material will be posted on FDA's Web site after the meeting. Background material is available at *http://www.fda.gov/AdvisoryCommittees/Calendar/default.htm.* Scroll down to the appropriate advisory committee meeting link.

Procedure: Interested persons may present data, information, or views, orally or in writing, on issues pending before the committee. Written submissions may be made to the contact person on or before February 23, 2017. Oral presentations from the public will be scheduled between approximately 12:50 p.m. and 1:50 p.m. Those individuals interested in making formal oral presentations should notify the contact person and submit a brief statement of the general nature of the evidence or arguments they wish to present, the names and addresses of proposed participants, and an indication of the approximate time requested to make their presentation on or before February 14, 2017. Time allotted for each presentation may be limited. If the number of registrants requesting to speak is greater than can be reasonably accommodated during the scheduled open public hearing session, FDA may conduct a lottery to determine the speakers for the scheduled open public hearing session. The contact person will notify interested persons regarding their request to speak by February 15, 2017.

Persons attending FDA's advisory committee meetings are advised that the Agency is not responsible for providing access to electrical outlets.

FDA welcomes the attendance of the public at its advisory committee meetings and will make every effort to accommodate persons with disabilities. If you require accommodations due to a disability, please contact Prabhakara Atreya at least 7 days in advance of the meeting.

FDA is committed to the orderly conduct of its advisory committee meetings. Please visit our Web site at *http://www.fda.gov/AdvisoryCommittees/AboutAdvisoryCommittees/ucm111462.htm* for procedures on public conduct during advisory committee meetings.

Notice of this meeting is given under the Federal Advisory Committee Act (5 U.S.C. app. 2).

Dated: January 6, 2017.

Janice M. Soreth,

Associate Commissioner for Special Medical Programs.

[FR Doc. 2017–00476 Filed 1–11–17; 8:45 am]

BILLING CODE 4164–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute of Allergy and Infectious Diseases; Notice of Closed Meetings

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meetings.

The meetings will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The contract proposals and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the contract proposals, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute of Allergy and Infectious Diseases Special Emphasis Panel; NIAID Investigator Initiated Program Project Applications (P01).

Date: February 7, 2017.

Time: 1:30 p.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institutes of Health, 5601 Fishers Lane, Rockville, MD 20892 (Telephone Conference Call).

Contact Person: Julio Aliberti, Ph.D., Scientific Review Officer, Scientific Review Program, DEA/NIAID/NIH/DHHS, 5601 Fishers Lane, MSC–9823, Rockville, MD 20852, 301–761–7322, *alibertijc@niaid.nih.gov.*

Name of Committee: National Institute of Allergy and Infectious Diseases Special Emphasis Panel; NIAID Peer Review Meeting.

Date: February 9, 2017.

Time: 8:00 a.m. to 5:00 p.m.

Agenda: To review and evaluate contract proposals.

Place: National Institutes of Health, 5601 Fishers Lane, Rockville, MD 20892 (Telephone Conference Call).

Contact Person: Vasundhara Varthakavi, DVM, Ph.D., Scientific Review Officer, Scientific Review Program, Division of Extramural Activities, Room 3E70, National Institutes of Health, NIAID, 5601 Fishers Lane, MSC 9823, Bethesda, MD 20892–9823, (240) 669–5020, *varthakaviv@niaid.nih.gov.*

(Catalogue of Federal Domestic Assistance Program Nos. 93.855, Allergy, Immunology, and Transplantation Research; 93.856, Microbiology and Infectious Diseases Research, National Institutes of Health, HHS)

Dated: January 6, 2017.

Natasha M. Copeland,

Program Analyst, Office of Federal Advisory Committee Policy.

[FR Doc. 2017–00477 Filed 1–11–17; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Substance Abuse and Mental Health Services Administration (SAMHSA)

Advisory Committee for Women's Services (ACWS); Notice of Meeting

Pursuant to Public Law 92–463, notice is hereby given of a meeting of the Substance Abuse and Mental Health Services Administration's (SAMHSA) Advisory Committee for Women's Services (ACWS) on February 1, 2017.

The meeting will include discussions on the National Institutes of Health (NIH) women and girls research agendas; a Legislative update and an overview of the Cures Act; an overview of the Surgeon General's Report; a presentation on physical health/behavioral health integration activities; and a conversation with the Deputy Assistant Secretary for Mental Health and Substance Use.

The meeting is open to the public and will be held at SAMHSA, 5600 Fishers Lane, Rockville, MD 20857, in Conference Room 5N76. Attendance by the public will be limited to space available. Interested persons may present data, information, or views, orally or in writing, on issues pending before the committee. Written submissions should be forwarded to the contact person (below) by January 18, 2017. Oral presentations from the public will be scheduled at the conclusion of the meeting. Individuals interested in making oral presentations are encouraged to notify the contact person on or before January 18, 2017. Five minutes will be allotted for each presentation.

The meeting may be accesed via telephone. To attend on site, obtain the call-in number and access code, submit written or brief oral comments, or request special accommodations for persons with disabilities, please register on-line at *http://nac.samhsa.gov/Registration/meetingsRegistration.aspx,* or communicate with SAMHSA's Designated Federal Officer, Ms. Nadine Benton (see contact information below).

Substantive meeting information and a roster of Committee members may be obtained either by accessing the SAMHSA Committees' Web *https://www.samhsa.gov/about-us/advisory-councils/meetings,* or by contacting Ms. Benton.

Committee Name: Substance Abuse and Mental Health Services Administration Advisory Committee for Women's Services (ACWS).

Date/Time/Type: Wednesday, February 1, 2017, from: 9:00 a.m. to 4:45 p.m. EDT, OPEN.

Place: SAMHSA, 5600 Fishers Lane, Conference Room 5N76, Rockville, Maryland 20857.

Contact: Nadine Benton, Designated Federal Official, SAMHSA's Advisory Committee for Women's Services, 5600 Fishers Lane, Rockville, MD 20857, Telephone: (240) 276–0127, Fax: (240) 276–2252, Email: *nadine.benton@samhsa.hhs.gov.*

CDR. Carlos Castillo,

Committee Management Officer, Substance Abuse and Mental Health, Services Administration.

[FR Doc. 2017–00520 Filed 1–11–17; 8:45 am]

BILLING CODE 4162–20–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[FWS–R5–R–2016–N134; BAC–4333–99]

Plum Tree Island National Wildlife Refuge, Poquoson, VA; Comprehensive Conservation Plan and Environmental Assessment

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of availability; request for comments.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce the availability of a draft comprehensive conservation plan (CCP) and environmental assessment (EA) for Plum Tree Island National Wildlife Refuge (NWR) for public review and comment. Plum Tree Island NWR is located in Poquoson, Virginia, and is administered by staff at Eastern Virginia Rivers NWR Complex based in Warsaw, Virginia. The draft CCP and EA describes two alternatives for managing Plum Tree Island NWR for the next 15 years. Alternative B is identified as the Service-preferred alternative. Also available for public review and comment are the draft compatibility determinations, which are included as appendix B in the draft CCP and EA.

DATES: To ensure consideration of your written comments, please send them by March 13, 2017. We will also hold public meetings. We will announce those meetings and other opportunities for public input in local news media, via our project mailing list, and on the refuge planning Web site: *http://www.fws.gov/refuge/Plum_Tree_Island/what_we_do/conservation.html.*

ADDRESSES: You may submit comments or requests for copies or more information by any of the following methods. You may request hard copies or a CD–ROM of the documents.

Email: EasternVirginiaRiversNWRC@fws.gov. Please include ''Plum Tree Island CCP'' in the subject line of the message.

U.S. Mail: Meghan Powell, Natural Resource Planner, U.S. Fish and Wildlife Service, P.O. Box 1030, Warsaw, VA 22572.

Fax: Attention: Meghan Powell, 804–333–3396.

In-Person Drop-off, Viewing, or Pickup: Call Meghan Powell at 804–313–7729, or Andy Hofmann, Refuge Manager, at 804–333–1470, extension 112, during regular business hours to make an appointment to view the document.

FOR FURTHER INFORMATION CONTACT: Meghan Powell, Natural Resource

Planner, U.S. Fish and Wildlife Service; mailing address: 336 Wilna Road, Warsaw, VA 22572; 804–313–7729 (phone); 804–333–3396 (fax); *EasternVirginiaRiversNWRC@fws.gov* (email) (please put ''Plum Tree Island NWR'' in the subject line).

SUPPLEMENTARY INFORMATION:

Introduction

With this notice, we continue the CCP process for Plum Tree Island NWR. We published our original notice of intent to prepare a CCP in the **Federal Register** on January 10, 2012 (77 FR 1500).

The 3,502-acre Plum Tree Island NWR is located in the City of Poquoson, Virginia. The refuge is approximately 7 miles north of Hampton, Virginia. It was established in 1972 primarily to conserve and protect migratory birds. It is one of many important migratory bird stopover sites along the Atlantic Flyway and provides protected breeding habitat for Federal- and State-listed threatened and endangered species, as well as many neotropical migrant bird species. The refuge is comprised of a variety of wildlife habitats, including salt marsh, maritime shrubland and dune, sandy beaches and mudflats, and estuarine habitats.

Prior to refuge establishment in 1972, the U.S. Air Force used approximately 3,276 acres of the present-day refuge as a bombing and gunnery range. Known as the Plum Tree Island Range, it was actively used from 1917 until June 1971. The nature and extent of unexploded ordnance and munitions constituents occurring within and adjacent to the refuge have been characterized by the U.S. Army Corps of Engineers' (USACE) Formerly Used Defense Site Program. A remedial action plan to address human health and ecological risks of the Plum Tree Island Range is currently being developed by the USACE.

The only public use that is currently allowed on the refuge is a 30-day waterfowl hunt on the refuge's 211-acre Cow Island tract, which lies outside the former gunnery and bombing range.

Background

The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd–668ee) (Refuge Administration Act), as amended by the National Wildlife Refuge System Improvement Act of 1997, requires us to develop a CCP for each national wildlife refuge. The purpose for developing a CCP is to provide refuge managers with a 15-year plan for achieving refuge purposes and contributing toward the mission of the National Wildlife Refuge System, consistent with sound principles of fish and wildlife management conservation, legal mandates, and our policies. In addition to outlining broad management direction on conserving wildlife and their habitats, CCPs identify wildlife-dependent recreational opportunities available to the public, including opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation. We will review and update the CCP at least every 15 years, in accordance with the Refuge Administration Act.

Public Outreach

In September 2012, we distributed a planning newsletter to over 410 parties on our project mailing list. The newsletter informed people about the planning process and asked recipients to contact us about issues or concerns they would like us to address. We also posted the newsletter on our Web site for people to access electronically. In addition, we notified the general public of our planning project, and our interest in hearing about issues and concerns, by publishing news releases in local newspapers. We also held an evening public scoping meeting on September 13, 2012, in Poquoson, Virginia, and an afternoon public scoping meeting on September 14, 2012, in Poquoson, Virginia. The purpose of the two meetings was to share information on the planning process and to solicit management issues and concerns. Throughout the process, refuge staff has conducted additional outreach via participation in community meetings, events, and other public forums. We have considered and evaluated all of the comments we received and addressed them in various ways in the alternatives presented in the draft CCP and EA.

CCP Alternatives We Are Considering

Several issues were raised by us, other governmental partners, and the public during the public scoping process. To address these issues, we developed and evaluated two management alternatives in the draft CCP and EA. A full description of each alternative is in the draft CCP and EA. Both alternatives include measures to continue to share staff across the Eastern Virginia Rivers NWR Complex, control invasive species, protect cultural resources, distribute refuge revenue sharing payments, support research on the refuge, and participate in conservation and education partnerships.

There are other actions that differ among the alternatives. The draft CCP and EA provides a full description of both alternatives and relates each to the issues and concerns that arose during the planning process. Below, we provide summaries for the two alternatives.

Alternative A (Current Management)

This alternative is the ''no action'' alternative required by the National Environmental Policy Act. Alternative A defines our current management activities, including those planned, funded, or underway, and serves as the baseline against which to compare alternative B. Under alternative A, we would continue to protect the refuge's wildlife habitats by allowing natural processes to occur unimpeded. Our refuge management efforts would continue to focus on minimizing human-caused disturbance of refuge habitats and wildlife, conducting annual northeastern beach tiger beetle surveys (a federally threatened species), performing visual surveys of shoreline changes, and administering the waterfowl hunt while on the refuge. While off the refuge, our staff would continue to focus on interagency coordination to assess and evaluate hazards posed by the former bombing range. Refuge staff has also participated in community programs and events to promote understanding and appreciation for the purpose of the refuge and the mission of the Service. The refuge's limited waterfowl hunt on Cow Island would continue to be the only public use permitted on the refuge.

Alternative B (Increased Ecosystem Monitoring, Partnerships, and Public Use; Service-Preferred Alternative)

Alternative B is the Service-preferred alternative. It combines the actions we believe would best achieve the refuge's purposes, vision, and goals and respond to public issues. Under alternative B, we would continue to protect the refuge's wildlife habitats by allowing natural processes to occur unimpeded. Our refuge management efforts would continue to focus on minimizing human-caused disturbance of refuge habitats and wildlife, while working with a greater diversity of partners to conduct biological research, inventory, and monitoring efforts. We are primarily interested in learning more about the presence and sustainability of priority wildlife species through inventories and the monitoring of climate change impacts and changes in habitat conditions over the life of the plan. Collecting this information would serve as the basis for future refuge management actions in the next CCP.

Under alternative B, we would evaluate opportunities to enhance and expand the waterfowl hunt program on Cow Island, with an emphasis on increasing adult and youth

participation. Alternative B would also expand wildlife-dependent recreation on Cow Island by opening one designated location to recreational and commercial wildlife observation, photography, environmental education, and interpretation of natural and cultural resources. Access by canoe and kayak would complement the City of Poquoson's Blueway Trail surrounding the refuge. In partnership with other government agencies and adjacent landowners, we would investigate the potential to establish viewing platforms on the mainland overlooking the refuge.

Next Steps

After this comment period ends, we will analyze the comments and address them in the form of a final CCP and, if appropriate, finding of no significant impact.

Public Availability of Documents

In addition to any methods in **ADDRESSES**, you can view or obtain documents from the agency Web site at: *http://www.fws.gov/refuge/Plum_Tree_Island/what_we_do/conservation.html*.

Submitting Comments

We consider comments substantive if they:

- Question, with reasonable basis, the accuracy of the information in the document.
- Question, with reasonable basis, the adequacy of the EA.
- Present reasonable alternatives other than those presented in the EA.
- Provide new or additional information relevant to the EA.

Public Availability of Comments

Before including your address, phone number, email address, or other personal identifying information in your comments, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Dated: November 3, 2016.

Deborah Rocque,

Acting Regional Director, Northeast Region.

[FR Doc. 2017–00314 Filed 1–11–17; 8:45 am]

BILLING CODE 4333–15–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–NPS0022630]; [PPWOCRADN0–PCU00RP14.R50000]

Notice of Inventory Completion: International Boundary and Water Commission, U.S. Section, El Paso, TX, and the Texas Archeological Research Laboratory, Austin, TX

AGENCY: National Park Service, Interior.

ACTION: Notice.

SUMMARY: The International Boundary & Water Commission, U.S. Section, and the Texas Archeological Research Laboratory (TARL) have completed an inventory of human remains and associated funerary objects, in consultation with the appropriate Indian tribes or Native Hawaiian organizations, and have determined that there is no cultural affiliation between the human remains and associated funerary objects and present-day Indian tribes or Native Hawaiian organizations. Representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written request to the Texas Archeological Research Laboratory (TARL) and the International Boundary & Water Commission. If no additional requestors come forward, transfer of control of the human remains and associated funerary objects to the lineal descendants, Indian tribes, or Native Hawaiian organizations stated in this notice may proceed.

DATES: Representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written request with information in support of the request to the Texas Archeological Research Laboratory (TARL) and the International Boundary & Water Commission at the address in this notice by February 13, 2017.

ADDRESSES: Marybeth Tomka, Head of Collections, Texas Archaeological Research Laboratory, 10100 Burnet Road, PRC Building 5, Austin, TX 78758, telephone (512) 475–6853, email *marybeth.tomka@austin.utexas.edu;* and Mark Howe, Cultural Resources Specialist, International Boundary and Water Commission—U.S. Section, 4171 North Mesa, Suite C–100, El Paso, TX 79902, telephone (915) 832–4767, email *Mark.Howe@ibwc.gov.*

SUPPLEMENTARY INFORMATION: Notice is here given in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3003, of the completion of an inventory of human remains and associated funerary objects under the control of the International Boundary and Water Commission—U.S. Section, and in the possession of the Texas Archaeological Research Laboratory. The human remains and associated funerary objects were removed from Zapata County, TX.

This notice is published as part of the National Park Service's administrative responsibilities under NAGPRA, 25 U.S.C. 3003(d)(3). The determinations in this notice are the sole responsibility of the museum, institution, or Federal agency that has control of the Native American human remains and associated funerary objects. The National Park Service is not responsible for the determinations in this notice.

Consultation

A detailed assessment of the human remains was made by TARL professional staff in consultation with representatives of the Comanche Nation, Oklahoma, the Kiowa Indian Tribe of Oklahoma, the Mescalero Apache Tribe of the Mescalero Reservation, New Mexico, and the Tonkawa Tribe of Indians of Oklahoma.

History and Description of the Remains

In 1952, human remains representing, at minimum, one individual were removed from site 41ZP2, also referenced as the ''Castillo Site'' in Zapata County, TX. The burial was discovered east of the Rio Grande River, and the human remains were likely partially or completely excavated by a ''Mr. Garcia'' prior to the arrival of professional archeologists. The human remains are identified by two TARL Human Osteology (HO) numbers: #2428 and #3404. The cranial material (TARL HO #2428) represents a young adult female (approximately 20–35 years old at the time of death). The age-at-death could not be determined for the postcranial material (TARL HO #3404). While packaged under separate HO numbers, TARL has determined that these human remains likely belong to the same individual. No known individuals were identified. The 190 associated funerary objects are six pieces of chert debitage, two bifaces, one Tortugas dart point, one bone awl (possibly animal), 95 bone beads (strung necklace), 70 fragmentary bone beads, one bone tube (a modified right human ulna), 13 ochre pebbles and fragments, and one ochre pebble. Based on the presence of the Tortugas point associated with these human remains, this individual is estimated to date to

the Late Middle Archaic Period (approximately 1000 B.C.).

In the 1983, during a period of low water levels at Falcon Lake, human remains representing, at minimum, one individual were recovered from site 41ZP8 in Zapata County, TX. The context of these human remains (TARL HO #4024) is unknown, but they were originally packaged with two other sets of remains (TARL HO #4023 and #4025). This individual is represented by one left innominate and is a middle to older adult female, aged 42–55. No known individuals were identified. No associated funerary objects are present.

In the 1983, human remains representing, at minimum, five individuals were uncovered during low-water levels at Falcon Lake, somewhere near site 41ZP8 in Zapata County, TX (TARL HO #4025). The sex of these individuals could not be determined and their ages are unclear. Two of the individuals might be juveniles. No known individuals were identified. No associated funerary objects are present.

In 1950, human remains representing, at minimum, one adult individual were recorded by J.T. Hughes at site 41ZP10 in Zapata County, TX. The individual (TARL HO #2113) is represented by only the bottom half of the skeleton. The individual is a middle-adult (30 years old or older). The individual's sex could not be determined, although the original report suggests the individual may have been female. No known individuals were identified. The 21 associated funerary objects are four Tortugas Points, three Kinney Points, one Abasolo Point, one scraper/biface, one end scraper, seven knives/bifaces, and four Matamoros Points. One grooved sandstone abrader was noted on a 1950 map, but cannot be located in TARL's collections. Based on the presence of the projectile point artifacts associated with these human remains, this burial is estimated to date to the Middle to Late/Transitional Archaic Periods (approximately 1000 B.C. to A.D. 1000).

In 1952, human remains representing, at minimum, three individuals were identified at the Gaspar Garcia Site, 41ZP61, near the Castillo Site (41ZP7) within the Falcon Reservoir of Zapata County, TX. The first of the three individuals (TARL HO #2182) is represented by only a few fragmentary remains, so the age and sex could not be determined. Six bone bead fragments were comingled with these human remains. The second individual (TARL HO #2356) is a young to middle adult male, approximately 25–44 years old at the time of death. The third individual (TARL HO #3405) is represented by a single fragment—the distal epiphysis of the right femur. The sex and age of this individual could not be determined. No known individuals were identified. Associated funerary objects were identified for this site, but it is unclear whether the objects were placed with only one or more of the individuals listed for this site (TARL HO #2182, #2356, or #3405). The 146 associated funerary objects are one Desmuke Point, one Tortugas Point, one Matamoros Point, one triangular biface, one chert debitage, one chert biface, one polished pebble, 128 bone beads (possibly bird), five ochre pebbles, and the six bone bead fragments that were found commingled with the human remains of TARL HO #2182. Based on the presence of the projectile points associated with these human remains, these burials are estimated to date to the Middle to Late/Transitional Archaic Periods (approximately 1000 B.C. to A.D. 1000).

In 1952, human remains representing, at minimum, one individual were exposed at site 41ZP67 during low-water levels at Falcon Reservoir in Zapata County, TX. This individual (TARL HO #2055) is represented by only cranial remains and is estimated to be an adult female, at least 23 years old at the time of death. No known individuals were identified. The single associated funerary object is one Tortugas dart point. Based on the presence of the Tortugas dart point associated with these human remains, this burial is estimated to date to the Late Middle Archaic Period (approximately 1000 B.C.).

During the 1980s, human remains representing, at minimum, three individuals were excavated from various sites within Falcon Reservoir in Zapata County, TX. Information on the excavation of these human remains is lacking, and the skeletal remains associated with these individuals (TARL HO #4018A, #4018B, and #4018C) are fragmentary. The individuals are all estimated to be adults, but their sex cannot be determined. One individual (TARL HO #4018B) is 30+ years old at the time of death. No known individuals were identified. There are no associated funerary objects present, but a small bag of non-human faunal remains is included with the individuals.

At an unknown date, human remains representing, at minimum, one individual were recovered from an unrecorded site ''several hundred meters north of . . . 41ZP86'' (in Zapata County, TX). While the human remains (TARL HO #4022) were located near a historic cemetery and 41ZP86, they are likely not associated with either of the aforementioned sites. Although past analysis records indicate the individual is female, the individual is more likely a middle-adult male, approximately 35–50 years old at the time of death. No known individuals were identified. The 1996 osteological analysis notes that ''stone artifacts'' were included with these remains, but no count or description was provided and those artifacts cannot be located in TARL's collections. Therefore, no associated funerary objects are present.

Due to the archeological context of the human remains described above, TARL has determined these human remains to be Native American.

TARL, on behalf of the International Boundary and Water Commission, consulted with the Comanche Nation, Oklahoma, the Kiowa Indian Tribe of Oklahoma, the Mescalero Apache Tribe of the Mescalero Reservation, New Mexico, and the Tonkawa Tribe of Indians of Oklahoma based on the Indian tribes' interest in human remains found in Zapata County. However, TARL was unable to determine the cultural affiliation of these human remains with any present-day Indian tribe.

Determinations Made by International Boundary and Water Commission

Officials of International Boundary and Water Commission have determined that:

- Pursuant to 25 U.S.C. 3001(9), the human remains described in this notice are Native American based on their archeological context.
- Pursuant to 25 U.S.C. 3001(9), the human remains described in this notice represent the physical remains of 16 individuals of Native American ancestry.
- Pursuant to 25 U.S.C. 3001(3)(A), the 358 objects described in this notice are reasonably believed to have been placed with or near individual human remains at the time of death or later as part of the death rite or ceremony.
- Pursuant to 25 U.S.C. 3001(2), a relationship of shared group identity cannot be reasonably traced between the Native American human remains and associated funerary objects and any present-day Indian tribe.
- Treaties, Acts of Congress, or Executive Orders, indicate that the land from which the Native American human remains and associated funerary objects were removed is the aboriginal land of the Comanche Nation, Oklahoma, and the Kiowa Indian Tribe of Oklahoma.
- Pursuant to 43 CFR 10.11(c)(1), the disposition of the human remains and associated funerary objects may be to the Comanche Nation, Oklahoma, and the Kiowa Indian Tribe of Oklahoma.

Additional Requestors and Disposition

Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written request with information in support of the request to Marybeth Tomka, Head of Collections, Texas Archaeological Research Laboratory, 10100 Burnet Road, PRC Building 5, Austin, TX 78758, telephone (512) 475–6853, email *marybeth.tomka@austin.utexas.edu;* and Mark Howe, Cultural Resources Specialist, International Boundary and Water Commission—U.S. Section, 4171 North Mesa, Suite C–100, El Paso, TX 79902, telephone (915) 832–4767, email *Mark.Howe@ibwc.gov,* by February 13, 2017. After that date, if no additional requestors have come forward, transfer of control of the human remains and associated funerary objects to the Comanche Nation, Oklahoma, and the Kiowa Indian Tribe of Oklahoma may proceed.

TARL is responsible for notifying the Comanche Nation, Oklahoma, the Kiowa Indian Tribe of Oklahoma, the Mescalero Apache Tribe of the Mescalero Reservation, New Mexico, and the Tonkawa Tribe of Indians of Oklahoma that this notice has been published.

Dated: December 21, 2016.

Melanie O'Brien,

Manager, National NAGPRA Program.

[FR Doc. 2017–00508 Filed 1–11–17; 8:45 am]

BILLING CODE 4312–52–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–NPS0022622; PPWOCRADN0–PCU00RP14.R50000]

Notice of Inventory Completion: U.S. Department of Defense, Defense Health Agency, National Museum of Health and Medicine, Silver Spring, MD

AGENCY: National Park Service, Interior.

ACTION: Notice.

SUMMARY: The U.S. Department of Defense, Defense Health Agency, National Museum of Health and Medicine has completed an inventory of human remains, in consultation with the appropriate Indian tribes or Native Hawaiian organizations, and has determined that there is no cultural affiliation between the human remains and any present-day Indian tribes or Native Hawaiian organizations. Representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains should submit a written request to the National Museum of Health and Medicine. If no additional requestors come forward, transfer of control of the human remains to the Indian tribes or Native Hawaiian organizations stated in this notice may proceed.

DATES: Representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains should submit a written request with information in support of the request to the National Museum of Health and Medicine at the address in this notice by February 13, 2017.

ADDRESSES: Mr. Brian F. Spatola, Curator of Anatomical Division, National Museum of Health and Medicine, U.S. Army Garrison Forest Glen, 2500 Linden Lane, Silver Spring, MD 20910, telephone (301) 319–3353, email *brian.f.spatola.civ@mail.mil.*

SUPPLEMENTARY INFORMATION: Notice is here given in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3003, of the completion of an inventory of human remains under the control of the National Museum of Health and Medicine, Silver Spring, MD. The human remains were removed from Marion County, TN, and Limestone County, AL.

This notice is published as part of the National Park Service's administrative responsibilities under NAGPRA, 25 U.S.C. 3003(d)(3) and 43 CFR 10.11(d). The determinations in this notice are the sole responsibility of the museum, institution, or Federal agency that has control of the Native American human remains. The National Park Service is not responsible for the determinations in this notice.

Consultation

A detailed assessment of the human remains was made by the National Museum of Health and Medicine professional staff in consultation with representatives of the Cherokee Nation, Eastern Band of Cherokee Indians, The Chickasaw Nation, and United Keetoowah Band of Cherokee Indians in Oklahoma.

History and Description of the Remains

In 1914, human remains representing, at minimum, one individual were removed from Bennett Place (site 40M17) in Marion County, TN. Age and sex could not be identified. Artifacts were present at the time of excavation, but were not retained with the human remains. The human remains were donated to the Army Medical Museum (today the National Museum of Health and Medicine) by Clarence B. Moore in December of 1914. No known individuals were identified. No associated funerary objects are present.

On an unknown date, human remains representing, at minimum, one individual were removed from a site at the confluence of the Sequatchie and Tennessee Rivers in Marion County, TN. The human remains consist of the cranium and mandible of an adult female. The human remains were purchased by the Army Medical Museum (National Museum of Health and Medicine) from C.H. Ward Company, Rochester, NY, in 1915. No known individuals were identified. No associated funerary objects are present.

In 1915, human remains representing, at minimum, one individual were removed from the Dwelling site at the mouth of the Sequatchie Creek (40M12) in Marion County, TN. The human remains consist of an adult left humerus. The human remains were donated to the Army Medical Museum (National Museum of Health and Medicine) by Clarence B. Moore in May of 1915. No known individuals were identified. No associated funerary objects are present.

In 1915, human remains representing, at minimum, one individual were removed from the Dwelling site on Mason Island (1La92) in Limestone County, AL. The human remains consist of the left femur and right tibia of an adult male. The human remains were donated to the Army Medical Museum (National Museum of Health and Medicine) by Clarence B. Moore in May of 1915. No known individuals were identified. No associated funerary objects are present.

Determinations Made by the National Museum of Health and Medicine

Officials of the National Museum of Health and Medicine have determined that:

- Pursuant to 25 U.S.C. 3001(9), the human remains described in this notice are Native American based on: Osteological evidence, collection history, artifacts, and association with prehistoric archeological sites.
- Pursuant to 25 U.S.C. 3001(9), the human remains described in this notice represent the physical remains of four individuals of Native American ancestry.
- Pursuant to 25 U.S.C. 3001(2), a relationship of shared group identity cannot be reasonably traced between the

Native American human remains and any present-day Indian tribe.

• According to final judgments of the Indian Claims Commission or the Court of Federal Claims, the land from which the Native American human remains were removed is the aboriginal land of the Cherokee Nation, Eastern Band of Cherokee Indians, The Chickasaw Nation, and United Keetoowah Band of Cherokee Indians in Oklahoma.

• Treaties, Acts of Congress, or Executive Orders, indicate that the land from which the Native American human remains were removed is the aboriginal land of the Cherokee Nation, Eastern Band of Cherokee Indians, The Chickasaw Nation, and United Keetoowah Band of Cherokee Indians in Oklahoma.

• Pursuant to 43 CFR 10.11(c)(1), the disposition of the human remains may be to the Cherokee Nation, Eastern Band of Cherokee Indians, The Chickasaw Nation, and United Keetoowah Band of Cherokee Indians in Oklahoma.

Additional Requestors and Disposition

Representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains should submit a written request with information in support of the request to Mr. Brian F. Spatola, Curator of Anatomical Division, National Museum of Health and Medicine, U.S. Army Garrison Forest Glen, 2500 Linden Lane, Silver Spring, MD 20910, telephone (301) 319–3353, email *brian.f.spatola.civ@mail.mil,* by February 13, 2017. After that date, if no additional requestors have come forward, transfer of control of the human remains to the Cherokee Nation, Eastern Band of Cherokee Indians, The Chickasaw Nation, and United Keetoowah Band of Cherokee Indians in Oklahoma may proceed.

The National Museum of Health and Medicine is responsible for notifying the Cherokee Nation, Eastern Band of Cherokee Indians, The Chickasaw Nation, and United Keetoowah Band of Cherokee Indians in Oklahoma that this notice has been published.

Dated: December 20, 2016.

Melanie O'Brien,

Manager, National NAGPRA Program.

[FR Doc. 2017–00511 Filed 1–11–17; 8:45 am]

BILLING CODE 4312–52–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–NPS0022629; PPWOCRADN0–PCU00RP14.R50000]

Notice To Rescind a Notice of Inventory Completion: Texas Archeological Research Laboratory, Austin, TX

AGENCY: National Park Service, Interior.

ACTION: Notice.

SUMMARY: The Texas Archeological Research Laboratory (TARL) is rescinding a Notice of Inventory Completion published in the **Federal Register** on July 11, 2016.

ADDRESSES: Marybeth Tomka, Head of Collections, Texas Archaeological Research Laboratory, 10100 Burnet Road, PRC Building 5, Austin, TX 78758, telephone (512) 475–6853, email *marybeth.tomka@austin.utexas.edu.*

SUPPLEMENTARY INFORMATION: Notice was previously given in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3003, of the completion of an inventory of human remains and associated funerary objects under the control of the Texas Archaeological Research Laboratory. The human remains and associated funerary objects were removed from Zapata County, TX.

This notice is published as part of the National Park Service's administrative responsibilities under NAGPRA, 25 U.S.C. 3003(d)(3). The determinations in this notice are the sole responsibility of the museum, institution, or Federal agency that has control of the Native American human remains and associated funerary objects. The National Park Service is not responsible for the determinations in this notice.

The Texas Archeological Research Laboratory (TARL) is rescinding a Notice of Inventory Completion published in the **Federal Register** (81 FR 44893–44896, July 11, 2016). Transfer of control of the items in this correction notice has not occurred.

Correction

In the **Federal Register** (81 FR 44893–44896, July 11, 2016), all paragraphs are deleted in their entirety.

The Texas Archeological Research Laboratory (TARL) is responsible for notifying the Comanche Nation, Oklahoma, the Kiowa Indian Tribe of Oklahoma, the Mescalero Apache Tribe of the Mescalero Reservation, New Mexico, and the Tonkawa Tribe of Indians of Oklahoma that this notice has been published.

Dated: December 21, 2016.

Melanie O'Brien,

Manager, National NAGPRA Program.

[FR Doc. 2017–00507 Filed 1–11–17; 8:45 am]

BILLING CODE 4312–52–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–NPS0022623;PPWOCRADN0–PCU00RP14.R50000]

Notice of Intent To Repatriate Cultural Items: Arizona State Museum, University of Arizona, Tucson, AZ

AGENCY: National Park Service, Interior.

ACTION: Notice.

SUMMARY: The Arizona State Museum, University of Arizona, in consultation with the appropriate Indian tribes or Native Hawaiian organizations, has determined that the cultural items listed in this notice meet the definition of objects of cultural patrimony. Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to claim these cultural items should submit a written request to the Arizona State Museum, University of Arizona. If no additional claimants come forward, transfer of control of the cultural items to the lineal descendants, Indian tribes, or Native Hawaiian organizations stated in this notice may proceed.

DATES: Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to claim these cultural items should submit a written request with information in support of the claim to the Arizona State Museum, University of Arizona at the address in this notice by February 13, 2017.

ADDRESSES: John McClelland, NAGPRA Coordinator, P.O. Box 210026, Arizona State Museum, University of Arizona, Tucson, AZ 85721, telephone (520) 626–2950.

SUPPLEMENTARY INFORMATION: Notice is here given in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3005, of the intent to repatriate cultural items under the control of the Arizona State Museum, University of Arizona, Tucson, AZ, that meet the definition of objects of cultural patrimony under 25 U.S.C. 3001.

This notice is published as part of the National Park Service's administrative responsibilities under NAGPRA, 25

U.S.C. 3003(d)(3). The determinations in this notice are the sole responsibility of the museum, institution, or Federal agency that has control of the Native American cultural items. The National Park Service is not responsible for the determinations in this notice.

History and Description of the Cultural Item(s)

In April 1939, one cultural item was removed from the Tohono O'odham Reservation in the village of Sil Nakya, AZ. The one object of cultural patrimony is a calendar stick. Mr. and Mrs. Wetmore Hodges purchased the calendar stick (E–151) from José Maria, the keeper of the stick and subsequently donated it to the Arizona State Museum.

In the 1960s, one cultural item was removed from the Tohono O'odham Reservation near the village of Santa Rosa, AZ. The one object of cultural patrimony is a calendar stick. Mr. Donald Bahr was given the calendar stick (E–7310) by an unknown Tohono O'odham man, at an abandoned village near Santa Rosa on the Tohono O'odham Reservation. In 1967, Mr. Bahr donated the calendar stick to the Arizona State Museum.

Calendar sticks carried a record of social and natural events, which were read only by the carver. These sticks were mnemonic devices with carved notches to represent a year, and dots and other symbols to represent events during the year, as reported by ethnographers. The distances between each notch represent a year, which is from summer to summer or saguaro harvest to saguaro harvest. The notches and cuts represent various happenings but only the keepers of the sticks can read the symbols. The stick is worthless unless the keeper can translate it or has given information to someone. Mr. Maria translated the events recorded on the Sil Nakya calendar stick, which cover the years 1841–1939.

While some ethnographic accounts suggested that calendar sticks were considered to be private property, a newspaper account of the sale of the Sil Nakya stick reported that there was considerable community opposition to the sale. Based on interviews with a Tohono O'odham Elder from Sil Nakya who participated in calendar stick activities as a young boy in the late 1930s, it seems clear that Tohono O'odham in Sil Nakya regarded the calendar stick as an item that could not be alienated. While they were taken care of by an individual, the stick belonged to the community. The Elder described the time of year when people in the community would gather for a large social event, attended by members of surrounding villages. Men of the communities would gather to meet with the calendar stick keeper and discuss what entry would be carved onto the calendar stick for the year. This event was attended only by men; women were excluded. Some debate would take place before a consensus decision was made as to what event of the past year would be carved on the calendar stick for the year. From conversations with this Elder, it seems clear that the calendar stick belonged to the major village community where the keeper lived, but also retained importance for the surrounding villages. A preponderance of the evidence indicates that at the time of the purchase, this item was considered to be a community resource rather than an object owned by an individual. Because the calendar stick records significant events in the history of the Tohono O'odham Nation and the community determined by consensus what was to be recorded, the item has historical and traditional cultural importance central to the tribe.

Determinations Made by the Arizona State Museum, University of Arizona

Officials of the Arizona State Museum have determined that:

- Pursuant to 25 U.S.C. 3001(3)(D), the 2 cultural items described above have ongoing historical, traditional, or cultural importance central to the Native American group or culture itself, rather than property owned by an individual.
- Pursuant to 25 U.S.C. 3001(2), there is a relationship of shared group identity that can be reasonably traced between the objects of cultural patrimony and the Tohono O'odham Nation of Arizona.

Additional Requestors and Disposition

Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to claim these cultural items should submit a written request with information in support of the claim to John McClelland, NAGPRA Coordinator, P.O. Box 210026, Arizona State Museum, University of Arizona, Tucson, AZ 85721, telephone (520) 626–2950, by February 13, 2017. After that date, if no additional claimants have come forward, transfer of control of the objects of cultural patrimony to Tohono O'odham Nation of Arizona may proceed.

The Arizona State Museum is responsible for notifying the Tohono O'odham Nation of Arizona that this notice has been published.

Dated: December 20, 2016.

Melanie O'Brien,

Manager, National NAGPRA Program.

[FR Doc. 2017–00510 Filed 1–11–17; 8:45 am]

BILLING CODE 4312–52–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–NPS0022625; PPWOCRADN0–PCU00RP14.R50000]

Notice of Intent To Repatriate Cultural Items: Denver Museum of Nature & Science, Denver, CO

AGENCY: National Park Service, Interior.

ACTION: Notice.

SUMMARY: The Denver Museum of Nature & Science, in consultation with the appropriate Indian tribes or Native Hawaiian organizations, has determined that the cultural items listed in this notice meet the definition of unassociated funerary objects and/or sacred objects. Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to claim these cultural items should submit a written request to the Denver Museum of Nature & Science. If no additional claimants come forward, transfer of control of the cultural items to the lineal descendants, Indian tribes, or Native Hawaiian organizations stated in this notice may proceed.

DATES: Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to claim these cultural items should submit a written request with information in support of the claim to the Denver Museum of Nature & Science at the address in this notice by February 13, 2017.

ADDRESSES: Chip Colwell, Senior Curator of Anthropology and NAGPRA Officer, Denver Museum of Nature & Science, 2001 Colorado Boulevard, Denver, CO 80205, telephone (303) 370–6378, email *Chip.Colwell@dmns.org.*

SUPPLEMENTARY INFORMATION: Notice is here given in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3005, of the intent to repatriate cultural items under the control of the Denver Museum of Nature & Science, Denver, CO, that meet the definition of unassociated funerary objects and/or sacred objects, under 25 U.S.C. 3001.

This notice is published as part of the National Park Service's administrative responsibilities under NAGPRA, 25

U.S.C. 3003(d)(3). The determinations in this notice are the sole responsibility of the museum, institution, or Federal agency that has control of the Native American cultural items. The National Park Service is not responsible for the determinations in this notice.

History and Description of the Cultural Item(s)

In 1964, seven cultural items were removed from Ojibwe communities in unknown counties, MN. In the 1950s, Karen Petersen and her husband Sydney Petersen spent their summers visiting Ojibwe communities, buying crafts from tribal members. These items belonged to John Mink, a fourth-degree Midewiwin priest at the Mille Lacs Indian Reservation in central Minnesota. Soon after Mink's death in 1962 or 1963, museum records affirm the items were dug up to be offered for sale. Petersen sold the cache to Mary and Francis Crane on February 2, 1976, with the exception of one scroll (A943.1), which was donated to the Denver Museum of Natural History (now the Denver Museum of Nature & Science or DMNS) directly in November 1976. The Cranes in turn donated the other six unassociated funerary objects to the DMNS in December 1976. The seven unassociated funerary objects are 2 birch bark scrolls (A943.1 and AC.11525), 2 ceremonial invitation sets (AC.11528 and AC.11529), 2 medicine bags (AC.11535B and AC.11535J), and 1 vessel containing ceremonial stain (AC.11530).

Between 1950 and 1964, six cultural items were removed from Ojibwe communities in unknown counties, MN. Karen Petersen purchased four cultural items (AC.11533, AC.11536A, AC.11536B, and AC.11538) from Ole Sam who had inherited these objects in 1960 from the estate of his father, Mike Sam, a Midewiwin priest. Petersen sold the cultural items to Mary and Francis Crane on February 5, 1976, who donated them to THE DMNS in December 1976. Petersen purchased one cultural item (ac.11526) from Annie Sam, a rare fourth-degree Midewiwin female priest. On February 2, 1976, the Cranes purchased the cultural item and donated it to the DMNS in December 1976. Petersen purchased one cultural item (AC.115351) from Maggie Skinaway in 1961. On February 19, 1976, Petersen sold the cultural item to the Cranes who donated it to the DMNS in December 1976. The six sacred objects are 1 ceremonial post (AC.11533), 1 large cowrie shell (AC.11536A), 1 collection of 19 shells (AC.11536B), 1 ceremonial drumstick (AC.115381), 1 birch bark scroll (AC.11526), and 1 medicine bag (AC.11535I).

Museum accession, catalogue, and documentary records, as well as consultation with representatives of the Mille Lacs Band of the Minnesota Chippewa Tribe, Minnesota, indicate that the 13 cultural objects are Ojibwe and are from the Mille Lacs Indian Reservation, Minnesota. The 13 cultural items, A943.1, AC.11525, AC.11528, AC.11529, AC.11530, AC.11535B, AC.11535J, AC.11533, AC.11536A, AC.11536B, AC 11538, AC.11526, and AC.11535I, relate to the Grand Medicine Society or Midewiwin, a ritual society.

Determinations Made by the Denver Museum of Nature & Science

Officials of the Denver Museum of Nature & Science have determined that:

- Pursuant to 25 U.S.C. 3001(3)(B), the 7 cultural items described above are reasonably believed to have been placed with or near individual human remains at the time of death or later as part of the death rite or ceremony and are believed, by a preponderance of the evidence, to have been removed from a specific burial site of a Native American individual.
- Pursuant to 25 U.S.C. 3001(3)(C), the 6 cultural items described above are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents.
- Pursuant to 25 U.S.C. 3001(2), there is a relationship of shared group identity that can be reasonably traced between the unassociated funerary objects and the Mille Lacs Band of the Minnesota Chippewa Tribe, Minnesota.
- Pursuant to 25 U.S.C. 3001(2), there is a relationship of shared group identity that can be reasonably traced between the sacred objects and the Mille Lacs Band of the Minnesota Chippewa Tribe, Minnesota.

Additional Requestors and Disposition

Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to claim these cultural items should submit a written request with information in support of the claim to Chip Colwell, Senior Curator of Anthropology and NAGPRA Officer, Denver Museum of Nature & Science, 2001 Colorado Boulevard., Denver, CO 80205, telephone (303) 370–6378, email *Chip.Colwell@dmns.org,* by February 13, 2017. After that date, if no additional claimants have come forward, transfer of control of the unassociated funerary objects and/or sacred objects may proceed.

The Denver Museum of Nature & Science is responsible for notifying the Mille Lacs Band of the Minnesota Chippewa Tribe, Minnesota, that this notice has been published.

Dated: December 21, 2016.

Melanie O'Brien,

Manager, National NAGPRA Program.

[FR Doc. 2017–00512 Filed 1–11–17; 8:45 am]

BILLING CODE 4312–52–P

DEPARTMENT OF THE INTERIOR

National Park Service

[NPS–WASO–NAGPRA–NPS0022621]; [PPWOCRADN0–PCU00RP14.R50000]

Notice of Inventory Completion: Metroparks of the Toledo Area, Toledo, OH

AGENCY: National Park Service, Interior.

ACTION: Notice.

SUMMARY: The Metroparks of the Toledo Area (Metroparks Toledo) has completed an inventory of human remains and associated funerary objects, in consultation with the appropriate Indian tribes or Native Hawaiian organizations, and has determined that there is a cultural affiliation between the human remains and associated funerary objects and present-day Indian tribes or Native Hawaiian organizations. Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written request to Metroparks Toledo. If no additional requestors come forward, transfer of control of the human remains and associated funerary objects to the lineal descendants, Indian tribes, or Native Hawaiian organizations stated in this notice may proceed.

DATES: Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written request with information in support of the request to Metroparks Toledo at the address in this notice by February 13, 2017.

ADDRESSES: Joseph Fausnaugh, Metroparks of the Toledo Area, 5100 West Central Avenue, Toledo, OH 43615, telephone (419) 407–9700, email *joe.fausnaugh@metroparkstoledo.com.*

SUPPLEMENTARY INFORMATION: Notice is here given in accordance with the Native American Graves Protection and

Repatriation Act (NAGPRA), 25 U.S.C. 3003, of the completion of an inventory of human remains and associated funerary objects under the control of Metroparks Toledo, Toledo, OH. The human remains and associated funerary objects were removed from Audubon Island, City of Maumee, Lucas County, OH.

This notice is published as part of the National Park Service's administrative responsibilities under NAGPRA, 25 U.S.C. 3003(d)(3). The determinations in this notice are the sole responsibility of the museum, institution, or Federal agency that has control of the Native American human remains and associated funerary objects. The National Park Service is not responsible for the determinations in this notice.

Consultation

On behalf of Metroparks Toledo, a detailed assessment of the human remains was made by professional staff of the Ohio History Connection, Columbus, OH, in consultation with representatives of the Eastern Shawnee Tribe of Oklahoma, the Miami Tribe of Oklahoma, the Ottawa Tribe of Oklahoma, the Shawnee Tribe, and the Wyandotte Nation.

History and Description of the Remains

In April and October 2014, human remains representing, at minimum, one individual were removed from 33LU0805 in Lucas County, OH. At the request of the landowner (Metroparks Toledo), on April 10, 2014, Ohio History Connection (OHC) staff recovered human remains and funerary items that were exposed and eroding out of Audubon/Ewing Island in the Maumee River. Members of the Miami and Shawnee nations were present during this excavation. Only the right side of a single individual (approximately 40% of the individual), likely a male between the ages of 17–20 years, was recovered at that time, as the remainder of the burial was stable. Associated funerary items were also recovered. All human remains and associated funerary objects were temporarily transferred to the OHC's laboratory facilities in Columbus for cleaning, cataloging and analysis. Non-artifact remains of water screened soil (rocks and shell) from burial context were retained. Following consultation with the Indian tribes listed above, OHC staff returned to the site on October 1 and 2, 2014, to excavate the remainder of the burial. This follow-up excavation was similarly overseen by representatives of the consulted Indian tribes, and all excavated human remains and associated funerary items were again temporarily transferred to the OHC's laboratory facilities in Columbus, where they were cleaned, cataloged, analyzed, and rejoined with the human remains and associated funerary items that were excavated in April 2014. All human remains and associated funerary items recovered from 33LU0805 are currently being temporarily held at the OHC's Columbus facility on behalf of the Toledo Metroparks.

In total, one individual was identified. No known individuals were identified. The 3,049 associated funerary objects include the following: 1 pan; 2 kettles; 2 arm bands; 1 brooch; 1 glass mirror; 2 musket balls; 1 strike-light; 2 flints; 19 copper coils; 14 tinkler cones; 1 tubular long bead; 517 tubular small beads; 2,130 seed beads; 10 pieces of possible fabric; 2 pieces of charcoal; 37 seeds; 3 stones; 4 rock and shell; 2 light fractions; 1 non-human bone fragment; 11 ceramic sherds; 21 flint flakes; 11 buckshot; 1 rose head nail; 7 brass flakes; 4 clay fragments with vermillion; 1 lot of an unspecified number of corroded iron fragments; 1 otolith; 1 cone; 2 finial-like bone objects; 1 musket ball fragment; 83 wampum beads; 2 unknown material fragments; 1 fixed blade knife with half tang; 1 bone tube; 1 pair of scissors; 1 wooden object; 1 disc-shaped button; 15 perforated triangular brass fragments; 1 iron ring; 1 brass ring; 1 ferrule; 1 silver ring; 6 ferrule fragments; 1 leather bag; 1 sample of a granular substance; 1 sample of vermillion powder; 1 textile and cordage; 1 fixed blade knife with full tang; 7 samples of textile fragments; 3 pieces of textile, leather, and organic material; 3 samples of textile and leather fragments; 1 knife blade with rust fragments; 1 sample of knife handle fragments; 1 rivet; 24 kettle fragments; 4 unperforated brass triangles; 1 silver clipping; 1 sample of cordage fragments; 1 sample of cordage; 28 hawk bell fragments; 1 bell clapper; 6 solder fragments; 1 shaped sheet of brass; 1 iron awl with bone handle and coat button attached; 1 button; 1 butt cone; 1 non-human, possibly modified bone fragment; 15 brass fragments; 1 sample of iron fragments; 1 wire; and 12 samples of water screened residual portion of soil.

A nearby 18th century Ottawa grave demonstrates that this part of the island may have been occupied and used as a burial area by the Ottawa until around the time of the 1795 Treaty of Greenville. Audubon Island is located in the lower Maumee Valley in northern Ohio. Some Ottawa bands had taken up residence in the lower Maumee Valley by A.D. 1740–1750. Following Pontiac's siege of Detroit in the summer of 1763, some of the Ottawa bands from that area also resettled to the lower Maumee Valley. In 1764, Captain Thomas Morris met an Ottawa delegation at the foot of the Maumee Rapids, adjacent to Audubon Island. Between 1783 and 1794, Audubon Island was known as Col. McKee's Island, and was farmed as part of Alexander McKee's Department of Indian Affairs post at the foot of the Maumee Rapids. Several other Euro-Canadian traders occupied lands in the area, presumably with the consent of the local Ottawa.

In 1795, many of the Great Lakes-Ohio Valley tribes signed the Treaty of Greenville, which produced several land cession, including a 12-square-mile reserve surrounding the foot of the Maumee Rapids and Audubon Island. Occupation of Audubon Island by the Ohio Ottawa appears to have ceased at that time, at which point some of them moved to Walpole Island, Canada. Between 1807 and 1817, the United States established four small reservations for the Ottawa along the lower Maumee River. Audubon Island lies between two of these reservations. In 1831 to 1833, the four reservations were finally ceded to the United States in return for lands in present-day Franklin County, KS. In 1867, the Kansas reservation organization was dissolved and the Ottawa sold their individual allotments and moved to Oklahoma. Descendants of the Ottawa that occupied Audubon Island are members of the Ottawa Tribe of Oklahoma.

Determinations Made by Metroparks Toledo

Officials of Metroparks Toledo have determined that:

- Pursuant to 25 U.S.C. 3001(9), the human remains described in this notice represent the physical remains of one individual of Native American ancestry.
- Pursuant to 25 U.S.C. 3001(3)(A), the 3,049 objects described in this notice are reasonably believed to have been placed with or near individual human remains at the time of death or later as part of the death rite or ceremony.
- Pursuant to 25 U.S.C. 3001(2), there is a relationship of shared group identity that can be reasonably traced between the Native American human remains and associated funerary objects and the Ottawa Tribe of Oklahoma.

Additional Requestors and Disposition

Lineal descendants or representatives of any Indian tribe or Native Hawaiian organization not identified in this notice that wish to request transfer of control of these human remains and associated funerary objects should submit a written

request with information in support of the request Joseph Fausnaugh, Metroparks of the Toledo Area, 5100 West Central Avenue, Toledo, OH 43615, telephone (419) 407–9700, email *joe.fausnaugh@metroparkstoledo.com,* by February 13, 2017. After that date, if no additional requestors have come forward, transfer of control of the human remains and associated funerary objects to the Ottawa Tribe of Oklahoma may proceed.

Metroparks Toledo is responsible for notifying the Eastern Shawnee Tribe of Oklahoma, the Miami Tribe of Oklahoma, the Ottawa Tribe of Oklahoma, the Shawnee Tribe, and the Wyandotte Nation that this notice has been published.

Dated: December 20, 2016.

Melanie O'Brien,

Manager, National NAGPRA Program.

[FR Doc. 2017–00509 Filed 1–11–17; 8:45 am]

BILLING CODE 4312–52–P

DEPARTMENT OF JUSTICE

Foreign Claims Settlement Commission

[F.C.S.C. Meeting and Hearing Notice No. 1–17]

Sunshine Act Meeting

The Foreign Claims Settlement Commission, pursuant to its regulations (45 CFR part 503.25) and the Government in the Sunshine Act (5 U.S.C. 552b), hereby gives notice in regard to the scheduling of open meetings as follows:

Thursday, January 26, 2017: 10:00 a.m.—Issuance of Proposed Decisions in claims against Iraq.

Status: Open.

All meetings are held at the Foreign Claims Settlement Commission, 600 E Street NW., Washington, DC. Requests for information, or advance notices of intention to observe an open meeting, may be directed to: Patricia M. Hall, Foreign Claims Settlement Commission, 600 E Street NW., Suite 6002, Washington, DC 20579. Telephone: (202) 616–6975.

Brian M. Simkin,

Chief Counsel.

[FR Doc. 2017–00717 Filed 1–10–17; 4:15 pm]

BILLING CODE 4410–BA–P

DEPARTMENT OF JUSTICE

Notice of Lodging of Proposed Consent Decree Under the Comprehensive Environmental Response, Compensation, and Liability Act

On January 6, 2017, the Department of Justice lodged a proposed Consent Decree with the United States District Court for the District of Maine in the lawsuit entitled *United States and State of Maine* v. *Smith Cove Preservation Trust,* Civil Action No. 1:17–CV–00009–JDL

In this action, the United States, on behalf of the U.S. Environmental Protection Agency (''EPA''), sought injunctive relief for remedial cleanup and recovery of response costs against Smith Cove Preservation Trust (''Settling Defendant''), the current owner of the approximately 120-acre former Callahan Mine property at the Callahan Mine Superfund Site in Brooksville, Maine (''Site''). The complaint seeks relief under to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act (''CERCLA''), 42 U.S.C. 9606 and 9607. The State of Maine (''Maine'') has asserted parallel claims under CERCLA and related State provisions and is a co-plaintiff to the proposed Consent Decree.

Under the proposed Consent Decree, Settling Defendant will provide in-kind services (permission for EPA and the Maine Department of Environmental Protection to use ''Borrow Material'' located within Settling Defendant's property for use in implementing response actions at the Site), access, and institutional controls, all of which would be valuable for the environmental response at the Site, based on an analysis of Settling Defendant's ability to pay. In exchange, Settling Defendant will receive a covenant not to sue under Sections 106 and 107 of CERCLA for remedial cleanup and response costs relating to the Site, subject to certain reservations of rights.

The publication of this notice opens a period for public comment on the Consent Decree. Comments should be addressed to the Assistant Attorney General, Environment and Natural Resources Division, and should refer to *United States and State of Maine* v. *Smith Cove Preservation Trust,* D.J. Ref. No. 90–11–3–09953. All comments must be submitted no later than thirty (30) days after the publication date of this notice. Comments may be submitted either by email or by mail:

To submit comments:	*Send them to:*
By email	*pubcomment-ees.enrd@usdoj.gov.*
By mail	Assistant Attorney General, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044–7611.

During the public comment period, the Consent Decree may be examined and downloaded at this Justice Department Web site: *https://www.justice.gov/enrd/consent-decrees.* We will provide a paper copy of the Consent Decree upon written request and payment of reproduction costs. Please mail your request and payment to: Consent Decree Library, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044–7611.

Please enclose a check or money order for $14.75 (25 cents per page reproduction cost) payable to the United States Treasury. For a paper copy without the exhibits, the cost is $9.00.

Robert E. Maher Jr.,

Assistant Section Chief, Environmental Enforcement Section, Environment and Natural Resources Division.

[FR Doc. 2017–00489 Filed 1–11–17; 8:45 am]

BILLING CODE 4410–15–P

NATIONAL SCIENCE FOUNDATION

Notice of Permits Issued under the Antarctic Conservation Act of 1978

AGENCY: National Science Foundation

ACTION: Notice of permits issued under the Antarctic Conservation of 1978, Public Law 95–541.

SUMMARY: The National Science Foundation (NSF) is required to publish notice of permits issued under the Antarctic Conservation Act of 1978. This is the required notice.

FOR FURTHER INFORMATION CONTACT: Nature McGinn, ACA Permit Officer, Office of Polar Programs, Rm. 755, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230. Or by email: *ACApermits@nsf.gov.*

SUPPLEMENTARY INFORMATION: On December 7, 2016 the National Science Foundation published a notice in the **Federal Register** of a permit application received. The permit was issued on January 6, 2017 to:

1. David W. Johnston, Permit No. 2017–034
2. Joseph Wilson, Permit No. 2017–033

3. James Droney, Permit No. 2017–032

Nadene G. Kennedy,

Polar Coordination Specialist, Office of Polar Programs.

[FR Doc. 2017–00487 Filed 1–11–17; 8:45 am]

BILLING CODE 7555–01–P

NATIONAL SCIENCE FOUNDATION

Smart Cities and Communities Federal Strategic Plan: Exploring Innovation Together

AGENCY: The National Coordination Office (NCO) for Networking and Information Technology Research and Development (NITRD), National Science Foundation.

ACTION: Request for public comment.

FOR FURTHER INFORMATION CONTACT: Ernest Lucier at (703) 292–4873 or *lucier@NITRD.gov*. Individuals who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1–800–877–8339 between 8 a.m. and 8 p.m., Eastern time, Monday through Friday.

DATES: January 9, 2017.

SUMMARY: With this notice, the National Coordination Office for Networking and Information Technology Research and Development (NITRD) requests comments from the public regarding the draft Smart Cities and Communities Federal Strategic Plan: Exploring Innovation Together. The draft Strategic Plan is posted at: *https://www.nitrd.gov/drafts/SCC_StrategicPlan_Draft.pdf*.

ADDRESS AND SUBMISSION INFORMATION: You may submit comments by any of the following methods:

- *Email: SCCTF@nitrd.gov,* comments submitted by email should be machine-readable and should not be copy-protected;
- *Fax:* (703) 292–9097, Attn: Smart Cities and Communities; or
- *Mail:* Attn: Smart Cities and Communities, NCO, Suite II–405, 4201 Wilson Blvd., Arlington, VA 22230.

The deadline for submission under this RFC is February 28, 2017. Submissions must not exceed 3 pages in 12 point or larger font, with a page number provided on each page. Responders should include the name of the person(s) or organization(s) filing the comment.

Responses to this RFC may be posted online at *http://www.nitrd.gov*. Therefore, the Smart Cities and Communities Task Force requests that no business proprietary information or copyrighted information be submitted in response to this RFC.

In accordance with FAR 15.202(3), responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. Responders are solely responsible for all expenses associated with responding to this RFC.

SUPPLEMENTARY INFORMATION:

Summary of Draft Strategy

Motivated by a vision of ubiquitous, smart infrastructure, systems, and services, many cities and communities view advances in networking and information technology as a way to increase efficiency, reduce costs, and improve quality of life for their residents. They seek to become ''smart cities'' and ''smart communities'' by embedding new digital technologies into their infrastructure, systems, and services to enhance existing, and develop new, city/community resources. Smart city/community solutions are intended to enable new capabilities and opportunities—all in the face of limited budgets. The possible applications are numerous: Citizen services, smart grids, intelligent transportation systems, and remote healthcare, to name a few.

Although information technology promises enormous public benefits, it also introduces new challenges. These challenges range from technical to ethical, legal, and social, including cybersecurity, data sharing and analysis, privacy, public health and well-being, workforce and education needs, and cultural and socioeconomic considerations. Addressing these challenges requires new forms of cross-sector and cross-government collaboration, experimentation, knowledge sharing, and alignment.

This strategic plan offers a high-level framework to guide and coordinate smart city/community-related Federal initiatives, with an emphasis on local government and stakeholder engagement. Coordinating efforts across Federal agencies should help accelerate the development of smart city/community solutions that maximize the value of investments and optimize benefits to residents.

The Central Goals that motivate this strategy are to:

- Understand local needs and local goals;
- Accelerate smart city/community innovation and infrastructure development;
- Facilitate cross-sector collaboration and bridge existing silos;
- Boost exports and promote U.S. global leadership; and
- Focus on people-centered solutions that support job growth and economic competitiveness.

A key objective of this plan is to identify priorities for federally funded research and development (R&D) as well as capacity-building to help transform our cities and communities and improve our standards of living. To do so, the Strategic Priorities identified herein are to:

- Accelerate fundamental R&D for smart cities/communities;
- Facilitate secure and resilient infrastructure, systems, and services for smart cities/communities;
- Foster smart cities/communities through data and knowledge sharing, best practices, and collaboration; and
- Enable evaluation of progress and long-term growth of smart cities/communities.

This plan envisions Federal agencies working together and engaging with local leaders, academia, industry, civil society, and other key stakeholders. The aim is to accelerate the development and implementation of new discoveries and innovations that in turn enable cities and communities to achieve local goals and address their most important challenges. Therefore, the Next Steps recommended in this strategic plan include, through the Smart Cities and Communities Task Force, promoting interagency coordination and collaboration; engaging cities/communities to collect feedback on and enable continued refinement of this strategic plan and future efforts; and developing a roadmap for specific Federal actions to execute the Strategic Priorities presented here.

Questions for Commenters

The Smart Cities and Communities Task Force invites comments on the draft strategic plan. In particular, commenters should consider the following questions as they develop their responses:

- Are the central goals appropriate and/or are there other goals that should be considered?
- Are the strategic priorities appropriate and/or are there other priorities that should be considered?
- Are the next steps identified in the draft plan appropriate and/or are there others that should be considered?

Submitted by the National Science Foundation for the National Coordination Office (NCO) for Networking and Information

Technology Research and Development (NITRD) on January 9, 2017.

Suzanne H. Plimpton,

Reports Clearance Officer, National Science Foundation.

[FR Doc. 2017–00501 Filed 1–11–17; 8:45 am]

BILLING CODE 7555–01–P

NUCLEAR REGULATORY COMMISSION

[Docket No. 50–193; NRC–2016–0213]

Rhode Island Atomic Energy Commission

AGENCY: Nuclear Regulatory Commission.

ACTION: License renewal; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) has issued a renewal of Facility Operating License No. R–95, held by the Rhode Island Atomic Energy Commission (RINSC or the licensee) for the continued operation of its Rhode Island Nuclear Science Center reactor for an additional 20 years from the date of issuance. The facility is located on the Narragansett Bay Campus of the University of Rhode Island in Narragansett, Rhode Island.

DATES: The renewed facility operating license No. R–95 is effective on January 5, 2017.

ADDRESSES: Please refer to Docket ID NRC–2016–0213 when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- *Federal Rulemaking Web site:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2016–0213. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *Carol.Gallagher@nrc.gov.* For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.
- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *http://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''*ADAMS Public Documents*'' and then select ''*Begin Web-based ADAMS Search.*'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* For the convenience of the reader, the ADAMS accession numbers are provided in a table in the ''Availability of Documents'' section of this document.
- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Patrick G. Boyle, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; telephone: 301–415–3936; email: *Patrick.Boyle@nrc.gov.*

SUPPLEMENTARY INFORMATION: The NRC has issued renewed Facility Operating License No. R–95, held by the licensee, which authorizes continued operation of the RINSC reactor, located on the Narragansett Bay Campus of the University of Rhode Island in Narragansett, Rhode Island. The RINSC reactor is a heterogeneous open pool-type, natural and forced convection, light-water cooled and shielded reactor. The renewed license authorizes the licensee to operate the RINSC reactor up to a steady-state power level of 2 megawatts thermal. The renewed Facility Operating License No. R–95 will expire 20 years from its date of issuance, January 5, 2017.

The renewed facility operating license complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's regulations in chapter I of title 10 of the *Code of Federal Regulations* (10 CFR), and sets forth those findings in the renewed facility operating license. The agency afforded an opportunity for hearing in the Notice of Opportunity for Hearing published in the **Federal Register** on October 24, 2016 (81 FR 73148). The NRC received no request for a hearing or petition for leave to intervene following the notice.

The NRC staff prepared a safety evaluation report (SER)—Renewal of the Facility Operating License for the Rhode Island Nuclear Science Center Reactor related to the renewal of Facility Operating License No. R–95 and concluded, based on that evaluation, that the licensee can continue to operate the facility without endangering the health and safety of the public. The NRC staff also prepared an environmental assessment and finding of no significant impact regarding the renewal of the facility operating license, noticed in the **Federal Register** on January 5, 2017 (82 FR 1364), and concluded that renewal of the facility operating license will not have a significant impact on the quality of the human environment.

Availability of Documents

The documents identified in the following table are available to interested persons through ADAMS accession numbers, as indicated. The SER, prepared by the NRC staff for the license renewal, is available in ADAMS under Accession No. ML16337A325.

''Rhode Island Atomic Energy Commission—'Requesting Renewal of Operating License R–095 (Enclosure 2)' [REDACTED Safety Analysis Report],'' May 3, 2004.	ML14038A386
''Rhode Island Atomic Energy Commission, Requesting Renewal of Operating License R–095,'' May 3, 2004	ML041270519
''Response to Request for Additional Information Concerning Plans for Decommissioning Facility at the End of Useful Life Ref Item 3 Parts a, b, and c,'' January 19, 2010.	ML100270176
''Rhode Island Nuclear Science Center, Appendix A to Safety Analysis Report, Information on Ar–41 and N–16,'' (received December 5, 2016), February 4, 2010.	ML16340A068
''Rhode Island Nuclear Science Center Reactor Submittal of Response to Request for Additional Information Re License Renewal,'' August 6, 2010.	ML102240257
''Responding to Requests for Additional Information (RAI) regarding our Analysis of the Maximum Hypothetical Accident (MHA) for Renewal of License R–95,'' August 18, 2010.	ML102360440
''Memorandum Steady-State Thermal-Hydraulic Analysis for Forced-Convective Flow in the Rhode Island Nuclear Science (RINSC) Reactor,'' September 3, 2010.	ML16062A376
''Rhode Island Atomic Energy Commission, Fourth Response to Request for Additional Information dated April 23, 2010 (Redacted),'' September 8, 2010.	ML16279A516
Argonne National Laboratory Intra-Laboratory Memo from Earl E. Feldman and M. Kalimullah to James E. Matos Regarding Steady-State Thermal-Hydraulic Analysis for Natural-Convective Flow in the Rhode Island Nuclear Science Center (RINSC) Reactor, November 8, 2016.	ML16343A144
''Rhode Island Atomic Energy Commission Fifth Response to April 13, 2010 Request for Additional Information (Regarding License Renewal redacted),'' November 26, 2010.	ML16279A518
''Rhode Island Atomic Energy Commission—Response to Requests for Additional Information Regarding Aging Issues Raised in RAIs,'' December 7, 2010.	ML103490242

''Rhode Island Atomic Energy Commission Response to April 13, 2010, Request for Additional Information Regarding License Renewal Technical Specifications (Redacted),'' December 14, 2010.	ML16279A519
''Reply to your Request for Additional Information (RAI) dated April 13, 2010, regarding License Renewal for the Rhode Island Nuclear Science Center Reactor (RINSC),'' January 24, 2011.	ML110320416
''Letter re: Request for Additional Information dated April 13, 2010 Regarding License Renewal for the Rhode Island Nuclear Science Center Reactor (RINSC),'' February 24, 2011.	ML110600699
''Rhode Island Atomic Energy Commission Response to Request for Additional Information Regarding License Renewal,'' July 15, 2011.	ML11202A287
''Rhode Island Atomic Energy Commission Tenth Response to the April 13, 2010, Request for Additional Information Regarding License Renewal (Redacted),'' July 5, 2011.	ML16279A520
''Rhode Island Atomic Energy Commission Responses to Request for Additional Information Regarding License Renewal (Redacted),'' July 15, 2011.	ML16279A521
''Rhode Island Nuclear Science Center Tenth Response to NRC Request for Additional Information dated April 13, 2010, Pages 126 Through 204,'' July 15, 2011.	ML11202A290
''Response to NRC's Request for Additional Information Regarding Rhode Island Nuclear Science Center Reactor License Renewal,'' March 15, 2013.	ML13080A361
''Response to NRC's Request for Additional Information Regarding Rhode Island Nuclear Science Center Reactor License Renewal,'' March 15, 2013.	ML13080A362
''Response to NRC's Request for Additional Information Regarding Rhode Island Nuclear Science Center Reactor License Renewal, Proposed Technical Specification 130314,'' March 15, 2013.	ML13080A364
''Response to Request for Additional Information Regarding Financial Qualifications for the RINSC Reactor License Renewal,'' September 16, 2013.	ML13260A474
''Rhode Island Atomic Energy Commission License Renewal Historical Resource Impact Response Letter,'' December 19, 2013.	ML14006A420
''Response to Request for Additional Information Regarding Requalification Plan for the RINSC Reactor License Renewal,'' February 24, 2014.	ML14057A639
''Compilation of All Submitted Requests for Additional Information for the Rhode Island Nuclear Science Center Reactor License Renewal. Part 1 of 3,'' April 28, 2014.	ML14126A192
''Rhode Island Atomic Energy Commission Consolidated Responses to Request for Additional Information Regarding License Renewal. Part 2 of 3 (Redacted),'' April 28, 2014.	ML16279A523
''Compilation of All Submitted Requests for Additional Information for the Rhode Island Nuclear Science Center Reactor License Renewal. Part 3 of 3,'' April 28, 2014.	ML14126A195
''Rhode Island Nuclear Science Center Reactor—Updated Proposed Technical Specifications,'' June 30, 2014	ML14184B361
''Rhode Island Nuclear Science Center Updated Technical Specifications,'' August 7, 2015	ML15223A953
''Rhode Island Nuclear Science Center Submittal of Updated Proposed Technical Specification,'' August 11, 2015	ML15223A952
''Summary of Changes to the Proposed Technical Specifications,'' August 11, 2015	ML15223A954
''Contractor Comments and Responses,'' August 11, 2015	ML15223A955
''Rhode Island Nuclear Science Center Transient Analyses Revised January 20, 2016,'' January 20, 2016	ML16062A378
''Rhode Island Nuclear Science Center Technical Specifications,'' February 26, 2016	ML16062A380
''Rhode Island Atomic Energy Commission—Response to Requests for Additional Information dated September 3, 2015,'' March 1, 2016.	ML16062A373
''Fuel Failure Addendum 160229,'' March 1, 2016	ML16062A381
''New Transient Analysis Results 160226,'' March 1, 2016	ML16062A379
''150903 RAI Responses 160301,'' March 1, 2016	ML16062A374
''Core Change Summary for Conversion from RINSC LEU Core #5 to LEU Core #6,'' March 1, 2016	ML16062A375
''[RINSC] Fuel Failure Analysis [Dose Table],'' March 1, 2016	ML16062A382
''Request for Change to License for the Rhode Island Atomic Energy Commission,'' April 21, 2016	ML16112A071
''Rhode Island Atomic Energy Commission Research Reactor—Responses to NRC Staff Request for Additional Information for License Renewal Review (Redacted Version),'' July 20, 2016.	ML16202A008
''State of Rhode Island and Province Plantations—Response to Request for Additional Dated August 3, 2016, Rhode Island Nuclear Science Center Response to NRC Request for Additional Information Regarding the Renewal, and Rhode Island Nuclear Science Center Technical Specifications,'' October 6, 2016.	ML16280A420
''State of Rhode Island and Providence Plantations—Response to Request for Additional Information Regarding Calculations for Fuel Element Failure Accident Scenario,'' Letter and Responses, November 1, 2016.	ML16306A063
''Rhode Island Atomic Energy Commission—Transmittal of Supplemental Information in Support of Relicensing for the Rhode Island Nuclear Science Center (R–95),'' Letter and Responses, November 14, 2016.	ML16319A298
Rhode Island Nuclear Science Center—''Supplemental Information for the Relicensing of the Rhode Island Atomic Energy Commission, Rhode Island Nuclear Science Center—Safety Analysis Report, and Rhode Island Nuclear Science Center—Technical Specifications,'' December 1, 2016.	ML16336A734
State of Rhode Island and Province Plantations—''Supplemental Information Regarding Relicensing for the Rhode Island Nuclear Science Center,'' December 8, 2016.	ML16343A851
Rhode Island December 13, 2016 Conversation Record, December 13, 2016	ML16351A003
Supplemental Information Re: Relicensing for the Rhode Island Nuclear Science Center (R–95), December 15, 2016	ML16350A042
Rhode Island December 15 2016 Conversation Record, December 15, 2016	ML16351A012
Rhode Island Nuclear Science Center—Supplemental Information Regarding Relicensing, December 15, 2016	ML16350A256
Rhode Island Atomic Energy Commission—Issuance of Renewed Facility Operating Licnese No. R–95 for the Rhode Island Nuclear Science Center Reactor (TAC No. ME1598) January 5, 2017.	ML16337A322

Dated at Rockville, Maryland, this 5th day of January, 2017.

For the Nuclear Regulatory Commission.

Michael Balazik,

Chief (Acting), Research and Test Reactors Licensing Branch, Division of Policy and Rulemaking, Office of Nuclear Reactor Regulation.

[FR Doc. 2017–00527 Filed 1–11–17; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket No. 52–047; NRC–2016–0119]

Tennessee Valley Authority; Clinch River Nuclear Site

AGENCY: Nuclear Regulatory Commission.

ACTION: Early site permit application; acceptance for docketing.

SUMMARY: On May 12, 2016, the Tennessee Valley Authority (TVA) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) for an early site permit (ESP) for the Clinch River Nuclear Site located in Oak Ridge, Tennessee. A notice of receipt and availability of this application was published in the **Federal Register** on June 23, 2016. The TVA also provided supplemental information in support of the application to the NRC.

DATES: The NRC received the ESP application on May 12, 2016, and docketed it on December 30, 2016.

ADDRESSES: Please refer to Docket ID NRC–2016–0119 when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- *Federal Rulemaking Web site:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2016–0119. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *Carol.Gallagher@nrc.gov.* For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.
- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *http://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''*ADAMS Public Documents,*'' and then select ''*Begin Web-based ADAMS Search.*'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* For the convenience of the reader, the ADAMS accession numbers are provided in a table in the ''Availability of Documents'' section of this document.
- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852.

FOR FURTHER INFORMATION CONTACT: Allen Fetter, Office of New Reactors, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, telephone: 301–415–8556, email: *Allen.Fetter@nrc.gov.*

SUPPLEMENTARY INFORMATION:

I. Introduction

Pursuant to Section 103 of the Atomic Energy Act of 1954, as amended (AEA), and part 52 of title 10 of the *Code of Federal Regulations* (10 CFR), ''Licenses, Certifications, and Approvals for Nuclear Power Plants,'' the applicant, TVA, filed an application with the NRC for an ESP in Oak Ridge, Tennessee. In accordance with subpart A of 10 CFR part 52, an applicant may seek an ESP separate from the filing of an application for a construction permit (CP) or combined license (COL) for a nuclear power facility. The ESP process allows resolution of issues relating to siting. At any time during the period of an ESP (up to 20 years), the permit holder may reference the permit in an application for a CP or COL.

The NRC staff has determined that TVA has submitted information in accordance with 10 CFR part 2, ''Agency Rules of Practice and Procedure'' and 10 CFR part 52, ''Licenses, Certifications, and Approvals for Nuclear Power Plants,'' that is sufficiently complete and acceptable for docketing. The docket number for this application is ''52–047.''

II. Further Information

The NRC staff will perform a detailed technical review of the application, and docketing of the ESP application does not preclude the NRC from requesting additional information from the applicant as the review proceeds, nor does it predict whether the Commission will grant or deny the application. The Commission will receive a report on the application from the Advisory Committee on Reactor Safeguards in accordance with 10 CFR 52.23. An Atomic Safety and Licensing Board Panel will conduct a hearing in accordance with 10 CFR 52.21 and will make an initial decision on the issuance of the permit for the Commission. If the Commission then finds that the application meets the applicable standards of the AEA and the Commission's regulations, and that required notifications to other agencies and bodies have been made, the Commission will issue an ESP, in the form and containing conditions and limitations that the Commission finds appropriate and necessary.

In accordance with 10 CFR part 51, the Commission will also prepare an environmental impact statement for the proposed action. Pursuant to 10 CFR 51.26, and as part of the environmental scoping process, the staff intends to hold a public scoping meeting. Detailed information regarding this meeting will be included in a future **Federal Register** notice.

Finally, the Commission will announce, in a **Federal Register** notice, the opportunity to petition for leave to intervene in the hearing required for this application by 10 CFR 52.21.

III. Availability of Documents

The following table indicates the ADAMS accession numbers or Web site links where application documents and supplemental information are available to interested persons.

Document title	ADAMS accession No(s). or Web site
Application Transmittal letter for ESP for Clinch River Nuclear Site	ML16139A752.
Clinch River Nuclear Site Early Site Permit Application, Part 1, Administrative Information	ML16144A033.
Clinch River Nuclear Site Early Site Permit Application, Part 2, Site Safety Analysis Report	ML16144A074.
Clinch River Nuclear Site Early Site Permit Application, Part 3, Environmental Report	ML16144A145.
Clinch River Nuclear Site Early Site Permit Application, Part 5, Emergency Plan	ML16144A150.
Clinch River Nuclear Site Early Site Permit Application, Part 6, Exemptions and Departures	ML16144A151.
Early Site Permit Application—Clinch River Nuclear Site Web site	*http://www.nrc.gov/reactors/new-reactors/esp/clinch-river.html.*
Calculation Input and Output Files in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16180A307.
Siting Study in Support of the Clinch River Nuclear Site Early Site Permit Application	ML16188A075.
Hydrology Information and Calculation Input and Output Files in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16216A115, ML16280A065, ML16280A066, ML16344A085.
Atmospheric Dispersion Calculation Input and Output Files in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16216A109.
Environmental Alternatives Supplemental Items in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16252A182.
Geologic and Geotechnical Information in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16302A176.
Vibratory Ground Motion Information in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16302A445.

Document title	ADAMS accession No(s). or Web site
Information on Cumulative Radiological Health Impacts in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16340A259.
Meteorological Information in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16340A256.
Information on Radiation Protection and Accident Consequences in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16340A258.
Information on Alternate Cooling Water Systems in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16344A061.
Information on Terrestrial Ecology in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16348A552.
Information on Stability of Subsurface Materials and Foundation in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16350A420.
Site Selection Information in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16350A429.
Aquatic Ecology Information in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16356A485.
Environmental Protection Plan Information in Support of the Clinch River Nuclear Site Early Site Permit Application.	ML16363A378.

The NRC will post other publically available materials related to this application in ADAMS and on the NRC's public Web site at *http://www.nrc.gov/reactors/new-reactors/esp/clinch-river.html.*

Dated at Rockville, Maryland, this 5th day of January 2017.

For The Nuclear Regulatory Commission.

Francis M. Akstulewicz,

Director, Division of New Reactor Licensing, Office of New Reactors.

[FR Doc. 2017–00529 Filed 1–11–17; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket No. 50–186; NRC–2013–0090]

University of Missouri—Columbia Research Reactor

AGENCY: Nuclear Regulatory Commission.

ACTION: License renewal; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) issued a renewal of Facility Operating License No. R–103, held by the Curators of the University of Missouri—Columbia (the licensee), for the continued operation of its University of Missouri—Columbia Research Reactor (MURR or the reactor) at a maximum steady-state power level of 10 megawatts thermal (MWt) for an additional 20 years from the date of issuance. The MURR facility is located in the University Research Park, adjacent to the main campus of the University of Missouri-Columbia, in Boone County, Columbia, Missouri.

DATES: The renewed facility operating license No. R–103 is effective on January 4, 2017.

ADDRESSES: Please refer to Docket ID NRC–2013–0090 when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- *Federal Rulemaking Web site:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2013–0090. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *Carol.Gallagher@nrc.gov.* For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.
- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *http://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''*ADAMS Public Documents*'' and then select ''*Begin Web-based ADAMS Search.*'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* The ADAMS accession number for each document referenced (if it available in ADAMS) is provided the first time that a document is referenced. For the convenience of the reader, the ADAMS accession numbers are provided in a table in the ''Availability of Documents'' section of this document.
- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Geoffrey A. Wertz, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; telephone: 301–415–0893; email: *Geoffrey.Wertz@nrc.gov.*

SUPPLEMENTARY INFORMATION:

I. Discussion

The NRC has issued renewed Facility Operating License No. R–103, held by the licensee, which authorizes continued operation of the MURR, located in the University Research Park, adjacent to the main campus of the University of Missouri—Columbia, in Columbia, Missouri. The MURR is an open pool-type reactor which is light-water moderated and cooled. It is licensed to operate at a maximum steady state power level of 10 MWt. The renewed Facility Operating License No. R–103 will expire 20 years from its date of issuance.

The renewed facility operating license complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's regulations in chapter I of title 10 of the *Code of Federal Regulations* (10 CFR), and sets forth those findings in the renewed facility operating license. The agency afforded an opportunity for hearing in the Notice of Opportunity for Hearing published in the **Federal Register** on May 20, 2013 (78 FR 29393). The NRC received no request for a hearing or petition for leave to intervene following the notice.

The NRC staff prepared a safety evaluation report (SER) for the renewal of Facility Operating License No. R–103 and concluded, based on that evaluation, that the licensee can continue to operate the facility without

endangering the health and safety of the public. The NRC staff also prepared an environmental assessment and finding of no significant Impact for the renewal of the facility operating license, noticed in the **Federal Register** on November 29, 2016 (81 FR 86024), and concluded that renewal of the facility operating license will not have a significant impact on the quality of the human environment.

II. Availability of Documents

The documents identified in the following table are available to interested persons through ADAMS accession numbers, as indicated. The SER, prepared by the NRC staff for the license renewal, is available under ADAMS Accession No. ML16124A887.

Document	ADAMS accession No.
Application for License Renewal for the University of Missouri-Columbia Research Reactor as Per 10 CFR 2.109—Cover Letter, August 31, 2006.	ML062540114.
Safety Analysis Report for the University of Missouri-Columbia Application for License Renewal Application—Volume 1 of 2—Redacted, August 31, 2006.	ML092110573.
Safety Analysis Report for the University of Missouri-Columbia Application for License Renewal—Chapters 10–18, Volume 2 of 2—Redacted, August 31,2006.	ML092110597.
University of Missouri Research Reactor (MURR) Environmental Report for License Renewal, August 31, 2006	ML062540121.
Written Communication as Specified by 10 CFR 50.4 (b)(1) Regarding the Response to the ''University of Missouri at Columbia—Request for Additional Information RE: License Renewal Environmental Report,'' January 29, 2010.	ML100330073.
University of Missouri, Columbia—Response to NRC Request for Additional Information, Redacted, July 16, 2010	ML12354A237.
University of Missouri—Columbia Licensee Response to NRC Request for Additional Information—Chapter 10, Related to Amendment Information Only, Redacted, August 31, 2010.	ML120050315.
University of Missouri, Columbia, Response to Request for Additional Information Regarding License Renewal, September 3, 2010.	ML102500533.
University of Missouri, Columbia—Response to NRC Request for Additional Information, dated June 1, 2010, (TAC No.ME1580) Redacted, September 30, 2010.	ML12355A019.
University of Missouri, Columbia—Response to NRC Request for Additional Information 45-Day Response Questions (TAC No. ME1580) Redacted, October 29, 2010.	ML12355A023.
Written Communication as Specified by 10 CFR 50.4 (b)(1) Regarding the Response to the ''University of Missouri at Columbia—Request for Additional Information RE: License Renewal, Safety Analysis Report, Complex Questions,'' dated May 6, 2010, October 29, 2010.	ML103060018.
University of Missouri, Columbia—Response to NRC Request for Additional Information 45-Day Response Questions (TAC No. ME1580) Redacted, November 30, 2010.	ML12355A026.
University of Missouri-Columbia Research Reactor Response to Request for Additional Information Regarding Renewal Request for Amendment Facility Operating License R–103, March 11, 2011.	ML110740249.
University of Missouri-Columbia Research Reactor's Response to NRC Request for Additional Information Regarding a Renewal Request for Amended Facility Operating License R–103, September 8, 2011.	ML11255A003.
University of Missouri—Columbia Research Reactor, Written Communication as Specified by 10 CFR 50.4 (b)(1) Regarding Responses to the University of Missouri at Columbia—Request for Additional Information RE: License Renewal, Safety Analysis Report, January 6, 2012.	ML12010A186.
University of Missouri, Columbia—Licensee Response to NRC Request for Additional Information dated May 6, 2010 (Complex Questions) and June 1, 2012 (45-Day Response Questions) RE: License Renewal (TAC No. ME1580) Redacted, June 28, 2012.	ML12346A004.
Written Communication as Specified by 10 CFR 50.4 (b)(1) Regarding the Response to the University of Missouri at Columbia—Request for Additional Information Regarding the Renewal of Facility Operating License No. R–103 for the University of Missouri, January 28, 2015.	ML15034A474.
University of Missouri-Columbia—Response to Request for Additional Information Regarding Renewal Request for Amended Facility Operating License, July 31, 2015.	ML15216A122.
University of Missouri-Columbia, Request for a copy of the Emergency Plan in Support of Renewal of Amended Facility License No. R–103, September 15, 2015.	ML15260A439.
University of Missouri, Columbia-Responses to NRC Request for Additional Information, Dated April 17, 2015, Regarding Renewal Request for Amended Facility Operating License, October 1, 2015.	ML15275A314.
University of Missouri-Columbia—Response to NRC Request for Additional Information Dated December 17, 2015, Regarding Renewal Request for License No. R–103, February 8, 2016.	ML16041A221.
University of Missouri at Columbia—Responses to NRC Request for Additional Information dated February 8, 2016 Regarding Renewal Request for Amendment, April 8, 2016.	ML16103A536.
University of Missouri- Columbia Research Reactor, Response to Request for Additional Information on License Renewal Amendment Request, April 15, 2016.	ML16110A164.
University of Missouri-Columbia Research Reactor's Responses to the NRC Request for Additional Information, Dated October 28, 2015, Regarding Our Renewal Request for Amended Facility Operating License No. R–103, May 31, 2016.	ML16155A132.
University of Missouri-Columbia Response to Request for Additional Information Regarding the Proposed Technical Specifications for the License Renewal, July 25, 2016.	ML16209A236.
University of Missouri-Columbia Response to NRC Request for Additional Information Regarding Renewal for Amended Facility Operating License, August 31, 2016.	ML16246A010.
University of Missouri-Columbia Response to NRC Request for Additional Information Regarding the Technical Specifications for the Renewal for Amended Facility Operating License, November 7, 2016.	ML16313A517.
University of Missouri-Columbia Response to NRC Request for Additional Information Regarding the Technical Specifications for the Renewal for Amended Facility Operating License, November 15, 2016.	ML16321A485.
University of Missouri-Columbia Response to NRC Request for Additional Information Regarding the Security Plan for the Renewal for Amended Facility Operating License, November 15, 2016.	ML16321A455.
University of Missouri-Columbia Response to NRC Request for Additional Information Regarding the Renewal for Amended Facility Operating License, December 14, 2016.	ML16350A424.
University Of Missouri-Columbia Regarding Issuance of Renewed Facility Operating License No. R–103 for The University Of Missouri—Columbia Research Reactor (TAC No. ME1580) January 4, 2017.	ML16124A885.

Dated at Rockville, Maryland, this 5th day of January 2017.

For the Nuclear Regulatory Commission.

Michael Balazik,

Chief (Acting), Research and Test Reactors Licensing Branch, Division of Policy and Rulemaking, Office of Nuclear Reactor Regulation.

[FR Doc. 2017–00523 Filed 1–11–17; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket No. 040–06377; NRC–2014–0041]

Department of the Army, U.S. Army Research, Development and Engineering Command, Armament Research, Development and Engineering Center, Picatinny Arsenal; Picatinny, New Jersey

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is considering the issuance to license amendment of SUB–348, issued on July 13, 1961 and held by the Department of the Army, U.S. Army Research, Development and Engineering Command (RDEC), Armament Research, Development and Engineering Center (ARDEC or the licensee), for its facilities located at the Picatinny Arsenal in Morris County, New Jersey.

DATES: The Environmental assessment and finding of no significant impact referenced in this document is available on January 12, 2017.

ADDRESSES: Please refer to Docket ID NRC–2014–0041 when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- *Federal Rulemaking Web site:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2014–0041. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *Carol.Gallagher@nrc.gov.* For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.
- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *http://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''*ADAMS Public Documents*'' and then select ''*Begin Web-based ADAMS Search.*'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* For the convenience of the reader, the ADAMS accession numbers are provided in a table in the ''Availability of Documents'' section of this document.
- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Laurie A. Kauffman, Division of Nuclear Materials Safety, Region I, U.S. Nuclear Regulatory Commission, King of Prussia, PA 19406; telephone: 610–337–5323; email: *Laurie.Kauffman@nrc.gov.*

SUPPLEMENTARY INFORMATION:

I. Introduction

The NRC is considering the issuance of a license amendment to NRC's Source Materials License No. SUB–348 (License No. SUB–348). The license is held by the Department of the Army, U.S. Army Research, Development and Engineering Command (RDEC), Armament Research, Development and Engineering Center (ARDEC or the licensee), for its facilities located at the Picatinny Arsenal in Morris County, New Jersey. The ARDEC submitted to the NRC a license amendment request and proposed decommissioning plan for Area 1222. The ARDEC requested authorization to decontaminate the small remaining amounts of depleted uranium and radium in Area 1222, and proposed a decommissioning plan that included information describing how Area 1222 would meet the criteria described in part 20 of title 10 of the *Code of Federal Regulations* (CFR), subpart E, ''License Termination Criteria'' following decommissioning. Issuance of the amendment would authorize the decontamination of Area 1222. The ARDEC license would not be otherwise affected, and the ARDEC will continue to conduct authorized activities under this license at other locations on the Picatinny Arsenal site. The ARDEC requested this action in a letter dated July 23, 2013 (ADAMS Accession No. ML14078A564). The NRC's consideration of the license amendment request for the proposed decommissioning plan, and notice of an opportunity to request a hearing was publicly noticed in **Federal Register** notice (79 FR 18934–18936; March 27, 2014) (ADAMS Accession No. ML14058A702).

The NRC has prepared an environmental assessment (EA) in support of its review of the proposed actions in accordance with the requirements of 10 CFR part 51 ''Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions,'' which implements the NRC's environmental protection program under the National Environmental Policy Act (NEPA) of 1969, as amended. Based on this EA, the NRC has concluded that a finding of no significant impact (FONSI) is appropriate. The NRC will make a decision to amend the license following completion of a safety evaluation report.

II. Environmental Assessment

Description of the Proposed Action

The proposed action is to amend NRC License No. SUB–348 to authorize the decontamination of Area 1222 so that residual radioactivity above background can be reduced to a level that meets the criteria in 10 CFR part 20, subpart E, ''License Termination Criteria,'' specifically, 10 CFR 20.1402, ''Radiological Criteria for Unrestricted Use.'' This criteria allows unrestricted use of a site if the maximum total effective dose equivalent to an average member of the critical group is 25 millirem per year (0.25 millisievert (mSv) per year) and the residual radioactivity above background has been reduced to levels that are as low as is reasonably achievable.

The NRC License No. SUB–348 was issued on July 13, 1961, pursuant to 10 CFR part 40, and has been amended periodically since that time. This license authorizes ARDEC to use uranium and thorium in any form for purposes of conducting research and development activities. The ARDEC conducts authorized activities under this license at numerous other locations on the arsenal, and is not requesting license termination.

The Picatinny Arsenal is situated on 6,500 acres of land and consists of office space, laboratories, and specialized facilities. The Picatinny Arsenal is located in a mixed residential and commercial area. Area 1222, which includes an open detonation pit area and the adjacent hillside areas, is located on the arsenal property in the valley toward the northern end of the arsenal and lies at the base of the Copperas Mountain. In the 1970's, the ARDEC used Area 1222 for open detonation of munitions and as a demilitarization area. NRC-licensed activities performed in Area 1222 were restricted to the detonation of a limited number of mines containing small

quantities of depleted uranium and radium, specifically, the demilitarization of excess, unserviceable, or obsolete conventional munitions and explosives. Materials that are treated by open detonation at the arsenal include items such as small arms ammunition, land mines, mortars, bombs, fuses, detonators and other types of ordnance. The open detonation pit was subdivided into two areas: The interior area, which is within the berm area (approximately 1,800 square feet (ft^2)), and the exterior area, which includes the area outside of the berm area (approximately 21,200 ft^2). The hillside area is approximately 17,222 ft^2. The total area boundary of Area 1222 is approximately 40,222 ft^2. There are numerous structures in and around the open detonation pit exterior area. The largest structure is a blast shield which has a total surface area of 38 square meters and is constructed of steel. There are no contaminated systems or equipment on the site.

In the late 1990's, ARDEC determined that Area 1222 was no longer required for licensed activities and initiated a survey and decontamination program. In 2011, ARDEC submitted an amendment application to renew their NRC Source Material License (SUB–348). The request noted that Area 1222 was considered potentially radiologically contaminated with depleted uranium, and possibly with fragments of luminescent gauges or dials containing radium from past limited research and development testing operations at the site. The request also included provisions for conducting minor surficial soil remediation if soil contamination is identified above the criteria identified for cleanup. In a letter dated July 23, 2013 (ADAMS Accession No. ML14078A564), ARDEC submitted a license amendment request and proposed decommissioning plan for Area 1222. In the proposed decommissioning plan, the ARDEC provided information regarding the previous characterization and remediation surveys, and a plan for the radiological survey and subsequent excavation, decontamination, and proper disposal of licensed radioactive material identified within Area 1222. The ARDEC also provided information to the NRC stating that after decommissioning, Area 1222 would meet the criteria for release for unrestricted use as described in 10 CFR part 20, subpart E, ''License Termination Criteria.''

Need for the Proposed Action

The current ARDEC license does not authorize decontamination activities to be conducted. The NRC regulations in 10 CFR 40.42, in part, require a decommissioning plan to be submitted and approved prior to the initiation of decommissioning if the procedures and activities necessary to carry out decontamination of an area could increase potential health and safety impacts to workers or the public. The proposed action would allow the ARDEC to remove any remaining radioactive material in Area 1222 to ultimately meet the criteria for release for unrestricted use as described in 10 CFR part 20, subpart E, ''License Termination Criteria'' following decommissioning.

Environmental Impacts of the Proposed Action

A historical review of licensed activities conducted in Area 1222 shows that such activities involved use of depleted uranium and radium. The ARDEC proposes to conduct radiological surveys and subsequent excavation, decontamination, and disposal of licensed radioactive material identified within Area 1222. Following completion of these activities, the ARDEC would conduct a final status survey of the area. The ARDEC proposes to undertake this effort in accordance with the guidance contained in the ''Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM),'' NUREG–1575, Rev. 1 (ADAMS Accession No. ML082470583). The final determination that the site area meets the radiological criteria for release for unrestricted use would be contingent upon the NRC staff's approval of the licensee's final status survey report.

The NRC staff has reviewed the decommissioning plan for ARDEC's Area 1222 site and examined the impacts of decontamination activities. Based on its review, the staff has determined that the affected environment and the environmental impacts associated with this decommissioning action are bounded by information contained in the ''Generic Environmental Impact Statement (GEIS) in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities,'' NUREG–1496, Vols. 1, 2 and 3 (ADAMS Accession Nos. ML042310492, ML042320379, and ML042330385, respectively).

The NRC staff determined that the contaminants, the potential dose scenarios or pathways, the physical size of the area, and the volumes of waste expected to be generated are similar to those in the GEIS reference facilities, and do not change conclusions regarding environmental impacts. No additional non-radiological impacts were identified. A beneficial environmental impact of the proposed action is that there will no longer be depleted uranium contamination to the soil in Area 1222 because the depleted uranium contamination would be removed.

In the Decommissioning Plan, the ARDEC states that they would implement controls and perform radiological sampling and analysis to limit the potential release of radioactive material. Contamination controls, such as the use of covers for loaded containers or vehicles, or water sprays for dust control, will be implemented during decommissioning activities to prevent airborne contamination from escaping the remediation work areas; therefore, no significant release of airborne contamination is anticipated. Air sampling and analysis will be conducted to ensure regulatory criteria are met for air effluents. No liquid effluents are expected to be generated during decommissioning. Controls, such as silt fences and water diversion berms will be put in place to control water inflow or runoff due to precipitation. Any radioactive waste generated will be placed in suitable transport containers that will be covered and staged within the property pending shipment to a licensed radioactive waste treatment or disposal facility.

The ARDEC intends to use a contractor to perform remediation activities at Area 1222. The contractor will perform these activities under the authority of its NRC license. The ARDEC will oversee the activities and will maintain primary responsibility for the decommissioning project. As noted, the ARDEC has prepared a decommissioning plan describing the work to be performed, and, work activities are not anticipated to result in a dose to workers or the public in excess of the limits in 10 CFR part 20, ''Standards for Protection Against Radiation,'' consistent with decommissioning activities at similar sites.

Alternatives to the Proposed Action

The only alternative the NRC staff considered is the no-action alternative, under which the staff would deny the amendment request to initiate remediation activities at Area 1222. Denying the amendment request would result in no decontamination at the site, leaving residual contamination. The environmental impacts of the no-action alternative are greater than the proposed action, therefore no-action alternative is accordingly not further considered.

Agencies and Persons Contacted

The NRC staff prepared this EA with input from the Department of the Army, Installation Management Command, Environmental Affairs Division; the U.S. Fish and Wildlife Service New Jersey Field office; and the State of New Jersey Department of Environmental Protection (NJDEP).

In accordance with Section 106 of the National Historic Preservation Act, the NRC staff contacted the Environmental Affairs Division of the Department of the Army, Installation Management Command. In a response letter dated February 1, 2016 (ADAMS Accession No. ML16060A404), the Environmental Affairs Division, on the basis of current information, indicated that surrounding, above ground, structures of age for historic assessment have been determined to not be eligible for listing on the National Register of Historic Places (NRHP) and that the likelihood of encountering and impacting below ground cultural resources, such as archaeological materials and property, is low. The above ground structures are considered equipment and are used as blast and exhaust deflectors and/or explosive barriers and therefore are not real property under NRHP assessments. Archaeological artifacts are not likely to be identified because Area 1222 is previously disturbed due to the munitions testing. However, the Environmental Affairs Division also indicated that cultural resources potentially eligible for the NRHP could be encountered and impacted because the depth of the excavations, as described in the decommissioning plan, will go below four feet, which is the depth to which munitions were buried. Because of the potential impact on cultural resources, ARDEC will stop the project if cultural/archaeological resources are discovered in Area 1222 so the Environmental Affairs Division can determine the significance of the identified resources.

In accordance with Section 7 of the Endangered Species Act, the NRC staff contacted the Environmental Affairs Division of the Department of the Army, Installation Management Command. (U.S. NRC email to Department of the Army dated December 2, 2014 (ADAMS Accession No. ML14357A609)). In a response letter dated February 1, 2016 (ADAMS Accession No. ML16060A404), the Environmental Affairs Division indicated, on the basis of current information, that three federally-listed endangered species, two state-listed endangered species, and one additional state species may have potential habitats within the project boundary. The three federally-listed endangered species identified are: the Indiana Bat (IBAT—Myotis sodalist); Northern Long-eared Bat (NLEB—Myotis septentrionalis); and the Bog Turtle (Gyptemys muhlenbergii). Since there will be no impacts to any vegetation (such as trees), there will be no impacts to the two federally-listed bat species. The Bog Turtle could be potentially impacted because the reptile could be in or around Area 1222 during the summer months. The two state-listed endangered species identified are: the Timber Rattlesnake (Crotalus horridus) and the Wood Turtle (Glyptemys insculpta). Both reptiles could be in the project area during the summer months; the rattlesnake lives near rocks and the turtle lives along Gorge Road and along the banks of Green Pond Brook. The last State species, which is not listed as endangered or threatened, is the Eastern Small-footed Bat (Myotis leibii). Although, this species is not listed as either endangered or threatened, there is a remote chance that this bat could be using the rip-rap hillside above the open detonation pit as a diurnal roost site and could be encountered in Area 1222. If any of the above species are encountered or observed in Area 1222, ARDEC stated it will stop the project so the Environmental Affairs Division can determine significance of the presence of the identified species.

Based upon the above, the NRC staff also contacted the U.S. Fish & Wildlife Service, New Jersey Field office, for consultation and concurrence on the rare, threatened or endangered species that were identified by the Army's Environmental Affairs Division and could be present in the vicinity of the site (U.S. NRC email to U.S. Fish & Wildlife dated August 10, 2016 (ADAMS Accession No. ML16246A209)). In an email dated September 1, 2016 (ADAMS Accession No. ML16244A708), a representative of the U.S. Fish & Wildlife Service New Jersey Field office agreed with the conclusions of this EA that the proposed action would not result in impacts to endangered and threatened species and to cultural/archaeological resources.

On August 23, 2016, the NRC staff provided a draft of this EA to the NJDEP for comment. In an email dated September 6, 2016 (ADAMS Accession No. ML16250A386), a representative of the NJDEP agreed with the conclusions of this EA.

III. Finding of No Significant Impact

The NRC staff has prepared this EA as part of its review of the requested license amendment for decommissioning the ARDEC's Area 1222 on the Picatinny Arsenal site, Picatinny, New Jersey to reduce residual radioactivity to levels consistent with the release criteria for unrestricted use. On the basis of this EA, the NRC staff finds that there are no significant environmental impacts from the proposed amendment action, and that preparation of an environmental impact statement is not warranted. Accordingly, the NRC staff has determined that a FONSI is appropriate.

IV. Availability of Documents

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

Document	ADAMS Accession No./Web link/**Federal Register** Citation
New World Technology, Final Report, Radiological Surveys and Sampling, Area 1222, ARDEC Picatinny Arsenal NJ, Revision 1, January 30, 2006.	ML090820710
New World Technology, Final Report, Radiological Remediation/Release Surveys and Sampling Project, Revision 4, September 27, 2006.	ML062840662
Department of the Army, Final Report on Radiological Surveys and Support, Revision 3, dated July 21, 2006.	ML062910337
Department of the Army, Picatinny Arsenal Radiological Remediation/Release Surveys & Sampling Project, USA 99–109, Revision 1, dated January 30, 2006.	ML090820710
Department of the Army, Picatinny Arsenal Radiological Remediation/Release Surveys & Sampling Project, USA 99–109, Revision 3, dated January 30, 2006.	ML061510185
Letter dated October 19, 2011	ML112930069
Department of the Army, License Renewal Amendment 31, Control No. 575463, dated November 10, 2011.	ML113140090

Document	ADAMS Accession No./Web link/**Federal Register** Citation
Department of the Army, License Renewal Letter, Control No. 575463, dated November 10, 2011.	ML113140075
Request for Comment on Plan to Release Area 1222, letter dated July 23, 2013	ML14078A564
Department of the Army, email dated October 31, 2013: Re: Additional Response to Request for Additional Information Regarding Plan to Release Area 1222.	ML13310B506
Department of the Army, Acknowledgement of Receipt of MARSSIM Final Status Survey and Sampling Work Plan, dated November 4, 2013.	ML13310B861
Department of the Army, email dated January 28, 2014, Request for Additional Information	ML14041A364
Department of the Army, letter dated February 21, 2014, Re: Response to Comments on Plan to Release Area 1222.	ML14258A062
Department of the Army, emails dated February 26, 2014 and January 28, 2014, Re: Request for Additional Information.	ML14062A097
Department of the Army, email dated March 20, 2014, Re: Follow up and 2nd Deficiency Request.	ML14080A210
FEDERAL REGISTER Notice (79 FR 18934–18936) for Department of Army Picatinny Arsenal, Opportunity to Provide Comments, Request a Hearing and to Petition for leave to Intervene, dated March 27, 2014.	ML14058A702
Response to NRC Request for Additional Information; Area 1222 Radiological Release, letter dated April 11, 2014.	ML14122A099
R. Lamoreaux Letter Re: DandD Code Transmittal, letter dated June 9, 2014	ML14161A038
Department of the Army, email dated June 10, 2014, Re: Deficiency Response Update	ML14177A375
Department of the Army, Deficiency Response, letter dated July 10, 2014	ML14205A271
Department of the Army; Email dated December 02, 2014, Re: Deficiency Request for NEPA Compliance and Section 106 Review(s) Concerning the Dept. of the Army, ARDEC, Picatinny Arsenal, NJ Decommissioning Plan.	ML14357A609
Department of the Army, Request for Additional Information Concerning NRC License Application, letter dated June 10, 2015.	ML15188A078
Department of the Army, Memorandum dated 9 July 2015, Received in LAT on July 24, 2015, Subject: Response to NRC Request for Additional Information dated 10 June 2015; Area 1222 Radiological Release.	ML15222A258
Department of the Army, Telephone Conversation Record dated August 10, 2015, Deficiency Response to NRC Request for Additional Information, (Revised Decommissioning Plan Attachments 1 and 2).	ML15239A789
Endangered Species Review in Support of the Proposed Gorge Radiological Release Project dated February 1, 2016.	ML16060A404
Record of Historic Property Consideration, Department of the Army Installation Management Command headquarters, United States Army Garrison, Picatinny, Picatinny Arsenal, New Jersey 07806–5000, dated February 2, 2016.	ML16060A403
U.S. NRC email to U.S. Fish & Wildlife Service dated August 10, 2016	ML16246A209
The U.S. Fish & Wildlife Service letter dated August 29, 2016	ML16244A708
State of New Jersey Department of Environmental Protection—email dated September 1, 2016.	ML16250A386
FEDERAL REGISTER Notice, Volume 65, No. 114, page 37186, dated Tuesday, June 13, 2000, ''Use of Screening Values to Demonstrate Compliance with the Federal Rule on Radiological Criteria for License Termination.''.	ML003721257
Title 10 *Code of Federal Regulations,* part 20, subpart E, ''Radiological Criteria for License Termination.''.	*http://www.nrc.gov/reading-rm/adams.html*
Title 10 of the *Code of Federal Regulations,* part 40, ''Domestic Licensing of Source Material.''.	*http://www.nrc.gov/reading-rm/adams.html*
Title 10 of the *Code of Federal Regulations,* part 51, ''Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions.''.	*http://www.nrc.gov/reading-rm/adams.html*
NUREG–1496, ''Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities.''.	*http://www.nrc.gov/reading-rm/adams.html*

Dated at King of Prussia, Pennsylvania, this 27th day of December 2016.

For the Nuclear Regulatory Commission.

Raymond J. Powell,

Chief, Decommissioning and Technical Support Branch, Division of Nuclear Materials Safety, Region I.

[FR Doc. 2017–00526 Filed 1–11–17; 8:45 am]

BILLING CODE 7590–01–P

OVERSEAS PRIVATE INVESTMENT CORPORATION

Sunshine Act: OPIC Annual Public Hearing

TIME AND DATE: 1 p.m., Wednesday, March 8, 2017.

PLACE: Offices of the Corporation, Twelfth Floor Board Room, 1100 New York Avenue NW., Washington, DC.

STATUS: Hearing OPEN to the Public at 1 p.m.

PURPOSE: Annual Public Hearing to afford an opportunity for any person to present views regarding the activities of the Corporation.

PROCEDURES: Individuals wishing to address the hearing orally must provide advance notice to OPIC's Corporate Secretary no later than 5 p.m. Friday, February 24, 2017. The notice must include the individual's name, title, organization, address, email, telephone number, and a concise summary of the subject matter to be presented.

Oral presentations may not exceed ten (10) minutes. The time for individual presentations may be reduced proportionately, if necessary, to afford

all participants who have submitted a timely request an opportunity to be heard.

Participants wishing to submit a written statement for the record must submit a copy of such statement to OPIC's Corporate Secretary no later than 5 p.m. Friday, February 24, 2017. Such statement must be typewritten, double-spaced, and may not exceed twenty-five (25) pages.

Upon receipt of the required notice, OPIC will prepare an agenda for the hearing identifying speakers, setting forth the subject on which each participant will speak, and the time allotted for each presentation. The agenda will be available at the hearing.

A written summary of the hearing will be compiled, and such summary will be made available, upon written request to OPIC's Corporate Secretary, at the cost of reproduction.

CONTACT PERSON FOR INFORMATION: Information on the hearing may be obtained from Catherine F. I. Andrade at (202) 336–8768, or via email at *catherine.andrade@opic.gov.*

SUPPLEMENTARY INFORMATION: OPIC is a U.S. Government agency that provides, on a commercial basis, political risk insurance and financing in friendly developing countries and emerging democracies for environmentally sound projects that confer positive developmental benefits upon the project country while creating employment in the U.S. OPIC is required by section 231A(c) of the Foreign Assistance Act of 1961, as amended (the ''Act'') to hold at least one public hearing each year.

Dated: January 9, 2017.

Catherine F.I. Andrade,

OPIC Corporate Secretary.

[FR Doc. 2017–00600 Filed 1–10–17; 11:15 am]

BILLING CODE 3210–01–P

OFFICE OF PERSONNEL MANAGEMENT

Excepted Service

AGENCY: U.S. Office of Personnel Management (OPM).

ACTION: Notice.

SUMMARY: This notice identifies Schedule A, B, and C appointing authorities applicable to a single agency that were established or revoked from July 1, 2016 to July 31, 2016.

FOR FURTHER INFORMATION CONTACT: Senior Executive Resources Services, Senior Executive Service and Performance Management, Employee Services, 202–606–2246.

SUPPLEMENTARY INFORMATION: In accordance with 5 CFR 213.103, Schedule A, B, and C appointing authorities available for use by all agencies are codified in the Code of Federal Regulations (CFR). Schedule A, B, and C appointing authorities applicable to a single agency are not codified in the CFR, but the Office of Personnel Management (OPM) publishes a notice of agency-specific authorities established or revoked each month in the **Federal Register** at *www.gpo.gov/fdsys/.* OPM also publishes an annual notice of the consolidated listing of all Schedule A, B, and C appointing authorities, current as of June 30, in the **Federal Register**.

Schedule A

No schedule A authorities to report during July 2016.

Schedule B

No schedule B authorities to report during July 2016.

Schedule C

The following Schedule C appointing authorities were approved during July 2016.

Agency name	Organization name	Position title	Authorization No.	Effective date
Department of Agriculture	Office of the Secretary	Advisor for Special Projects	DA160129	07/08/2016
		Deputy White House Liaison	DA160156	07/21/2016
	Office of the Assistant Secretary for Administration.	Chief of Staff	DA160151	07/08/2016
	Office of the Chief Financial Officer	Chief of Staff	DA160153	07/12/2016
	Office of the Assistant Secretary for Congressional Relations.	Legislative Director	DA160128	07/18/2016
	Office of the Under Secretary for Research, Education, and Economics.	Chief of Staff	DA160157	07/22/2016
	Office of the Under Secretary for Natural Resources and Environment.	Special Advisor	DA160159	07/26/2016
Department of Commerce	Office of the Under Secretary	Deputy Director, Office of Public Affairs.	DC160171	07/06/2016
		Director of Congressional and Public Affairs.	DC160179	07/20/2016
	Economics and Statistics Administration.	Senior Advisor	DC160166	07/07/2016
	Bureau of Industry and Security	Special Assistant	DC160176	07/12/2016
	Office of the Assistant Secretary for Industry and Analysis.	Special Assistant	DC160180	07/15/2016
	Office of the White House Liaison	Special Advisor	DC160177	07/19/2016
	Office of the Chief Financial Officer and Assistant Secretary for Administration.	Special Assistant for Administration.	DC160181	07/21/2016
	Office of the Executive Secretariat	Associate Director	DC160188	07/27/2016
		Special Advisor	DC160192	07/28/2016
	Office of the Deputy Secretary	Special Assistant	DC160189	07/27/2016
	Office of Public Affairs	Press Assistant	DC160197	07/28/2016
Department of Defense	Office of the Under Secretary of Defense (Policy).	Special Assistant for Homeland Defense Integration and Defense Support.	DD160155	07/06/2016
		Special Assistant for Asian and Pacific Security Affairs.	DD160161	07/18/2016

Agency name	Organization name	Position title	Authorization No.	Effective date
	Washington Headquarters Services.	Defense Fellow (2)	DD160157	07/12/2016
			DD160158	07/19/2016
Department of the Air Force	Office of the Secretary	Special Assistant and Speechwriter.	DF160040	07/13/2016
Department of the Army	Office of the Secretary	Special Advisor for Digital Strategy and Engagement.	DW160051	07/01/2016
		Director of Strategic Communications for the Secretary of the Army.	DW160053	07/08/2016
	Office of the Assistant Secretary Army (Manpower and Reserve Affairs).	Special Advisor (Manpower and Reserve Affairs).	DW160050	07/08/2016
	Office of the Assistant Secretary Army (Civil Works).	Special Assistant (Civil Works) (2)	DW160040	07/12/2016
			DW160041	07/14/2016
	Office of the General Counsel	Special Assistant	DW160046	07/19/2016
Department of Education	Office of Planning, Evaluation and Policy Development.	Senior Policy Advisor (2)	DB160105	07/01/2016
			DB160106	07/01/2016
	Office of the Secretary	Special Projects Manager	DB160109	07/01/2016
		Director of Scheduling and Advance.	DB160112	07/01/2016
		Special Assistant	DB160110	07/01/2016
	Office of Career Technical and Adult Education.	Policy Analyst	DB160111	07/01/2016
	Office of the Deputy Secretary	Engagement Manager	DB160102	07/05/2016
	Office of Communications and Outreach.	Deputy Press	DB160118	07/21/2016
		Press Secretary and Strategic Communications Advisor.	DB160114	07/07/2016
		Confidential Assistant	DB160113	07/08/2016
	Office of Elementary and Secondary Education.	Confidential Assistant	DB160116	07/07/2016
	Office of Special Education and Rehabilitative Services.	Special Assistant	DB160117	07/15/2016
	Office of the Under Secretary	Confidential Assistant	DB160115	07/19/2016
	Office of Innovation and Improvement.	Senior Policy Advisor	DB160119	07/26/2016
		Chief of Staff	DB160120	07/29/2016
Department of Energy	Office of the Assistant Secretary for Congressional and Intergovernmental Affairs.	Senior Advisor for Intergovernmental and External Affairs.	DE160141	07/07/2016
	Office of the Chief Information Officer.	Deputy Chief of Staff	DE160138	07/13/2016
	Office of the Assistant Secretary for International Affairs.	Senior Advisor	DE160143	07/27/2016
Environmental Protection Agency	Office of Public Affairs	Press Secretary	EP160047	07/01/2016
		Deputy Associate Administrator for Public Affairs.	EP160048	07/01/2016
	Office of the Administrator	White House Liaison	EP160050	07/08/2016
Federal Energy Regulatory Commission.	Office of the General Counsel	Program Analyst	DR160005	07/1/2016
	Office of the Chairman	Confidential Assistant	DR160006	07/01/2016
Department of Health and Human Services.	Office of the Administration for Children and Families.	Confidential Assistant	DH160132	07/07/2016
		Senior Policy Advisor	DH160166	07/26/2016
	Office of the Assistant Secretary for Public Affairs.	Deputy Press Secretary	DH160160	07/08/2016
		National Press Secretary for Health Care.	DH160157	07/12/2016
		Communications Director for Human Services.	DH160164	07/21/2016
Department of Homeland Security	Office of the Chief of Staff	Special Assistant	DM160276	07/13/2016
	Office of the Secretary	Confidential Assistant	DM160273	07/20/2016
Department of Housing and Urban Development.	Office of Public Affairs	Director of Speechwriting	DU160040	07/20/2016
		Deputy Director of Speechwriting	DU160043	07/26/2016
		Special Advisor for Digital Strategy	DU160039	07/28/2016
Department of the Interior	Bureau of Land Management	Advisor	DI160079	07/22/2016
	Office of the Assistant Secretary—Policy, Management and Budget.	Senior Advisor	DI160082	07/29/2016
Department of Justice	Office on Violence Against Women	Advisor	DJ160141	07/26/2016
Department of Labor	Office of the Solicitor	Counselor	DL160104	07/06/2016
	Office of the Secretary	Advisor	DL160103	07/20/2016
Office of Management and Budget	Office of Legislative Affairs	Deputy	BO160045	07/12/2016
Office of National Drug Control Policy.	Office of Legislative Affairs	Senior Legislative and Policy Advisor.	QQ160005	07/20/2016

Agency name	Organization name	Position title	Authorization No.	Effective date
Office of the United States Trade Representative.	Office of Public and Media Affairs	Deputy Press Secretary and Director of Press Operations.	TN160008	07/21/2016
Department of State	Bureau of Economic and Business Affairs.	Special Assistant	DS160116	07/08/2016
	Bureau of Legislative Affairs	Legislative Management Officer	DS160119	07/08/2016
	Office of the Global Women's Issues.	Senior Advisor	DS160120	07/20/2016
		Staff Assistant	DS160127	07/29/2016
	Office of Global Food Security	Special Assistant	DS160121	07/21/2016
	Office of the Chief of Protocol	Protocol Officer (Visits)	DS160126	07/27/2016
Department of Transportation	Office of the Assistant Secretary for Transportation Policy.	Associate Director for Public Engagement.	DT160071	07/20/2016
		Deputy Director for Public Engagement.	DT160072	07/20/2016
	Office of the Administrator	Senior Advisor	DT160074	07/21/2016
Department of the Treasury	Office of the Assistant Secretary (Public Affairs).	Spokesperson (2)	DY160102	07/05/2016
			DY160107	07/21/2016
	Office of the Secretary of the Treasury.	Director of Scheduling, Advance and Administration.	DY160103	07/07/2016
		Senior Advisor	DY160116	07/26/2016
	Office of the Under Secretary for International Affairs.	Special Assistant	DY160109	07/18/2016
	Office of the Under Secretary for Domestic Finance.	Executive Assistant	DY160112	07/21/2016
	Office of the Assistant Secretary for Management.	Special Assistant	DY160115	07/21/2016
	Office of the Assistant Secretary (Economic Policy).	Senior Advisor	DY160108	07/27/2016
Department of Veterans Affairs	Office of the Secretary and Deputy	Director, Special Projects, Strategic Partnerships.	DV160060	07/06/2016
	Office of Intergovernmental Affairs	Special Assistant	DV160065	07/22/2016
	Office of Public Affairs	Deputy Press Secretary	DV160066	07/22/2016

The following Schedule C appointing authorities were revoked during July 2016.

Agency name	Organization name	Position title	Authorization No.	Vacate date
Department of Agriculture	Office of the Under Secretary for Rural Development.	Special Advisor	DA150192	07/09/2016
	Office of the Under Secretary for Research, Education, and Economics.	Special Assistant	DA160004	07/27/2016
	Natural Resources Conservation Service.	Senior Advisor	DA130121	07/29/2016
	Rural Housing Service	State Director—Kansas	DA130130	07/31/2016
Department of Commerce	Office of Public Affairs	Senior Public Affairs Coordinator	DC160008	07/08/2016
	Office of the Deputy Secretary	Special Assistant	DC150104	07/08/2016
	Office of the Under Secretary	Senior Advisor	DC160148	07/17/2016
	Office of the Executive Secretariat	Associate Director	DC150121	07/22/2016
	Office of the Chief of Staff	Confidential Assistant	DC150105	07/29/2016
Office of the Secretary of Defense	Office of the Assistant Secretary of Defense (International Security Affairs).	Special Assistant to the Deputy Assistant Secretary of Defense for Middle East.	DD150126	07/09/2016
	Office of the Assistant of Defense (Special Operations/Low Intensity Conflict and Interdependent Capabilities).	Chief of Staff to Deputy Assistant Secretary of Defense for Stability and Humanitarian Affairs.	DD150067	07/09/2016
	Office of the Assistant Secretary of Defense (Global Strategic Affairs).	Special Assistant to the Deputy Assistant Secretary of Defense for Cyber Policy.	DD130028	07/10/2016
	Office of the General Counsel	Special Counsel to the General Counsel.	DD150044	07/23/2016
	Washington Headquarters Services.	Defense Fellow	DD150062	07/23/2016
	Office of the Assistant Secretary of Defense (Asian and Pacific Security Affairs).	Special Assistant to Assistant Secretary of Defense for Asian and Pacific Security Affairs.	DD150120	07/24/2016
Department of Education	Office of the Secretary	Director of Scheduling and Advance.	DB160037	07/01/2016

Agency name	Organization name	Position title	Authorization No.	Vacate date
		Special Advisor to the Chief of Staff.	DB160038	07/09/2016
	Office of Innovation and Improvement.	Strategic Advisor	DB160019	07/09/2016
	Office of Communication and Outreach.	Press Secretary	DB150012	07/15/2016
Department of Energy	Office of the Assistant Secretary for Congressional and Intergovernmental Affairs.	Legislative Affairs Specialist	DE150034	07/15/2016
Environmental Protection Agency	Office of Public Affairs	Deputy Press Secretary	EP150048	07/09/2016
Federal Energy Regulatory Commission.	Office of the Chairman	Program Analyst	DR150004	07/05/2016
General Services Administration	Office of Citizen Services, Innovative Technologies and 18F.	Program Director, Presidential Innovation Fellows.	GS140040	07/05/2016
	Public Building Service	Special Assistant	GS150008	07/05/2016
Department of Health and Human Services.	Centers for Medicare and Medicaid Services.	Special Assistant	DH160004	07/01/2016
	Office of the Assistant Secretary for Public Affairs.	Confidential Assistant	DH150173	07/09/2016
	Office of Public Affairs	Special Assistant	DH110110	07/23/2016
Department of Homeland Security	Office of the Assistant Secretary for Policy.	Special Assistant, Office of Policy	DM160248	07/01/2016
	Office of the Under Secretary For National Protection and Programs Directorate.	Confidential Assistant	DM160243	07/01/2016
	Federal Emergency Management Agency.	Special Assistant	DM150263	07/29/2016
	Office of the Assistant Secretary for Public Affairs.	Confidential Assistant to the Assistant Secretary for Public Affairs.	DM150199	07/29/2016
Department of Housing and Urban Development.	Office of Public Affairs	Deputy Assistant Secretary for Public Affairs.	DU150072	07/01/2016
	Office of Policy Development and Research.	Financial Analyst For Housing Finance.	DU140027	07/15/2016
Department of the Interior	United States Geological Survey	Confidential Assistant	DI140050	07/09/2016
Department of Justice	Office of Public Affairs	Public Affairs Specialist	DJ150116	07/16/2016
National Endowment for the Arts	Office of the Chairman	Director of Congressional Affairs	NA140003	07/07/2016
National Endowment for the Humanities.	Office of the Chairman	White House Liaison and Chairman's Strategic Scheduler.	NH150004	07/16/2016
Securities and Exchange Commission.	Office of the Chairman	Confidential Assistant	SE110005	07/24/2016
Department of State	Bureau of Economic and Business Affairs.	Special Assistant	DS150077	07/09/2016
		Staff Assistant	DS120122	07/09/2016
Department of Transportation	Office of the Assistant Secretary for Governmental Affairs.	Director of State and Local Governmental Affairs.	DT150037	07/15/2016
		Director of Governmental Affairs, Budget and Programs.	DT160018	07/23/2016
	Office of the Assistant Secretary for Transportation Policy.	Associate Director for Public Engagement.	DT150045	07/23/2016
Department of the Treasury	Office of the Secretary of the Treasury.	Special Assistant	DY140116	07/01/2016
	Office of the Assistant Secretary (Public Affairs).	Spokesperson (2)	DY150111 DY140113	07/02/2016 07/09/2016
	Office of the Secretary of the Treasury.	Director of Scheduling, Advance and Administration.	DY150103	07/09/2016
	Office of the Under Secretary for Terrorism and Financial Intelligence.	Senior Advisor	DY140012	07/09/2016
	Office of the Under Secretary for Domestic Finance.	Senior Advisor	DY140016	07/16/2016
	United States Mint	Senior Advisor	DY160036	07/23/2016
United States International Trade Commission.	Office of Commissioner Pinkert	Staff Assistant (Legal)	TC070012	07/20/2016

Authority: 5 U.S.C. 3301 and 3302; E.O. 10577, 3 CFR, 1954–1958 Comp., p. 218. U.S. Office of Personnel Management.

Beth F. Cobert,

Acting Director.

[FR Doc. 2017–00576 Filed 1–11–17; 8:45 am]

BILLING CODE 6325–39–P

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–79752; File No. SR–FINRA–2017–001]

Self-Regulatory Organizations; Financial Industry Regulatory Authority, Inc.; Notice of Filing and Immediate Effectiveness of a Proposed Rule Change To Extend the Expiration Date of FINRA Rule 0180 (Application of Rules to Security-Based Swaps)

January 6, 2017.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (''Act'') [1] and Rule 19b–4 thereunder,[2] notice is hereby given that on January 5, 2017, Financial Industry Regulatory Authority, Inc. (''FINRA'') filed with the Securities and Exchange Commission (''SEC'' or ''Commission'') the proposed rule change as described in Items I, II, and III below, which Items have been prepared by FINRA. FINRA has designated the proposed rule change as constituting a ''non-controversial'' rule change under paragraph (f)(6) of Rule 19b–4 under the Act,[3] which renders the proposal effective upon receipt of this filing by the Commission. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

FINRA is proposing to extend the expiration date of FINRA Rule 0180 (Application of Rules to Security-Based Swaps) to February 12, 2018. FINRA Rule 0180 temporarily limits, with certain exceptions, the application of FINRA rules with respect to security-based swaps.

The text of the proposed rule change is available on FINRA's Web site at *http://www.finra.org,* at the principal office of FINRA and at the Commission's Public Reference Room.

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] 17 CFR 240.19b–4(f)(6).

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, FINRA included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. FINRA has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

On July 1, 2011, the SEC issued an Order granting temporary exemptive relief (the ''Temporary Exemptions'') from compliance with certain provisions of the Exchange Act in connection with the revision, pursuant to Title VII of the Dodd-Frank Wall Street Reform and Consumer Protection Act (the ''Dodd-Frank Act''),[4] of the Exchange Act definition of ''security'' to encompass security-based swaps.[5] Consistent with the Commission's action, on July 8, 2011, FINRA filed for immediate effectiveness FINRA Rule 0180,[6] which, with certain exceptions, is intended to temporarily limit the application of FINRA rules [7] with respect to security-based swaps, thereby helping to avoid undue market disruptions resulting from the change to the definition of ''security'' under the Act.[8]

The Commission, noting the need to avoid a potential unnecessary disruption to the security-based swap market in the absence of an extension of the Temporary Exemptions, and the need for additional time to consider the potential impact of the revision of the Exchange Act definition of ''security'' in light of ongoing Commission rulemaking efforts under Title VII of the Dodd-Frank Act, issued an Order which extended and refined the applicable expiration dates for the previously granted Temporary Exemptions.[9] The Commission previously noted that extending the Temporary Exemptions would facilitate a coordinated consideration of these issues with the

[4] Public Law 111–203, 124 Stat. 1376 (2010).

[5] *See* Securities Exchange Act Release No. 64795 (July 1, 2011), 76 FR 39927 (July 7, 2011) (Order Granting Temporary Exemptions Under the Securities Exchange Act of 1934 in Connection With the Pending Revision of the Definition of ''Security'' To Encompass Security-Based Swaps, and Request for Comment) (the ''Exemptive Release''). The term ''security-based swap'' is defined in Section 761 of the Dodd-Frank Act. *See also* Securities Exchange Act Release No. 67453 (July 18, 2012), 77 FR 48207 (August 13, 2012) (Further Definition of ''Swap,'' ''Security-Based Swap,'' and ''Security-Based Swap Agreement''; Mixed Swaps; Security-Based Swap Agreement Recordkeeping).

[6] *See* Securities Exchange Act Release No. 64884 (July 14, 2011), 76 FR 42755 (July 19, 2011) (Notice of Filing and Immediate Effectiveness of Proposed Rule Change; File No. SR–FINRA–2011–033) (''FINRA Rule 0180 Notice of Filing''). *See also* Securities Exchange Act Release No. 76850 (January 7, 2016), 81 FR 1666 (January 13, 2016) (Notice of Filing and Immediate Effectiveness of Proposed Rule Change; File No. SR–FINRA–2016–001) (extending the expiration date of FINRA Rule 0180 to February 11, 2017).

[7] The current FINRA rulebook consists of: (1) FINRA Rules; (2) NASD Rules; and (3) rules incorporated from NYSE (''Incorporated NYSE Rules''). While the NASD Rules generally apply to all FINRA members, the Incorporated NYSE Rules apply only to those members of FINRA that are also members of the NYSE. The FINRA Rules apply to all FINRA members, unless such rules have a more limited application by their terms. For more information about the rulebook consolidation process, *see Information Notice,* March 12, 2008 (Rulebook Consolidation Process).

[8] In its Exemptive Release, the Commission noted that the relief is targeted and does not include, for instance, relief from the Act's antifraud and anti-manipulation provisions. FINRA has noted that FINRA Rule 0180 is similarly targeted. For instance, paragraph (a) of FINRA Rule 0180 provides that FINRA rules shall not apply to members' activities and positions with respect to security-based swaps, except for FINRA Rules 2010 (Standards of Commercial Honor and Principles of Trade), 2020 (Use of Manipulative, Deceptive or Other Fraudulent Devices), 3310 (Anti-Money Laundering Compliance Program) and 4240 (Margin Requirements for Credit Default Swaps). *See also* paragraphs (b) and (c) of FINRA Rule 0180 (addressing the applicability of additional rules) and FINRA Rule 0180 Notice of Filing.

[9] *See* Securities Exchange Act Release No. 71485 (February 5, 2014), 79 FR 7731 (February 10, 2014) (Order Extending Temporary Exemptions Under the Securities Exchange Act of 1934 in Connection With the Revision of the Definition of ''Security'' to Encompass Security-Based Swaps, and Request for Comment) (''Temporary Exemptions Extension Release'') stating that, for those expiring Temporary Exemptions ''that are not directly linked to pending security-based swap rulemakings, the Commission is extending the expiration date until the earlier of such time as the Commission issues an order or rule determining whether any continuing exemptive relief is appropriate for security-based swap activities with respect to any of these Exchange Act provisions or until three years following the effective date of this Order.'' The Temporary Exemptions Extension Release further stated that for each expiring Temporary Exemption ''that is related to pending security-based swap rulemakings, the Commission is extending the expiration date until the compliance date for the related security-based swap-specific rulemaking.'' *See also* Securities Exchange Act Release No. 71482 (February 5, 2014), 79 FR 7570 (February 10, 2014) (Extension of Exemptions for Security-Based Swaps) (extending the expiration dates in interim final rules that provide exemptions under the Securities Act of 1933 (the ''Securities Act''), the Exchange Act, and the Trust Indenture Act of 1939 for those security-based swaps that prior to July 16, 2011 were security-based swap agreements and are defined as ''securities'' under the Securities Act and the Exchange Act as of July 16, 2011 due solely to the provisions of Title VII of the Dodd-Frank Act).

relief provided pursuant to FINRA Rule 0180.[10] In establishing Rule 0180, and in extending the rule's expiration date, FINRA noted its intent, pending the implementation of any SEC rules and guidance that would provide greater regulatory clarity in relation to security-based swap activities, to align the expiration date of FINRA Rule 0180 with the termination of relevant provisions of the Temporary Exemptions.[11]

The Commission's rulemaking and development of guidance in relation to security-based swap activities is ongoing. As such, FINRA believes it is appropriate and in the public interest, in light of the Commission's goals as set forth in the Exemptive Release and the Temporary Exemptions Extension Release, to extend FINRA Rule 0180 for a limited period, to February 12, 2018, so as to avoid undue market disruptions resulting from the change to the definition of ''security'' under the Act.[12]

FINRA has filed the proposed rule change for immediate effectiveness. FINRA is proposing that the implementation date of the proposed rule change will be February 11, 2017.

2. Statutory Basis

FINRA believes that the proposed rule change is consistent with the provisions of Section 15A(b)(6) of the Act,[13] which requires, among other things, that FINRA rules must be designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, and, in general, to protect investors and the public interest. FINRA believes that the proposed rule change would further the purposes of the Act because, consistent with the goals set forth by the Commission in the Exemptive Release and in the Temporary Exemptions Extension Release, the proposed rule change will help to avoid undue market disruption that could result if FINRA Rule 0180 expires before the implementation of any SEC rules and guidance that would provide greater regulatory clarity in relation to security-based swap activities.

B. Self-Regulatory Organization's Statement on Burden on Competition

FINRA does not believe that the proposed rule change will result in any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act. FINRA believes that the proposed rule change would prevent undue market disruption that would otherwise result if security-based swaps were, by virtue of the expansion of the Act's definition of ''security'' to encompass security-based swaps, subject to the application of all FINRA rules before the implementation of any SEC rules and guidance that would provide greater regulatory clarity in relation to security-based swap activities. FINRA believes that, by extending the expiration of FINRA Rule 0180, the proposed rule change will serve to promote regulatory clarity and consistency, thereby reducing burdens on the marketplace and facilitating investor protection.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

Written comments were neither solicited nor received.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Because the foregoing proposed rule change does not: (i) Significantly affect the protection of investors or the public interest; (ii) impose any significant burden on competition; and (iii) become operative for 30 days from the date on which it was filed, or such shorter time as the Commission may designate, it has become effective pursuant to Section 19(b)(3)(A) of the Act[14] and Rule 19b–4(f)(6) thereunder.[15]

At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov*. Please include File Number SR–FINRA–2017–001 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–FINRA–2017–001. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filing also will be available for inspection and copying at the principal office of FINRA. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–FINRA–2017–001 and should be submitted on or before February 2, 2017.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[16]

Eduardo A. Aleman,

Assistant Secretary.

[FR Doc. 2017–00493 Filed 1–11–17; 8:45 am]

BILLING CODE 8011–01–P

[10] *See* Securities Exchange Act Release No. 68864 (February 7, 2013), 78 FR 10218 (February 13, 2013) (Order Extending Temporary Exemptions Under the Securities Exchange Act of 1934 in Connection With the Revision of the Definition of ''Security'' to Encompass Security-Based Swaps, and Request for Comment).

[11] *See* note 6 *supra.*

[12] FINRA may amend the expiration date of FINRA Rule 0180 based on any related Commission action.

[13] 15 U.S.C. 78*o*–3(b)(6).

[14] 15 U.S.C. 78s(b)(3)(A).

[15] 17 CFR 240.19b–4(f)(6).

[16] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–79751; File No. SR–Phlx–2017–02]

Self-Regulatory Organizations; NASDAQ PHLX LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change To Amend Options Regulatory Fee

January 6, 2017.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (''Act''),[1] and Rule 19b–4 thereunder,[2] notice is hereby given that on January 4, 2017, NASDAQ PHLX LLC (''Phlx'' or ''Exchange'') filed with the Securities and Exchange Commission (''SEC'' or ''Commission'') the proposed rule change as described in Items I, II, and III, below, which Items have been prepared by the Exchange. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization's Statement of the Terms of Substance of the Proposed Rule Change

The Exchange proposes to make adjustments to its Options Regulatory Fee (''ORF'') by amending Section IV, Part D, of the Pricing Schedule.

While changes to the Pricing Schedule pursuant to this proposal are effective upon filing, the Exchange has designated these changes to be operative on February 1, 2017.

The text of the proposed rule change is available on the Exchange's Web site at *http://nasdaqphlx.cchwallstreet.com/,* at the principal office of the Exchange, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

A. Self-Regulatory Organization's Statement of the Purpose of, and the Statutory Basis for, the Proposed Rule Change

1. Purpose

The Exchange proposes to increase the ORF from $0.0034 to $0.0045 as of February 1, 2017 to recoup regulatory expenses while also ensuring that the ORF will not exceed costs.

Background

The ORF is assessed to each member for all options transactions executed or cleared by the member that are cleared at The Options Clearing Corporation (''OCC'') in the Customer range (*i.e.,* that clear in the Customer account of the member's clearing firm at OCC). The Exchange monitors the amount of revenue collected from the ORF to ensure that it, in combination with other regulatory fees and fines, does not exceed regulatory costs. The ORF is imposed upon all transactions executed by a member, even if such transactions do not take place on the Exchange.[3] The ORF also includes options transactions that are not executed by an Exchange member but are ultimately cleared by an Exchange member.[4] The ORF is not charged for member proprietary options transactions because members incur the costs of owning memberships and through their memberships are charged transaction fees, dues and other fees that are not applicable to non-members. The dues and fees paid by members go into the general funds of the Exchange, a portion of which is used to help pay the costs of regulation. The ORF is collected indirectly from members through their clearing firms by OCC on behalf of the Exchange.

The ORF is designed to recover a portion of the costs to the Exchange of the supervision and regulation of its members, including performing routine surveillances, investigations, examinations, financial monitoring, and policy, rulemaking, interpretive, and enforcement activities. The Exchange believes that revenue generated from the ORF, when combined with all of the Exchange's other regulatory fees, will cover a material portion, but not all, of the Exchange's regulatory costs. The Exchange will continue to monitor the amount of revenue collected from the ORF to ensure that it, in combination with its other regulatory fees and fines, does not exceed regulatory costs. If the Exchange determines regulatory revenues exceed regulatory costs, the Exchange will adjust the ORF by submitting a fee change filing to the Commission.

ORF Adjustments

The Exchange is proposing to increase the ORF from $0.0034 to $0.0045 as of February 1, 2017 to recoup regulatory expenses while also ensuring that the ORF will not exceed costs. The Exchange lowered its ORF previously because it had collected certain fines associated with disciplinary actions taken by the Exchange.[5] At this time, the fines have been accounted for and the Exchange is increasing its ORF in connection with its regulatory expenses. The Exchange regularly reviews its ORF to ensure that the ORF, in combination with its other regulatory fees and fines, does not exceed regulatory costs. The Exchange believes this adjustment will permit the Exchange to cover a material portion of its regulatory costs, while not exceeding regulatory costs.

The Exchange notified members of this ORF adjustment thirty (30) calendar days prior to the proposed operative date.[6]

2. Statutory Basis

The Exchange believes that its proposal is consistent with Section 6(b) of the Act[7] in general, and furthers the objectives of Sections 6(b)(4) and 6(b)(5) of the Act[8] in particular, in that it provides for the equitable allocation of reasonable dues, fees and other charges among members and issuers and other persons using any facility or system which the Exchange operates or controls [sic], and is not designed to permit

[3] The ORF applies to all ''C'' account origin code orders executed by a member on the Exchange. Exchange Rules require each member to record the appropriate account origin code on all orders at the time of entry in order to allow the Exchange to properly prioritize and route orders and assess transaction fees pursuant to the Rules of the Exchange and report resulting transactions to OCC. *See* Exchange Rule 1063, Responsibilities of Floor Brokers, and Options Floor Procedure Advice F–4, Orders Executed as Spreads, Straddles, Combinations or Synthetics and Other Order Ticket Marking Requirements. The Exchange represents that it has surveillances in place to verify that members mark orders with the correct account origin code.

[4] In the case where one member both executes a transaction and clears the transaction, the ORF is assessed to the member only once on the execution. In the case where one member executes a transaction and a different member clears the transaction, the ORF is assessed only to the member who executes the transaction and is not assessed to the member who clears the transaction. In the case where a non-member executes a transaction and a member clears the transaction, the ORF is assessed to the member who clears the transaction.

[5] *See* Securities Exchange Act Release No. 77032 (February 2, 2016), 81 FR 6560 (February 8, 2016) (SR–Phlx–2016–04).

[6] *See* Options Trader Alert 2016–37.

[7] 15 U.S.C. 78f(b).

[8] 15 U.S.C. 78f(b)(4) and (5).

unfair discrimination between customers, issuers, brokers, or dealers.

The additional ORF offsets regulatory expenses, but does not exceed regulatory costs. Further, the Exchange's collection of ORF needs to be balanced against the amount of regulatory revenue collected by the Exchange. The Exchange believes that the proposed adjustments noted herein will serve to balance the Exchange's regulatory revenue against the anticipated regulatory costs.

The Exchange believes that increasing its ORF from $0.0034 to $0.0045 as of February 1, 2017 is equitable and not unfairly discriminatory because this adjustment would be applicable to all members on all of their transactions that clear as Customer at OCC. In addition, the ORF seeks to recover the costs of supervising and regulating members, including performing routine surveillances, investigations, examinations, financial monitoring, and policy, rulemaking, interpretive, and enforcement activities.

The ORF is not charged for member proprietary options transactions because members incur the costs of owning memberships and through their memberships are charged transaction fees, dues and other fees that are not applicable to non-members. Moreover, the Exchange believes the ORF ensures fairness by assessing higher fees to those members that require more Exchange regulatory services based on the amount of Customer options business they conduct.

Regulating Customer trading activity is more labor intensive and requires greater expenditure of human and technical resources than regulating non-Customer trading activity. Surveillance, regulation and examination of non-Customer trading activity generally tends to be more automated and less labor intensive. As a result, the costs associated with administering the Customer component of the Exchange's overall regulatory program are anticipated to be higher than the costs associated with administering the non-Customer component of its regulatory program. The Exchange proposes assessing higher fees to those members that will require more Exchange regulatory services based on the amount of Customer options business they conduct.[9] Additionally, the dues and fees paid by members go into the general funds of the Exchange, a portion of which is used to help pay the costs of regulation. The Exchange believes that the proposed ORF is a small cost for Customer executions.[10] The Exchange has in place a regulatory structure to surveil for, exam [sic] and monitor the marketplace for violations of Exchange Rules. The ORF assists the Exchange to fund the cost of this regulation of the marketplace.

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed rule change will impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act. In terms of inter-market competition, the Exchange notes that it operates in a highly competitive market in which market participants can readily favor competing venues if they deem fee levels at a particular venue to be excessive, or rebate opportunities available at other venues to be more favorable. In such an environment, the Exchange must continually adjust its fees to remain competitive with other exchanges and with alternative trading systems that have been exempted from compliance with the statutory standards applicable to exchanges. Because competitors are free to modify their own fees in response, and because market participants may readily adjust their order routing practices, the Exchange believes that the degree to which fee changes in this market may impose any burden on competition is extremely limited.

The Exchange does not believe that increasing its ORF creates an undue burden on intra-market competition because the adjustment will apply to all members on all of their transactions that clear as Customer at OCC. The Exchange is obligated to ensure that the amount of regulatory revenue collected from the ORF, in combination with its other regulatory fees and fines, does not exceed regulatory costs. Additionally, the dues and fees paid by members go into the general funds of the Exchange, a portion of which is used to help pay the costs of regulation. The Exchange's members are subject to ORF on other options markets.[11]

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

No written comments were either solicited or received.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

The foregoing rule change has become effective pursuant to Section 19(b)(3)(A)(ii) of the Act.[12]

At any time within 60 days of the filing of the proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is: (i) Necessary or appropriate in the public interest; (ii) for the protection of investors; or (iii) otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings to determine whether the proposed rule should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov*. Please include File Number SR–Phlx–2017–02 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–Phlx–2017–02. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the

[9] The ORF is not charged for orders that clear in categories other than the Customer range at OCC (*e.g.,* market maker orders) because members incur the costs of memberships and through their memberships are charged transaction fees, dues and other fees that go into the general funds of the Exchange, a portion of which is used to help pay the costs of regulation.

[10] The Exchange does not assess a Customer any transaction fees in Multiply Listed Options, except in SPY, and pays Customer rebates.

[11] The following options exchanges assess an ORF, Chicago Board Options Exchange, Incorporated, C2 Options Exchange, Inc., the International Securities Exchange, LLC (''ISE''), ISE Gemini, LLC, NYSE Arca, Inc., NYSE MKT, Inc., BATS Exchange, Inc., NASDAQ BX, Inc., The NASDAQ Options Market LLC and Miami International Securities Exchange, LLC.

[12] 15 U.S.C. 78s(b)(3)(A)(ii).

proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–Phlx–2017–02, and should be submitted on or before February 2, 2017.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[13]

Eduardo A. Aleman.

Assistant Secretary.

[FR Doc. 2017–00492 Filed 1–11–17; 8:45 am]

BILLING CODE 8011–01–P

[13] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–79748; File No. SR–NYSE–2016–93]

Self-Regulatory Organizations; New York Stock Exchange LLC; Notice of Filing and Immediate Effectiveness of Proposed Rule Change Amending Its Price List

January 6, 2017.

Pursuant to Section 19(b)(1)[1] of the Securities Exchange Act of 1934 (the ''Act'')[2] and Rule 19b–4 thereunder,[3] notice is hereby given that, on December 30, 2016, New York Stock Exchange LLC (''NYSE'' or the ''Exchange'') filed with the Securities and Exchange Commission (the ''Commission'') the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the self-regulatory organization. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

[1] 15 U.S.C. 78s(b)(1).

[2] 15 U.S.C. 78a.

[3] 17 CFR 240.19b–4.

I. Self-Regulatory Organization's Statement of the Terms of the Substance of the Proposed Rule Change

The Exchange proposes to amend its Price List to: (1) Revise the quoting, quoted size, and adding liquidity requirements for Designated Market Makers (''DMM'') to qualify for certain rebates for providing liquidity on the Exchange; (2) introduce new rebates for DMMs for providing liquidity on the Exchange; and (3) change the monthly fees for the use of certain ports by DMMs. The Exchange proposes to implement these changes to its Price List effective January 3, 2017. The proposed rule change is available on the Exchange's Web site at *www.nyse.com,* at the principal office of the Exchange, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the self-regulatory organization included statements concerning the purpose of, and basis for, the proposed rule change and discussed any comments it received on the proposed rule change. The text of those statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant parts of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

The Exchange proposes to amend its Price List to: (1) Revise the quoting, quoted size, and adding liquidity requirements for DMMs to qualify for certain rebates for providing liquidity on the Exchange; (2) introduce new rebates for DMMs for providing liquidity on the Exchange; and (3) change the monthly fees for the use of certain ports by DMMs.

The Exchange proposes to implement these changes effective January 3, 2017.

DMMs

Quoting, Quoted Size, and Adding Liquidity Requirements

Currently, DMMs earn a rebate of $0.0027 per share when adding liquidity with orders, other than Mid-Point Liquidity Orders (''MPL Order''), in More Active Securities[4] if the More Active Security has a stock price of $1.00 or more and the DMM meets the More Active Securities Quoting Requirement.[5]

In order to qualify for the $0.0027 rebate per share, the Exchange proposes to require that DMMs also have a DMM Quoted Size for an applicable month that is at least 5% of the NYSE Quoted Size.[6]

Currently, DMMs earn a rebate of $0.0031 per share when adding liquidity with orders, other than MPL Orders, in More Active Securities if the More Active Security has a stock price of $1.00 or more and the DMM meets (1) the More Active Securities Quoting Requirement, and (2) has a DMM Quoted Size for an applicable month that is at least 10% of the NYSE Quoted Size.

In order to qualify for the $0.0031 rebate per share, the Exchange proposes to require that DMMs also quote at the NBBO in the applicable security at least 20% of the time in the applicable month and for providing liquidity that is more than 5% of the NYSE's total intraday adding liquidity in each such security for that month.[7]

Similarly, DMMs currently earn a rebate of $0.0034 per share when adding liquidity with orders, other than MPL Orders, in More Active Securities if the More Active Security has a stock price of $1.00 or more and the DMM meets (1) the More Active Securities Quoting Requirement and (2) has a DMM Quoted Size for an applicable month that is at least 15% of the NYSE Quoted Size, for providing liquidity that is more than 15% of the NYSE's total intraday adding liquidity in each such security for that month.

In order to qualify for this $0.0034 per share rebate, the Exchange proposes to require that DMMs also quote at the NBBO in the applicable security at least

[4] ''More Active Securities'' are securities with an average daily consolidated volume (''ADV'') in the previous month equal to or greater than 1,000,000 shares per month

[5] The ''More Active Securities Quoting Requirement'' is met if the More Active Security has a stock price of $1.00 or more and the DMM quotes at the National Best Bid or Offer (''NBBO'') in the applicable security at least 10% of the time in the applicable month.

[6] The ''NYSE Quoted Size'' is calculated by multiplying the average number of shares quoted on the NYSE at the NBBO by the percentage of time the NYSE had a quote posted at the NBBO. The ''DMM Quoted Size'' is calculated by multiplying the average number of shares of the applicable security quoted at the NBBO by the DMM by the percentage of time during which the DMM quoted at the NBBO. *See* Price List, n. 7.

[7] The NYSE total intraday adding liquidity is totaled monthly and includes all NYSE adding liquidity, excluding NYSE open and NYSE close volume, by all NYSE participants, including Supplemental Liquidity Providers, customers, Floor brokers, and DMMs.

30% of the time in the applicable month.

New Adding Liquidity Rebates

The Exchange also proposes to provide two additional rebates for DMMs adding liquidity to the Exchange.

First, the Exchange proposes a rebate of $0.0035 per share when adding liquidity with orders, other than MPL Orders, in More Active Securities if the More Active Security has a stock price of $1.00 or more and the DMM meets the More Active Securities Quoting Requirement and has a DMM Quoted Size for an applicable month that is at least 25% of the NYSE Quoted Size, for providing liquidity that is more than 15% of the NYSE's total intraday adding liquidity in each such security for that month and the DMM quotes at the NBBO in the applicable security at least 50% of the time in the applicable month. The NYSE total intraday adding liquidity would be totaled monthly and would include all NYSE adding liquidity, excluding NYSE open and NYSE close volume, by all NYSE participants, including Supplemental Liquidity Providers, customers, Floor brokers, and DMMs.

Second, the Exchange proposes a rebate of $0.0045 per share when adding liquidity with orders, other than MPL orders, in Less Active Securities if the Less Active Security has a stock price of $1.00 or more and the DMM quotes at the NBBO in the applicable security at least 30% of the time in the applicable month.

As with existing DMM rebates, the proposed rebates would be applied when (1) posting displayed and non-displayed orders on Display Book, including s-quote and s-quote reserve orders; (2) providing liquidity on non-displayed interest using the Capital Commitment Schedule; or, prior to the implementation of the Capital Commitment Schedule, using the following message activities: price improvement, size improvement (PRIN FILL), matching away market quotes; and (3) executing trades in the crowd and at Liquidity Replenishment Points. The proposed rebates would not apply to executions at the open.[8]

DMM Port Fees

The Exchange proposes to amend its Price List to change the monthly fees for the use of certain ports by DMMs.

The Exchange currently makes ports available that provide connectivity to the Exchange's trading systems (*i.e.,* ports for entry of orders and/or quotes (''order/quote entry ports'')) and charges $550 per port per month, except that DMMs are not charged for ports that connect to the Exchange via the DMM Gateway.[9] The Exchange also currently makes ports available for drop copies and charges $550 per port per month, except that DMMs are not charged for ports that connect to the Exchange via the DMM Gateway.[10]

The Exchange proposes to not charge DMMs for the first twelve ports that connect to the Exchange via the DMM Gateway and then charge DMMs $550 per port per month for additional ports above the first 12 ports. The DMMs would continue not to incur fees for ports that connect to the Exchange via the DMM Gateway for drop copies. DMMs would also, like other market participants, continue to be charged for order/entry ports that connect to the Exchange via the CCG.

* * * * *

The proposed changes are not otherwise intended to address any other issues, and the Exchange is not aware of any problems that member organizations would have in complying with the proposed change.

2. Statutory Basis

The Exchange believes that the proposed rule change is consistent with Section 6(b) of the Act,[11] in general, and furthers the objectives of Sections 6(b)(4) and 6(b)(5) of the Act,[12] in particular, because it provides for the equitable allocation of reasonable dues, fees, and other charges among its members, issuers and other persons using its facilities and does not unfairly discriminate between customers, issuers, brokers or dealers.

DMMs

Quoting, Quoted Size and Adding Liquidity Requirements

The Exchange believes that the proposed additional quoting, quoted size and adding liquidity requirements in order for DMMs to qualify for the $0.0027, $0.0031 and $0.0034 rebates per share when adding liquidity on the Exchange is reasonable because the higher proposed requirement would improve quoting and increase adding liquidity across securities where there may be fewer liquidity providers. The Exchange believes that higher quoting obligations provide higher volumes of liquidity, which contributes to price discovery and benefits all market participants. Moreover, the Exchange believes that the proposed increase in the credits is equitable and not unfairly discriminatory because, as is currently the case under the existing rates, the credits are available to all DMM firms.

New Adding Liquidity Rebates

The Exchange believes that the proposed new rebates are equitably allocated and not unfairly discriminatory because they will apply equally to all DMMs. The Exchange believes that the proposed rebate of $0.0035 for intraday adding liquidity that exceeds 25% share of NYSE Quoted Size for providing liquidity that is more than 15% of the NYSE's total intraday adding liquidity in each such security for that month and the DMM quotes at the NBBO in the applicable security at least 50% of the time in the applicable month is reasonable as it would encourage greater quoting and liquidity. Similarly, the proposed rebate of $0.0045 for DMMs adding liquidity with orders, other than MPL orders, in Less Active Securities if the Less Active Security has a stock price of $1.00 or more and the DMM quotes at the NBBO in the applicable security at least 30% of the time in the applicable month is reasonable given the higher proposed quoting requirement and corresponding rebate. Moreover, the proposed requirements are equitable and not unfairly discriminatory because they would apply equally to all DMM firms.

DMM Port Fees

The Exchange believes that the proposal to amend the port fees constitutes an equitable allocation of fees because all similarly situated DMMs and other market participants would be charged the same port rates. The Exchange believes that the proposed change is reasonable even though DMMs are required to use the DMM Gateway for certain DMM-specific

[8] *See* Price List, n. 6.

[9] The Exchange has a Common Customer Gateway (''CCG'') that accesses the equity trading systems that it shares with its affiliates, NYSE MKT LLC (''NYSE MKT'') and NYSE Arca, Inc. (''NYSE Arca''). All ports connect to the CCG. *See, e.g.,* Securities Exchange Act Release No. 64542 (May 25, 2011), 76 FR 31659 (June 1, 2011) (SR–NYSE–2011–13). DMMs can connect to the Exchange in two ways: Via the DMM Gateway and CCG. Only DMMs may connect to the DMM Gateway and only when acting in their capacity as a DMM. DMMs are required to use the DMM Gateway for certain DMM-specific functions that relate to the DMM's role on the Exchange and the obligations attendant therewith, which are not applicable to other market participants on the Exchange. By contrast, non-DMMs as well as DMMs may use the CCG. Use of the CCG by a DMM is optional, and a DMM that connects to the Exchange via CCG can use the relevant order/quote entry port for orders and quotes both in its capacity as a DMM and for orders and quotes in other securities.

[10] Only one fee per drop copy port applies, even if receiving drop copies from multiple order/quote entry ports.

[11] 15 U.S.C. 78f(b).

[12] 15 U.S.C. 78f(b)(4) & (5).

functions that relate to the DMM's role on the Exchange and the obligations attendant therewith because the proposed port fees for DMMs are expected to permit the Exchange to offset, in part, its infrastructure costs associated with making such ports available, including costs based on gateway software and hardware enhancements and resources dedicated to gateway development, quality assurance, and support. In this regard, the Exchange believes that the proposed fees are competitive with those charged by other exchanges.[13] The proposed change is also reasonable because the proposed per port rates would encourage DMM users to become more efficient with, and reduce the number of ports used, thereby resulting in a corresponding increase in the efficiency that the Exchange would be able to realize with respect to managing its own infrastructure.

Finally, the Exchange believes that it is subject to significant competitive forces, as described below in the Exchange's statement regarding the burden on competition.

For the foregoing reasons, the Exchange believes that the proposal is consistent with the Act.

B. Self-Regulatory Organization's Statement on Burden on Competition

In accordance with Section 6(b)(8) of the Act,[14] the Exchange believes that the proposed rule change would not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act. Rather, the Exchange believes that the proposed change relating to DMM rebates would contribute to the Exchange's market quality by promoting price discovery and ultimately increased competition. For the same reasons, the proposed change also would not impose any burden on competition among market participants. Further, the proposed change will permit the Exchange to set fees for ports that are competitive with those charged by other exchanges.[15] Moreover, the Exchange believes that the proposal to amend the port fees would encourage users to become more efficient with, and reduce the number of ports used. In this regard, the Exchange believes that the proposal would not impose any burden on competition that is not necessary or appropriate in furtherance of the purposes of the Act because the Exchange believes that a reduction in the number of ports would result in a decrease in the infrastructure that the Exchange is required to support for connectivity to its trading systems. This would also provide incentive for users to become more efficient with their use of ports and could therefore result in such users becoming more competitive due to decreased costs.

Finally, the Exchange notes that it operates in a highly competitive market in which market participants can readily favor competing venues if they deem fee levels at a particular venue to be excessive or rebate opportunities available at other venues to be more favorable. In such an environment, the Exchange must continually adjust its fees and rebates to remain competitive with other exchanges and with alternative trading systems that have been exempted from compliance with the statutory standards applicable to exchanges. Because competitors are free to modify their own fees and credits in response, and because market participants may readily adjust their order routing practices, the Exchange believes that the degree to which fee changes in this market may impose any burden on competition is extremely limited. As a result of all of these considerations, the Exchange does not believe that the proposed changes will impair the ability of member organizations or competing order execution venues to maintain their competitive standing in the financial markets.

C. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received From Members, Participants, or Others

No written comments were solicited or received with respect to the proposed rule change.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

The foregoing rule change is effective upon filing pursuant to Section 19(b)(3)(A)[16] of the Act and subparagraph (f)(2) of Rule 19b–4[17] thereunder, because it establishes a due, fee, or other charge imposed by the Exchange.

At any time within 60 days of the filing of such proposed rule change, the Commission summarily may temporarily suspend such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in furtherance of the purposes of the Act. If the Commission takes such action, the Commission shall institute proceedings under Section 19(b)(2)(B)[18] of the Act to determine whether the proposed rule change should be approved or disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov*. Please include File Number SR–NYSE–2016–93 on the subject line.

Paper Comments

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–NYSE–2016–93. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only

[13] For example, the charge on the NASDAQ for a FIX Trading Port is $575 per port per month. *See* NASDAQ Rule 7015. A separate charge for Pre-Trade Risk Management ports also is applicable, which ranges from $400 to $600 and is capped at $25,000 per firm per month. *See* NASDAQ Rule 7016.

[14] 15 U.S.C. 78f(b)(8).

[15] *See* note 13, *supra*.

[16] 15 U.S.C. 78s(b)(3)(A).

[17] 17 CFR 240.19b–4(f)(2).

[18] 15 U.S.C. 78s(b)(2)(B).

information that you wish to make available publicly. All submissions should refer to File Number SR–NYSE–2016–93, and should be submitted on or before February 2, 2017.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[19]

Eduardo A. Aleman,

Assistant Secretary.

[FR Doc. 2017–00490 Filed 1–11–17; 8:45 am]

BILLING CODE 8011–01–P

SECURITIES AND EXCHANGE COMMISSION

[Release No. 34–79750; File No. SR–ICC–2016–013]

Self-Regulatory Organizations; ICE Clear Credit LLC; Notice of Filing Amendment No. 1 and Order Granting Accelerated Approval of Proposed Rule Change To Amend the ICE Clear Credit Clearing Rules, as Modified by Amendment No. 1, Relating to Default Management, Clearing House Recovery and Wind-Down

January 6, 2017.

I. Introduction

On November 4, 2016, ICE Clear Credit LLC (''ICC'' or ''clearing house'') filed with the Securities and Exchange Commission (''Commission''), pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (''Act'')[1] and Rule 19b–4 thereunder,[2] a proposed rule change (SR–ICC–2016–013) to amend the ICC Clearing Rules (''ICC Rules'' or ''Rules'') relating to clearing house default management, recovery, and wind-down, and to adopt certain related default auction procedures. The proposed rule change was published for comment in the **Federal Register** on November 22, 2016.[3] The Commission received one comment letter to the proposed rule change.[4] On December 19, 2016, ICC filed Amendment No. 1 to the proposed rule change. The Commission is publishing this notice to solicit comment on Amendment No. 1 from interested persons and, for the reasons stated below, is approving the proposed rule change, as modified by Amendment No. 1, on an accelerated basis.

II. Description of the Proposed Rule Change and Notice of Filing of Amendment No. 1

ICC has proposed changes to the ICC Rules, as modified by Amendment No. 1, relating to clearing house default management, recovery, and wind-down to address uncovered losses from a clearing participant (''Participant'') default or series of Participant defaults. The proposed changes consist of three aspects. First, ICC proposes to revise its auction procedures and tools for returning to a matched-book after a Participant default or series of Participant defaults and to implement a different approach to allocating uncovered losses stemming from such Participant default(s) that provides more certainty to Participants by limiting their exposure to ICC. Second, ICC proposes to collect additional initial margin to ensure that it maintains minimum pre-funded financial resources in compliance with applicable regulatory requirements. Third, ICC proposes to clarify the governance requirements relating to the use of ICC's proposed default management tools, including matched-book tools and loss allocation tools, as well as clarify the Rules to enhance transparency and specificity.

A. Revised Auction Procedures, Tools for Returning ICC to a Matched-Book and Tools for Default Loss Allocation

ICC proposes substantial changes in the way it returns to a matched-book following a Participant default or series of defaults. Specifically, ICC proposes to maintain its existing default management practices,[5] such as the practice of auctioning a defaulting Participant's positions to its non-defaulting Participants, but proposes to eliminate its ability to forcibly allocate a defaulting Participant's positions to other non-defaulting Participants, in the event an auction is unsuccessful. In lieu of these forced allocations, ICC has proposed a revised set of auction procedures and an additional matched-book tool. The revised auction procedures include initial and secondary auctions, each of which include a number of features designed to incentivize Participants and their customers to bid competitively. In the event that the default management auctions are unsuccessful in returning ICC to a matched-book, ICC proposes to terminate any positions of non-defaulting Participants (or their customers) that exactly offset the unsuccessfully auctioned positions in the defaulting Participant's portfolio. ICC refers to this termination of a discrete set, as opposed to all, of its outstanding positions as ''partial tear-up.'' Separately, ICC proposes to revise its authority to seek unlimited guaranty fund assessments from its Participants and implement a ''cooling-off period,'' during which its ability to call for additional Participant contributions to the guaranty fund is capped. In addition, ICC proposes, in a highly limited set of circumstances, to allocate losses by reducing the amount of variation margin that would otherwise be owed to Participants or their customers as a tool to assist in ICC's recovery, which ICC refers to as ''reduced gains distributions.'' These provisions are described more fully below.[6]

1. Revised Auction Procedures

Under the proposed changes, ICC will use an auction to dispose of a defaulting Participant's portfolio.[7] Ordinarily, ICC will begin with an initial default auction and if necessary or appropriate proceed to a secondary auction. But, in consultation with the Risk Committee, if practicable, and upon a majority vote of ICC's Board, ICC may bypass the initial auction and proceed directly to a secondary auction.

In the initial auction, ICC management will divide the defaulting Participant's portfolio into one or more lots, and each non-defaulting Participant will be subject to a minimum bid requirement for each lot. In addition, ICC proposes to permit customers of Participants to participate in the initial auction either by bidding indirectly through a Participant or by bidding directly in the auction, provided that such customers (1) agree to the terms of the auction, (2) accept the same confidentiality agreements concerning the auction as a Participant; and (3) make a minimum deposit to be applied by ICC in the same manner as Participants' guaranty fund contributions. ICC will use all available default resources to cover the costs associated with the initial default

[19] 17 CFR 200.30–3(a)(12).

[1] 15 U.S.C. 78s(b)(1).

[2] 17 CFR 240.19b–4.

[3] Securities Exchange Act Release No. 34–79324 (Nov. 16, 2016), 81 FR 83906 (Nov. 22, 2016) (SR–ICC–2016–013) (''Notice'').

[4] *See* letter from Jacqueline H. Mesa, Senior Vice President of Global Policy, FIA (Dec. 2, 2016) (''FIA Comment'').

[5] ICC's existing default remedies, as amended by this proposed rule change, are referred to as ''Standard Default Management Actions.'' By contrast, additional, new default management tools adopted as part of this proposed rule change are referred to as ''Secondary Default Management Actions.'' *See* Notice, 81 FR at 83906.

[6] See Notice, 81 FR at 83906–10, unless otherwise noted.

[7] Although the auction procedures will not be published, ICC will make such procedures available to all Participants, subject to existing confidentiality arrangements between ICC and Participants and the confidentiality provisions set forth in the auction procedures. ICC will also make such procedures available to customers of Participants at the request of such customers (and/or permit Participants to do so), subject to confidentiality arrangements.

auction. These resources include all mutualized guaranty fund contributions, whether pre-funded or assessed, including ICC's ''pro rata'' contribution. In an effort to encourage competitive bidding, ICC will ''juniorize,'' *i.e.,* apply the guaranty fund contributions of Participants who fail to bid and those who bid non-competitively to the costs of the auction before it applies those of Participants who bid competitively, as set forth in the default auction procedures.

As part of this proposed rule change, ICC proposes to move its contribution to the guaranty fund higher in the default waterfall such that ICC's contribution will be used prior to the application of guaranty fund contributions of non-defaulting Participants.

In the event an initial auction does not fully dispose of a defaulting Participant's portfolio, ICC may conduct one or more secondary auctions. At the secondary auction stage, ICC will endeavor to auction off the remaining portfolio in a single lot, though ICC retains the discretion to break the portfolio into separate lots if certain non-defaulting Participants are not able to bid on particular positions or ICC otherwise determines that doing so would facilitate the auction process. Moreover, customers of Participants are permitted to bid in secondary auctions directly without the need for a minimum deposit, so long as a Participant has confirmed that it would clear any resulting transactions of the customer. (Customers of Participants continue to retain the option of bidding indirectly through a Participant as well.) As with initial auctions, ICC will apply all remaining default resources to fund the secondary auction(s), and it will continue to juniorize guaranty fund contributions that remain, if any. A secondary auction for any lot is deemed successful if it results in a price that is within ICC's remaining default resources. If a secondary auction is unsuccessful for any lot, ICC may run another secondary auction for that lot on a subsequent business day, unless ICC has invoked reduced gains distributions, in which case secondary auctions may not extend beyond the five business-day reduced gains distributions period.

2. Removal of Forced Allocation and Addition of Partial Tear-Up

ICC further proposes to eliminate its rules regarding forced allocation, in which all positions not successfully auctioned through the default auction process are allocated to non-defaulting Participants, and instead, implement pro rata partial tear-up to return to a matched book. Partial tear-up entails terminating the positions of non-defaulting Participants (and their customers) that exactly offset those in the defaulting Participant's remaining portfolio (*i.e.,* positions in the identical contracts and in the same aggregate notional amount). Partial tear-up will be employed on both house and customer origin accounts across all non-defaulting Participants that have such positions on a pro rata basis. ICC proposes to base the partial tear-up price on the last established end-of-day mark-to-market settlement price and terminate selected contracts contemporaneously with the determination of such price (*i.e.,* at 5 p.m., New York time). Thus, ICC proposes to collect and pay the tear-up price by application of mark-to-market margin posted (or that would have been posted but for reduced gains distributions) as part of its end-of-day settlement process. After a partial tear-up is executed, ICC would return to a matched-book and would be positioned to continue offering clearing services for all remaining Participants and their customers.

ICC may invoke partial tear-up as a matched-book tool only after a number of prerequisites have been satisfied. First, ICC may not resort to partial tear-up until it has attempted one or more initial or secondary auctions. In addition, ICC must consult with its Risk Committee, which is comprised of a supermajority of Participants, if practicable, before it may proceed to partial tear-up. If consultation with the Risk Committee is impracticable prior to taking action, ICC must use its reasonable best efforts to consult with the Risk Committee as soon as practicable thereafter regarding any further relevant actions. Moreover, only ICC's Board, which is comprised of a majority of directors independent of ICC and includes directors chosen by Participants and may also include Participant representatives, may invoke partial-tear up.

3. Cooling-Off Period, Participant Withdrawal, and Reduced Gains Distributions

ICC's current rules permit the clearing house to seek unlimited guaranty fund assessments from its Participants, but the proposed rule change would eliminate the clearing house's unlimited power of assessment. Instead, ICC proposes to implement a ''cooling-off period,'' during which its ability to call for additional Participant contributions to the guaranty fund is limited. During a cooling-off period, non-defaulting Participants will not be required to pay more than one time their required guaranty fund contribution per default. And during the cooling-off period, non-defaulting Participants' liability for mutualized guaranty fund contributions is capped at three times the required guaranty fund contribution, based on the last guaranty fund calculation before the cooling-off period was triggered, regardless of the number of defaults that occur during this period. Similarly, ICC's contributions to the guaranty fund are subject to limits of one times its contribution per default and three times its contribution during the cooling-off period. Participants may terminate their membership during a cooling-off period by providing ICC with an irrecoverable notice of withdrawal and closing out all positions by a specified deadline. Participants who withdraw during a cooling-off termination period must continue to meet their obligations to ICC, including guaranty fund assessments with respect to defaults and potential defaults that occur before such Participants' withdrawal becomes effective, subject to the limits described above.

ICC further proposes to use reduced gains distributions as a tool to allocate losses stemming from the defaulting Participant's variation margin obligations while ICC attempts a secondary auction or conducts a partial tear-up during default management and recovery. Currently, holders of positions opposite those of a defaulting Participant are entitled to receive variation margin each day such positions appreciate in value. Under the proposed rule change, ICC may reduce variation margin that would be otherwise owed to both Participants and their customers. ICC proposes to use reduced gains distributions for no more than five business days. On each day when reduced gains distributions are invoked, ICC will calculate a haircut that is applied pro rata to house and customer origin accounts and applied pro rata to each customer portfolio such that each customer portfolio receives the same haircut.

Under the proposed rule change, the use of reduced gains distributions is subject to certain conditions. ICC may not resort to reduced gains distributions unless it has exhausted all available financial resources and expects that there will be favorable conditions for completing a successful secondary auction, subject to the limitation that reduced gains distributions may not extend for more than five business days. In the event ICC conducts a successful secondary auction, reduced gains distributions will end on that day. If ICC has been unable to conduct a successful secondary auction by the end of the five

business day reduced gains distributions period, ICC will proceed to partial tear-up, as described above, at the close of business on such fifth business day. Moreover, as further clarified in Amendment No. 1, reduced gains distributions will not be available to provide additional funds for a secondary auction, and projected auction costs will not be factored into the amount of reduced gains distributions. Finally, as with partial tear-up, ICC must consult with its Risk Committee before invoking reduced gains distributions, to the extent practicable, and the ultimate decision to do so must be made by the Board.

B. Additional Initial Margin

ICC further proposes to levy additional initial margin, if necessary, during a cooling-off period when Participants' obligations to replenish the guaranty fund and to make required guaranty fund contributions (*i.e.,* assessments) have reached the cap described above, in order to maintain sufficient financial resources that would enable the clearing house to withstand a default by the two Participant families to which it has the largest exposure in extreme but plausible market conditions (*i.e.* the ''cover two'' standard), as required by Exchange Act Rule 17Ad–22(b)(3). The additional initial margin will be calculated in an amount such that ICC has collected sufficient financial resources to meet the regulatory requirement.

C. Governance

ICC further proposes enhanced governance requirements for the use of certain default management tools as part of the proposed rule change. Under the proposed rule change, ICC is required to consult with the Risk Committee (which consists of a supermajority of Participant representatives) on whether to conduct a secondary auction, employ reduced gains distributions, implement partial tear-up, or proceed to wind-down the service. If such consultation is impracticable, ICC must use its reasonable best efforts to consult with the Risk Committee as soon as practicable thereafter regarding any further relevant actions. In addition, ICC's management is not permitted to invoke partial tear-up or reduced gains distributions on its own authority. Those decisions may only be undertaken after majority vote of the ICC Board, which itself is composed of a majority of directors independent of ICC.

To complement its governance provisions, ICC has also proposed several clarifications to enhance the transparency of its Rules. With respect to clearing service termination, ICC proposes to establish more specific procedures governing a number of matters, such as the notice of and timing of clearing service termination, the calculation of termination prices, and the determination of the net amount owed to or by each Participant. In addition, ICC has made a number of additional changes to the existing rules to clarify that its emergency authority does not override the limitations on Participant obligations to make guaranty fund contributions during a cooling-off period or permit resort to partial tear-up, unless otherwise permitted under the Rules, as well as a number of more minor drafting enhancements.

D. Notice of Filing of Amendment No. 1

In Amendment No. 1, ICC proposes to clarify certain aspects of the proposed rule change. In particular, as noted above, ICC explains that reduced gains distributions will not be used to provide additional funds for a secondary auction, and that expected auction costs will not be factored into the determination of the haircut used for reduced gains distributions. In addition, ICC clarifies that additional initial margin called after the cap on guaranty fund replenishments and assessments in a cooling-off period is reached will be calculated not only for the house account, but also customer accounts (on a net basis across customers). Any margin amounts charged, however, will be charged to the house account of the Participant, with no charge against any customer accounts. Finally, ICC notes that the ability to call for the additional initial margin after the cap on guaranty fund replenishments and assessments has been reached may have a procyclical impact on Participants and their customers. However, ICC believes that any additional initial margin called will likely not exceed the amount of initial margin otherwise on deposit, and will be commensurate with the range of initial margin variation experienced in the ordinary course.

III. Summary of Comment Letter

The Commission received one comment letter in response to the proposed rule change.[8] The commenter, a trade association, provided general comments on three broad issues: (1) The use of variation margin gains haircutting (''VMGH'') and partial tear-ups; (2) compensation for losses beyond mutualized resources; and (3) full clearing service termination,[9] but did not take a position regarding any of these three issues or provide any legal analysis regarding whether ICC's use of VMGH, *i.e.,* reduced gains distributions, or partial-tear up or other aspects of ICC's proposal is consistent with the Exchange Act. The commenter did suggest that ICC be required to consult not only with its Risk Committee, but also with all members when ''invoking tools that impact loss distributions after the exhaustion of funded and unfunded resources.'' [10]

IV. Discussion and Commission Findings

Pursuant to section 19(b)(2)(C) [11] of the Act, the Commission must approve a proposed rule change of a self-regulatory organization if the Commission finds that such proposed rule change is consistent with the requirements of the Act and the rules and regulations thereunder applicable to such self-regulatory organization. After careful consideration, the Commission believes that the proposed rule changes are consistent with the Act and the rules and regulations thereunder applicable to ICC.

Specifically, Section 17A(b)(3)(F) of the Act requires,[12] among other things, that the rules of a clearing agency be designed to promote the prompt and accurate clearance and settlement of securities transactions and, to the extent applicable, derivative agreements, contracts, and transactions, as well as to assure the safeguarding of securities and funds and to protect investors and the public interest. Exchange Act Rule 17Ad–22(d)(11) requires,[13] in part, each registered clearing agency to establish, implement, maintain, and enforce written policies and procedures reasonably designed to make key aspects of the clearing agency's default procedures publicly available and establish default procedures that ensure that the clearing agency can take timely action to contain losses and liquidity pressures and to continue meeting its obligations in the event of a participant

[8] *See* FIA Comment, *supra* note 4.

[9] With regard to the use of VMGH and partial tear-up, the commenter noted that its members have varying, sometimes inconsistent views on the desirability of using VMGH or partial tear-up in recovery. Similarly, the commenter noted that there is a disagreement within its membership as to whether ICC should be able to terminate all trades without recourse to ICC capital. With regard to compensation for losses beyond mutualized resources, the commenter expects to engage ICC on this topic and does not argue that this is a basis upon which the proposed rule change can or should be disapproved. *See id.*

[10] *See id.*

[11] 15 U.S.C. 78s(b)(2)(C).

[12] 15 U.S.C. 78q–1(b)(3)(F).

[13] 17 CFR 240.17Ad–22(d)(11).

default. Furthermore, Exchange Act Rule 17Ad–22(b)(3) requires, in part, each registered clearing agency providing central counterparty services to establish, implement, maintain, and enforce written policies and procedures reasonably designed to maintain certain financial resource requirements at all times,[14] including during the default management process and in the clearing house recovery scenario. Finally, Exchange Act Rule 17Ad–22(d)(8) requires a clearing agency to establish, implement, maintain, and enforce written policies and procedures reasonably designed to have governance arrangements that are clear and transparent to fulfill the public interest requirements in Section 17A of the Act, to support the objectives of owners and participants, and to promote the effectiveness of the clearing agency's risk management procedures.[15]

The Commission discusses each aspect of ICC's proposed rule change and its findings below.

A. Revised Auction Procedures, Tools for Returning ICC to a Matched-Book and Tools for Default Loss Allocation

1. Revised Auction Procedures

The Commission finds the revised auction procedures, as proposed by ICC, consistent with Section 17A(b)(3)(F) and Exchange Act Rule 17Ad–22(d)(11). As described above, under the proposed rule change, in the event of a Participant default, ICC will ordinarily conduct an initial auction as part of its Standard Default Management Actions.[16] Under the proposed auction procedures, Participants will be required to bid in the initial auction for each lot in a minimum amount determined by ICC. In addition, the revised auction procedures will permit customers of Participants to participate in auctions by either bidding indirectly through a Participant or by bidding directly in the auction, provided that such customers (1) agree to the terms of the auction, (2) accept the same confidentiality agreements concerning the auction as a Participant; and (3) make a minimum deposit to be applied by ICC in the same manner as Participants' guaranty fund contributions. Furthermore, the guaranty fund and assessment contributions of non-defaulting Participants will be subject to juniorization and applied using a defined default auction priority set out in the default auction procedures based on the competitiveness of their bids.

If the initial auction fails, as described above, ICC may conduct a secondary auction to maximize the opportunities of disposing of the defaulting Participant's portfolio and returning to a matched-book. Similar to the initial auction, ICC would juniorize the guaranty fund and assessment contributions that remain, if any, of non-defaulting Participants with less competitive bids in order to incentivize competitive bidding by such Participants. In addition, at the secondary auction stage, ICC will apply all remaining clearing house default resources and endeavor to auction off the remaining portfolio in a single lot, although it may break the portfolio into separate lots if certain Participants are not able to bid on particular contracts or it otherwise determines that doing so would facilitate the auction process. A secondary auction for a lot will be deemed successful if it results in a price for the lot that is within ICC's remaining default resources. The secondary auction procedures would make it even easier for customers to bid directly by eliminating the need for a minimum deposit, so long as a Participant has confirmed that it would clear any resulting transactions of the customer. (As with initial auctions, customers retain the option of bidding through a Participant.) If a secondary auction is unsuccessful for any lot, ICC may repeat this process and run another secondary auction for that lot on a subsequent business day, unless ICC has invoked reduced gains distributions, in which case, the secondary auctions may not extend beyond the five-business-day reduced gains distributions period.[17]

Taken together, the Commission believes that the revised default auction procedures, including the assignment of minimum bid requirements to Participants during the initial auction, broadening participation in both the initial auction and the secondary auctions by permitting customers of Participants to bid directly or indirectly, and juniorization of the guaranty fund and assessment contributions of non-defaulting Participants and the minimum deposit of customers, provide Participants and applicable customers of Participants who elect to participate in the auction a strong incentive to bid competitively. The revised auction procedures should significantly increase the likelihood of reaching an efficient auction clearing price that permits ICC successfully to dispose of the defaulting Participant's portfolio within the resources of the clearing house. Therefore, Commission believes that the revised auction procedures are reasonably designed to establish default procedures that ensure that the clearing agency can take timely action to contain losses and to continue meeting its obligations in the event of a participant default, as well as promoting safeguarding securities and funds, consistent with the requirements in Section 17A(b)(3)(F) of the Act and Exchange Act Rule 17Ad–22(d)(11).

In addition, the Commission finds the proposal to move ICC's contribution to the guaranty fund to the beginning of the waterfall is consistent with the Act. Subordination of ICC's guaranty fund contribution reinforces its incentives to manage risk appropriately and safeguard the securities and funds with which it has been entrusted, and therefore, is consistent with the requirements in Section 17A(b)(3)(F) of the Act.

2. Removal of Forced Allocation and Addition of Partial Tear-Up

The Commission further finds that the removal of forced allocation and addition of partial tear-up, as proposed by ICC, are consistent with the Exchange Act. As described above, if any positions are not successfully auctioned through the default auction process, ICC proposes pro-rata partial tear-up in lieu of the existing forced allocation.[18] As a result of the partial tear-up, ICC would return to a matched book.

The Commission recognizes that the replacement of forced allocation with partial tear-up as a matched-book tool would result in termination of positions of non-defaulting Participants across both the house and customer origin accounts that exactly offset those in the defaulting Participant's portfolio that are not successfully auctioned off during the initial and/or secondary auctions. However, the Commission also recognizes that the forced allocation of positions in a defaulting Participant's remaining portfolio that cannot be successfully disposed of with the clearing house's financial resources would potentially result in non-defaulting Participants taking unmeasurable and unlimited losses beyond their risk tolerance or risk management capability. Because ICC will only be permitted to use partial tear-up to return to a matched book after it has attempted initial and/or secondary auctions, as appropriate, and the proposed auction procedures would significantly improve the likelihood of successful auctions, the use of the

[14] 17 CFR 240.17Ad–22(b)(3).

[15] 17 CFR 240.17Ad–22(d)(8).

[16] In consultation with the Risk Committee, if practicable, and with a majority vote of the Board, ICC may proceed directly to Secondary Default Management Actions if appropriate.

[17] *See* ICC Rule 808(e).

[18] *See* ICC Rules 809 and 20–605(f)(iii).

partial tear-up would only arise in an extreme stress scenario. In such a stress scenario, the forced allocation of a defaulting Participant's remaining positions that could not be auctioned off also could pose risk to non-defaulting Participants and threaten systemic financial stability by, among other things, precipitating further defaults among such Participants. On the other hand, use of partial tear-up could potentially return the clearing house to a matched book quickly, thereby containing the clearing house's losses. Pursuant to the proposed rule change, ICC would base the partial tear-up price on the last established end-of-day mark-to-market settlement price and terminate selected contracts contemporaneously with the determination of such price (*i.e.,* at 5 p.m., New York time).[19] This would enable ICC to collect and pay the tear-up price by application of mark-to-market margin posted (or that would have been posted but for reduced gains distributions) as part of its end-of-day settlement process. Once the partial tear-up is completed through the end-of-day mark-to-market settlement process, ICC would have the ability to promptly return the initial margin associated with the terminated positions to the Participants and customers whose positions have been terminated pursuant to ICC's existing rules. Finally, pursuant to the proposed rule change, ICC must consult with the Risk Committee, if practicable, and obtain the Board's approval before invoking partial tear-up, which ensures that Participants have the opportunity to provide input in the decision-making process with respect to whether the clearing house should initiate partial tear-up.

The Commission believes that these provisions regarding the use of partial tear-up and the removal of forced allocation are designed to provide greater certainty to Participants in the estimation of their potential risks and losses in their use of the clearing agency, while enabling ICC to promptly return to a matched book. The Commission believes that returning to a matched book pursuant to these provisions in the context of ICC's default management and recovery, facilitates the timely containment of default losses and liquidity pressures and is consistent with the safeguarding of assets and funds and, to the extent of limiting contagion to the broader financial system, is consistent with the protection of investors and the public interest as well—consistent with Section 17A(b)(3)(F) and Exchange Act Rule 17Ad–22(d)(11).

3. Cooling-Off Period, Participant Withdrawal, and Reduced Gains Distributions

With respect to financial resources available during default management and clearing house recovery, ICC also proposes to impose a cooling-off period, to permit Participants to withdraw from ICC during the cooling-off period, and to use reduced gains distributions when all the other default resources have been exhausted. The Commission believes that these changes, subject to the conditions and the governance arrangements proposed by ICC in conjunction therewith, are consistent with the requirements of prompt and accurate clearance and settlement, safeguarding securities and funds and promoting public interest and investor protection in the Act, and the rules and regulations thereunder.

As described above, during the proposed cooling-off period, Participants' obligations for assessments would be capped at ''1x'' the required guaranty fund contribution per default, and each Participant's total amount of replenishments and assessment contributions would be capped at three times the required guaranty fund contribution, regardless of the number of defaults during the period. In addition, Participants who seek to withdraw from ICC during a cooling-off period must generally provide ICC with an irrecoverable notice of withdrawal and close out all positions by a specified deadline. The Commission recognizes that these provisions would effectively limit the amount of financial resources available to ICC for covering default losses, even though a withdrawing Participant will continue to meet its obligations, including guaranty fund assessments, with respect to defaults and potential defaults before such withdrawal becomes effective, subject to the cap described above. However, these provisions also provide certainty regarding Participants' ultimate exposure to the clearing house in connection with their use of clearing services and provide clarity with respect to the distinction between additional guaranty fund contributions (*i.e.,* assessment) and replenishment obligations, as well as when participant withdrawal is effective. In an extreme stress scenario, where multiple calls for assessments or sequential guaranty fund depletion have occurred, capping Participants' obligations and permitting Participant withdrawal could well have stabilizing effects on the financial market.

Because the proposed rule change would not subject Participants to unlimited assessment calls, ICC further proposes reduced gains distributions as a tool to manage the limitation the proposed rule change places on its financial resources while the clearing house attempts a secondary auction or conducts a partial tear-up during default management and recovery.[20] Since reduced gains distributions will allow ICC to reduce payment of variation margin, or mark-to-market, gains that would otherwise be owed to Participants or their customers, reduced gains distributions will be used only on an extremely limited basis, with appropriate input from the Risk Committee in order to minimize the negative impact on Participants or customers. Pursuant to the proposed rule change, the implementation of reduced gains distributions will be subject to certain conditions, including the condition that ICC has exhausted all other available default resources and has determined that reduced gains distributions are appropriate in connection with a secondary auction or partial tear-up. As described above, ICC must, to the extent practicable, consult with the Risk Committee, which is predominantly comprised of Participants, before using reduced gains distributions, and any decision to use reduced gains distributions must be made by the ICC Board, which as noted above, is independent of ICC and must include members chosen by Participants and may also include Participant representatives.[21]

It should also be noted that under the proposed rule change, as clarified by Amendment No. 1, the use of reduced gains distributions is not intended to pay for the auction costs; rather, it is designed to provide additional time and liquidity needed (no more than five business days) to enable completion of a successful secondary auction or partial tear-up that would not otherwise be possible because all other default resources have been exhausted. Thus, reduced gains distributions will not be used as a source of funds for a secondary auction, and projected auction costs will not be factored into the amount of any reduced gains distributions.

The proposed rule change also limits the use of reduced gains distributions to no more than five business days, and even during this limited period, ICC may not continue to invoke reduced gains distributions to keep the clearing house going if there is no reasonable

[19] *See* ICC Rules 809(b)(iv) and (d).

[20] *See* ICC Rules 20–605(f)(i) and 808.

[21] *See* ICC Rules 20–605(l)(iv) and (v).

prospect of a successful auction. Pursuant to the proposed rule change, at the end of each day in the five-business-day period, ICC must determine whether it expects that there will be favorable conditions for completing a successful secondary auction.[22] If so, ICC may continue the reduced gains distributions for that day. The proposed rule change also provides that, if ICC conducts a successful secondary auction on any day, any reduced gains distributions period that is in effect will end. If ICC has been unable to conduct a successful secondary auction by the end of the five business day reduced gains distributions period, ICC will proceed to conduct a partial tear-up described above, as of the close of business on such fifth business day.[23] As such, the Commission believes the cooling-off period, Participant withdrawal, and reduced gains distributions, taken together with the other components of ICC's default management procedures and recovery rules, are reasonably designed to provide ICC with financial resources it needs to cover default losses and to ensure that ICC can take timely Standard Default Management Actions and/or Secondary Default Management Actions, including auctions, to contain losses and liquidity pressures and to continue meeting its obligations in the event of Participant defaults, in accordance with Exchange Act Rule 17Ad–22(d)(11),[24] while at the same time providing Participants and their customers with greater certainty and predictability with respect to the amount of losses they must bear as a result of a Participant default, which could potentially limit loss contagion in the broader financial system, consistent with the public interest requirement under Section 17A(b)(3)(F).[25]

B. Additional Initial Margin

The Commission further finds the aspect of the proposed rule change that would require Participants to provide additional initial margin during the cooling-off period is consistent with applicable rules. Exchange Act Rule 17Ad–22(b)(3) provides, in part, that a registered clearing agency that performs central counterparty services for security-based swaps must establish, implement, maintain, and enforce written policies and procedures reasonably designed to maintain sufficient financial resources to meet the cover two standard.[26]

As described above, the proposed rule change will require Participants to provide additional initial margin in the event the cap on Participant guaranty fund assessments and replenishment during a cooling-off period described above is reached. The amount of such initial margin would be determined by ICC based on the applicable regulatory financial resources requirements during the remainder of the cooling-off period. The Commission finds that the additional initial margin requirement is reasonably designed to ensure that ICC would maintain sufficient financial resources meeting the cover two standard and therefore, consistent with the requirement of Exchange Act Rule 17Ad–22(b)(3).[27]

C. Governance

The Commission also finds the aspects of proposed rule change concerning amendments to ICC's governance provisions with respect to default management, use of recovery tools and clearing service termination are consistent with the Act. As described above, key decisions by the clearing house in connection with recovery or wind-down, including the use of partial tear-up and reduced gains distributions, or clearing service termination, are subject to specific governance requirements. These governance requirements include consultation with the Risk Committee, when practicable, and the requirement that certain enumerated decisions on the deployment of end-of-waterfall recovery tools, such as reduced gains distributions, partial tear-up, or clearing service termination, must be made by the Board and cannot be delegated to ICC management. In addition to the governance requirements regarding key decision-making, the proposed rule change also specifies the conditions to the invocation and continuation of reduced gains distributions. Moreover, the proposed rule change further clarifies that ICC's emergency authority does not permit overriding the limitations on Participant obligations during the cooling-off period, or permit ICC's management to invoke partial tear-up of positions without going through the required governance processes as described above. With respect to clearing service termination, as described above, ICC also proposes to establish more specific procedures, such as the timing of termination and calculation of termination prices.

Accordingly, the Commission believes that these governance changes and related clarifications provide greater specificity, transparency, fair representation of Participants, and a sound process for Participants' input with respect to ICC's default management, recovery, and wind-down, as applicable, and are reasonably designed to establish governance arrangements that are clear and transparent to fulfill the public interest and support the objectives of owners and participants, and promote the effectiveness of the clearing agency's risk management procedures, consistent with the requirements in Section 17A of the Act and Exchange Act Rule 17Ad–22(d)(8).[28]

The Commission notes that a commenter urged that ICC implement greater governance requirements with regard to the invocation of certain loss allocation methods. In particular, the commenter suggested that ICC be required to consult not only with its Risk Committee, but also with all Participants when ''invoking tools that impact loss distributions after the exhaustion of funded and unfunded resources.'' [29] The commenter did not provide any analysis regarding whether the governance changes proposed by ICC are consistent with the applicable requirements under the Exchange Act and applicable rules and regulations thereunder. As stated above, ICC must consult, if practicable, with its Risk Committee on key decisions regarding ICC's default management, recovery, and wind-down, such as the initiation and continuation of reduced gains distributions, and partial tear-up. Moreover, the decision to invoke these end-of-waterfall measures must be made by the ICC Board, which itself consists of a majority of directors that are independent of ICC. As noted above, ICC's Risk Committee consists of a supermajority of Participant members, and it in turn has the right to name four members to the ICC Board, two of which may be Participant representatives.[30]

The Commission also notes that this proposed rule change has been developed over the course of several years, and throughout that time ICC has regularly consulted at length with Participants (individually and as a group) on both the overall design and drafting of this proposed rule change. In particular, the introduction of partial tear-up and reduced gains distributions as recovery tools have been discussed in detail with Participants, and have been

[22] *See* ICC Rule 808(d).

[23] *See* Rule 808(e).

[24] 17 CFR 240.17Ad–22(d)(11).

[25] 15 U.S.C. 78q–1(b)(3)(F).

[26] 17 CFR 240.17Ad–22(b)(3).

[27] 17 CFR 240.17Ad–22 (b)(3).

[28] 17 CFR 240.17Ad–22(d)(8).

[29] *See* FIA Comment, *supra* note 4.

[30] *See* ICC Rules 503 and 508.

crafted to take into account suggestions and issues raised by Participants, including to limit the circumstances in which those tools may be used, to limit the adverse impact of such tools on netting, regulatory capital, and other matters, and to consult with Risk Committee in major decisions.[31] In addition, as described above, the proposed rule change clarifies that ICC's senior management would not be permitted to invoke emergency authority to initiate these recovery tools without consulting the Risk Committee, if practicable, and obtaining the Board's approval.

Based on the extensive ex ante consultation with Participants at the proposal development stage and the enhanced governance provisions surrounding ICC's invoking tools that impact loss distributions after the exhaustion of funded and unfunded resources, the Commission does not believe that the proposed rule change is inconsistent with the Act because it does not require ICC to consult with all Participants when it invokes loss distribution tools. As discussed above, the Commission finds that the governance provisions and related clarification changes as part of the proposed rule change are reasonably designed to establish governance arrangements that are clear and transparent to fulfill the public interest and support the objectives of owners and participants, and promote the effectiveness of the clearing agency's risk management procedures, consistent with the requirements in Section 17A of the Act and Exchange Act Rule 17Ad–22(d)(8).

V. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change, as modified by Amendment No. 1, is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments

- Use the Commission's Internet comment form (*http://www.sec.gov/rules/sro.shtml*); or
- Send an email to *rule-comments@sec.gov.* Please include File Number SR–ICC–2016–013 on the subject line.

Paper Comments

Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE., Washington, DC 20549–1090.

All submissions should refer to File Number SR–ICC–2016–013. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet Web site (*http://www.sec.gov/rules/sro.shtml*). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for Web site viewing and printing in the Commission's Public Reference Room, 100 F Street NE., Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filings will also be available for inspection and copying at the principal office of ICE Clear Credit and on ICE Clear Credit's Web site at *https://www.theice.com/clear-credit/regulation.*

All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR–ICC–2016–013 and should be submitted on or before February 2, 2017.

VI. Accelerated Approval of Proposed Rule Change, as Modified by Amendment No. 1

The Commission finds good cause, pursuant to section 19(b)(2) of the Act,[32] to approve the proposed rule changes, as modified by Amendment No. 1, prior to the 30th day after the publication of Amendment No. 1 in the **Federal Register**. As discussed above, Amendment No.1 clarifies various aspects of ICC's proposal to utilize reduced gains distributions, as well as its proposal to collect additional initial margin after the cap on replenishments and assessments to the guaranty fund is reached. Amendment No. 1 does not raise any novel regulatory issues, nor does it materially alter the substance of ICC's proposed rule changes.

Accordingly, on its own motion, the Commission finds good cause for approving the proposed rule changes, as modified by Amendment No. 1, on an accelerated basis, pursuant to section 19(b)(2) of the Act.

VII. Conclusion

On the basis of the foregoing, the Commission finds that the proposal is consistent with the requirements of the Act and in particular with the requirements of Section 17A of the Act[33] and the rules and regulations thereunder.

It is therefore ordered, pursuant to Section 19(b)(2) of the Act,[34] that the proposed rule changes (File No. SR–ICC–2016–013), as modified by Amendment No. 1, be, and hereby is, approved on an accelerated basis.[35]

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[36]

Eduardo A. Aleman,

Assistant Secretary.

[FR Doc. 2017–00491 Filed 1–11–17; 8:45 am]

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[31] *See* Notice, 81 FR 83914–15. The Commission also notes that in addition to consulting Participants on the proposed rule change and the governance surrounding the use of recovery tools, ICC also consulted with the customers of Participants. In particular, ICC discussed the proposed rule change individually with members of its buy-side advisory committee, which consists of customers of Participants. ICC also considered the views of industry groups representing customers of Participants, both through discussions with members of such groups and through the public statements and positions of such groups. ICC has taken these views into account and incorporated them into the proposed rule change, including limiting the use of reduced gains distributions to scenarios where all other financial resources of the clearing house have been exhausted, and moving the priority of ICC's contributions in the waterfall such that they are used prior to the guaranty fund contributions of non-defaulting Participants. *See id.* at 83915.

[32] 15 U.S.C. 78s(b)(2).

[33] 15 U.S.C. 78q–1.

[34] 15 U.S.C. 78s(b)(2).

[35] In approving the proposed rule changes, the Commission considered the proposal's impact on efficiency, competition and capital formation. 15 U.S.C. 78s(f).

[36] 17 CFR 200.30–3(a)(12).

SECURITIES AND EXCHANGE COMMISSION

Proposed Collection; Comment Request

Upon Written Request, Copies Available From: Securities and Exchange Commission, Office of FOIA Services, 100 F Street NE., Washington, DC 20549–2736

Extension:

Rule 8c–1; SEC File No. 270–455, OMB Control No. 3235–0514.

Notice is hereby given that pursuant to the Paperwork Reduction Act of 1995 (''PRA'') (44 U.S.C. 3501 *et seq.*), the Securities and Exchange Commission (''Commission'') is soliciting comments

on the existing collection of information provided for in Rule 8c–1 (17 CFR 240.8c–1), under the Securities Exchange Act of 1934 (''Exchange Act'') (15 U.S.C. 78a *et seq.*). The Commission plans to submit this existing collection of information to the Office of Management and Budget (''OMB'') for extension and approval.

Rule 8c–1 generally prohibits a broker-dealer from using its customers' securities as collateral to finance its own trading, speculating, or underwriting transactions. More specifically, Rule 8c–1 states three main principles: (1) A broker-dealer is prohibited from commingling the securities of different customers as collateral for a loan without the consent of each customer; (2) a broker-dealer cannot commingle customers' securities with its own securities under the same pledge; and (3) a broker-dealer can only pledge its customers' securities to the extent that customers are in debt to the broker-dealer.[1]

The information required by Rule 8c–1 is necessary for the execution of the Commission's mandate under the Exchange Act to prevent broker-dealers from hypothecating or arranging for the hypothecation of any securities carried for the account of any customer under certain circumstances. In addition, the information required by Rule 8c–1 provides important investor protections.

There are approximately 60 respondents as of year-end 2015 (*i.e.,* broker-dealers that conducted business with the public, filed Part II of the FOCUS Report, did not claim an exemption from the Reserve Formula computation, and reported that they had a bank loan during at least one quarter of the current year). Each respondent makes an estimated 45 annual responses, for an aggregate total of 2,700 responses per year.[2] Each response takes approximately 0.5 hours to complete. Therefore, the total third-party reporting burden per year is 1,350 burden hours.[3]

Written comments are invited on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's estimates of the burden of the proposed collection of information; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology. Consideration will be given to comments and suggestions submitted in writing within 60 days of this publication.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information under the PRA unless it displays a currently valid OMB control number.

Please direct your written comments to: Pamela Dyson, Director/Chief Information Officer, Securities and Exchange Commission, c/o Remi Pavlik-Simon, 100 F Street NE., Washington, DC 20549, or send an email to: *PRA_Mailbox@sec.gov.*

Dated: January 3, 2017.

Eduardo A. Aleman,

Assistant Secretary.

[FR Doc. 2017–00469 Filed 1–11–17; 8:45 am]

BILLING CODE 8011–01–P

SOCIAL SECURITY ADMINISTRATION

[Docket No: SSA–2017–0001]

Agency Information Collection Activities: Proposed Request and Comment Request

The Social Security Administration (SSA) publishes a list of information collection packages requiring clearance by the Office of Management and Budget (OMB) in compliance with Public Law 104–13, the Paperwork Reduction Act of 1995, effective October 1, 1995. This notice includes revisions of OMB-approved information collections.

SSA is soliciting comments on the accuracy of the agency's burden estimate; the need for the information; its practical utility; ways to enhance its quality, utility, and clarity; and ways to minimize burden on respondents, including the use of automated collection techniques or other forms of information technology. Mail, email, or fax your comments and recommendations on the information collection(s) to the OMB Desk Officer and SSA Reports Clearance Officer at the following addresses or fax numbers.

(OMB), Office of Management and Budget, Attn: Desk Officer for SSA, Fax: 202–395–6974, Email address: *OIRA_Submission@omb.eop.gov*

(SSA), Social Security Administration, OLCA, Attn: Reports Clearance Director, 3100 West High Rise, 6401 Security Blvd., Baltimore, MD 21235, Fax: 410–966–2830, Email address: *OR.Reports.Clearance@ssa.gov*

Or you may submit your comments online through *www.regulations.gov,* referencing Docket ID Number [SSA–2017–0001].

I. The information collections below are pending at SSA. SSA will submit them to OMB within 60 days from the date of this notice. To be sure we consider your comments, we must receive them no later than March 13, 2017. Individuals can obtain copies of the collection instruments by writing to the above email address.

1. State Mental Institution Policy Review Booklet—20 CFR 404.2035, 404.2065, 416.635, & 416.665—0960–0110. SSA uses Form SSA–9584–BK: (1) To determine if the policies and practices of a state mental institution acting as a representative payee for SSA beneficiaries conform to SSA's regulations in the use of benefits; (2) to confirm institutions are performing other duties and responsibilities required of representative payees; and (3) as the basis for conducting onsite reviews of the institutions and preparing subsequent reports of findings. The respondents are state mental institutions serving as representative payees for Social Security beneficiaries and Supplemental Security Income (SSI) recipients.

Type of Request: Revision of an OMB-approved information collection.

Modality of completion	Number of respondents	Frequency of response	Average burden per response (minutes)	Estimated total annual burden (hours)
SSA–9584–BK	69	1	60	69

[1] *See* Exchange Act Release No. 2690 (November 15, 1940); Exchange Act Release No. 9428 (December 29, 1971).

[2] 60 respondents × 45 annual responses = 2,700 aggregate total of annual responses.

[3] 2,700 responses × 0.5 hours = 1,350 hours.

2. Statement of Death by Funeral Director—20 CFR 404.715 and 404.720—0960–0142. When an SSA-insured worker dies, the funeral director or funeral home responsible for the worker's burial or cremation completes Form SSA–721 and sends it to SSA. SSA uses this information for three purposes: (1) To establish proof of death for the insured worker; (2) to determine if the insured individual was receiving any pre-death benefits SSA needs to terminate; and (3) to ascertain which surviving family member is eligible for the lump-sum death payment or for other death benefits. The respondents are funeral directors who handled death arrangements for the insured individuals.

Type of Request: Revision of an OMB-approved information collection.

Modality of completion	Number of respondents	Frequency of response	Average burden per response (minutes)	Estimated total annual burden (hours)
SSA–721	703,638	1	4	46,909

3. Employee Identification Statement—20 CFR 404.702—0960–0473. When two or more individuals report earnings under the same Social Security Number (SSN), SSA collects information on Form SSA–4156 to credit the earnings to the correct individual and SSN. We send the SSA–4156 to the employer to: (1) Identify the employees involved; (2) resolve the discrepancy; and (3) credit the earnings to the correct SSN. The respondents are employers involved in erroneous wage reporting for an employee.

Type of Request: Revision of an OMB-approved information collection.

Modality of completion	Number of respondents	Frequency of response	Average burden per response (minutes)	Estimated total annual burden (hours)
SSA–4156	4,750	1	10	792

4. Employee Work Activity Questionnaire—20 CFR 404.1574, 404.1592—0960–0483. SSI recipients qualify for payments when a verified physical or mental impairment prevents them from working. If disability claimants attempt to return to work after receiving payments, but are unable to continue working, they submit the SSA–3033, Employee Work Activity Questionnaire, so SSA can evaluate their work attempt. SSA also uses this form to evaluate unsuccessful subsidy work and determine applicants' continuing eligibility for disability payments. The respondents are employers of Social Security disability beneficiaries and SSI recipients who unsuccessfully attempted to return to work.

Type of Request: Revision of an OMB-approved information collection.

Modality of completion	Number of respondents	Frequency of response	Average burden per response (minutes)	Estimated total annual burden (hours)
SSA–3033–BK	15,000	1	15	3,750

5. Epidemiological Research Report—20 CFR 401.165—0960–0701. Section 1106(d) of the Social Security Act directs the Social Security Administration (SSA) to provide support to researchers involved in epidemiological or similar research. Specifically, when, in consultation with the Department of Health and Human Services, we determine a study contributes to a national health interest, SSA furnishes information to determine if a study subject appears in SSA administrative records as alive or deceased (vital status). SSA charges a small fee per request for providing this information. SSA's Internet application questions solicit the information SSA needs to provide the data and to collect the fees. The respondents are qualified health and scientific researchers who apply to receive vital status information about individuals from Social Security administrative data records.

Type of Request: Revision of an OMB-approved information collection.

Modality of completion	Number of respondents	Frequency of response	Average burden per response (minutes)	Estimated total annual burden (hours)
State & Local Government—Interent Application	15	1	120	30
Private Entities—Internet Application	10	1	120	20
Totals	25	.....	.....	50

Cost Burden:

- Average annual cost per respondent (based on SSA data): $3,500.
- Total estimated annual cost burden: $87,500.

6.Request for Medical Treatment in an SSA Employee Health Facility: Patient Self-Administered or Staff

Administered Care—0960–0772. SSA operates onsite Employee Health Clinics (EHC) in eight different States. These clinics provide health care for all SSA employees including treatments of personal medical conditions when authorized through a physician. Form SSA–5072 is the employee's personal physician's order form. The information we collect on Form SSA–5072 gives the nurses the guidance they need by law to perform certain medical procedures and to administer prescription medications such as allergy immunotherapy. In addition, the form allows the medical officer to determine whether they can administer treatment safely and appropriately in the SSA EHCs. Respondents are physicians of SSA employees who need to have medical treatment in an SSA EHC.

Type of Request: Revision of an OMB-approved information collection.

Modality of collection	Number of respondents	Frequency of response	Number of responses	Average burden per response (minutes)	Estimated total annual burden (hours)
SSA–5072 Annually	25	1	25	5	2
SSA–5072 Bi-Annually	75	2	150	5	13
Totals	100				15

II. SSA submitted the information collections below to OMB for clearance. Your comments regarding the information collections would be most useful if OMB and SSA receive them 30 days from the date of this publication. To be sure we consider your comments, we must receive them no later than February 13, 2017. Individuals can obtain copies of the OMB clearance package by writing to *OR.Reports.Clearance@ssa.gov*.

1. Petition to Obtain Approval of a Fee for Representing a Claimant Before the Social Security Administration—20 CFR 404.1720 and 404.1725; 20 CFR 416.1520 and 416.1525—0960–0104. A Social Security claimant's representative, whether an attorney or a non-attorney, uses Form SSA–1560–U4 to petition SSA for authorization to charge and collect a fee. A claimant may also use the form to agree or disagree with the requested fee amount or other information the representative provides on the form. The SSA official responsible for setting the fee uses the information from the form to determine a reasonable fee amount representatives may charge for their services. The respondents are attorneys and non-attorneys who represent Social Security claimants.

Type of Request: Revision of an OMB-approved information collection.

Modality of collection	Number of respondents	Frequency of response	Average burden per response (minutes)	Estimated total annual burden (hours)
SSA–1560–U4	44,365	1	30	22,183

2. Requests for Self-Employment Information, Employee Information, Employer Information—20 CFR 422.120—0960–0508. When SSA cannot identify Form W–2 wage data for an individual, we place the data in an earnings suspense file and contact the individual (and in certain instances the employer) to obtain the correct information. If the respondent furnishes the name and SSN information that agrees with SSA's records, or provides information that resolves the discrepancy, SSA adds the reported earnings to the respondent's Social Security record. We use Forms SSA–L2765, SSA–L3365, and SSA–L4002 for this purpose. The respondents are self-employed individuals and employees whose name and SSN information do not agree with their employer's and SSA's records.

Type of Request: Revision of an OMB approved information collection.

Modality of completion	Number of respondents	Frequency of response	Average burden per response (minutes)	Estimated total annual burden (hours)
SSA–L2765	12,321	1	10	2,054
SSA–L3365	179,749	1	10	29,958
SSA–L4002	121,679	1	10	20,280
Totals	313,749			52,292

Dated: January 9, 2017.

Naomi R. Sipple,

Reports Clearance Officer, Social Security Administration.

[FR Doc. 2017–00500 Filed 1–11–17; 8:45 am]

BILLING CODE 4191–02–P

DEPARTMENT OF STATE

[Public Notice 9850]

E.O. 13224 Designation of Mustafa Mughniyeh, aka Mustafa Mughniyah as a Specially Designated Global Terrorist

Acting under the authority of and in accordance with section 1(b) of Executive Order 13224 of September 23, 2001, as amended by Executive Order 13268 of July 2, 2002, and Executive Order 13284 of January 23, 2003, I hereby determine that the person known as Mustafa Mughniyeh, also known as Mustafa Mughniyah, committed, or poses a significant risk of committing, acts of terrorism that threaten the security of U.S. nationals or the national security, foreign policy, or economy of

the United States. Consistent with the determination in section 10 of Executive Order 13224 that prior notice to persons determined to be subject to the Order who might have a constitutional presence in the United States would render ineffectual the blocking and other measures authorized in the Order because of the ability to transfer funds instantaneously, I determine that no prior notice needs to be provided to any person subject to this determination who might have a constitutional presence in the United States, because to do so would render ineffectual the measures authorized in the Order.

This notice shall be published in the **Federal Register**.

Dated: December 20, 2016.

John F. Kerry,

Secretary of State.

[FR Doc. 2017–00544 Filed 1–11–17; 8:45 am]

BILLING CODE 4710–AD–P

DEPARTMENT OF STATE

[Public Notice 9851]

E.O. 13224 Designation of Alexanda Amon Kotey, aka Alexanda Kotey, aka Allexanda Kotey, aka Alexander Kotey, aka Alexe Kotey, aka Alex Kotey, aka Abu Salih, aka Abu-Salih al-Baritani as a Specially Designated Global Terrorist

Acting under the authority of and in accordance with section 1(b) of Executive Order 13224 of September 23, 2001, as amended by Executive Order 13268 of July 2, 2002, and Executive Order 13284 of January 23, 2003, I hereby determine that the person known as Alexanda Amon Kotey, also known as Alexanda Kotey, also known as Allexanda Kotey, also known as Alexander Kotey, also known as Alexe Kotey, also known as Alex Kotey, also known as Abu Salih, also known as Abu-Salih al-Baritani, committed, or poses a significant risk of committing, acts of terrorism that threaten the security of U.S. nationals or the national security, foreign policy, or economy of the United States.

Consistent with the determination in section 10 of Executive Order 13224 that prior notice to persons determined to be subject to the Order who might have a constitutional presence in the United States would render ineffectual the blocking and other measures authorized in the Order because of the ability to transfer funds instantaneously, I determine that no prior notice needs to be provided to any person subject to this determination who might have a constitutional presence in the United States, because to do so would render ineffectual the measures authorized in the Order.

This notice shall be published in the **Federal Register**.

Dated: December 27, 2016.

John F. Kerry,

Secretary of State.

[FR Doc. 2017–00545 Filed 1–11–17; 8:45 am]

BILLING CODE 4710–AD–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Availability, Notice of Public Comment Period, and Request for Comment on the Draft Environmental Assessment for Issuing a License to LauncherOne, LLC for LauncherOne Launches at the Mojave Air and Space Port, Kern County, California

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT), lead Federal agency. National Aeronautics and Space Administration, cooperating agency.

ACTIONS: Notice of availability, notice of public comment period, and request for comment.

SUMMARY: In accordance with the National Environmental Policy Act of 1969, as amended (NEPA; 42 United States Code 4321 *et seq.*), Council on Environmental Quality NEPA implementing regulations (40 Code of Federal Regulations parts 1500 to 1508), and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures,* the FAA is announcing the availability of and requesting comment on the *Draft Environmental Assessment for Issuing a License to LauncherOne, LLC for LauncherOne Launches at the Mojave Air and Spaceport, Kern County, California* (Draft Environmental Assessment [EA]).

DATES: The public comment period for the Draft EA begins with the issuance of this Notice of Availability and lasts 30 days. The FAA encourages all interested parties to provide comments concerning the scope and content of the Draft EA by February 13, 2017, or 30 days from the date of publication of this Notice of Availability, whichever is later.

Before including your address, phone number, email address, or other personal identifying information in your comment, be advised that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask the FAA in your comment to withhold from public review your personal identifying information, the FAA cannot guarantee that we will be able to do so.

ADDRESSES: Please submit comments or questions regarding the Draft EA to Daniel Czelusniak, Environmental Specialist, Federal Aviation Administration, 800 Independence Ave. SW., Suite 325, Washington, DC 20591; email *LauncherOneEA@icfi.com.*

FOR FURTHER INFORMATION CONTACT: Daniel Czelusniak, Environmental Specialist, Federal Aviation Administration, 800 Independence Avenue SW., Suite 325, Washington, DC 20591; email *LauncherOneEA@icfi.com;* or phone (202) 267–5924.

SUPPLEMENTARY INFORMATION: The FAA is evaluating LauncherOne LLC's (L1's) proposal to launch the LauncherOne at the Mojave Air and Space Port in Kern County, California, for purposes of transporting small satellites into a variety of Low Earth Orbits. The launch system consists of the rocket (LauncherOne) and a carrier aircraft (Boeing 747). To operate LauncherOne at the Mojave Air and Space Port, L1 must obtain a launch license from the FAA. Issuing a license is considered a major Federal action subject to environmental review under NEPA. Under the Proposed Action, the FAA would issue a launch license to L1 that would allow L1 to operate LauncherOne from the Mojave Air and Space Port. L1 is proposing a maximum of 115 launches over the course of the 5-year launch license (expected 2017–2021). The maximum number of annual launches during this time period would be 40.

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a launch license for the operation of LauncherOne from the Mojave Air and Space Port. Also, the FAA would not modify Mojave Air and Space Port's launch site operator license to include ''orbital'' reusable launch vehicle missions. The Mojave Air and Space Port would continue its existing operations.

The Draft EA evaluates the potential environmental impacts from the Proposed Action and No Action Alternative on air quality; biological resources (including fish, wildlife, and plants); climate; Department of Transportation Act, Section 4(f); hazardous materials, solid waste, and pollution prevention; historical, architectural, archaeological, and cultural resources; land use; noise and noise-compatible land use;

socioeconomics, environmental justice, and children's environmental health and safety risks; visual effects; and water resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers). Potential cumulative impacts are also addressed in the Draft EA.

The FAA has posted the Draft EA on the FAA Office of Commercial Space Transportation Web site: *http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/launch/.*

Issued in Washington, DC, on January 5, 2017.

Daniel Murray,

Manager, Space Transportation Development Division.

[FR Doc. 2017–00549 Filed 1–11–17; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

[Docket No. FMCSA–2013–0109; FMCSA–2013–0444]

Qualification of Drivers; Exemption Applications; Epilepsy and Seizure Disorders

AGENCY: Federal Motor Carrier Safety Administration (FMCSA), DOT.

ACTION: Notice of renewal of exemptions; request for comments.

SUMMARY: FMCSA announces its decision to renew exemptions of 10 individuals from the requirement in the Federal Motor Carrier Safety Regulations (FMCSRs) that interstate commercial motor vehicle (CMV) drivers have ''no established medical history or clinical diagnosis of epilepsy or any other condition which is likely to cause loss of consciousness or any loss of ability to control a CMV.'' The exemptions enable these individuals who have had one or more seizures and are taking anti-seizure medication to continue to operate CMVs in interstate commerce.

DATES: Each group of renewed exemptions was effective on the dates stated in the discussions below and will expire on the dates stated in the discussions below. Comments must be received on or before February 13, 2017.

FOR FURTHER INFORMATION CONTACT: Ms. Christine A. Hydock, Chief, Medical Programs Division, 202–366–4001, *fmcsamedical@dot.gov,* FMCSA, Department of Transportation, 1200 New Jersey Avenue SE., Room W64–224, Washington, DC 20590–0001. Office hours are from 8:30 a.m. to 5 p.m., e.t., Monday through Friday, except Federal holidays. If you have questions regarding viewing or submitting material to the docket, contact Docket Services, telephone (202) 366–9826.

ADDRESSES: You may submit comments bearing the Federal Docket Management System (FDMS) Docket No. FMCSA–2013–0109; FMCSA–2013–0444 using any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the online instructions for submitting comments.
- *Mail:* Docket Management Facility; U.S. Department of Transportation, 1200 New Jersey Avenue SE., West Building Ground Floor, Room W12–140, Washington, DC 20590–0001.
- *Hand Delivery:* West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.
- *Fax:* 1–202–493–2251.

Instructions: Each submission must include the Agency name and the docket number(s) for this notice. Note that all comments received will be posted without change to *http://www.regulations.gov,* including any personal information provided. Please see the Privacy Act heading below for further information.

Docket: For access to the docket to read background documents or comments, go to *http://www.regulations.gov* at any time or Room W12–140 on the ground level of the West Building, 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The FDMS is available 24 hours each day, 365 days each year. If you want acknowledgment that we received your comments, please include a self-addressed, stamped envelope or postcard or print the acknowledgement page that appears after submitting comments online.

Privacy Act: In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to *http://www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *http://www.dot.gov/privacy.*

I. Background

Under 49 U.S.C. 31136(e) and 31315, FMCSA may grant an exemption for two years if it finds ''such exemption would likely achieve a level of safety that is equivalent to or greater than the level that would be achieved absent such exemption.'' The statute also allows the Agency to renew exemptions at the end of the two-year period.

The physical qualification standard for drivers regarding epilepsy found in 49 CFR 391.41(b)(8) states that a person is physically qualified to drive a CMV if that person:

> Has no established medical history or clinical diagnosis of epilepsy or any other condition which is likely to cause the loss of consciousness or any loss of ability to control a CMV.

In addition to the regulations, FMCSA has published advisory criteria to assist Medical Examiners in determining whether drivers with certain medical conditions are qualified to operate a CMV in interstate commerce. [49 CFR part 391, APPENDIX A TO PART 391—MEDICAL ADVISORY CRITERIA, section H. Epilepsy: § 391.41(b)(8), paragraphs 3, 4, and 5.]

The 10 individuals listed in this notice have requested renewal of their exemptions from the Epilepsy and Seizure Disorders prohibition in 49 CFR 391.41(b)(8), in accordance with FMCSA procedures. Accordingly, FMCSA has evaluated these applications for renewal on their merits and decided to extend each exemption for a renewable two-year period.

II. Request for Comments

Interested parties or organizations possessing information that would otherwise show that any, or all, of these drivers are not currently achieving the statutory level of safety should immediately notify FMCSA. The Agency will evaluate any adverse evidence submitted and, if safety is being compromised or if continuation of the exemption would not be consistent with the goals and objectives of 49 U.S.C. 31136(e) and 31315, FMCSA will take immediate steps to revoke the exemption of a driver.

III. Basis for Renewing Exemptions

Under 49 U.S.C. 31315(b)(1), an exemption may be granted for no longer than two years from its approval date and may be renewed upon application. In accordance with 49 U.S.C. 31136(e) and 31315, each of the 10 applicants has satisfied the conditions for obtaining an exemption from the Epilepsy and Seizure Disorder requirements and was published in the **Federal Register** (79

FR 23054, 79 FR 73400). In addition, for Commercial Driver's License (CDL) holders, the Commercial Driver's License information System (CDLIS) and the Motor Carrier Management Information System (MCMIS) are searched for crash and violation data. For non-CDL holders, the Agency reviews the driving records from the State Driver's Licensing Agency (SDLA). These factors provide an adequate basis for predicting each driver's ability to continue to safely operate a CMV in interstate commerce.

The 10 drivers in this notice remain in good standing with the Agency, have maintained their medical monitoring, and have not exhibited any medical issues that would compromise their ability to safely operate a CMV during the previous two-year exemption period. FMCSA has concluded that renewing the exemptions for each of these applicants is likely to achieve a level of safety equal to that existing without the exemption. Therefore, FMCSA has decided to renew each exemption for a two-year period. In accordance with 49 U.S.C. 31136(e) and 31315, each driver has received a renewed exemption.

As of June 9, 2016, David Crowe (VA) has satisfied the renewal conditions for obtaining an exemption from the Epilepsy and Seizure Disorders prohibition in 49 CFR 391.41(b)(8) from driving CMVs in interstate commerce (79 FR 23054). This driver was included in FMCSA–2013–0109. The exemption was effective on June 9, 2016, and will expire on June 9, 2018.

As of June 24, 2016, the following 9 individuals have satisfied the renewal conditions for obtaining an exemption from the Epilepsy and Seizure Disorders prohibition in 49 CFR 391.41(b)(8) from driving CMVs in interstate commerce (79 FR 73400):

Travis Arend (VA)
Heath Crowe (LA)
Richard Degnan (AZ)
Peter DellaRocco (PA)
Domenick Panfie (NJ)
Scott Reaves (TX)
Milton Tatham (NV)
Thomas Tincher (VA)
Duane Troff (MN)

These drivers were included in FMCSA–2013–0444. The exemptions were effective on June 24, 2016, and will expire on June 24, 2018.

IV. Conditions and Requirements

The exemptions are extended subject to the following conditions: (1) Each driver must remain seizure-free and maintain a stable treatment during the two-year exemption period; (2) each driver must submit annual reports from their treating physicians attesting to the stability of treatment and that the driver has remained seizure-free; (3) each driver must undergo an annual medical examination by a certified Medical Examiner, as defined by 49 CFR 390.5; and (4) each driver must provide a copy of the annual medical certification to the employer for retention in the driver's qualification file or keep a copy of his/her driver's qualification file if he/she is self-employed. The driver must have a copy of the exemption when driving for presentation to a duly authorized Federal, State, or local enforcement official. The exemption will be rescinded if: (1) The person fails to comply with the terms and conditions of the exemption; (2) the exemption has resulted in a lower level of safety than was maintained before it was granted; or (3) continuation of the exemption would not be consistent with the goals and objectives of 49 U.S.C. 31136(e) and 31315.

V. Preemption

During the period the exemption is in effect, no State shall enforce any law or regulation that conflicts with this exemption with respect to a person operating under the exemption.

VI. Conclusion

Based upon its evaluation of the 10 exemption applications, FMCSA renews the exemptions of the aforementioned drivers from the Epilepsy and Seizure Disorders requirement in 49 CFR 391.41(b)(8). In accordance with 49 U.S.C. 31136(e) and 31315, each exemption will be valid for two years unless revoked earlier by FMCSA.

Issued on: December 29, 2016.

Larry W. Minor,

Associate Administrator for Policy.

[FR Doc. 2017–00518 Filed 1–11–17; 8:45 am]

BILLING CODE 4910–EX–P

DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

[Docket No. FMCSA–2010–0247; FMCSA–2012–0128; FMCSA–2012–0217; FMCSA–2012–0219; FMCSA–2014–0021]

Qualification of Drivers; Exemption Applications; Diabetes

AGENCY: Federal Motor Carrier Safety Administration (FMCSA), DOT.

ACTION: Notice of final disposition.

SUMMARY: FMCSA announces its decision to renew exemptions of 116 individuals from its prohibition in the Federal Motor Carrier Safety Regulations (FMCSRs) against persons with insulin-treated diabetes mellitus (ITDM) from operating commercial motor vehicles (CMVs) in interstate commerce. The exemptions enable these individuals with ITDM to continue to operate CMVs in interstate commerce.

DATES: Each group of renewed exemptions was effective on the dates stated in the discussions below and will expire on the dates stated in the discussions below.

FOR FURTHER INFORMATION CONTACT: Ms. Christine A. Hydock, Chief, Medical Programs Division, 202–366–4001, *fmcsamedical@dot.gov,* FMCSA, Department of Transportation, 1200 New Jersey Avenue SE., Room W64–224, Washington, DC 20590–0001. Office hours are from 8 a.m. to 5:30 p.m., e.t., Monday through Friday, except Federal holidays. If you have questions regarding viewing or submitting material to the docket, contact Docket Services, telephone (202) 366–9826.

SUPPLEMENTARY INFORMATION:

I. Electronic Access

You may see all the comments online through the Federal Document Management System (FDMS) at: *http://www.regulations.gov.*

Docket: For access to the docket to read background documents or comments, go to *http://www.regulations.gov* and/or Room W12–140 on the ground level of the West Building, 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., e.t., Monday through Friday, except Federal holidays.

Privacy Act: In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to *http://www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *http://www.dot.gov/privacy.*

II. Background

On November 15, 2016, FMCSA published a notice announcing its decision to renew exemptions for 116 individuals from the insulin-treated diabetes mellitus prohibition in 49 CFR 391.41(b)(3) to operate a CMV in interstate commerce and requested comments from the public (81 FR 80164). The public comment period ended on December 15, 2016 and no comments were received.

As stated in the previous notice, FMCSA has evaluated the eligibility of

these applicants and determined that renewing these exemptions would achieve a level of safety equivalent to or greater than the level that would be achieved by complying with the current regulation 49 CFR 391.41(b)(3).

The physical qualification standard for drivers regarding diabetes found in 49 CFR 391.41(b)(3) states that a person is physically qualified to drive a CMV if that person has no established medical history or clinical diagnosis of diabetes mellitus currently requiring insulin for control.

III. Discussion of Comments

FMCSA received no comments in this preceding.

IV. Conclusion

Based upon its evaluation of the 116 renewal exemption applications and that no comments were received, FMCSA confirms its' decision to exempt the following drivers from the rule prohibiting drivers with ITDM from driving CMVs in interstate commerce in 49 CFR 391.64(3):

As of October 8, 2016, and in accordance with 49 U.S.C. 31136(e) and 31315, the following individual, Gary B. Bland (GA) has satisfied the renewal conditions for obtaining an exemption from the rule prohibiting drivers with ITDM from driving CMVs in interstate commerce. (75 FR 52813; 75 FR 64394):

The driver was included in Docket No. FMCSA–2010–0247. The exemption is effective as of October 8, 2016, and will expire on October 8, 2018.

As of October 10, 2016, and in accordance with 49 U.S.C. 31136(e) and 31315, the following 8 individuals have satisfied the renewal conditions for obtaining an exemption from the rule prohibiting drivers with ITDM from driving CMVs in interstate commerce (77 FR 48587; 77 FR 61655):

Dominick Bravata (IL)
Barry J. Drews (MI)
Mason L. Hall (SD)
Chad E. Hasler (MT)
Norman A. Latondresse (RI)
Robert C. Lister, Jr. (OH)
Robert E. Smith (GA)
Steven A. Wilson (FL)

The drivers were included in Docket No. FMCSA–2012–0217. Their exemptions are effective as of October 10, 2016, and will expire on October 10, 2018.

As of October 19, 2016, and in accordance with 49 U.S.C. 31136(e) and 31315, the following 14 individuals have satisfied the renewal conditions for obtaining an exemption from the rule prohibiting drivers with ITDM from driving CMVs in interstate commerce (75 FR 52813; 75 FR 64394):

Eric A. Anderson (ND)
Juan E. Boyd (NC)
Bradley R. Burns (OH)
Leo G. Dinero (GA)
Terry W. Ferguson (GA)
Thomas G. Flanagan (IN)
Donald K. Fraase (ND)
Jason W. Geier (MT)
Scott R. Grange (CA)
John A. Hayes (NY)
Bradley D. Heagel (IA)
Harold A. Meeker, Jr. (MA)
Ronald D. Olson (WI)
Daniel E. Velasco (MD)

The drivers were included in Docket No. FMCSA–2010–0247. Their exemptions are effective as of October 19, 2016, and will expire on October 19, 2018.

As of October 21, 2016, and in accordance with 49 U.S.C. 31136(e) and 31315, the following 70 individuals have satisfied the renewal conditions for obtaining an exemption from the rule prohibiting drivers with ITDM from driving CMVs in interstate commerce (79 FR 56107; 79 FR 73946):

Michael L. Agnitsch (NE)
Earl W. Avery (TN)
Michael A. Baker (CT)
Pablo H. Bilbao La Vieja Pozo (RI)
Todd D. Bloomfield (WA)
Charles K. Bond (PA)
Christopher R. Cook (NY)
Wygila M. Corliss (NM)
Timothy J. Cornish (OH)
Evan R. Dieken (MN)
Greg B. Duck (TX)
Richard A. Durr (IL)
George B. Ferris, Jr. (NY)
John B. Flood (MO)
Brian K. Forrest (PA)
David S. Fortune (VA)
John Galione (NJ)
Peter E. Ganss (KS)
David E. Gates (MA)
Michael Hawkins (SC)
Rodney J. Hendricks (ID)
Timothy U. Herring (NC)
Richard L. Hines (NC)
David M. Hughes (UT)
Jammie L. Hughes (OH)
Andy L. Hughes (IL)
Rodney L. Johnson (OR)
Paul D. Kimmel (IA)
Scott M. Klain (OR)
Jeffrey P. Kloeckl (SD)
John J. Kress (AZ)
Gregory L. Kuharski (MN)
Robert B. Langston, III (MS)
Mark W. Lavorini (PA)
Alan S. Lewis (NM)
William M. Linskey (MA)
Jason D. Lowder (OH)
Arnold V. Magaoay (HI)
Norman C. Mallett (AR)
Justin T. Mattice (AZ)
Leldon W. McCutcheon (AL)
William F. McQueen Jr. (MO)
Kenneth M. Miller (ID)
William F. Mitchell (CT)
Richard E. Moore (NY)
Matthew K. Morrison (UT)
Gary R. Nelson (MN)
Edward L. Norfleet (AL)
Mark P. Norwood (NV)
Kyle R. Perry (PA)
Michael L. Plinski (WA)
Christopher M. Provance (NE)
James A. Rambo (VA)
Michael E. Reck (OH)
Warren A. Richter (MN)
Richard D. Sandison (ND)
James E. Seymour (PA)
Calvin R. Smith (IL)
Wesley J. Summerville (PA)
William R. Thome (IA)
Stephen M. Thompson (GA)
Randy L. Triplett (OH)
John E. Trygstad (SD)
Steven R. Weir (MA)
Richard T. Whitney (MN)
Donald D. Willard (IA)
Gary W. Wozniak (NE)
Steven L. Yokom (ID)
Allan M. Younglas (PA)
Daniel R. Zuriff (MN)

The drivers were included in Docket No. FMCSA–2014–0021. Their exemptions are effective as of October 21, 2016, and will expire on October 21, 2018.

As of October 22, 2016, and in accordance with 49 U.S.C. 31136(e) and 31315, the following 16 individuals have satisfied the renewal conditions for obtaining an exemption from the rule prohibiting drivers with ITDM from driving CMVs in interstate commerce (77 FR 52384; 77 FR 64585):

Richard T. Ewell (IL)
Patrick D. Fortier (MN)
Daniel J. Gladen (MN)
Walter V. Gruba (VA)
Marshall D. Howell (MI)
Roger P. LaFever (WI)
William R. Lawrence (MT)
Duane J. Mullins (WI)
Louis R. Noellsch (WA)
Darrin W. Pettis (WA)
Michael J. Raposa (MA)
Anthony E. Reed (MO)
Earl L. Slater (NY)
Keith J. Tavares (MA)
Phillip L. Truitt (MD)
David A. Weinbroer (KY)

The drivers were included in Docket No. FMCSA–2012–0128. Their exemptions are effective as of October 22, 2016, and will expire on October 22, 2018.

As of October 31, 2016, and in accordance with 49 U.S.C. 31136(e) and 31315, the following 7 individuals have satisfied the renewal conditions for obtaining an exemption from the rule

prohibiting drivers with ITDM from driving CMVs in interstate commerce (77 FR 56258; 77 FR 65929):

Edward K. Belcher (KY)
Philip C. Brooks, Jr. (VA)
Michael R. Conley (MN)
Patrick J. Connors (MA)
John C. Halabura (PA)
Paul L. Harrison III (NY)
Robert D. Marshall (PA)

The drivers were included in Docket No. FMCSA–2012–0219. Their exemptions are effective as of October 31, 2016, and will expire on October 31, 2018.

Each of the 116 drivers in the aforementioned groups qualifies for a renewal of the exemption. They have maintained their required medical monitoring and have not exhibited any medical issues that would compromise their ability to safely operate a CMV during the previous 2-year exemption period.

These factors provide an adequate basis for predicting each driver's ability to continue to drive safely in interstate commerce. Therefore, FMCSA concludes that extending the exemption for each of the 116 drivers for a period of two years is likely to achieve a level of safety equal to that existing without the exemption. The drivers were included in docket numbers FMCSA–2010–0247; FMCSA–2012–0128; FMCSA–2012–0217; FMCSA–2012–0219; FMCSA–2014–0021.

In accordance with 49 U.S.C. 31315, each exemption will be valid for two years from the effective date unless revoked earlier by FMCSA. The exemption will be revoked if the following occurs: (1) The person fails to comply with the terms and conditions of the exemption; (2) the exemption has resulted in a lower level of safety than was maintained prior to being granted; or (3) continuation of the exemption would not be consistent with the goals and objectives of 49 U.S.C. 31136 and 31315.

Issued on: January 6, 2017.

Larry W. Minor,

Associate Administrator for Policy.

[FR Doc. 2017–00516 Filed 1–11–17; 8:45 am]

BILLING CODE 4910–EX–P

DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

[Docket No. FMCSA–2016–0382]

Qualification of Drivers; Exemption Applications; Diabetes Mellitus

AGENCY: Federal Motor Carrier Safety Administration (FMCSA).

ACTION: Notice of applications for exemptions; request for comments.

SUMMARY: FMCSA announces receipt of applications from 47 individuals for exemption from the prohibition against persons with insulin-treated diabetes mellitus (ITDM) operating commercial motor vehicles (CMVs) in interstate commerce. If granted, the exemptions would enable these individuals with ITDM to operate CMVs in interstate commerce.

DATES: Comments must be received on or before February 13, 2017.

ADDRESSES: You may submit comments bearing the Federal Docket Management System (FDMS) Docket No. FMCSA–2016–0382 using any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the on-line instructions for submitting comments.
- *Mail:* Docket Management Facility; U.S. Department of Transportation, 1200 New Jersey Avenue SE., West Building Ground Floor, Room W12–140, Washington, DC 20590–0001.
- *Hand Delivery:* West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., e.t., Monday through Friday, except Federal Holidays.
- *Fax:* 1–202–493–2251.

Instructions: Each submission must include the Agency name and the docket numbers for this notice. Note that all comments received will be posted without change to *http://www.regulations.gov,* including any personal information provided. Please see the Privacy Act heading below for further information.

Docket: For access to the docket to read background documents or comments, go to *http://www.regulations.gov* at any time or Room W12–140 on the ground level of the West Building, 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., e.t., Monday through Friday, except Federal holidays. The Federal Docket Management System (FDMS) is available 24 hours each day, 365 days each year. If you want acknowledgment that we received your comments, please include a self-addressed, stamped envelope or postcard or print the acknowledgement page that appears after submitting comments on-line.

Privacy Act: In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to *www.regulations.gov,* as described in the system of records notice (DOT/ALL–14 FDMS), which can be reviewed at *www.dot.gov/privacy.*

FOR FURTHER INFORMATION CONTACT: Ms. Christine A. Hydock, Chief, Medical Programs Division, (202) 366–4001, *fmcsamedical@dot.gov,* FMCSA, Department of Transportation, 1200 New Jersey Avenue SE., Room W64–113, Washington, DC 20590–0001. Office hours are 8:30 a.m. to 5 p.m., e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

I. Background

Under 49 U.S.C. 31136(e) and 31315, FMCSA may grant an exemption from the Federal Motor Carrier Safety Regulations for a 2-year period if it finds ''such exemption would likely achieve a level of safety that is equivalent to or greater than the level that would be achieved absent such exemption.'' The statute also allows the Agency to renew exemptions at the end of the 2-year period. The 47 individuals listed in this notice have recently requested such an exemption from the diabetes prohibition in 49 CFR 391.41(b)(3), which applies to drivers of CMVs in interstate commerce. Accordingly, the Agency will evaluate the qualifications of each applicant to determine whether granting the exemption will achieve the required level of safety mandated by statute.

II. Qualifications of Applicants

Luciano Abreu

Mr. Abreu, 61, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Abreu understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Abreu meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from New Jersey.

Louis I. Alonzo

Mr. Alonzo, 45, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no

severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Alonzo understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Alonzo meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Texas.

John P. Botcher

Mr. Botcher, 52, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Botcher understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Botcher meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds a Class A CDL from Wisconsin.

Mark D. Breskey

Mr. Breskey, 51, has had ITDM since 1990. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Breskey understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Breskey meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds an operator's license from Illinois.

Cornelius T. Brooks

Mr. Brooks, 54, has had ITDM since 2106. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Brooks understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Brooks meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds a Class A CDL from Arkansas.

Donald E. Brown

Mr. Brown, 59, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Brown understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Brown meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative and stable proliferative diabetic retinopathy. He holds a Class A CDL from Illinois.

Armando Camacho Nunez

Mr. Camacho Nunez, 56, has had ITDM since 2005. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Camacho Nunez understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Camacho Nunez meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds a Class A CDL from Washington.

Robert P. Coutu

Mr. Coutu, 61, has had ITDM since 2011. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Coutu understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Coutu meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Rhode Island.

John J. Crance, Jr.

Mr. Crance, 46, has had ITDM since 2011. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Crance understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Crance meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds a Class B CDL from New York.

Frank Croce

Mr. Croce, 63, has had ITDM since 2004. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Croce understands diabetes management and monitoring,

has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Croce meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class B CDL from New York.

Kevin S. Cuberson

Mr. Cuberson, 56, has had ITDM since 2007. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Cuberson understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Cuberson meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from North Carolina.

William T. DeGarmo

Mr. DeGarmo, 40, has had ITDM since 2010. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. DeGarmo understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. DeGarmo meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds an operator's license from Oregon.

David J. Dionne

Mr. Dionne, 57, has had ITDM since 2001. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Dionne understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Dionne meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from New Hampshire.

Raymond J. Dionne

Mr. Dionne, 66, has had ITDM since 2015. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Dionne understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Dionne meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from New Hampshire.

Steven W. Doutt

Mr. Doutt, 51, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Doutt understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Doutt meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Pennsylvania.

Brian J. Dunn

Mr. Dunn, 59, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Dunn understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Dunn meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class B CDL from Massachusetts.

Jason E. Earlywine

Mr. Earlywine, 42, has had ITDM since 1976. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Earlywine understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Earlywine meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds a Class D CDL from Kentucky.

William J. Evans

Mr. Evans, 67, has had ITDM since 2015. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Evans understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Evans meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Virginia.

Brandon J. Fonstad

Mr. Fonstad, 21, has had ITDM since 2015. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the

assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Fonstad understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Fonstad meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Wisconsin.

Raymond M. Garron

Mr. Garron, 36, has had ITDM since 1990. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Garron understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Garron meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from South Carolina.

Ms. Jill M. Hall

Ms. Hall, 41, has had ITDM since 2016. Her endocrinologist examined her in 2016 and certified that she has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. Her endocrinologist certifies that Ms. Hall understands diabetes management and monitoring has stable control of her diabetes using insulin, and is able to drive a CMV safely. Ms. Hall meets the requirements of the vision standard at 49 CFR 391.41(b)(10). Her optometrist examined her in 2016 and certified that she does not have diabetic retinopathy. She holds a Class A CDL from Maine.

Eugene C. Hamilton

Mr. Hamilton, 48, has had ITDM since 1979. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Hamilton understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Hamilton meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable proliferative diabetic retinopathy. He holds a Class A CDL from North Carolina.

Robert C. Hanna

Mr. Hanna, 60, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Hanna understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Hanna meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Ohio.

Richard L. Hart

Mr. Hart, 69, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Hart understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Hart meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class E CDL from Michigan.

Rafael Hecht

Mr. Hecht, 26, has had ITDM since 2001. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Hecht understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Hecht meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Indiana.

Tony L. Hopper

Mr. Hopper, 57, has had ITDM since 2015. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Hopper understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Hopper meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Illinois.

Robert J. Hough

Mr. Hough, 64, has had ITDM since 2013. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Hough understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Hough meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy.

He holds an operator's license from Maryland.

Curran P. Jones

Mr. Jones, 27, has had ITDM since 1995. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Jones understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Jones meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Arizona.

Ryan W. Koski

Mr. Koski, 23, has had ITDM since 2000. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Koski understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Koski meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Michigan.

Forrest M. Land, Jr.

Mr. Land, 24, has had ITDM since 1997. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Land understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Land meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Texas.

Allan M. Lewis

Mr. Lewis, 56, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Lewis understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Lewis meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Maine.

Jordan H. Little

Mr. Little, 22, has had ITDM since 2014. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Little understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Little meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from New York.

Nicolas G. Lopez

Mr. Lopez, 25, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Lopez understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Lopez meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Texas.

Michael R. Ludowese

Mr. Ludowese, 35, has had ITDM since 2009. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Ludowese understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Ludowese meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Minnesota.

Brian L. Lynch

Mr. Lynch, 35, has had ITDM since 2008. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Lynch understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Lynch meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Connecticut.

Marten L. Matuszewski

Mr. Matuszewski, 67, has had ITDM since 2014. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Matuszewski understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV

safely. Mr. Matuszewski meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Wisconsin.

Thomas W. Mitchell, III

Mr. Mitchell, 29, has had ITDM since 2002. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Mitchell understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Mitchell meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds an operator's license from Ohio.

David M. Molnar

Mr. Molnar, 55, has had ITDM since 2015. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Molnar understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Molnar meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from Pennsylvania.

Anthony G. Monaghan

Mr. Monaghan, 34, has had ITDM since 1996. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Monaghan understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Monaghan meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from New York.

Jose N. Negron

Mr. Negron, 41, has had ITDM since 1982. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Negron understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Negron meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable proliferative diabetic retinopathy. He holds an operator's license from New Jersey.

Michael J. Perfect

Mr. Perfect, 51, has had ITDM since 2013. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Perfect understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Perfect meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds a Class A CDL from Washington.

Lowell A. Reigel, Jr.

Mr. Reigel, 53, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Reigel understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Reigel meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class D CDL from Kentucky.

Jennifer L. Schroeder

Ms. Schroeder, 42, has had ITDM since 1991. Her endocrinologist examined her in 2016 and certified that she has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. Her endocrinologist certifies that Ms. Schroeder understands diabetes management and monitoring has stable control of her diabetes using insulin, and is able to drive a CMV safely. Ms. Schroeder meets the requirements of the vision standard at 49 CFR 391.41(b)(10). Her optometrist examined her in 2016 and certified that she does not have diabetic retinopathy. She holds an operator's license from Wisconsin.

Daniel M. Seguin

Mr. Seguin, 53, has had ITDM since 2016. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Seguin understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Seguin meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class B CDL from New Hampshire.

Darren K. Vaughan

Mr. Vaughan, 51, has had ITDM since 1982. His endocrinologist examined him

in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Vaughan understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Vaughan meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds an operator's license from North Carolina.

Melvin E. Welton, Jr.

Mr. Welton, 80, has had ITDM since 2010. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Welton understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Welton meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His ophthalmologist examined him in 2016 and certified that he has stable nonproliferative diabetic retinopathy. He holds a Class A CDL from Washington.

Keith A. Williams

Mr. Williams, 65, has had ITDM since 2015. His endocrinologist examined him in 2016 and certified that he has had no severe hypoglycemic reactions resulting in loss of consciousness, requiring the assistance of another person, or resulting in impaired cognitive function that occurred without warning in the past 12 months and no recurrent (2 or more) severe hypoglycemic episodes in the last 5 years. His endocrinologist certifies that Mr. Williams understands diabetes management and monitoring, has stable control of his diabetes using insulin, and is able to drive a CMV safely. Mr. Williams meets the requirements of the vision standard at 49 CFR 391.41(b)(10). His optometrist examined him in 2016 and certified that he does not have diabetic retinopathy. He holds a Class A CDL from Alabama.

III. Request for Comments

In accordance with 49 U.S.C. 31136(e) and 31315, FMCSA requests public comment from all interested persons on the exemption petitions described in this notice. We will consider all comments received before the close of business on the closing date indicated in the date section of the notice.

FMCSA notes that section 4129 of the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users requires the Secretary to revise its diabetes exemption program established on September 3, 2003 (68 FR 52441).[1] The revision must provide for individual assessment of drivers with diabetes mellitus, and be consistent with the criteria described in section 4018 of the Transportation Equity Act for the 21st Century (49 U.S.C. 31305).

Section 4129 requires: (1) Elimination of the requirement for 3 years of experience operating CMVs while being treated with insulin; and (2) establishment of a specified minimum period of insulin use to demonstrate stable control of diabetes before being allowed to operate a CMV.

In response to section 4129, FMCSA made immediate revisions to the diabetes exemption program established by the September 3, 2003 notice. FMCSA discontinued use of the 3-year driving experience and fulfilled the requirements of section 4129 while continuing to ensure that operation of CMVs by drivers with ITDM will achieve the requisite level of safety required of all exemptions granted under 49 U.S.C. 31136 (e).

Section 4129(d) also directed FMCSA to ensure that drivers of CMVs with ITDM are not held to a higher standard than other drivers, with the exception of limited operating, monitoring and medical requirements that are deemed medically necessary.

The FMCSA concluded that all of the operating, monitoring and medical requirements set out in the September 3, 2003 notice, except as modified, were in compliance with section 4129(d). Therefore, all of the requirements set out in the September 3, 2003 notice, except as modified by the notice in the **Federal Register** on November 8, 2005 (70 FR 67777), remain in effect.

IV. Submitting Comments

You may submit your comments and material online or by fax, mail, or hand delivery, but please use only one of these means. FMCSA recommends that you include your name and a mailing address, an email address, or a phone number in the body of your document so that FMCSA can contact you if there are questions regarding your submission.

To submit your comment online, go to *http://www.regulations.gov* and in the search box insert the docket number FMCSA–2016–0382 and click the search button. When the new screen appears, click on the blue ''Comment Now!'' button on the right hand side of the page. On the new page, enter information required including the specific section of this document to which each comment applies, and provide a reason for each suggestion or recommendation. If you submit your comments by mail or hand delivery, submit them in an unbound format, no larger than 8½ by 11 inches, suitable for copying and electronic filing. If you submit comments by mail and would like to know that they reached the facility, please enclose a stamped, self-addressed postcard or envelope.

We will consider all comments and material received during the comment period. FMCSA may issue a final determination at any time after the close of the comment period.

V. Viewing Comments and Documents

To view comments, as well as any documents mentioned in this preamble, go to *http://www.regulations.gov* and in the search box insert the docket number FMCSA–2016–0382 and click ''Search.'' Next, click ''Open Docket Folder'' and you will find all documents and comments related to this notice.

Issued on: January 6, 2017.

Larry W. Minor,

Associate Administrator for Policy.

[FR Doc. 2017–00519 Filed 1–11–17; 8:45 am]

BILLING CODE 4910–EX–P

[1] Section 4129(a) refers to the 2003 notice as a ''final rule.'' However, the 2003 notice did not issue a ''final rule'' but did establish the procedures and standards for issuing exemptions for drivers with ITDM.

DEPARTMENT OF THE TREASURY

Submission for OMB Review; Comment Request

January 9, 2017.

The Department of the Treasury will submit the following information collection request to the Office of Management and Budget (OMB) for review and clearance in accordance with the Paperwork Reduction Act of 1995, Public Law 104–13, on or after the date of publication of this notice.

DATES: Comments should be received on or before February 13, 2017 to be assured of consideration.

ADDRESSES: Send comments regarding the burden estimate, or any other aspect of the information collection, including suggestions for reducing the burden, to (1) Office of Information and Regulatory Affairs, Office of Management and Budget, Attention: Desk Officer for Treasury, New Executive Office Building, Room 10235, Washington, DC 20503, or email at *OIRA_Submission@OMB.EOP.gov* and (2) Treasury PRA Clearance Officer, 1750 Pennsylvania Ave. NW., Suite 8142, Washington, DC 20220, or email at *PRA@treasury.gov.*

FOR FURTHER INFORMATION CONTACT: Copies of the submissions may be obtained by emailing *PRA@treasury.gov,* calling (202) 622–0934, or viewing the entire information collection request at *www.reginfo.gov.*

SUPPLEMENTARY INFORMATION:

Community Development Financial Institutions (CDIF) Fund

OMB Control Number: 1559–0005.

Type of Review: Revision of a currently approved collection.

Title: Bank Enterprise Award Program Application.

Form: 201611.

Abstract: The BEA Program provides incentives to insured depository institutions to increase their support of CDFIs and their activities in economically distressed communities.

Affected Public: Business or other for-profits.

Estimated Total Annual Burden Hours: 4,500.

Bob Faber,

Treasury PRA Clearance Officer.

[FR Doc. 2017–00504 Filed 1–11–17; 8:45 am]

BILLING CODE 4810–70–P

DEPARTMENT OF THE TREASURY

Departmental Offices

Debt Management Advisory Committee Meeting

Notice is hereby given, pursuant to 5 U.S.C. App. 2, 10(a)(2), that a meeting will be held at the Hay-Adams Hotel, 16th Street and Pennsylvania Avenue NW., Washington, DC, on January 31, 2017 at 10:00 a.m. of the following debt management advisory committee:

Treasury Borrowing Advisory Committee of The Securities Industry and Financial Markets Association.

The agenda for the meeting provides for a charge by the Secretary of the Treasury or his designate that the Committee discuss particular issues and conduct a working session. Following the working session, the Committee will present a written report of its recommendations. The meeting will be closed to the public, pursuant to 5 U.S.C. App. 2, 10(d) and Public Law 103–202, 202(c)(1)(B) (31 U.S.C. 3121 note).

This notice shall constitute my determination, pursuant to the authority placed in heads of agencies by 5 U.S.C. App. 2, 10(d) and vested in me by Treasury Department Order No. 101–05, that the meeting will consist of discussions and debates of the issues presented to the Committee by the Secretary of the Treasury and the making of recommendations of the Committee to the Secretary, pursuant to Public Law 103–202, 202(c)(1)(B). Thus, this information is exempt from disclosure under that provision and 5 U.S.C. 552b(c)(3)(B). In addition, the meeting is concerned with information that is exempt from disclosure under 5 U.S.C. 552b(c)(9)(A). The public interest requires that such meetings be closed to the public because the Treasury Department requires frank and full advice from representatives of the financial community prior to making its final decisions on major financing operations. Historically, this advice has been offered by debt management advisory committees established by the several major segments of the financial community. When so utilized, such a committee is recognized to be an advisory committee under 5 U.S.C. App. 2, 3.

Although the Treasury's final announcement of financing plans may not reflect the recommendations provided in reports of the Committee, premature disclosure of the Committee's deliberations and reports would be likely to lead to significant financial speculation in the securities market. Thus, this meeting falls within the exemption covered by 5 U.S.C. 552b(c)(9)(A).

Treasury staff will provide a technical briefing to the press on the day before the Committee meeting, following the release of a statement of economic conditions and financing estimates. This briefing will give the press an opportunity to ask questions about financing projections. The day after the Committee meeting, Treasury will release the minutes of the meeting, any charts that were discussed at the meeting, and the Committee's report to the Secretary.

The Office of Debt Management is responsible for maintaining records of debt management advisory committee meetings and for providing annual reports setting forth a summary of Committee activities and such other matters as may be informative to the public consistent with the policy of 5 U.S.C. 552(b). The Designated Federal Officer or other responsible agency official who may be contacted for additional information is Fred Pietrangeli, Director for Office of Debt Management (202) 622–1876.

Dated: January 5, 2017.

Fred Pietrangeli,

Director for Office of Debt Management.

[FR Doc. 2017–00318 Filed 1–11–17; 8:45 am]

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Part II

Department of Transportation

National Highway Traffic Safety Administration

49 CFR Part 571

Federal Motor Vehicle Safety Standards; V2V Communications; Proposed Rule

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA–2016–0126]

RIN 2127–AL55

Federal Motor Vehicle Safety Standards; V2V Communications

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice of Proposed Rulemaking (NPRM).

SUMMARY: This document proposes to establish a new Federal Motor Vehicle Safety Standard (FMVSS), No. 150, to mandate vehicle-to-vehicle (V2V) communications for new light vehicles and to standardize the message and format of V2V transmissions. This will create an information environment in which vehicle and device manufacturers can create and implement applications to improve safety, mobility, and the environment. Without a mandate to require and standardize V2V communications, the agency believes that manufacturers will not be able to move forward in an efficient way and that a critical mass of equipped vehicles would take many years to develop, if ever. Implementation of the new standard will enable vehicle manufacturers to develop safety applications that employ V2V communications as an input, two of which are estimated to prevent hundreds of thousands of crashes and prevent over one thousand fatalities annually.

DATES: Comments must be received on or before April 12, 2017.

ADDRESSES: You may submit comments to the docket number identified in the heading of this document by any of the following methods:

- *Online:* Go to *http://www.regulations.gov* and follow the online instructions for submitting comments.
- *Mail:* Docket Management Facility, M–30, U.S. Department of Transportation, West Building, Ground Floor, Rm. W12–140, 1200 New Jersey Avenue SE., Washington, DC 20590.
- *Hand Delivery or Courier:* West Building, Ground Floor, Rm. W12–140, 1200 New Jersey Avenue SE., between 9 a.m. and 5 p.m. Eastern Time, Monday through Friday, except Federal Holidays.
- *Fax:* (202) 493–2251.

Regardless of how you submit your comments, you should mention the docket number of this document. You may call the Docket Management Facility at 202–366–9826.

Instructions: Direct your comments to Docket No. NHTSA–2016–0126. See the **SUPPLEMENTARY INFORMATION** section on ''Public Participation'' for more information about submitting written comments.

Docket: All documents in the dockets are listed in the *http://www.regulations.gov* index. Although listed in the index, some information is not publicly available, *e.g.,* confidential business information (CBI) or other information whose disclosure is restricted by statute. Publicly available docket materials are available either electronically in regulations.gov or in hard copy at DOT's Docket Management Facility, 1200 New Jersey Avenue SE., West Building, Ground Floor, Rm. W12–140, Washington, DC 20590. The Docket Management Facility is open between 9 a.m. and 5 p.m. Eastern Time, Monday through Friday, except Federal Holidays.

FOR FURTHER INFORMATION CONTACT: For technical issues, Mr. Gregory Powell, Office of Rulemaking, NHTSA, 1200 New Jersey Avenue SE., Washington, DC 20590. Telephone: (202) 366–5206; Fax: (202) 493–2990; email: *gregory.powell@dot.gov*. For legal issues, Ms. Rebecca Yoon, Office of the Chief Counsel, NHTSA, 1200 New Jersey Avenue SE., Washington, DC 20590. Telephone: (202) 366–2992; email: *rebecca.yoon@dot.gov*.

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Executive Summary
II. Background
A. The Safety Need
1. Overall Crash Population That V2V Could Help Address
2. Pre-Crash Scenarios Potentially Addressed by V2V Communications
B. Ways To Address the Safety Need
1. Radar and Camera Based Systems
2. Communication-Based Systems
3. Fusion of Vehicle-Resident and Communication-Based Systems
4. Automated Systems
C. V2V Research Up Until This Point
1. General Discussion
2. Main Topic Areas in Readiness Report
3. Research Conducted Between the Readiness Report and This Proposal
D. V2V International and Harmonization Efforts
E. V2V ANPRM
1. Summary of the ANPRM
2. Comments to the ANPRM
F. SCMS RFI
III. Proposal To Regulate V2V Communications
A. V2V Communications Proposal Overview
B. Proposed V2V Mandate for New Light Vehicles, and Performance Requirements for Aftermarket for Existing Vehicles
C. V2V Communication Devices That Would Be Subject to FMVSS No. 150
1. Original Equipment (OE) Devices on New Motor Vehicles
2. Aftermarket Devices
D. Potential Future Actions
1. Potential Future Safety Application Mandate
2. Continued Technology Monitoring
E. Performance Criteria for Wireless V2V Communication
1. Proposed Transmission Requirements
2. Proposed V2V Basic Safety Message (BSM) Content
3. Message Signing and Authentication
4. Misbehavior Reporting
5. Proposed Malfunction Indication Requirements
6. Software and Security Certificate Updates
7. Cybersecurity
IV. Public Acceptance, Privacy and Security
A. Importance of Public Acceptance To Establishing the V2V System
B. Elements That Can Affect Public Acceptance in the V2V Context
1. False Positives
2. Privacy
3. Hacking (Cybersecurity)
4. Health
5. Research Conducted on Consumer Acceptance Issues
6. User Flexibilities for Participation in System
C. Consumer Privacy
1. NHTSA's PIA
2. Privacy by Design and Data Privacy Protections
3. Data Access, Data Use and Privacy
4. V2V Privacy Statement
5. Consumer Education
6. Congressional/Other Government Action
D. Summary of PIA
1. What is a PIA?
2. PIA Scope
3. Non-V2V Methods of Tracking
4. V2V Data Flows/Transactions With Privacy Relevance
5. Privacy-Mitigating Controls
6. Potential Privacy Issues by Transaction Type
E. Health Effects
1. Overview
2. Wireless Devices and Health and Safety Concerns
3. Exposure Limits
4. U.S. Department of Energy (DOE) Smart Grid Implementation
5. Federal Agency Oversight & Responsibilities
6. EHS in the U.S. and Abroad
7. Conclusion
V. Device Authorization
A. Approaches to Security Credentialing
B. Federated Security Credential Management (SCMS)
1. Overview
2. Technical Design
3. Independent Evaluation of SCMS Technical Design
4. SCMS RFI Comments and Agency Responses

5. SCMS ANPRM Comments and Agency Response
6. SCMS Industry Governance
C. Vehicle Based Security System (VBSS)
D. Multiple Root Authority Credential Management
VI. What is the agency's legal authority to regulate V2V devices, and how is this proposal consistent with that authority?
A. What can NHTSA regulate under the Vehicle Safety Act?
B. What does the Vehicle Safety Act allow and require of NHTSA in issuing a new FMVSS, and how is the proposal consistent with those requirements?
1. ''Performance-Oriented''
2. Standards ''Meeting the Need for Motor Vehicle Safety''
3. ''Objective'' Standards
4. ''Practicable'' Standards
C. How are the regulatory alternatives consistent with our Safety Act authority?
D. What else needs to happen in order for a V2V system to be successful?
1. SCMS
2. Liability
VII. Estimated Costs and Benefits
A. General Approach to Costs and Benefits Estimates
B. Quantified Costs
1. Component Costs
2. Communication Costs
3. Fuel Economy Impact
4. Overall Annual Costs
5. Overall Model Year (MY) Costs
C. Non-Quantified Costs
1. Health Insurance Costs Relating to EHS
2. Perceived Privacy Loss
3. Opportunity Costs of Spectrum for Other Uses
4. Increased Litigation Costs
D. Estimated Benefits
1. Assumptions and Overview
2. Injury and Property Damage Benefits
3. Monetized Benefits
4. Non-Quantified Benefits
E. Breakeven Analysis
F. Cost Effectiveness and Positive Net Benefits Analysis
1. Cost Effectiveness
2. Lifetime Net Benefits for a Specified Model Year
3. Summary
G. Uncertainty Analysis
H. Estimated Costs and Benefits of V2V Alternatives
VIII. Proposed Implementation Timing
A. New Vehicles
1. Lead Time
2. Phase-In Period
B. Aftermarket
IX. Public Participation
A. How do I prepare and submit comments?
B. Tips for Preparing Your Comments
C. How can I be sure that my comments were received?
D. How do I submit confidential business information?
E. Will NHTSA consider late comments?
F. How can I read the comments submitted by other people?
X. Regulatory Notices and Analyses
A. Executive Order 12866, Executive Order 13563, and DOT Regulatory Policies and Procedures
B. Regulatory Flexibility Act
C. Executive Order 13132 (Federalism)
D. Executive Order 12988 (Civil Justice Reform)
E. Protection of Children From Environmental Health and Safety Risks
F. Paperwork Reduction Act
G. National Technology Transfer and Advancement Act
H. Unfunded Mandates Reform Act
I. National Environmental Policy Act
J. Plain Language
K. Regulatory Identifier Number (RIN)
L. Privacy Act
Proposed Regulatory Text

I. Executive Summary

The National Highway Traffic Safety Administration (NHTSA) is proposing to issue a new Federal Motor Vehicle Safety Standard (FMVSS) No. 150, to require all new light vehicles to be capable of Vehicle-to-Vehicle (''V2V'') communications, such that they will send and receive Basic Safety Messages to and from other vehicles. The proposal contains V2V communication performance requirements predicated on the use of on-board dedicated short-range radio communication (DSRC) devices to transmit Basic Safety Messages (BSM) about a vehicle's speed, heading, brake status, and other vehicle information to surrounding vehicles, and receive the same information from them. When received in a timely manner, this information would help vehicle systems identify potential crash situations with other vehicles and warn their drivers. The proposal also provides a path for vehicles to comply by deploying other technologies that meet certain performance and interoperability requirements, including interoperability with DSRC.

The agency believes that V2V has the potential to revolutionize motor vehicle safety. By providing drivers with timely warnings of impending crash situations, V2V-based safety applications could potentially reduce the number and severity of motor vehicle crashes, thereby reducing the losses and costs to society that would have resulted from these crashes.

More specifically, the agency believes that V2V will be able to address crashes that cannot be prevented by current in-vehicle camera and sensor-based technologies (''vehicle-resident'' technologies). This is because V2V would employ omnidirectional radio signals that provide 360 degree coverage along with offering the ability to ''see'' around corners and ''see'' through other vehicles. V2V is not restricted by the same line-of-sight limitations as crash avoidance technologies that rely on vehicle-resident sensors. Additionally, V2V communications (BSMs) contain additional information, such as path predictions and driver actions (braking, steering) not available from traditional sensors. This information can be used by receiving vehicles to more reliably predict potential collision events as well as reduce false warnings. This ability to communicate certain information that cannot be acquired by vehicle-resident onboard sensors makes V2V particularly good at preventing impending intersection crashes, such as when a vehicle is attempting to make a left turn from one road to another. V2V also offers an operational range of 300 meters or farther between vehicles, nearly double the detection distance afforded by some current and near-term vehicle-resident systems. These unique characteristics allow V2V-equipped vehicles to perceive and warn drivers of some threats sooner than vehicle-resident sensors can. Furthermore, while the operational status or accuracy of vehicle-resident sensors may be affected by weather, sunlight, shadows, or cleanliness, V2V technology does not share these same system limitations.

As another source of information about the driving environment, moreover, the agency also believes that V2V can be fused with existing radar- and camera-based systems to provide even greater crash avoidance capability than either approach alone. For vehicles equipped with current on-board sensors, the fundamentally different, but complementary, information stream provided by V2V has the potential to significantly enhance the reliability and accuracy of the sensor-based information available. Instead of relying on each vehicle to sense its surroundings on its own, V2V enables surrounding vehicles to help each other by conveying safety information about themselves to other vehicles. V2V communication can thus detect threat vehicles that are not in the sensors' field of view, and can use V2V information to validate a return signal from a vehicle-based sensor. Further, V2V can provide information on the operational status (*e.g.,* brake pedal status, transmission state, stability control status, vehicle at rest versus moving, etc.) of other V2V-equipped vehicles. Similarly, vehicle-resident systems can augment V2V systems by providing the information necessary to address other crash scenarios not covered by V2V communications, such as lane and road departure. These added capabilities can potentially lead to more timely warnings and a reduction in the number of false warnings, thereby adding confidence to the overall safety system, and increasing consumer satisfaction

and acceptance. Although some have contended that vehicle-resident systems could evolve to the point where they have similar ranges to V2V transmissions during the time it will take V2V to penetrate the fleet, the agency believes that these technologies will remain complementary rather than competing even as vehicle-resident systems continue to improve.

In the longer-term, the agency believes that this fusion of V2V and vehicle-resident technologies will advance the further development of vehicle automation systems, including the potential for truly self-driving vehicles. Although most existing automated systems currently rely on data obtained from vehicle-resident technologies, we believe that data acquired from GPS and telecommunications like V2V could significantly augment such systems. Communication-based technology that connects vehicles with each other could not only improve the performance of automated onboard crash warning systems, but also be a developmental stage toward achieving widespread deployment of safe and reliable automated vehicles.[1]

Despite these potential benefits, V2V offers challenges that are not present in vehicle-resident systems. Without government action, these challenges could prevent this promising safety technology from achieving sufficiently widespread use throughout the vehicle fleet to achieve these benefits. Most prominently, vehicles need to communicate a standard set of information to each other, using interoperable communications that all vehicles can understand. The ability of vehicles to both transmit and receive V2V communications from all other vehicles equipped with a V2V communications technology is referred to in this document as ''interoperability,'' and it is vital to V2V's success. Without interoperability, manufacturers attempting to implement V2V will find that their vehicles are not necessarily able to communicate with other manufacturers' vehicles and equipment, defeating the objective of the mandate and stifling the potential for innovation that the new information environment can create. In addition, there is the issue of achieving critical mass: That V2V can only begin to provide significant safety benefits when a significant fraction of vehicles comprising the fleet can transmit and receive the same information in an interoperable fashion.

The improvement in safety that results from enabling vehicles to communicate with one another depends directly on the fraction of the vehicle fleet that is equipped with the necessary technology, and on its ability to perform reliably. In turn, the effectiveness of any V2V communications technology depends on its ability to reliably transmit and receive recognizable and verifiable standardized information. Because the value to potential buyers of purchasing a vehicle that is equipped with V2V communications technology depends upon how many other vehicle owners have also purchased comparably-equipped models, V2V communications has many of the same characteristics as more familiar network communications technologies.

Viewed another way, an important consequence of any improvement in fleet-wide vehicle safety that results from an individual buyer's decision to purchase a V2V-capable model is the resulting increase in the safety of occupants of other V2V-equipped vehicles. Thus the society-wide benefits of individual vehicle buyers' decisions to purchase V2V-capable models extend well beyond the direct increase in their own safety; in economic parlance, their decisions can confer external benefits on other travelers. Thus a significant ''network externality'' arises from a new vehicle buyer's decision to purchase a vehicle equipped to connect to the existing V2V communications network.

Conversely, however, the benefits that any individual consumer would receive from voluntary adoption of V2V depend directly on the voluntary adoption of this technology by other consumers. Unless individual buyers believe that a significant number of other buyers will obtain V2V systems, they may conclude that the potential benefits they would receive from this system are unlikely to materialize. As a consequence, they are less likely to invest in V2V communications capabilities that would be would be justified by the resulting improvement in fleet-wide safety. The proposed requirement that all new vehicles be V2V-capable is thus likely to improve transportation safety more rapidly, effectively, and ultimately more extensively than would result from relying on the private decisions of individual vehicle buyers.

Another important consideration in achieving safety benefits from V2V is the long product lifespan of motor vehicles and the resulting slow fleet turnover. This places inherent constraints on the rate at which diffusion of new technologies throughout the entire vehicle fleet can occur. Thus in order to reach the critical mass of participants, a significant portion of the existing vehicle fleet will need replacement and a sustained, coordinated commitment on the part of manufacturers. Due to the inherent characteristics of the automobile market, manufacturers will inevitably face changing economic conditions and perhaps imperfect signals from vehicle buyers and owners, and these signals may not be based on complete information about the effectiveness of V2V technology, or incorporate the necessary foresight to value the potential life-saving benefits of V2V technology during the crucial phase of its diffusion. Without government intervention, the resulting uncertainty could undermine manufacturer plans or weaken manufacturers' incentive to develop V2V technology to its full potential.

We are, therefore, confident that creating the information environment through this mandate would lead to considerable advances in safety, and that those advances might not reach fruition if V2V communications were left to develop on their own.[2]

Overview of the Proposed Rule

The agency believes the market will not achieve sufficient coverage absent a mandate V2V capability for all new light vehicles. A V2V system as currently envisioned would be a combination of many elements. This includes a radio technology for the transmission and reception of messages, the structure and contents of ''basic safety messages'' (BSMs), the authentication of incoming messages by receivers, and, depending on a vehicle's behavior, the triggering of one or more safety warnings to drivers.

The agency is also proposing to require that vehicles be capable of receiving over-the-air (OTA) security and software updates (and to seek consumer consent for such updates where appropriate). In addition, NHTSA is also proposing that vehicles contain ''firewalls'' between V2V modules and other vehicle modules connected to the data bus to help isolate V2V modules

[1] Equipping vehicles with V2V could also lead to deployment of connectivity hardware that could potentially be used for other applications, such as connectivity with roadway infrastructure (V2I) and with pedestrians (V2P). These technologies (collectively referred to as ''V2X'') could increase the vehicle's awareness of its surroundings and enable additional applications. We do not consider these other potential applications here.

[2] This analysis for this proposal focuses on the benefits resulting from the implementation of safety applications that are projected to reduce vehicle crashes. The agency did not incorporate any potential benefits from the anticipated expanded use of DSRC for mobility and envirionment benefits. A list of potential mobility and environment applications can be found at *http://www.its.dot.gov/pilots/cv_pilot_apps.htm* (last accessed: Dec 7, 2016).

being used as a potential conduit into other vehicle systems.

The NPRM presents a comprehensive proposal for mandating DSRC-based V2V communications. That proposal includes a pathway for vehicles to comply using non-DSRC technologies that meet certain performance and interoperability standards. A key component of interoperability is a ''common language'' regardless of the communication technology used. Therefore, the agency's proposal includes a common specification for basic safety message (BSM) content regardless of the potential communication technology. The proposal also provides potential performance-based approaches for two security functions in an effort to obtain reaction and comment from industry and the public. Following is a more comprehensive discussion of the proposal and potential alternatives for different aspects of V2V security:

Communication Technology

• *Proposal:* NHTSA proposes to mandate DSRC technology—A DSRC unit in a vehicle sends out and receives ''basic safety messages'' (BSMs). DSRC communications within the 5.850 to 5.925 MHz band are governed by FCC 47 CFR parts 0, 1, 2 and 95 for onboard equipment and part 90 for road side units. In reference to the OSI model, the physical and data link layers (layers 1and 2) are addressed primarily by IEEE 802.11p as well as P1609.4; network, transport, and session layers (3,4 and 5) are addressed primarily by P1609.3; security communications are addressed by P1609.2; and additional session and prioritization related protocols are addressed by P1609.12. This mandate could also be satisfied using non-DSRC technologies that meet certain performance and interoperability standards.

Message Format and Information

• NHTSA proposes to standardize the content, initialization time, and transmission characteristics of the Basic Safety Message (BSM) regardless of the V2V communication technology potentially used. The agency's proposed content requirements for BSMs are largely consistent with voluntary consensus standards SAE 2735 and SAE 2945 which contains data elements such as speed, heading, trajectory, and other information, although NHTSA purposely does not require some elements to alleviate potential privacy concerns. Standardizing the message will facilitate V2V devices ''speaking the same language,'' to ensure interoperability. Vehicles will not be able to ''understand'' the basic safety message content hindering the ability to inform drivers of potential crashes.

Message Authentication

• *Public Key Infrastructure Proposal:* NHTSA proposes V2V devices sign and verify their basic safety messages using a Public Key Infrastructure (PKI) digital signature algorithm in accordance with performance requirements and test procedures for BSM transmission and the signing of BSMs. The agency believes this will establish a level of confidence in the messages exchanged between vehicles and ensure that basic safety message information is being received from devices that have been certified to operate properly, are enrolled in the security network, and are in good working condition. It is also important that safety applications be able to distinguish these from messages originated by ''bad actors,'' or defective devices, as well as from messages that have been modified or changed while in transit.

• *Alternative Approach—Performance-based Only:* This first alternative for message authentication is less prescriptive and defines a performance-based approach but not a specific architecture or technical requirement for message authentication. This performance only approach simply states that a receiver of a BSM message must be able to validate the contents of a message such that it can reasonably confirm that the message originated from a single valid V2V device, and the message was not altered during transmission. The agency seeks comment on this potential alternative.

• *Alternative Approach—No Message Authentication:* This second alternative stays silent on a specific message authentication requirement. BSM messages would still be validated with a checksum, or other integrity check, and be passed through a misbehavior detection system to attempt to filter malicious or misconfigured messages. Implementers would be free to include message authentication as an optional function. The agency seeks comment on this potential alternative.

Misbehavior Detection and Reporting

• *Primary Misbehavior Detection and Reporting Proposal:* NHTSA proposes to mandate requirements that would establish procedures for communicating with a Security Credential Management System to report misbehavior; and learn of misbehavior by other participants. This includes detection methods for a device hardware and software to ensure that the device has not been altered or tampered with from intended behavior. This approach enhances the ability of V2V devices to identify and block messages from other misbehaving or malfunctioning V2V devices.

• *Misbehavior Detection Alternative Approach:* An alternative for misbehavior detection imposes no requirement to report misbehavior or implement device blocking based to an authority. However, implementers would need to identify methods that check a devices' functionality, including hardware and software, to ensure that the device has not been altered or tampered with from intended behavior. Implementers would be free to include misbehavior detection and reporting and as optional functions. The agency seeks comment on this alternative.

Hardware Security

NHTSA proposes that V2V equipment be ''hardened'' against intrusion (FIPS–140 Level 3) by entities attempting to steal its security credentials.

Effective Date

The agency is proposing that the effective date for manufacturers to begin implementing these new requirements would be two model years after the final rule is adopted, with a three year phase-in period to accommodate vehicle manufacturers' product cycles. Assuming a final rule is issued in 2019, this would mean that the phase-in period would begin in 2021, and all vehicles subject to that final rule would be required to comply in 2023.

Safety Applications

The agency is not proposing to require specific V2V safety applications at this time. We believe the V2V communications we are proposing will create the standardized information environment that will, in turn, allow innovation and market competition to develop improved safety and other applications. Additionally, at this time, the agency believes that more research is likely needed in order to create regulations for safety applications. In support of this, we are seeking comment on information that could inform a future decision to mandate any specific safety applications.

Authority

Under the Vehicle Safety Act, 49 U.S.C. 30101 *et seq.,* the agency has the legal authority to require new vehicles to be equipped with V2V technology and to use it, as discussed in Section VI below. NHTSA has broad statutory authority to regulate motor vehicles and items of motor vehicle equipment, and to establish FMVSSs to address vehicle safety needs.

Privacy and Security

V2V systems would be required to be designed from the outset to minimize risks to consumer privacy. The NPRM proposes to exclude from V2V transmitting information that directly identifies a specific vehicle or individual regularly associated with a vehicle, such as owner's or driver's name, address, or vehicle identification numbers, as well as data ''reasonably linkable'' [3] to an individual. Additionally, the proposal contains specific privacy and security requirements with which manufacturers would be required to comply.

The Draft Privacy Impact Assessment that accompanies this proposal contains detailed information on the potential privacy risks posed by the V2V communications system, as well as the controls designed into that system to minimize risks to consumer privacy.

Estimated Costs and Benefits

In this NPRM, the agency proposes that all light vehicles be equipped with technology that allows for V2V communications, but has decided not to propose to mandate any specific safety applications at this time, instead allowing them to be developed and adopted as determined by the market. This market-based approach to application development and deployment makes estimating the potential costs and benefits of V2V quite difficult, because the V2V communication technology being mandated by the agency would improve safety only indirectly, by facilitating the deployment of previously developed OEM safety application. However, the agency is confident that these technologies will be developed and deployed once V2V communications are mandated and interoperable. Considerable research has already been done on various different potential applications, and the agency believes that functioning systems are likely to become available within a few years if their manufacturers can be confident that V2V will be mandated and interoperable.

In order to provide estimates of the rule's costs and benefits, the agency has considered a scenario where two V2V-enabled safety applications, IMA and LTA, are voluntarily adopted on hypothetical schedules similar to those observed in the actual deployment of other advanced communications technologies. The agency believes that IMA and LTA will reduce the frequency of crashes that cannot be avoided by vehicle-resident systems, and will thus generate significant safety benefits that would not be realized in the absence of universal V2V communications capabilities. In addition, the marginal costs of including the IMA and LTA applications are extremely low once the V2V system is in place, which the agency believes will speed their adoption.

The agency has not quantified any benefits attributable to the wide range of *other* potential uses of V2V, although we believe that such uses are likely to be numerous. Recognizing its experience with other technologies, the agency believes that focusing on two of the many potential uses of V2V technology that are inexpensive to implement provides a reasonable approach to estimating potential benefits of the proposed rule, and is likely to understate the breadth of potential benefits of V2V.

We estimate that the total annual costs to comply with this proposed mandate in the 30th year after it takes effect would range from $2.2 billion to $5.0 billion, corresponding to a cost per new vehicle of roughly $135–$300. This estimate includes costs for equipment installed on vehicles as well as the annualized equivalent value of initial investments necessary to establish the overarching security manager and the communications system, among other things, but, due to uncertainty, does not include opportunity costs associated with spectrum, which will be included in the final cost benefit analysis. The primary source of the wide range between the lower and upper cost estimates is based our assumption that manufacturers could comply with the rule using either one or two DSRC radios.

As discussed above, our benefit calculation examines a case where manufacturers would voluntarily include the IMA and LTA applications on a schedule that reflects adoption rates the agency has observed for other advanced, vehicle-resident safety technologies. Together, these applications could potentially prevent 424,901–594,569 crashes, and save 955–1,321 lives when fully deployed throughout the light-duty vehicle fleet. Converting these and the accompanying reductions in injuries and property damage to monetary values, we estimate that in 2051 the proposed rule could reduce the costs resulting from motor vehicle crashes by $53 to $71 billion (expressed in today's dollars).

The agency conducted two accompanying analyses to identify meaningful milestones in the future growth of benefits resulting from this proposed rule. These analyses highlight the effect that the passage of time has on the accumulated benefits from this proposed rule. Benefits in the first several calendar years after it takes effect will be quite low, because only a limited number of vehicles on the road will be equipped with V2V, but growth in these benefits will accelerate as time goes on.

First, NHTSA used a ''breakeven'' analysis to identify the calendar year during which the cumulative economic value of safety benefits from the use of V2V communications first exceeds the cumulative costs to vehicle manufacturers and buyers for providing V2V capability. The breakeven analysis indicated that this important threshold would be reached between 2029 and 2032, depending primarily on the effectiveness of the application technologies.

Next, NHTSA projected future growth in the proposed rule's benefits and costs over successive model years after it would take effect. This analysis identified the first model year for which the safety benefits from requiring vehicles to be equipped with V2V communications over their lifetime in the fleet would outweigh the higher initial costs for manufacturing them. It showed that this would occur in model year 2024 to 2026 if the proposed rule first took effect in model year 2021. This occurs sooner than the breakeven year, because focusing only on costs and benefits over the lifetimes of individual model years avoids including the burden of costs for installing V2V communications on vehicles produced during earlier model years.

[3] NHTSA intends for the term ''reasonably linkable,'' as used in this NPRM, to have the same meaning as the term ''as a practical matter linkable'' as used in the definition of ''personal data'' in Section 4 of the White House Consumer Privacy Bill of Rights: ''data that are under the control of a covered entity, not otherwise generally available to the public through lawful means, and are linked, or as a practical matter linkable by the covered entity, to a specific individual, or linked to a device that is associated with or routinely used by an individual.'' *https://www.whitehouse.gov/sites/default/files/omb/legislative/letters/cpbr-act-of-2015-discussion-draft.pdf* (last accessed Dec 7, 2016). The Federal Trade Commission also uses the concept of '' linked or reasonably linkable'' as a suggested definition of personally identifiable information in its recent comment to the Federal Communications Commission at *https://www.ftc.gov/system/files/documents/advocacy_documents/comment-staff-bureau-consumer-protection-federal-trade-commission-federal-communications-commission/160527fcccomment.pdf* (last accessed Dec 7, 2016).

TABLE I–1—COSTS * AND BENEFITS IN YEAR 30 OF DEPLOYMENT

[2051]

Total annual costs	Per vehicle costs	Crashes prevented and lives saved	Monetary benefits (billions)
$2.2 billion–$5.0 billion	$135–$301	Crashes: 424,901–594,569 Lives: 955–1,321	$53–$71

* Note: Does not include spectrum opportunity costs, which will be included in the analysis of the final rule.

In order to account for the inherent uncertainty in the assumptions underlying this cost-benefit analysis, the agency also conducted extensive uncertainty analysis to illustrate the variation in the rule's benefits and costs associated with different assumptions about the future number of accidents that could be prevented, the assumed adoption rates and estimated effectiveness of the two safety applications, and our assumptions about the costs of providing V2V communications capability. Aside from opportunity costs, this analysis showed that the proposed rule would reach its breakeven year between 2030 and 2032 with 90 percent certainty, with even the most conservative scenario showing that the breakeven year would be five to six years later than the previously estimated years (2029–2032). Considering these same sources of uncertainty in the cost-effectiveness and net benefits analyses showed that the proposed rule would become cost-effective and would accrue positive net benefits between MY 2024 and MY 2027 with 90 percent certainty. This indicates that it is very likely to become cost-effectiveness at most one MY later than estimated in the primary analysis, and that even under the most conservative scenario, this would occur two to three model years later than the initial estimate of 2024–2026.

Regulatory Alternatives

The agency considered two regulatory alternatives to today's proposal. First, the agency considered an ''if-equipped'' standard, which would entail simply setting a conditional standard stating that ''*if* a new vehicle is equipped with devices capable of V2V communications, then it is required to meet the following requirements.'' However, the agency did not adopt this alternative as the proposal because, as explained above, the agency believes that anything short of a mandate for universal V2V capability on all new vehicles would not lead a sufficient fraction of the vehicle fleet to be equipped with V2V to enable full realization of the technology's potential safety benefits. However, we seek further comment on adopting an ''if-equipped'' standard as the primary approach to V2V communications technology. We request commenters provide any relevant research and data that supports their position and rationale for this approach to regulation.

Second, we considered a regulatory alternative of requiring that V2V-capable vehicles also be equipped with the two safety applications analyzed in this proposed rule—Intersection Movement Assist (IMA) and Left Turn Assist (LTA)—in addition to V2V capability. This alternative would speed the introduction and increase the certainty of safety benefits. However, because performance requirements and test procedures for these safety applications are still nascent, we are not proposing this alternative at this time. However, the agency requests comment on whether sufficient information exists that could assist it in developing FMVSS-quality test procedures and performance standards for these applications.

We seek comment on all aspects of this proposed rule, as well as the Preliminary Regulatory Impact Assessment (PRIA) and Draft Privacy Impact Assessment (PIA) that accompany it. Although a number of specific questions and requests for comment appear in various locations throughout the text, we encourage comments broadly, particularly those that are supported by relevant documentation, information, or analysis. Instructions for submitting comments are located below in the ''Public Participation,'' Section IX.

II. Background

A. The Safety Need

Safety technology has developed rapidly since NHTSA began regulating the auto industry [4]—over the last several decades, vehicles have evolved to protect occupants much better in the event of a crash due to advanced structural techniques propagated by more stringent crashworthiness standards, and some crash avoidance technologies (*e.g.,* electronic stability control) are now required standard equipment. In fact, a recent study of data from our Fatality Analysis Reporting System (FARS) estimates those safety technologies have saved 613,501 lives since 1960.[5] As a result of existing NHTSA standards for crashworthiness and crash avoidance technologies, along with market-driven improvements in safety, motor vehicles are safer now than they have ever been, as evidenced by a significant reduction in highway fatalities and injuries—from 52,627 fatalities in 1970,[6] to 32,675 fatalities in 2015—a 38 percent reduction.[7]

[4] NHTSA was established by the Highway Safety Act of 1970, as the successor to the National Highway Safety Bureau, to carry out safety programs under the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966. NHTSA also carries out consumer programs established by the Motor Vehicle Information and Cost Savings Act of 1972.

[5] Kahane, C. J. (2015, January). Lives saved by vehicle safety technologies and associated Federal Motor Vehicle Safety Standards, 1960 to 2012—Passenger cars and LTVs—With reviews of 26 FMVSS and the effectiveness of their associated safety technologies in reducing fatalities, injuries, and crashes. (Report No. DOT HS 812 069). Washington, DC: National Highway Traffic Safety Administration.

[6] National Highway Traffic Safety Administration, Traffic Safety Facts 2012. Available at *http://www-nrd.nhtsa.dot.gov/Pubs/812032.pdf* (last accessed Dec. 7, 2016).

[7] National Highway Traffic Safety Administration, Fatality Analysis Report System (FARS) final 2014 data. For more information, see *http://www-fars.nhtsa.dot.gov/Main/index.aspx* (last accessed Dec 7, 2016).

NHTSA believes the greatest gains in highway safety in coming years will result from broad-scale application of crash *avoidance* technologies along with continued improvements in vehicle crashworthiness that can reduce fatalities and injuries.[8] To encourage adoption of such technologies, in February 2015 the agency announced that it would add two types of automatic emergency braking systems—crash imminent braking and dynamic brake support—to the list of recommended advanced safety features in our New Car Assessment Program, known to most Americans as NHTSA's Five Star Safety Ratings. In March, 2016 the agency announced an agreement with vehicle manufacturers to voluntarily make automatic emergency braking (AEB) a standard safety on future vehicles.[9] These technologies, along with technologies required as standard equipment like electronic stability control (ESC), help vehicles react to crash-imminent situations, but do not help drivers react ahead of time to avoid crashes.

This proposed rule would require vehicles to transmit messages about their speed, heading, brake status, and other vehicle information to surrounding vehicles, and to be able to receive the same information from them. V2V range and ''field-of-view'' capabilities exceed current and near-term radar- and camera-based systems—in some cases, providing nearly twice the range. That longer range and 360 degree field of ''view'', currently supported by DSRC, provides a platform enabling vehicles to perceive some threats that sensors, cameras, or radar cannot.

By providing drivers with timely warnings of impending crash situations, V2V-based safety applications could potentially reduce the number and severity of motor vehicle crashes, minimizing the losses and costs to society that would have resulted from these crashes. V2V message data can also be fused with existing radar- and camera-based systems to provide even greater crash-risk detection capability (and thus, driver confidence levels) than either approach alone.

1. Overall Crash Population That V2V Could Help Address

The first step in understanding how V2V could help drivers avoid crashes is determining how many crashes could potentially be addressed by V2V-based technologies. We estimate crash harm based on fatalities, injuries (described by MAIS),[10] and what we call ''property-damage-only,'' meaning that no people were hurt, but vehicles sustained damage that will have to be fixed and paid for. Based on 2010–2013 [11] General Estimates System (GES) and FARS, the agency estimated that there were 5.5 million police-reported crashes annually in the U.S. during those years. About 33,020 fatalities and 2.7 million MAIS [12] 1–5 injuries were associated with these crashes annually. In addition, about 6.3 million vehicles were damaged in property damage only crashes. These property damage only vehicles were noted as PDOVs.

Overall, these crashes directly cost $195 billion to society in terms of lost productivity, medical costs, legal and court costs, emergency service costs (EMS), insurance administration costs, congestion costs, property damage, and workplace losses. When you add the cost for less-tangible consequences like physical pain or lost quality-of-life, we estimate the *total* costs for those crashes to be $721 billion.[13]

Because V2V is a communications-based technology, it is relevant to crashes where more than one vehicle is involved: if a single vehicle crashes by itself, like by losing control and leaving the roadway and hitting a tree, V2V would not have been able to help the driver avoid losing control because there would have been no other vehicle to communicate with. Of the 5.5 million crashes described above, 3.8 million (69 percent of all crashes) were multi-vehicle crashes that V2V-based warning technologies could help address, which would translate to approximately 13,329 fatalities, 2.1 million MAIS1–5 injuries, and 5.2 million PDOVs.

However, some multi-vehicle crashes involve vehicles that would not be covered by this rule, and therefore could not yet be assumed to have V2V capability. As this proposal is currently limited only to light vehicles,[14] the crash population encompasses approximately 3.4 million (62 percent of all crashes) light-vehicle to light-vehicle (LV2LV) crashes, which would translate to 7,325 fatalities, 1.8 million MAIS 1–5 injuries, and 4.7 million PDOVs. The economic and comprehensive costs for these crashes amount to approximately $109 billion and $319 billion, respectively. Figure II–1 helps to illustrate the process for deriving the target population of 3.4 million LV2LV crashes that could be addressed by this proposal. All percentages are percentages of ''all police-reported crashes,'' rather than percentages of the prior line.

[8] For more information, see the agency policy statement on automated vehicles at *http://www.nhtsa.gov/staticfiles/rulemaking/pdf/Automated_Vehicles_Policy.pdf* (last accessed Dec 7, 2016).

[9] See *https://www.nhtsa.gov/About-NHTSA/Press-Releases/nhtsa_iihs_commitment_on_aeb_03172016* (last accessed Dec 7, 2016).

[10] MAIS (Maximum Abbreviated Injury Scale) approach, which represents the maximum injury severity of an occupant at an Abbreviated Injury Scale (AIS) level. AIS is an anatomically based, consensus-derived global severity scoring system that classifies each injury by body region according to its relative importance to fatality on a 6-point ordinal scale (1=minor, 2=moderate, 3=serious, 4=severe, 5=critical, and 6=maximum (untreatable). The AIS was developed by the Association for the Advancement of Automotive Medicine (AAAM). See *https://www.aaam.org/abbreviated-injury-scale-ais/* (last accessed Dec 7, 2016) for more information.

[11] 2014 GES and FARS data was not available at the time of NPRM development.

[12] GES and FARS only record the police-reported crash severity scale known as KABCO: K=fatal injury, A=incapacitating injury, B=non-incapacitating injury, C=possible injury, O=no injury. These KABCO injuries then were converted to MAIS scale through a KABCO–MAIS translator. The KABCO–MAIS translator was established using 1982–1986 NASS (old NASS) and 2000–2007 Crashworthiness Data System (CDS). Old NASS and CDS recorded both KABCO and MAIS scales thus enable us to create the KABCO-translator.

[13] Costs are in 2014 dollars and, for clarity, include the economic costs. *See* Blincoe, L.J., Miller, T.R., Zaloshnja, E., & Lawrence, B.A. (2014, May), *The economic and societal impact of motor vehicle crashes, 2010,* (Report No. DOT HS 812 013), Washington, DC: National Highway Traffic Safety Administration (Revised, May, 2015), available at: *http://www-nrd.nhtsa.dot.gov/pubs/812013.pdf* (last accessed Dec 7, 2016).

[14] Light vehicles include passenger cars, vans, minivans, sport utility vehicles, crossover utility vehicles and light pickup trucks with a gross vehicle weight rating (GVWR) less than or equal to 10,000 pounds.

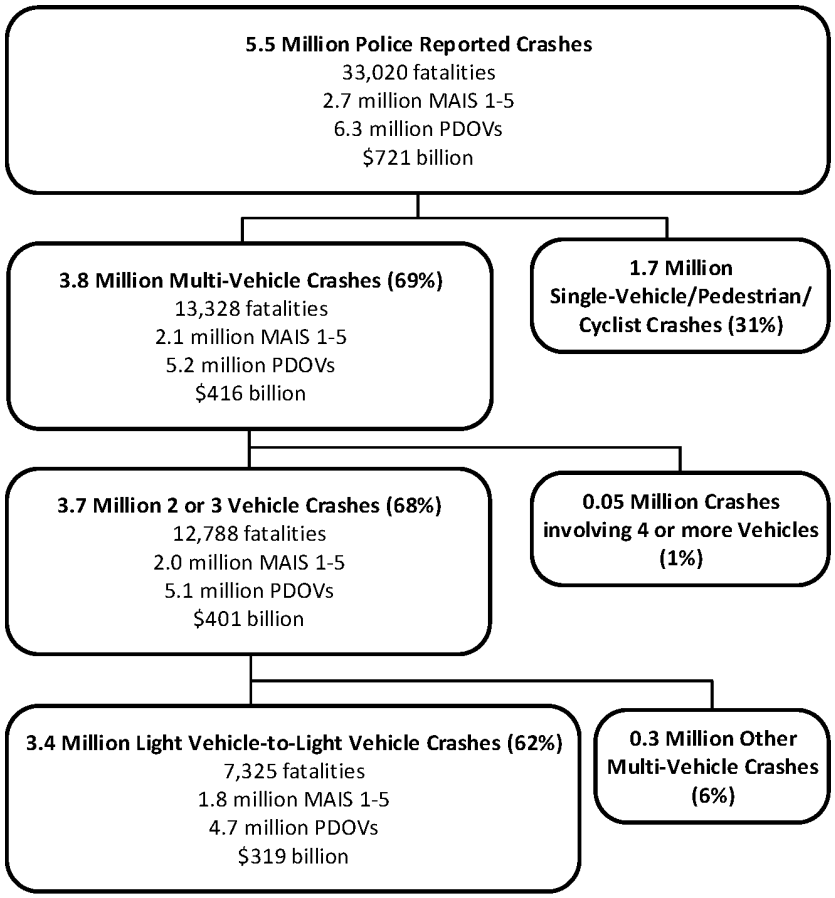


Figure II-1 Crash Population Breakdown for V2V Technology

2. Pre-Crash Scenarios Potentially Addressed by V2V Communications

In a separate analysis that has been updated using an average of 2010 through 2013 General Estimate System data (which does not include FARS data), the agency started with the initial 37 pre-crash scenarios that have been defined based on police-reported crashes from previous analyses for all crashes.[15] Of the 37 scenarios, 17 were deemed potentially addressable by V2V communications. Further statistical analysis focusing on the frequency and severity of those 17 pre-crash scenarios identified the top 10 (priority) pre-crash scenarios that V2V could potentially address. Table II–1 provides a graphical depiction of the flow of the pre-crash scenario breakdown used in the analysis.

TABLE II—1 37 PRE-CRASH SCENARIO TYPOLOGY

1. Vehicle Failure.
2. Control Loss with Prior Vehicle Action.
3. Control Loss without Prior Vehicle Action.
4. Running Red Light.
5. Running Stop Sign.
6. Road Edge Departure with Prior Vehicle Maneuver.
7. Road Edge Departure without Prior Vehicle Maneuver.
8. Road Edge Departure While Backing Up.
9. Animal Crash with Prior Vehicle Maneuver.
10. Animal Crash without Prior Vehicle Maneuver.

TABLE II—1 37 PRE-CRASH SCENARIO TYPOLOGY—Continued

11. Pedestrian Crash with Prior Vehicle Maneuver.
12. Pedestrian Crash without Prior Vehicle Maneuver.
13. Pedalcyclist Crash with Prior Vehicle Maneuver.
14. Pedalcyclist Crash without Prior Vehicle Maneuver.
15. Backing Up into Another Vehicle.
16. Vehicle(s) Turning—Same Direction.
17. Vehicle(s) Parking—Same Direction.
18. Vehicle(s) Changing Lanes—Same Direction.
19. Vehicle(s) Drifting—Same Direction.
20. Vehicle(s) Making a Maneuver—Opposite Direction.
21. Vehicle(s) Not Making a Maneuver—Opposite Direction.
22. Following Vehicle Making a Maneuver.
23. Lead Vehicle Accelerating.
24. Lead Vehicle Moving at Lower Constant Speed.
25. Lead Vehicle Decelerating.
26. Lead Vehicle Stopped.
27. Left Turn Across Path from Opposite Directions at Signalized Junctions.
28. Vehicle Turning Right at Signalized Junctions.
29. Left Turn Across Path from Opposite Directions at Non-Signalized Junctions.
30. Straight Crossing Paths at Non-Signalized Junctions.

[15] Najm, W.G., R. Ranganathan, G. Srinivasan, J. Smith, S. Toma, E. Swanson, and A. Burgett, "*Description of Light Vehicle Pre-Crash Scenarios for Safety Applications Based on Vehicle-to-Vehicle Communications.*" DOT HS 811 731, U.S. Department of Transportation, National Highway Traffic Safety Administration, May 2013. *http://www.nhtsa.gov/Research/Crash-Avoidance/Vehicle%E2%80%93to%E2%80%93Vehicle-Communications-for-Safety* (last accessed Dec 8, 2016) *see also* Najm, W.G., J. Smith, and M. Yanagisawa, "*Pre-Crash Scenario Typology for Crash Avoidance Research.*" DOT HS 810 767, U.S. Department of Transportation, National Highway Traffic Safety Administration, April 2007. Najm, W.G., B. Sen, J.D. Smith, and B.N. Campbell, "*Analysis of Light Vehicle Crashes and Pre-Crash Scenarios Based on the 2000 General Estimates System.*" DOT HS 809 573, U.S. Department of Transportation, National Highway Traffic Safety Administration, November 2002. Available at *http://www.nhtsa.gov/Research/Crash-Avoidance/Vehicle%E2%80%93to%E2%80%93Vehicle-Communications-for-Safety* (last accessed Dec 8, 2016).

TABLE II—1 37 PRE-CRASH SCENARIO TYPOLOGY—Continued

31. Vehicle(s) Turning at Non-Signalized Junctions.
32. Evasive Action with Prior Vehicle Maneuver.

TABLE II—1 37 PRE-CRASH SCENARIO TYPOLOGY—Continued

33. Evasive Action without Prior Vehicle Maneuver.
34. Non-Collision Incident.
35. Object Crash with Prior Vehicle Maneuver.

TABLE II—1 37 PRE-CRASH SCENARIO TYPOLOGY—Continued

36. Object Crash without Prior Vehicle Maneuver.
37. Other.

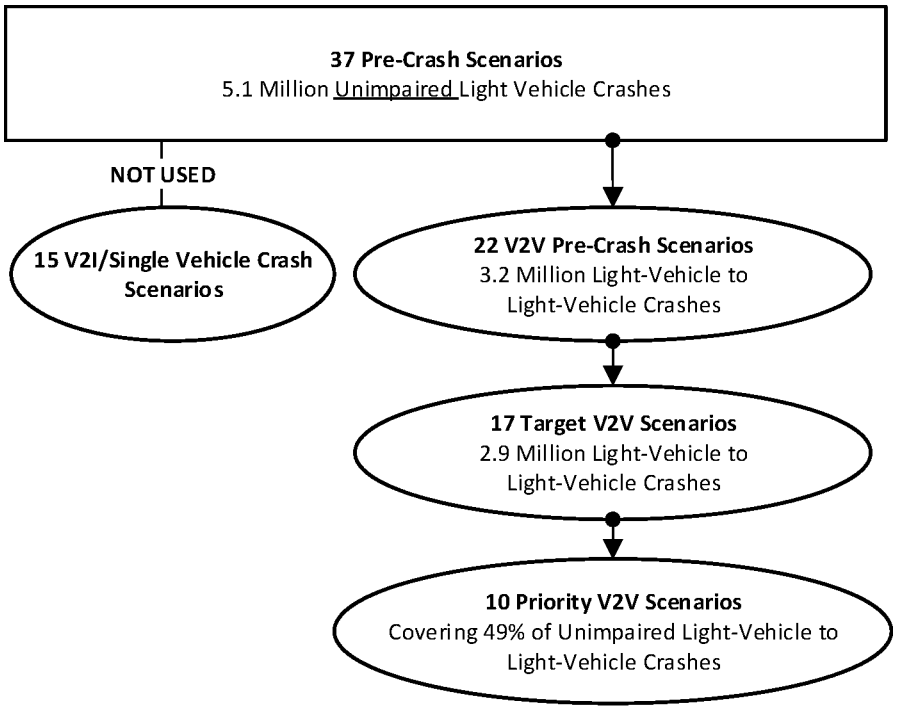


Figure II-2 V2V Pre-Crash Scenario Breakdown[16]

The 10 priority pre-crash scenarios listed in Table II–2 can be addressed by the corresponding V2V-based safety applications.

TABLE II–2—PRE-CRASH SCENARIO/SAFETY APPLICATION ASSOCIATION

Pre-crash scenarios	Pre-crash groups	Associated safety application
Lead Vehicle Stopped	Rear-end	Forward Collision Warning.
Lead Vehicle Moving	Rear-end	Forward Collision Warning.
Lead Vehicle Decelerating	Rear-end	Forward Collision Waring/Emergency Electronic Brake Light.
Straight Crossing Path @ Non Signal.	Junction Crossing	Intersection Movement Assist.
Left-Turn Across Path/Opposite Direction.	Left Turn @ crossing	Left Turn Assist.
Opposite Direction/No Maneuver	Opposite Direction	Do Not Pass Warning.
Opposite Direction/Maneuver	Opposite Direction	Do Not Pass Warning.
Change Lanes/Same Direction	Lane Change	Blind Spot/Lane Change Warning.
Turning/Same Direction	Lane Change	Blind Spot/Lane Change Warning.
Drifting/Same Direction	Lane Change	Blind Spot/Lane Change Warning.

The six applications listed in Table II–2 were developed and tested in the Connected Vehicle Safety Pilot Model Deployment.[17] These safety warning applications were (1) Forward Collision Warning (FCW), (2) Emergency Brake

[16] Average of 2010–2013–GES data; * Includes only 2&3 vehicle crashes; ** Includes running red-light and running stop sign.

[17] The Connected Vehicle Safety Pilot (''Safety Pilot'') Program was a scientific research initiative that features a real-world implementation of connected vehicle safety technologies, applications, and systems using everyday drivers. The effort will test performance, evaluate human factors and usability, observe policies and processes, and collect empirical data to present a more accurate, detailed understanding of the potential safety benefits of these technologies. The Safety Pilot program includes two critical test efforts—the Safety Pilot Driver Clinics and the Safety Pilot Model Deployment. See *http://www.its.dot.gov/research_archives/safety/cv_safetypilot.htm* for more information. (last accessed Dec 7, 2016).

Light (EEBL), (3) Intersection Move Assist (IMA), (4) Left Turn Assist (LTA), (5) Do Not Pass Warning (DNPW), and (6) Blind Spot/Lane Change Warning (BS/LCW). A description of each safety application and relationship to the pre-crash scenarios is provided below.

(1) Forward Collision Warning (FCW): Warns drivers of stopped, slowing, or slower vehicles ahead. FCW addresses rear-end crashes that are separated into three key scenarios based on the movement of lead vehicles: Lead-vehicle stopped (LVS), lead-vehicle moving at slower constant speed (LVM), and lead-vehicle decelerating (LVD).

(2) Emergency Electronic Brake Light (EEBL): Warns drivers of heavy braking ahead in the traffic queue. EEBL would enable vehicles to broadcast its emergency brake and allow the surrounding vehicles' applications to determine the relevance of the emergency brake event and alert the drivers. EEBL is expected to be particularly useful when the driver's visibility is limited or obstructed.

(3) Intersection Movement Assist (IMA): Warns drivers of vehicles approaching from a lateral direction at an intersection. IMA is designed to avoid intersection crossing crashes, the most severe crashes based on the fatality counts. Intersection crashes include intersection, intersection-related, driveway/alley, and driveway access related crashes. IMA crashes are categorized into two major scenarios: Turn-into path into same direction or opposite direction and straight crossing paths. IMA could potentially address five of the pre-crash scenarios identified in Table II–2.

(4) Left Turn Assist (LTA): Warns drivers to the presence of oncoming, opposite-direction traffic when attempting a left turn. LTA addresses crashes where one involved vehicle was making a left turn at the intersection and the other vehicle was traveling straight from the opposite direction.

(5) Do Not Pass Warning (DNPW): Warns a driver of an oncoming, opposite-direction vehicle when attempting to pass a slower vehicle on an undivided two-lane roadway. DNPW would assist drives to avoid opposite-direction crashes that result from passing maneuvers. These crashes include head-on, forward impact, and angle sideswipe crashes.

(6) Blind Spot/Lane Change Warning (BS/LCW): Alerts drivers to the presence of vehicles approaching or in their blind spot in the adjacent lane. BS/LCW addresses crashes where a vehicle made a lane changing/merging maneuver prior to the crashes.

The final table, Table II–3, merges the estimated target crash population for LV2LV crashes detailed in Table II–2 with the separate analysis that provided the breakdown of V2V pre-crash scenarios and relationships to prototype V2V safety applications. The 3.4 million LV2LV are distributed among the pre-crash scenarios that are associated with V2V safety applications and the economic and comprehensive costs. More specifically, Table II–3 provides a breakdown of crashes associated with FCW, IMA, LTA, and LCW scenarios that are used later when discussing potential benefits in Section VII. Crash scenarios associated with DNPW and EEBL are grouped with all remaining crashes under the ''other'' category due to the fact they are not used when discussing benefits. The agency grouped these two potential applications into the ''other'' category because of EEBL's advisory nature that cannot be directly attributed to avoiding a specific crash and the agency's current understanding of DNPW indicates it only addresses a limited amount of crashes per a specific situation and where there are three equipped vehicles present, limiting the amount of information available to develop comprehensive effectiveness estimates.

Overall the agency estimates that, together, these four potential safety applications that could be enabled by this proposal could potentially address nearly 89 percent of LV2LV crashes and 85 percent of their associated economic costs.

TABLE II–3—CRASH SCENARIOS FOR LV2LV SAFETY POPULATION

V2V Safety applications—crashes	Crash scenarios	Crashes	MAIS 1–5 injuries	Fatalities	PDOVs	Economic costs (billion)	Comprehensive costs (billion)
FCW Rear-End Crashes	Lead Vehicle Stopped	998,664	497,907	242	68,508	$27.4	$65.7
	Lead Vehicle Moving	146,247	80,508	242	12,605	$4.6	$12.9
	Lead Vehicle Decelerating.	343,183	173,538	78	25,599	$9.5	$23.1
	Total	1,488,094	751,953	562	106,712	$41.5	$101.6
IMA Intersection Crossing Crashes.	Turn-Into Path, Into Same Direction or Opposite Direction.	425,145	218,852	472	48,423	$12.6	$34.8
	Straight Cross Path	346,187	251,488	1,399	66,580	$14.4	$49.4
	Total	771,332	470,340	1,871	115,003	$26.9	$84.3
LTA Left-Turning Crashes.	Turn Across Path, Initial Opposite Direction.	298,542	224,336	613	64,233	$11.7	$37.9
BS/LCW Lane Change/Merge Crashes.	Vehicle Changing Lane, Same Direction.	475,097	175,044	397	20,816	$11.4	$26.6
Others		378,659	192,152	3,882	4,416,890	$16.7	$66.4
Total		3,411,724	1,813,825	7,325	4,723,654	$108.2	$316.8

Note: Due to rounding, the total might not be equal to the sum of each component.

B. Ways To Address the Safety Need

The most effective way to reduce or eliminate the property damage, injuries, and fatalities that occur annually from motor vehicle crashes is to lessen the severity of those crashes, or prevent those crashes from ever occurring. In recent years, vehicle manufacturers have begun to offer, or have announced plans to offer, various types of crash avoidance technologies that are

designed to do just that. These technologies are designed to address a variety of crashes, including rear end, lane change, and intersection.

1. Radar and Camera Based Systems

Many of the advanced crash avoidance technologies currently available in the marketplace employ on-board sensor technologies such as cameras, RADAR, or LIDAR, to monitor the vehicles' surroundings.[18] These technologies are what we call ''vehicle-resident'' systems because they are systems installed on one vehicle and, unlike V2V, do not communicate with other vehicles. Cameras, RADAR, and LIDAR that are installed on the vehicle can gather information directly by sensing their surroundings, and vehicle-resident crash avoidance technologies can use that information to warn the driver of impending danger so the driver can take appropriate action to avoid or mitigate a crash. Crash scenarios that can currently be addressed by existing crash avoidance technologies include, but are not limited to, Forward Collision Warning (FCW),[19] Blind Spot Warning (BSW), and Lane Change Warning (LCW).[20] Additionally, some crash-predicting safety applications leveraging these existing sensing technologies are beginning to emerge and NHTSA is aggressively pursuing those technologies that demonstrate safety benefits.

Vehicle-resident systems can be highly effective in mitigating certain crash types, although their performance varies by sensor type, and is limited in certain situations. Perception range varies from 10 meters to 200 meters for LIDAR and 77 GHz radar, respectively, while field-of-view ranges from 18 degrees to 56 degrees for 77 GHz radar and 24 GHz radar,[21] respectively. On-board sensors can also exhibit reduced reliability in certain weather conditions (*e.g.,* snow, fog, and heavy rain), and camera systems, in particular, can exhibit reduced performance when encountering lighting transitions and shadows. Most if not all current sensing technologies are susceptible to performance reductions through foreign objects such as dirt or snow. For camera-based systems, some manufacturers have implemented devices that attempt to keep the camera clear for maximal operation. Both sensor types can be vulnerable to misalignment or damage over time. On-board sensors do, however, perform reliably in ''urban canyons'' and other situations in which a clear view of the sky is not needed.

2. Communication-Based Systems

Devices enabling vehicles to communicate with one another or with road-side equipment and/or infrastructure have been prototyped and tested in field operational tests like the Safety Pilot Model Deployment. These devices, when eventually developed for mass production, could be fully integrated into a vehicle when manufactured, or could be standalone aftermarket units not restricted to a single vehicle. These devices offer varying degrees of functionality, but all are designed to communicate safety information to help mitigate crashes.

Safety information that can help mitigate crashes includes data elements like vehicle position, heading, speed, and so forth—data elements that could help a computer-based safety application on a vehicle calculate whether it and another vehicle were in danger of crashing without driver intervention. These pieces of information are collected into what is known as a ''Basic Safety Message,'' or ''BSM.'' In a fully-integrated vehicle communication system, the system is built into the vehicle during production, and consists of a general purpose processor and associated memory, a radio transmitter and transceiver, antennas, interfaces to the vehicle's sensors, and a GPS receiver. It generates the BSM using in-vehicle information obtained from the vehicle's on board sensors. An integrated system can both transmit and receive BSMs, and can process the content of received messages to provide advisories and/or warnings to the driver of the vehicle in which it is installed. Since the vehicle data bus provides a rich data set, integrated systems have the potential to obtain information that could indicate driver intent, which can help inform safety applications such as Left Turn Assist (LTA),[22] Do Not Pass Warning (DNPW),[23] and BSW/LCW safety applications, all of which can benefit from, or require, information on turn signal status or steering wheel angle.

Aftermarket devices, which are added to a vehicle after its assembly, can vary significantly from both fully-integrated vehicle communication systems, and from one another. The simplest designs may only transmit (and not also receive) a BSM, may only connect to a power source and otherwise operate independently from the systems in the vehicle, and may not run safety applications or provide advisories/warnings to a driver.[24] More sophisticated options may have the ability to both receive and transmit a BSM to nearby vehicles, may connect to the vehicle data bus (similar to fully integrated devices), and may contain safety applications that can provide advisories/warnings to the driver. Depending on the type of aftermarket device, different data elements may or may not be available. This may limit what safety applications can be supported. For example, a device that does not connect to a vehicle data bus may support FCW, but without having access to turn signal information, may not be able to support LTA.

Regardless of whether they are integrated or aftermarket, all communication-based systems are designed to, at a minimum; transmit BSM information such as vehicle position and heading to nearby vehicles. That information may be transmitted using various communication methods—like cellular, Wi-Fi, satellite radio, or dedicated short-range communication (DSRC)—each of which has its own advantages and disadvantages. At this time, DSRC is the only mature communication option that meets the latency requirements to support vehicle communication based crash avoidance, although future V2V standards may also meet the latency requirements.

Cellular networks currently offer fairly widespread coverage throughout the nation and are continuing to expand; however, there are still areas (dead spots) where cellular service is

[18] A LIDAR device detects distant objects and determines their position, velocity, or other characteristics by analysis of pulsed laser light reflected from their surfaces. Lidar operates on the same principles as radar and sonar.

[19] FCW warns the driver of an impending rear-end collision with a vehicle ahead in traffic in the same lane and direction of travel.

[20] BSW and LCW technologies warn the driver during a lane change attempt if the zone into which the driver intends to switch to is, or will soon be, occupied by another vehicle traveling in the same direction. The technology also provides the driver with advisory information that a vehicle in an adjacent lane is positioned in his/her vehicle's ''blind spot'' zone even when a lane change is not being attempted.

[21] ''Vehicle-to-Vehicle Communications: Readiness of V2V Technology for Application'', August 2014, pp. 105.

[22] LTA warns the driver of a vehicle, when entering an intersection, not to turn left in front of another vehicle traveling in the opposite direction. LTA applications currently trigger only when the driver activates the turn signal.

[23] DNPW warns the driver of a vehicle during a passing maneuver attempt when a slower-moving vehicle, ahead and in the same lane, cannot be safely passed using a passing zone that is occupied by vehicles travelling in the opposite direction. The application may also provide the driver an advisory warning that the passing zone is occupied when a passing maneuver is not being attempted.

[24] Such a device could still be useful to users, because it would alert other drivers to the presence of their vehicle (*i.e.,* it would help them be ''seen better'').

not available. And, although the advancement of long-term evolution (LTE) technology is helping to deliver large amounts of data to cellular users more quickly, transmission rates slow down if a user is moving or is in a high-capacity area with many other LTE users. While many new vehicles today already are equipped with cellular capability, this communication method could possibly introduce security risks, such as cyberattacks or privacy concerns,[25] and high costs stemming from cellular data costs and fitting new vehicles with cellular capability.

Wi-Fi technology offers generally higher data rates than the other options, but because of its intrinsic design for stationary terminals, and the need for a vehicle to provide its MAC (media access control) address, and obtain the MAC address of all other vehicles in a Wi-Fi hotspot before it can send communications, transmission rates are significantly reduced if a user is moving. Cost concerns and potential security risks for Wi-Fi are similar to those for cellular communication.[26]

Satellite radio, or Satellite Digital Audio Radio Service (SDARS), uses satellites to provide digital data broadcast service nearly nationwide (across approximately 98% of the U.S. land mass—fundamentally not covering Alaska and Hawaii and covering the southern parts of Canada and northern parts of Mexico. Data download time for satellite communication, however, is slow compared to the other communication options which limits its capability to ''back office'' type communications versus actual vehicle to vehicle safety communications, and the costs and security risks associated with cellular and Wi-Fi communication also apply to satellite.[27]

DSRC is a two-way short-range wireless technology that provides local, nearly instantaneous network connectivity and message transmission. It has a designated licensed bandwidth to permit secure, reliable communication, and provides very high data transmission rates in high-speed vehicle mobility conditions which are critical characteristics for detecting potential and imminent crash scenarios.[28] Cost concerns and potential security risks are also inherent to DSRC technology.

In this NPRM, the proposal would require V2V communication to use DSRC devices to transmit messages about a vehicle's speed, heading, braking status, etc. to surrounding vehicles, as well as to receive comparable information from surrounding vehicles. As DSRC is based on radio signals, which are omnidirectional (*i.e.,* offer 360 degrees of coverage), V2V offers the ability to ''see'' around corners and ''see'' through other vehicles. Consequently, V2V is not restricted by the same line-of-sight limitations as crash avoidance technologies that rely on vehicle-resident sensors. V2V also offers an operational range of 300 meters, or farther, between vehicles, which is nearly double the detection distance afforded by some current and near-term vehicle-resident systems. These unique characteristics allow V2V-equipped vehicles to perceive and warn drivers of some threats sooner than current vehicle-resident sensors can. The proposal would also allow vehicles to comply using non-DSRC technologies that meet certain performance and interoperability standards.

V2V is subject to the current limitations of GPS technology. This includes accuracy levels that are perceived to be only sufficient for warning applications vs. control applications such as automatic braking. The GPS dependency also poses challenges where sky visibility is limited (*e.g.,* under bridges, in tunnels, in areas of heavy foliage, and in highly dense urban areas). Some of these issues, however, can be resolved through techniques such as ''dead-reckoning.'' [29] V2V also requires that a significant number of vehicles be equipped with V2V technology to realize the effectiveness of the system, and similarly, whereas vehicle-resident sensors can ''see'' stop signs and traffic lights (and use that information to slow or stop the vehicle), the infrastructure also would need to be able to send messages to V2V-equipped vehicles if V2V was to have similar capability.

3. Fusion of Vehicle-Resident and Communication-Based Systems

Both vehicle-resident and communication-based safety systems have certain strengths and limitations, and as such, NHTSA and many commenters to the ANPRM, like the Automotive Safety Council, Hyundai Motor Group, IIHS, Motor & Equipment Manufacturers Association, and Volvo Cars, believe that combining (''fusing'') communication-based systems with vehicle-resident crash avoidance systems to exploit the functionality of both system types presents a significant opportunity. Given the proposed V2V system, we are confident that the technology could be easily combined with other vehicle-resident crash avoidance systems to enhance the functionality of both types of systems. Together, the two systems can provide even greater benefits than either system alone.

For vehicles equipped with current on-board sensors, V2V can offer a fundamentally different, but complementary, source of information that can significantly enhance the reliability and accuracy of the information available. Instead of relying on each vehicle to sense its surroundings on its own, V2V enables surrounding vehicles to help each other by reporting safety information to each other. V2V communication can also detect threat vehicles that are not in the sensors' field of view, and can validate a return from a vehicle-based sensor. This added capability can potentially lead to improved warning timing and a reduction in the number of false warnings, thereby adding confidence to the overall safety system, and increasing consumer satisfaction and acceptance. Similarly, vehicle-resident systems can augment V2V systems by providing the information necessary to address other crash scenarios not covered by V2V communications, such as lane and road departure. These systems can work collectively to advance motor vehicle safety, as was further evidenced in the comments submitted by the Automotive Safety Council and IIHS.

The Automotive Safety Council commented that, in addition to the safety advantages from increased sensing range and the environment use cases, V2V also offers advantages with respect to operation status (*e.g.,* brake pedal status, transmission state, stability control status, vehicle at rest versus moving, etc.) IIHS suggested that whereas current FCW systems are designed to operate off the deceleration of the vehicle directly ahead, V2V could permit communication with all vehicles ahead in the lane of travel, thus warning all vehicles, not just those equipped with FCW, of the eminent need to slow down or stop.

IIHS contended, however, that onboard sensing systems may evolve during the time it will take V2V to penetrate the fleet, potentially to the

[25] BAH CDDS Final Report. See Docket No. NHTSA–2014–0022.

[26] BAH CDDS Final Report. See Docket No. NHTSA–2014–0022.

[27] ''Organizational and Operational Models for the Security Credentials Management System (SCMS); Industry Governance Models, Privacy Analysis, and Cost Updates,'' dated October 23, 2013, prepared by Booz Allen Hamilton under contract to DOT, non-deliberative portions of which may be viewed in docket: NHTSA–2014–0022.

[28] Report and Order FCC–03–0324.

[29] The process of calculating one's position, especially at sea, by estimating the direction and distance traveled rather than by using landmarks, astronomical observations, or electronic navigation methods.

point where they have similar ranges to V2V transmissions, such that it may be difficult to quantify how much V2V will reduce collision frequency and severity beyond the capabilities of sensor-based systems. Along similar lines, the Automotive Safety Council countered some of its earlier comments by stating that ''it is possible that DSRC technology may be obsolete before the safety goals of V2V systems are realized'' such that it may be a better approach to pursue the installation of well-tested, standalone technologies that are currently available.

The agency appreciates the commenters' views on the co-existence of the technologies with varying capability and expressing support for the agency's approach in this proposal. We do disagree, however, with the comments indicating that V2V should not be pursued because onboard sensing systems exist in the marketplace. The agency views these technologies as complementary and not competing. Providing a data rich information environment should, most likely, enable more capability to enhance vehicle safety.

The agency requests comments its views concerning the potential of fusing connected and vehicle-resident technologies. In particular, the agency requests comment on what specific applications could use both technologies to enhance safety. The agency also seeks comment on whether an if-equipped option for V2V would be preferable, given the development of vehicle-resident technologies.

4. Automated Systems

Automated systems perform at least some aspects of a safety-critical control function (*e.g.,* steering, throttle, or braking) automatically—without direct input by a human driver. Examples of automated systems include Crash Imminent Braking (CIB) and Dynamic Brake Support (DBS). These systems are designed, respectively, to automatically apply the vehicle's brakes if the human driver does not respond at all to warnings that are provided, or to supplement the human driver's braking effort if the driver's response is determined (by the system) to be insufficient, in order to mitigate the severity of a rear-end crash, or to avoid it altogether.

Although many automated systems currently rely on data obtained from on-board sensors and cameras to judge safety-critical situations and respond with an appropriate level of control, data acquired from GPS and telecommunications like V2V could significantly augment such systems, since, as mentioned previously, vehicle communication-based systems, like V2V, are capable of providing warnings in several scenarios where vehicle-based sensors and cameras cannot (*e.g.,* vehicles approaching each other at intersections).[30] Honda Motor Col, Ltd commented that ''. . . the ability of vehicles to directly communicate with one another will greatly assist in the ability to safety and effectively deploy'' higher-level driver assistance and automated technologies in Honda vehicles. Along similar lines, Meritor WABCO and the Automotive Safety Council both mentioned that V2V safety applications with warning capability will enhance current active safety systems, but should not be considered a replacement for them.

Systems Research Associates, Inc. stated that ''it is irrefutable that V2V, V2I, and V2P communications will be absolutely critical to the successful development of self-driving vehicles that can avoid collisions, navigate responsibly, and achieve a transport objective efficiently and in a timely manner.'' Similarly, IEEE USA commented that V2V can provide the trusted map data and situation awareness messages necessary for innovative safety functions, and support the flow of traffic with self-driving cars.

Other commenters, including Robert Bosch LLC and Motor & Equipment Manufacturers Association expressed that V2V data should serve as a supplemental input in developing automated vehicles, but cautioned the agency that vehicles should not have an external, V2V exclusive infrastructure and communication medium dependency. This approach may unnecessarily limit the adoption or implementation of automated systems. Furthermore, the Automotive Safety Council commented that ''V2V should be considered as one of the supporting sensor sets for automated vehicle applications, where it can augment the information available to the vehicle about the surrounding environment'' by increasing the range and/or reliability of data from sensors, but it is ''. . . not sufficient alone as a sensor to support automated vehicles nor a technology that will inhibit the development of automated applications. In order to ensure robust decisions for autonomous functions, sensing redundancy at the vehicle level may still be required to meet functional safety requirements, and/or for functions where the V2V technology is not capable of providing the necessary data or inputs to the vehicle.''

Competitive Enterprise Institute expressed concerns that a V2V mandate may harm vehicle automation efforts. The company cited Google and Bosch's ability to develop vehicle automation systems that use onboard sensors and computers to map vehicle surroundings in real-time and make direction decisions without widespread vehicle-to-vehicle connectivity as reason to suggest that V2V is unnecessary for full-scale automation. The company also commented that if automated systems were required to interact with V2V under a new Standard, this would generate ''large and as yet uncontemplated cybersecurity, crash, and products liability risks.'' Similarly, the Automotive Safety Council commented that the security system described in the V2V Readiness report ''does not provide sufficient protection against all abuse of the V2V system'' in the event that active safety applications which leverage the V2V infrastructure, are considered in the future. The group suggested that because ''the data fed into the DSRC device from the vehicle sensors is not cryptographically protected,'' an attacker ''could simply feed a DSRC device bad data, which is subsequently cryptographically signed using the proposed PKI system and transmitted to nearby vehicles.'' The Automotive Safety Council suggested that this could allow an attacker to ''cause a vehicle to rapidly swerve off the road to avoid a collision with a car that does not exist in reality but was interpreted to exist'' because the vehicle received false, but cryptographically signed and thus trusted, data from a nearby malicious vehicle.

QUALCOMM Incorporated maintained an opposing position to Competitive Enterprise Institute and the Automotive Safety Council. The company commented that, ''while it is possible to implement a certain level of vehicle automation . . . without V2V, V2V can enhance the overall reliability and coverage of autonomous vehicle technology.'' Consequently, the company contended that there is no conflict between the deployment of DSRC and automated vehicles, and further suggested that the two technological advances should be pursued simultaneously so that the additional safety benefits offered by DSRC can penetrate the fleet and be realized in both autonomous and non-autonomous vehicles. Overall, this approach is aligned with the agency's view that V2V is complementary, and not competing, with automated vehicle deployment.

The agency requests comment on the interplay between V2V and autonomous technologies.

C. V2V Research Up Until This Point

1. General Discussion

The U.S. Department of Transportation, along with other research partners in State DOTs, academia, and industry, has been evaluating how to incorporate communication technology into transportation infrastructure since the mid-1980s, in order to improve transportation (particularly on-road vehicle) safety, mobility, and emissions. That broad research topic is generally referred to as ''intelligent transportation systems'' or ''ITS.'' V2V research developed out of ITS research in the mid-2000s, when NHTSA and CAMP began to look at the potential for DSRC as a vehicle communication technology, for the purpose of warning drivers of imminent crash risks in time to avoid them. NHTSA's decision to begin the rulemaking process to require V2V communications capability on new light vehicles thus represented the culmination of several decades of research by government and industry to develop this communications technology for vehicles from the ground up. In the interest of brevity, NHTSA refers readers to the V2V Readiness Report for a summary of the history of ITS research and NHTSA's work with CAMP and other partners prior to 2014.[31]

One element of the V2V research that took place prior to 2014 is the Safety Pilot Model Deployment. The Model Deployment was the culmination of the V2V research that had taken place in prior years. Using the Model Deployment, DOT deployed prototype V2V DSRC devices on real roads with real drivers that interacted for over a year and provided the data that allowed DOT to evaluate the functional feasibility of V2V under real world conditions.

The Model Deployment was conducted in Ann Arbor, Michigan, and ran from August 2012 to February 2014. Sponsored by DOT and conducted by the University of Michigan Transportation Research Institute, the experiment was designed to support evaluation of the functionality of V2V technology. Approximately 2,800 vehicles—a mix of cars, trucks, and transit vehicles operating on public streets within a highly concentrated area—were equipped with integrated in-vehicle safety systems, aftermarket safety devices, or vehicle awareness devices, all using DSRC to emit wireless signals of vehicle position and heading information. Vehicles equipped with integrated in-vehicle or aftermarket safety devices have the additional design functionality of being able to warn drivers of an impending crash situation involving another equipped vehicle.

Data collected during the Model Deployment was used to support an evaluation of functionality of the V2V safety applications used in the Model Deployment—in effect, *whether* the prototypes and the system worked, but not necessarily *how well* they worked. Overall, the Model Deployment demonstrated that V2V technology can be deployed in a real-world driving environment. The experimental design was successful in creating naturalistic interactions between DSRC-equipped vehicles that resulted in safety applications issuing warnings in the safety-critical driving scenarios that they were designed to address. The data generated by warning events indicated that all the devices were interoperable, meaning that they were successfully communicating with each other.

The Model Deployment was the first and largest test of V2V technology in a real-world environment. The Model Deployment was a key step in understanding whether the technology worked, the potential of this technology to help avoid crashes, and increase the vehicle safety.

Besides explaining the history of the research that led to NHTSA's decision to initiate rulemaking to require V2V communications capability, the Readiness Report also described NHTSA's understanding of the current state of the research in mid-2014, and identified a number of areas where additional research could be necessary either to develop mandatory requirements for new vehicles equipped with DSRC, or to further develop information needed to inform potential future requirements for DSRC-based safety applications. The following sections summarize the agency's research-based findings in the Readiness Report; list the areas where the agency identified additional research as necessary; and explain the status of research conducted since the Readiness Report in response to those identified research needs.

2. Main Topic Areas in Readiness Report

Based on the agency's research and thinking at the time of issuance, the V2V Readiness Report comprehensively covered several key topic areas:

- What the safety need is that V2V can address, and how V2V addresses it;
- The legal and policy issues associated with requiring V2V for light vehicles, the secure operation of the technology, and the implications of these issues for privacy;
- A description of the technology required for V2V capability, the different types of devices, and the security needed for trusted communications; and
- Based on preliminary data, how much the technology may be expected to cost (both for purchasers of new vehicles, and for the entities who develop and build out the security and communications networks, in terms of initial capital investments), and the potential effectiveness (and thus, benefits) of certain V2V-based safety applications at helping drivers avoid crashes.

(a) Key Findings of Readiness Report

The Readiness Report listed the key findings of the research up to that point, as follows:

- V2V (specifically, DSRC) devices installed in light vehicles as part of the Safety Pilot Model Deployment were able to transmit and receive messages from one another, with a security management system providing secure communications among the vehicles during the Model Deployment. This was accomplished with relatively few problems given the magnitude of this first-of-its-kind demonstration project.
- The V2V devices tested in the Model Deployment were originally developed based on existing communication protocols found in voluntary consensus standards from SAE and IEEE. NHTSA and its research partners participating in the Model Deployment (*e.g.,* its vehicle manufacturers and device suppliers) found that the standards did not contain enough detail as-is and left too much room for interpretation to achieve interoperability. They therefore developed additional protocols that enabled interoperability between devices participating in the study. The valuable interoperability information learned during the execution of Model Deployment is planned to be included in future versions of voluntary consensus standards that would support a larger, widespread technology roll-out.
- As tested in the Model Deployment, safety applications enabled by V2V, examples of which include IMA, FCW, and LTA, have proven effective in mitigating or preventing potential crashes, but the agency recognized that additional refinement to the prototype safety applications used in the Model Deployment would be needed before minimum performance standards could

[31] *See* Section II.B of the Readiness Report, available at *http://www.safercar.gov/v2v/* (last accessed Dec 7, 2016).

be finalized and issued.[32] Based on the agency's understanding of how these prototype safety applications operate, preliminary effectiveness estimates in the Readiness Report indicated substantial ability to mitigate crashes, injuries or fatalities in these crash scenarios. Also, the agency concluded that some safety applications could be better tailored to the safety problem that they are intended to solve (*e.g.,* LTA applications currently trigger only when the driver activates the turn signal, but many drivers do not always activate their turn signals in dedicated turn lanes).

• The agency has the legal authority to mandate V2V (specifically, DSRC) devices in new light vehicles, and could also require them to be installed in commercial vehicles already in use on the road if we also required them for new medium and heavy duty vehicles. The agency also has the authority to mandate safety applications that are V2V-based, and to work with an outside entity to develop the security and communications infrastructures needed to support deployment of V2V technologies in motor vehicles.

• Based on preliminary information used for the report, NHTSA estimated that the V2V equipment and supporting communications functions (including a security management system) would cost approximately $341 to $350 per vehicle in 2020, and it is possible that the cost could decrease to approximately $209 to $227 by 2058, as manufacturers gain experience producing this equipment (the ''learning curve'' effect). These costs would also include an additional $9 to $18 per year in fuel costs due to added vehicle weight from the V2V system. Estimated costs for the security management system ranged from $1 to $6 per vehicle, and were estimated to increase over time due to the need to support an increasing number of vehicles with V2V technology. The estimated communications costs ranged from $3 to $13 per vehicle. Cost estimates were not expected to change significantly by the inclusion of V2V-based safety applications, since the applications themselves are software and their costs are negligible.

• Based on preliminary estimates used for the report, the total projected preliminary annual costs of the V2V system fluctuated year after year but generally indicated a declining trend. The estimated total annual costs ranged from $0.3 to $2.1 billion in 2020, with the specific costs depending upon the technology implementation scenarios and discount rates. The costs peaked to $1.1 to $6.4 billion between 2022 and 2024, and then gradually decreased to $1.1 to $4.6 billion.

• The analysis conducted for the V2V Readiness Report estimated that just two of many possible V2V safety applications, IMA and LTA, would on an annual basis potentially prevent 25,000 to 592,000 crashes, save 49 to 1,083 lives, avoid 11,000 to 270,000 MAIS 1–5 injuries, and reduce 31,000 to 728,000 property-damage-only crashes by the time V2V technology had spread through the entire fleet, if manufacturers implemented them.[33] These two applications were used for analysis because they were illustrations of benefits that V2V can provide above and beyond the safety benefits of radar and camera based systems. Of course, the number of lives potentially saved would increase with the implementation of additional V2V- and V2I-based safety applications that could be enabled if vehicles were equipped with V2V communications capability.

(b) Additional V2V-Related Issues That Required the Agency's Consideration

The Readiness Report also recognized that additional items need to be in place for a potential V2V system to be successful. These items were listed as follows:

• Wireless spectrum: V2V communications transmit and receive messages at the 5.85–5.925 GHz frequency. The FCC, as part of an ongoing rulemaking proceeding, is considering whether to allow ''Unlicensed National Information Infrastructure'' devices (that provide short-range, high-speed, unlicensed wireless connections for, among other applications, Wi-Fi-enabled radio local area networks, cordless telephones, and fixed outdoor broadband transceivers used by wireless Internet service providers) to operate in the same area of the wireless spectrum as V2V.[34] Given that Wi-Fi use is growing exponentially, ''opening'' the 5.85–5.925 GHz part of the spectrum could result in many more devices transmitting and receiving information on the same or similar frequencies, which could potentially interfere with V2V communications in ways harmful to its safety intent. More research is needed on whether these Wi-Fi enabled devices can share the spectrum successfully with V2V, and if so, how. In December 2015 and January 2016, the DOT, FCC, and the Department of Commerce sent joint letters to members of the U.S. Senate Committee on Commerce, Science, and Transportation, delineating a collaborative multi-phased approach that will be used to provide real-world data on the performance of unlicensed devices that are designed to avoid interfering with DSRC operations in the 5.85–5.925 GHz band.

• V2V device certification issues: V2V devices are different from other technologies regulated by NHTSA under the Federal Motor Vehicle Safety Standards, insofar as part of ensuring their successful operation (and thus, the safety benefits associated with them) requires ensuring that they are able to communicate with all other V2V devices participating in the system. This means that auto manufacturers (and V2V device manufacturers) attempting to comply with a potential V2V mandate could have a significant testing obligation to guarantee interoperability among their own devices and devices produced by other manufacturers. At the time of the Readiness Report, it was an open question whether individual companies could meet such an obligation themselves, or whether independent testing facilities might need to be developed to perform this function. Based on the security design evaluated for the report, it was thought likely that an entity or entities providing the security management system would require that device manufacturers comply with interoperability certification requirements to ensure the reliability of message content. The agency currently believes the creation of a standardized test device should mitigate manufacturer to manufacturer communication variances to help ensure interoperability.

• Test procedures, performance requirements, and driver-vehicle interface (DVI) issues: Test procedures, performance requirements, and driver-vehicle interfaces appeared to work well enough for purposes of the Model Deployment (as compared to a true production, real-world environment), but NHTSA concluded that additional research and development would be necessary to produce FMVSS-level test procedures for V2V inter-device

[32] See, *e.g.,* Nodine et al., ''Independent Evaluation of Light-Vehicle Safety Applications Based on Vehicle-to-Vehicle Communications Used in the 2012–2013 Safety Pilot Model Deployment,'' USDOT Volpe Center, DOT HS 812 222, December 2015. Available at Docket NHTSA–2016–0126.

[33] The benefits estimated for this proposal vary from those developed for the V2V Readiness Report. Please refer to Section VII for details on the costs and benefits of this proposal.

[34] *See* Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U–NII) Devices in the 5 GHz Band, *Notice of Proposed Rulemaking,* ET Docket No. 13–49 (Feb. 2013). Under the FCC Part 15 rules U–NII devices cannot cause interference to DSRC operations and must accept interference from DSRC operations.

communication and potential safety applications.

• As a result of this item from the Readiness Report, NHTSA undertook additional research to examine the minimum performance measures for DSRC communication and system security.[35] The research included functional and performance requirements for the DSRC device, the results of which directly informed the development of this proposal. As we concluded in the Readiness Report, to eventually go forward with rulemaking involving safety applications, V2V and safety application standards need to be objective and practicable, meaning that technical uncertainties are limited, that tests are repeatable, and so forth. Additionally, the agency deferred consideration of whether standardization of DVIs would improve the effectiveness of safety applications, and whether some kind of standardization could have significant effects on costs and benefits.

• Standing up security and communications systems to support V2V: In order to function safely, a V2V system needs security and communications infrastructure to enable and ensure the trustworthiness of communication between vehicles. The source of each message needs to be trusted and message content needs to be protected from outside interference. A V2V system must include security infrastructure to credential each message, as well as a communications network to get security credentials and related information from vehicles to the entities providing system security (and vice versa).[36]

• Liability concerns from industry: Auto manufacturers repeatedly have expressed concern to the agency that V2V technologies will increase their liability as compared with other safety technologies. In their view, a V2V system exposes them to more legal risk than on-board safety systems because V2V warning technologies rely on information received from other vehicles via communication systems that they themselves do not control. However, the decision options under consideration by NHTSA at the time of the Readiness Report involved safety warning technologies—not control technologies. NHTSA's legal analysis indicated that, from a products liability standpoint, V2V safety warning technologies, analytically, are quite similar to on-board safety warnings systems found in today's motor vehicles. For this reason, NHTSA did not view V2V warning technologies as creating new or unbounded liability exposure for the industry.

• *Privacy:* NHTSA explained in the Readiness Report that, at the outset, readers should understand some very important points about the V2V system as then contemplated and understood by NHTSA. The system will not collect or store any data directly identifying specific individuals or their vehicles, nor will it enable the government to do so. There is no information in the safety messages exchanged by vehicles or collected by the V2V system that directly identifies the driver of a speeding or erratic vehicle for law enforcement purposes, or to third parties. The system—expected to be operated by private entities—will make it difficult to track through space and time specific vehicles, owners or drivers on a persistent basis. Third parties attempting to use the system to track a vehicle would find that it requires significant resources and effort to do so, particularly in light of existing means available for that purpose. The system will not collect financial information, personal communications, or other information directly linked to individuals. The system will enroll V2V enabled vehicles automatically, without collecting any information that identifies specific vehicles or owners. The system will not provide a ''pipe'' into the vehicle for extracting data. The system is designed to enable NHTSA and motor vehicle manufacturers to find lots or production runs of potentially defective V2V equipment without use of VIN numbers or other information that could identify specific drivers or vehicles. Our research to date suggests that drivers may be concerned about the possibility that the government or a private entity could use V2V communications to track their daily activities and whereabouts. However, NHTSA has worked hard to ensure that the V2V system both achieves the agency's safety goals and protects consumer privacy appropriately.

• Consumer acceptance: If consumers do not accept a required safety technology, the technology will not create the safety benefits that the agency expects. At the time of the report, the agency believed that one potential issue with consumer acceptance could be maintenance. More specifically, if the security system is designed to require consumers to take action to obtain new security certificates—depending on the mechanism needed to obtain the certificates—consumers may find the required action too onerous. For example, rather than accept new certificate downloads, consumers may choose instead to live with non-functioning V2V capabilities.[37]

3. Research Conducted Between the Readiness Report and This Proposal

The findings of the V2V Readiness Report also yielded a series of research, policy and standards needs. The agency believed some of these needs were significant enough that they should be addressed to properly inform any potential regulatory action; such as this NPRM. The agency also identified some needs from the Readiness Report that could be addressed later to potentially support other aspects of V2V deployment such as safety applications. Following is a list of needs identified in the V2V Readiness Report and their current status. The agency has completed what it believes is the necessary research for to inform and support this proposal, although the agency is continuing to study these and other issues. The agency notes that Table II–4 shows the status of the research related to safety applications, which are not being proposed in this NPRM.

[35] ''Development of DSRC Device and Communication System Performance Measures'' Booz Allen Hamilton, Final Report—May, 2016; FHWA–JPO–17–483 available at *http://ntl.bts.gov/lib/60000/60500/60536/FHWA-JPO-17-483.pdf* (last accessed Dec 12, 2016) and, CAMP research supporting SAE J2945–1, ''On-Board System Requirements for V2V Safety Communications'' April, 2016.

[36] Section II.F discusses NHTSA's Request for Information (RFI) regarding the development of a potential Security Credential Management System (SCMS).

[37] As follow-up to other consumer acceptance topics, the agency undertook additional consumer acceptance research (both qualitative and quantitative) to better understand potential consumer concerns. This research was used to directly inform this proposal. *See* Section III for discussion of this research and how the agency used it to develop this proposal.

TABLE II–4—DSRC PERFORMANCE REQUIREMENTS AND COMPLIANCE TESTING RESEARCH
[NPRM RELEVANT]

Readiness report research need	Description	Research projects initiated to address	Description	Completion date
Standards Need V–1 SAE Standards Maturity.	Currently Standards are being developed by outside standards organizations.	Crash Avoidance Metrics Partnership V2V Interoperability and V2V System Engineering Projects.	Crash Avoidance Metrics Partnership providing results of DSRC device performance requirements to SAE standards development committee for SAE J2735 and J2945.	April 2016.
Research Need V–2 Impact of Software Implementation on DSRC Device Performance.	[V–2] V2V device software updates may be required over its lifecycle. NHTSA will need to determine how to ensure necessary V2V device software updates are seamless for consumers and confirmed.	DSRC On-Board Unit Performance Measures Booze Allen and Hamilton. Crash Avoidance Metrics Partnership—Documentation of On-Board Unit Requirements and Certification Procedures for V2V Systems (System Engineering Project). and V2V-Comminication Research project.	BAH project will Develop performance measures for Dedicated Short Range Communication (DSRC) device; and develop security performance measures for the following, but not limited to Critical components on the DSRC device, Firmware on the DSRC device, Predominant elements in a Public Key Infrastructure (PKI).	BAH Completion date—Requirements October 2015/ Test Procedures October 2015. CAMP System Engineering Completion date—Requirements Aug 2015/Test Procedures Sept 2015.
Research Need V–3 DSRC Data Communication System Performance Measures.	[V–3] The purpose of this research is to finalize the operational modes and scenarios, key functions, and qualitative performance measures that indicate minimum operational performance to support DSRC safety and security communication functions.	.....	.....	CAMP Communications research completion date—August 2016.
Research Need V–5 BSM Congestion Sensitivity.	[V–5] Complete congestion mitigation and scalability research to identify bandwidth congestion conditions that could impair performance of safety or other applications, and develop appropriate mitigation approaches.	.....	CAMP will develop a single comprehensive document summarizing the minimum level of Connected Vehicle (CV) V2V safety system on-board requirements and certification procedures..	
Research Need V–6 Relative Positioning Performance Test.	[V–6] Research will be required to determine how to test relative positioning performance across GPS receivers produced by different suppliers and yield a generalized relationship between relative and absolute positioning.	.....	CAMP V2V Communications Research Project will identify requirement in relation to BSM message congestion mitigation and misbehavior detection.	
Research Need V–7 Vehicle and Receiver Positioning Biases.	[V–7] Research to understand potential erroneous position reporting due to positional biases across multiple GPS receiver combinations.			
Research Need VI–7 Compliance Specifications and Requirements.	[VI–7] Development of performance requirements, test procedures, and test scenarios to evaluate a device's compliance with interoperability standards, security communication needs; and to support safety applications.			

TABLE II–5—SYSTEM, SECURITY, AND ACCEPTANCE RESEARCH
[NPRM RELEVANT]

Readiness report research need	Description	Research projects initiated to address	Description	Completion date
Policy Need IV–1 Road Side Equipment Authority.	NHTSA will evaluate the need for DOT to regulate aspects of RSE operation and assess its authority for doing so.	Authority evaluation conducted for NPRM.	.....	Issuance of NPRM.

TABLE II–5—SYSTEM, SECURITY, AND ACCEPTANCE RESEARCH—Continued
[NPRM RELEVANT]

Readiness report research need	Description	Research projects initiated to address	Description	Completion date
Policy Need IV–2 V2V Device Software Updates.	V2V device software updates may be required over its lifecycle. NHTSA will need to determine how to ensure necessary V2V device software updates are seamless for consumers and confirmed.	Crash Avoidance Metrics Partnership V2V System Engineering project and Crash Avoidance Metrics Partnership Security Credential Management System Proof of Concept project.	The System Engineering project will investigate software update requirements from the vehicle perspective as the Security Credential Management Systems project investigates software update from the security system perspective. Both projects will identify requirements that will facilitate the software update of V2V devices.	Completion Date for Requirements—Sept 2015.
Research Need V–1 Spectrum Sharing Interference.	Evaluate the impact of unlicensed U–NII devices on the transmission and reception of safety critical warnings in a shared spectrum environment.	Testing spectrum sharing feasibility.	A test plan for testing unlicensed devices that would share the band with licensed DSRC devices has been developed. The testing will evaluate the feasibility of sharing spectrum with unlicensed devices.	The evaluation of spectrum sharing interference is pending the conduct of tests with representative U–NII–4 devices that operate in the 5.9 GHz (DSRC) frequency band.Testing could be completed within 12 months of receipt of prototype devices.
Research Need VII–1 Consumer Acceptance.	Supplement the driver acceptance analysis completed per the Driver Clinics and Safety Pilot Model Deployment with further research that includes a focused assessment of privacy in relation to V2V technology.	V2V Crash Avoidance Safety Technology Public Acceptance Review.	This review needs to extend the current evaluation of driver acceptance to a broader public acceptance context and evaluate how public acceptance may impact and or influence the design, performance, operation, and implementation of this technology.	September 2015.
Research Need VIII–1 V2V Location Tracking via BSM.	[VIII–1] Assess the availability of information and technologies that facilitate linking data in the BSM to determine a motor vehicle's path.	Independent Evaluation of V2V Security Design and Technical Analysis of the Potential Privacy Risk of V2V Systems.	The objective of this Task Order is to perform: (1) an independent and comprehensive technical analysis of the V2V security system design that is currently proposed specifically for a V2V connected vehicle environment; and (2) a technical analysis of the potential privacy risks of the entire V2V system that includes security but also focuses on the operation of V2V communications in support of crash avoidance safety applications.	March 2016.
Research Need VIII–2 V2V Identification Capabilities.	[VIII–2] Understanding and quantifying risk of linking vehicle tracking or other information in the BSM to a specific vehicle, address, or individual via available resources (including but not limited to database matching or data mining).			
Research Need VIII–3 V2V Inventory of Privacy Controls.	[VIII–3] Inventory and assess the privacy controls applicable to the SCMS in connection with our comprehensive privacy assessment.			
Research Need VIII–4 V2V Privacy Risk Assessment.	[VIII–4] A comprehensive privacy risk analysis of all aspects of the V2V system including infrastructure equipment, on-board vehicle systems, wireless and wired communications, as well as organizational and management issues.			

TABLE II–5—SYSTEM, SECURITY, AND ACCEPTANCE RESEARCH—Continued
[NPRM RELEVANT]

Readiness report research need	Description	Research projects initiated to address	Description	Completion date
Research Need IX–2 Cryptographic flexibility.	[IX–2] The chosen cryptographic algorithms are estimated to be resilient against brute force attack for a few decades with some susceptibility through an unanticipated weakness. In the future new algorithms could enable better performance but may require redesign of functions or operations within the SCMS.			
Research Need IX–3 Independent Security Design Assessment.	[IX–3] Independent evaluation of CAMP/USDOT security design to assess alignment with Government business needs, identify minimum requirements, assess the security designs ability to support trusted messages and appropriately protect privacy, identify and remove misbehaving devices, and be flexible enough to support future upgrades.			
Research Need IX–1 Misbehavior Authority.	Development of the processes, algorithms, reporting requirements, and data requirements for both local and global detection functions; and procedures to populate and distribute the CRL.	Crash Avoidance Metrics Partnership System Engineering project, Security Credential Management Proof of Concept project, and Communication Research Project.	The CAMP System engineering project will investigate the implementation and device requirements for local (vehicle based) misbehavior detection and global (system-wide) misbehavior detection. The Communication Research project will research local and global misbehavior detection needs. The SCMS Proof of Concept will investigate implementation aspects from the security system perspective.	Initial Misbehavior Detection information to be completed December 2015.

TABLE II–6—V2V SAFETY APPLICATION IMPROVEMENT AND PERFORMANCE VERIFICATION RESEARCH
[NPRM IRRELEVANT]

Readiness report research need	Description	Research projects initiated to address	Description	Completion date
Research Need V–4 Development of Safety Application Test Metrics and Procedures. Research Need VI–2 Safety Application Performance Measure Rationale.	[V–4] This research will take the performance measures and objective test procedures used during the research of V2V applications and develop FMVSS level performance measures and safety application objective tests.	Volpe False Alert Scenarios and Objective Test Procedures for Crash Avoidance Applications project and Vehicle Research and Test Center project.	The Volpe project will support NHTSA development of false-positive warning objective test procedures in conjunction with development of objective test procedures and performance criteria for IMA, LTA, FCW, and BS/LCW applications. The results of this IAA will contribute to potential Federal Motor Vehicle Safety Standards (FMVSS) for these crash avoidance applications.	Volpe Completion Date—December 2018. VRTC Completion Date—April 2019.
Research Need VI–3 Practicability of Non-Ideal Driving Condition Testing.	[VI–1] Assess the capability and capacity of possible refinements to reduce frequency of false positive warning while maintaining crash avoidance effectiveness. [VI–2] Develop a rationale to support each performance and test metric recommended for incorporation into an FMVSS.	.....	The VRTC project will incorporate results and information from the Volpe project to develop Federal Motor Vehicle Safety Standards (FMVSS) for these crash avoidance applications.	

TABLE II–6—V2V SAFETY APPLICATION IMPROVEMENT AND PERFORMANCE VERIFICATION RESEARCH—Continued
[NPRM IRRELEVANT]

Readiness report research need	Description	Research projects initiated to address	Description	Completion date
	[VI–3] Evaluate test variations for non-ideal driving conditions (*e.g.,* curved roads, turn signal use, weather, oblique intersections) and develop a rationale supporting the inclusion or exclusion of those test conditions.			
Research Need VI–4 Fused and Non-Fused V2V Safety Application Test Procedures.	[VI–4] Develop test procedures that can be applied to systems relying solely on V2V information as well as ''fused'' systems, those relying on both V2V and other sources of information (*e.g.,* on-board sensors).			
Research Need VI–5 Performance and Test Metric Validation.	[VI–5] Conduct test validation to ensure that the performance and test metrics are objective, repeatable, and practicable.			
Research Need VI–1 False Positive Mitigation.	Assess the capability and capacity of possible refinements to reduce frequency of false positive warning while maintaining crash avoidance effectiveness.	Volpe False Alert Scenarios and Objective Test Procedures for Crash Avoidance Applications project and.	The Volpe project will support NHTSA development of false-positive warning objective test procedures in conjunction with development of objective test procedures and performance criteria for IMA, LTA, FCW, and BS/LCW applications.	Volpe Completion Date—December 2018.
Research Need VI–6 DVI Minimum Performance Requirements.	Determine DVI's impact on effectiveness of system and safety benefits applications to establish minimum performance for crash avoidance and objective test procedures.	V2V On-Road DVI Project	Testing DVIs for Intersection Movement Assist and Left Turn Assist for stopped vehicles.	VTTI Completion Date: November 2016.

D. V2V International and Harmonization Efforts

Section V.F of NHTSA's Readiness Report detailed key similarities and some differences between U.S., European, and Asian V2X implementation approaches. There are several organizations in Europe and Asia conducting activities related to V2V and V2I communications and the U.S. DOT has established ongoing coordination activities with these regions and their representing organizations. For Europe, these organizations include DG CONNECT and the CAR 2 CAR Communications Consortium (C2C–CC). DG CONNECT is the EU directorate responsible for conducting research and pilot projects related to connected vehicles and C2C–CC has been working closely with CAMP as part of the EU–US V2X Harmonization Program.

A number of commenters to the ANPRM/Readiness Report addressed the issue of global harmonization. Most commenters addressing the issue encouraged the agency to pursue global harmonization between the U.S., EU, and Asia-Pacific regions as a way to reduce costs,[38] and also to facilitate cross-border traffic, as between NAFTA countries.[39] A number of commenters discussed existing or under-development technical standards by bodies such as ETSI, ISO, and the EU–US Task Force on ITS, and called on NHTSA to support them,[40] and some commenters suggested that NHTSA work to develop a Global Technical Regulation (GTR) and facilitate harmonization through that approach.[41]

With regard to what specifically should be harmonized, commenters mentioned hardware,[42] software,[43] DVI,[44] and BSM,[45] although Cohda Automotive argued that global harmonization efforts have effectively already resulted in a single hardware platform being possible, and that different software could run in each region.[46] Some industry commenters cautioned, however, that NHTSA should not let harmonization objectives impede safety.[47] Mercedes expressed concern that harmonization should not just be global, but also consider the risk of a patchwork of differing State regulations for advanced technologies, and asked that NHTSA work with State DOTs to avoid this.[48]

NHTSA recognizes the value of implementing V2V in a globally-harmonized way. Consistency could reduce costs, complexity, and contribute to a successful, long-term sustainable deployment. As discussed in the V2V Readiness Report, significant V2V research and development activities have been completed and continue in both Europe and Asia. Real-world deployments have been announced in both regions focusing on V2I systems to

[38] Mercedes at 7; Alliance at 50; Automotive Safety Council at 3; Harley-Davidson at 2; Volvo Group at 3;

[39] Alliance at 50; Global at 19–20; Pennsylvania DOT at 7; TRW Automotive at 7.

[40] Mercedes at 7; Systems Research Associates, Inc., at 10; SAE International at 5; Delphi at 10; Continental Automotive Systems at 3.

[41] Automotive Safety Council at 3; Volvo Group at 4.

[42] Mercedes at 7.

[43] Mercedes at 7.

[44] Automotive Safety Council at 3; TRW Automotive at 7.

[45] TRW Automotive at 7.

[46] Cohda Wireless at 9.

[47] Alliance at 50, Global at 19–20.

[48] Mercedes at 8.

aid drivers and to attempt improvements in traffic flow.

Collaboration between organizations and governmental bodies in the U.S. and Europe has led to extensive harmonization of the criteria for hardware, message sets, security, and other aspects needed to support V2V between the two regions. It will be possible to use common radios and antennas in both regions. Harmonization could potentially be enhanced by this proposal by prompting solidification of the work focusing on security and message performance requirements for common applications. The connected vehicle applications being developed in Europe place a much stronger priority on mobility and sustainability compared to U.S. focus on safety applications.

Japan, Korea and Australia are the Asia-Pacific countries most involved in pursuing DSRC-based V2X communications. In Japan, MLIT's current V2X approach centers on the adaptation of their electronic tolling system operating at 5.8 GHz. Additionally, some Japanese OEMs (mainly Toyota) are actively supporting the deployment of V2X using 760 MHz communications. Development of message sets in Japan is not yet complete but appears to be moving in a similar direction as the message sets harmonized between Europe and the U.S. Korea currently uses the 5.835–5.855 GHz band for Electronic Toll Collection and DSRC experimentation. Korea has performed field tests for V2V communication in this band. Industry sources indicate that Korea may shift DSRC for ITS to 5.9 GHz to be more aligned internationally.

In Australia, Austroads is the association of Australian and New Zealand road transport and traffic authorities. This organization is currently investigating potential interference issues, and working with affected license holders to evaluate the feasibility of use of the 5.9 GHZ spectrum for V2X in Australia. Another agency, Transport Certification Australia, is leading the design for security requirements, supporting field deployments, and working with the Australian Communications and Media Authority (ACMA) on identifying requirements for spectrum usage. Because the Australian vehicle market is predominantly comprised of imports from the U.S., Europe, and Asia, these Australian agencies have joined in the international harmonization efforts to ensure that the vehicle brought into the country are interoperable with each other and with the new cooperative infrastructure equipment and applications emerging on the market.

Canada has reserved spectrum at 5.9 GHz for V2X and is watching developments in the U.S. closely.

Harmonization and joint standardization is performed under an Implementing Arrangement for Cooperative Activities. This memorandum between the U.S. DOT and the European Commission established a collaborative relationship in 2009 and it was renewed in December 2014.[49]

The harmonization and collaboration on standards is governed by a Harmonization Work Plan that has generated a set of smaller, flexible task groups to focus on specific subjects. The completed and ongoing task groups and their status are the following:

- *Harmonization Task Group (HTG) 1 on Security Standards and HTG3 on Communications Standards* performed their analysis in 2011 with completion of results in 2012. HTG1 (which included experts from ISO, CEN, ETSI, IEEE) worked in coordination with HTG3 to identify the subset of available standards to provide assurance of interoperable security measures in a cooperative, interoperable environment. Because HTG 1 and HTG 3 issues were sufficiently interrelated and the HTGs had a significant overlap in membership, work on these topics was conducted jointly. The analysis documented how implementations of the protocol stack might not be interoperable because the specification of technical features from various Standards Development Organizations (SDOs) was different or incomplete. These differences presented interoperability challenges. HTG1 and 3 results provide guidance to the SDOs for actions to be taken that raise the assurance of security interoperability of deployed equipment. Vehicle connectivity through harmonization of standards and architecture will reduce costs to industry and consumers, in that hardware and/or software development costs will be spread over a larger user base, resulting in reduced unit costs. Differences between vehicles manufactured for different markets will also be minimized, allowing private-sector markets to have a greater set of global opportunities. A final outcome of the HTG1 and HTG3 work was recognition of the need to harmonize security policies and standards. To meet this need, a third HTG (HTG6) was established to explore and find consensus on management policies and security approaches for cooperative ITS.
- *HTG2 on Harmonization of US BSM and EU CAM:* The goal of HTG2 was to harmonize the vehicle-to-vehicle safety messages that had been developed within the EU and separately within the U.S. The group was able to harmonize on the hardware issues. However, differing U.S. and EU software approaches and institutional issues constrained the extent to which a single, cross-region safety message set could be developed. While a single message set did not result, the HTG was able to evolve the two messages in a manner such that simple software translation between the two message sets is sufficient to allow cross-compatibility. It was a significant step to be able to have the two message sets become substantially closer in nature. These advancements will facilitate deployment across multiple regions using similar or identical hardware and software modules.
- *HTG4/5 on Infrastructure Message Standards:* HTG 4/5 is currently in-progress. Its scope is to address the need for standardized Vehicle-to-Infrastructure message sets and interfaces, including:
  - Signalized intersections applications such as Signal Phase and Timing, Signal Request, Signal Status,
  - In-vehicle data message sets.

At this point, there is general agreement on the data concepts in these message sets, but there remain differences in how the data is conveyed between the infrastructure and the vehicles. These differences are due to project and communications restrictions. For example, the U.S. is planning for additional message sets for enhanced functionality; whereas the European approach may limit the initial applications and simply add data elements to the messages over time. ISO Technical Specification 19091, a standard covering to V2I and I2V communications for signalized intersections, is currently under development and is incorporating both harmonized content and recognizing region-specific content—a practical compromise resulting from existing differences in signal standards. Overall, 19091 allows for substantial hardware congruity while acknowledging that fully identical message standards are not viable at this time.

- *HTG6 on Harmonized Development of a Cooperative-ITS Security Policy Framework:* HTG6 assessed security policy needs across international,

[49] "Continuation of the Implementing Arrangement between the U.S. Department of Transportation and the European Commission" *http://www.its.dot.gov/press/2015/euro_commission.htm#sthash.URMW4OOH.dpuf* (last accessed Dec 8, 2016).

regional, and local levels. Analysis was performed to determine optimal candidate guidelines for policy areas. HTG6's intent was to identify where harmonization is desirable by exploring the advantages and limitations of global versus local security policy alternatives, including economic benefits. Implementation of harmonized policies engenders and sustains public trust in the C–ITS system and applications, particularly with a highly mobile environment that expects C–ITS services to remain available as they cross borders as well as over time. The task group is identifying the largest set of common approaches and interfaces for harmonization, recognizing that there will be multiple instantiations of security entities within and adjacent to geographic/jurisdictional borders. Although minimizing the number significantly decreases cost and complexity, decisions to own and operate security occur for diverse reasons, specifically because of differing jurisdictional requirements for security levels, privacy, cryptographic choices, or trust model choices. The group's analysis recognizes the benefits for commonality and identifies those policies and harmonized interfaces that support regional implementations that might diverge. At the time of developing this proposal, most of the reports from this activity are posted.[50]

The SCMS development activity has incorporated key outcomes of this activity, some of which include:

- Implementation of harmonized policies engenders and sustains public trust in the C–ITS system and applications, particularly within a highly mobile environment that expects C–ITS services to remain available as networks evolve over time and as services cross borders.
- To support cross-border/cross-jurisdictional operations of C–ITS applications, individual security systems (known as C–ITS Credential Management Systems or CCMS) require a defined range of harmonized processes as well as specific, secure data flows to support digital auditing and system transparency.
- Planning for inter-CCMS or intra-CCMS communications will require decisions when developing near-term operational systems but those decisions may have longer-term impacts on crypto-agility, system flexibility, and evolution of systems that must be considered from the start.
- Critical near-term steps for policy and decision makers to perform include:
  - *Minimize the number of CCMS:* Policy makers must determine the number of CCMS that will be operational within a local, regional, or national jurisdiction. Increasing the number of CCMS, in particular the root authorities, significantly increases complexity and cost.
  - *Assess risk and set appropriate parameters for risk and privacy:* No system will ever be without risk. Policy and decision makers must set acceptable levels of internal and external risk, as well as levels of privacy protection. Further, systems managers must assess these levels continuously throughout the lifecycle both of the security solution as well as end-entity (user) devices and applications. Risk and privacy levels come with trade-offs that will need to be assessed by policy makers.
  - *Choose appropriate trust models:* After system managers assess and categorize risk, they can identify policy and technical controls to mitigate risk. Collectively, these controls support the implementation of trust models that range from no trust among security entities to full trust that allows users (''trusted actors'' that are accepted into the C–ITS security environment) to receive security services even after leaving their ''native'' system in which they are enrolled. Decisions are also required to establish criteria that define who are trusted actors and policies and procedures for certification, enrollment, removal in the event of misbehavior, and reinstatement.
  - *Establish Governance:* These decisions include the identification and convening of key stakeholders who will require representation in ongoing decision-making. Once convened, this group will establish processes for decision-making, define criteria for new entrants into the governance process, assign roles and responsibilities, establish authority to provide governance and enforcement, and determine enforcement procedures.
  - *Implement harmonized processes:* The HTG6 team identified the priority areas for harmonization in report HTG6–3 and identified the interfaces and data flows where the policies would be applied in HTG6–4. Policy makers will need to examine them to determine which ones are appropriate both to support their choice in trust models and throughout the CCMS lifecycle.

HTG group members comprise a small group of international experts who worked together intensively with co-leadership. Members are provided by the EC DG–CONNECT and U.S. DOT, and typically chosen from among the editors of many of the current cooperative ITS standards in the different SDOs providing direct linkages into those SDO activities, as well as representatives of the EU and U.S. DOT and the Vehicle Infrastructure Integration Consortium (VIIC), and expert representatives from roadway and infrastructure agencies, system integrators, and policy analysts. HTG6 expanded the membership beyond the EC and U.S. DOT to include Transport Certification Australia (TCA) plus observers from Canada and Japan.

As the U.S. is taking the lead in potential V2V deployment, whereas Asia and Europe are focusing primarily on V2I implementation, the agency expects that a finalized implementation driven by this proposal will set precedent and potentially adjust standards for V2V implementation globally.

E. V2V ANPRM

To begin the rulemaking process, NHTSA issued an ANPRM on August 20, 2014.[51] Accompanying the ANPRM, NHTSA also published a research report discussing the status of V2V technology and its readiness for application (''V2V Readiness Report'').[52] NHTSA's goal in releasing these two documents in 2014 was to not only announce the agency's intent to move forward with the rulemaking process, but also to comprehensively collect all of the available information on V2V and present this information to the public to collect comments that would further help the agency refine its approach with regard to V2V.

1. Summary of the ANPRM

In the ANPRM and the accompanying V2V Readiness Report, we emphasized the capability of V2V to be an enabler for many advanced vehicle safety applications as well as an additional data stream for future automated vehicles.[53] We also stated our belief that a mandate to include DSRC devices in all vehicles would facilitate a market-driven approach to safety, and possibly other, application deployment.[54]

Current advanced vehicle safety applications (*e.g.,* forward collision warning, automated braking, lane keeping, etc.) use on-board sensors (*e.g.,* cameras, radars, etc.) to perceive a vehicle's surroundings. Because each

[50] ''Harmonized security policies for cooperative Intelligent Transport Systems create international benefits'' October 16, 2016. *https://ec.europa.eu/digital-single-market/news/harmonized-security-policies-cooperative-intelligent-transport-systems-create-international* (last accessed: Dec 8, 2016).

[51] 79 FR 49270.

[52] Docket No. NHTSA–2014–0022–0001.

[53] 79 FR 49270.

[54] *Id.*

type of sensor has advantages and disadvantages under different conditions, manufacturers seeking to incorporate advanced functions in their vehicles are increasingly relying on sensor fusion (*i.e.,* merging information from different sources) to ensure reliable information is available to the vehicle when it makes crash-imminent decisions. When compared to on-board sensors, V2V is a complementary, and unique, source of information that can significantly enhance the reliability of information available to vehicles. Instead of relying on each vehicle to sense its surroundings on its own, V2V enables surrounding vehicles to help each other by communicating safety information to each other. In addition, V2V enables new advanced vehicle safety functionality because it enables vehicles to receive information beyond the range of ''traditional'' sensing technology.

One important example that we mentioned in the ANPRM is intersection crashes.[55] Because of V2V's ability to provide vehicles with information beyond a vehicle's range of perception, V2V is the only source of information that supports applications like Intersection Movement Assist (IMA) and Left Turn Assist (LTA). These applications have the unique ability to address intersection crashes, which are among the most deadly crashes that drivers currently face in the U.S.[56]

However, in spite of the benefits of the technology, we explained in the ANPRM that we did not expect that V2V technology would be adopted in the vehicle fleet absent regulatory action by the agency.[57] Due to the cooperative nature of V2V, we stated that early adopters of the technology would not realize immediate safety benefits until a sufficient number of vehicles in their geographical area have the technology.[58] In other words, early adopters incurring the costs to equip their vehicle to transmit BSM information about their vehicle would not realize the benefit of the V2V information environment unless other vehicles in their surroundings are also transmitting and receiving BSM information.

In the V2V Readiness Report,[59] we observed that, based on the data collected from the Safety Pilot Model Deployment Project, V2V systems work in real world testing. V2V-equipped vehicles successfully exchanged BSM information with each other and issued warnings to their drivers.[60]

We further discussed and summarized our preliminary information regarding many of the technical aspects of a potential rule including: The types of safety problems that could be addressed by V2V,[61] the potential technological solutions to those problems (V2V-based or otherwise),[62] the potential hardware/software component that could be used in DSRC devices,[63] the applications that could be enabled by V2V,[64] and preliminary design concepts for a security system for the V2V environment.[65]

The report also explored various important policy issues including: the agency's legal authority over the various aspects of the V2V environment (*e.g.,* the vehicle components, aftermarket devices, etc.),[66] issues that may be outside the scope of NHTSA's activities,[67] privacy and public acceptance concerns over V2V technology,[68] and potential legal liability implications.[69] In addition, we began the process of analyzing the costs of a potential rule to require V2V capability in vehicles based on different technology assumptions and different scenarios for adoption.[70] While we acknowledged that there are a variety of potential benefits of V2V, we conducted a preliminary estimate of the benefits attributable to two V2V-specific safety applications.[71] Finally, throughout the V2V Readiness Report, we also identified various research and policy gaps in each of the substantive areas that we discussed.[72]

In the context of the V2V Readiness Report, the ANPRM asked 57 questions to help solicit comments from the public more effectively.[73] While the questions we asked in the ANPRM covered a variety of subjects, many of our questions covered issues relating to estimating costs and benefits.[74] For example, we asked the public about potential ways to obtain real-world test data concerning the effectiveness of V2V safety applications and whether we have identified the relevant potential crash scenarios for calculating benefits.[75] On the same subject, we asked if preferring certain technologies over others in the situation of a network good[76] such as V2V would lead to any detrimental impact.[77]

The ANPRM questions also covered policy issues such as legal interpretation of NHTSA's authorities under the Motor Vehicle Safety Act,[78] and how commenters view the public's potential acceptance/non-acceptance of V2V technology.[79] The ANPRM also posed technical questions such as, how can the agency mandate V2V can help ensure interoperability, whether the Safety Pilot Model Deployment sufficiently demonstrated interoperability, and whether standards under development by organizations such as IEEE and SAE could help ensure interoperability.[80]

We raised important questions regarding the potential sharing of the DSRC spectrum allocation by soliciting comments on potential sharing and, if so, ideas on how to share the spectrum safely.[81] In addition, we requested comment on the usefulness of our concepts for a potential security design (*i.e.,* PKI)—including specific elements like the certificate revocation list (CRL), whether the system would create new ''threat vectors,'' sufficiently protect privacy, how DSRC devices could be updated, and potential cybersecurity threats.[82]

2. Comments to the ANPRM

In response to the ANPRM, the V2V Readiness Report, and our questions, we received more than 900 comments.[83] The agency received responses to the ANPRM from a diverse set of commenters representing a wider range of perspectives than with other agency safety rules. They range from more traditional commenters to NHTSA safety rulemakings (*e.g.,* automobile manufacturers/suppliers, trade associations, standards development organizations, safety advocacy groups, individual citizens, etc.) to newer participants in such rulemakings such as technology/communications companies, other state/federal agencies, and privacy groups. The comments also

[55] *Id.*

[56] *Id.*

[57] *Id.*

[58] *Id.*

[59] V2V Readiness Report. Docket No. NHTSA–2014–0022–0001. Page xv.

[60] *Id.* at xv.

[61] *Id.* at 15.

[62] *Id.* at 25.

[63] *Id.* at 65.

[64] *Id.* at 119.

[65] *Id.* at 158.

[66] *Id.* at 33.

[67] *Id.* at xvi.

[68] *Id.* at 133.

[69] *Id.* at 208.

[70] *Id.* at 216.

[71] *Id.* at 259.

[72] *See e.g., id.* at xix.

[73] 79 FR 49270, 49271.

[74] *Id. See also id.* at 49273–24.

[75] *Id.* at 49271.

[76] A network good's value to each user increases when the number of users of that good increase (*e.g.,* telephone). In other words, increasing the number of users creates a positive externality.

[77] *Id.*

[78] *Id.*

[79] *Id.* at 49273.

[80] *Id.* at 49272.

[81] *Id.*

[82] *Id.* at 49273.

[83] *See* Docket No. NHTSA–2014–0022.

covered a wide variety of topics ranging from the technical details of V2V technology to the policy implications of any potential rule. While this document discusses the relevant comments in much greater detail when discussing each aspect of the proposal (in the sections that follow), the paragraphs here contain a sampling of the types of commenters and the major issues they raised.

While expressing general support, the automotive manufacturers stated their belief that the Federal government needs to assume a large role in establishing key elements of the V2V environment (*e.g.,* establishing common operating criteria for V2V devices, establishing a security credentials system, preserving the 5.9 GHz spectrum for V2V safety, and mandating devices in new vehicles).[84] The automotive manufacturer commenters discussed their legal concerns (including concerns over practicability of an FMVSS if certain aspects of the V2V environment are missing and potential legal liability for manufacturers).[85] While generally agreeing with our assessment regarding the readiness of some of the industry technical standards to ensure that V2V communications work, the automotive manufacturer commenters also emphasized the importance of privacy and public acceptance to the success of the technology.[86] In spite of some of these open policy and technical questions, many automotive manufacturer commenters also agreed that a regulation or requirement defining key items needed for interoperability is necessary to realize the full potential benefits of V2V.[87]

Automotive suppliers generally expressed support for the technology as well. They further generally opined that the technology and standards for the technology are mature enough for initial deployment. For example, DENSO[88] stated that DSRC is a suitable technology for implementing V2V safety applications and that the current BSM is adequate to support those purposes. Continental further commented that V2V demonstrations thus far show that the system works and is interoperable.[89] Raising different points, Delphi commented that the coverage of a potential V2V rule should include more than just the vehicles contemplated in the ANPRM and that the technology should be developed in conjunction with the vehicle-resident systems.[90]

Safety advocacy groups also expressed support, but emphasized the importance of ensuring interference-free spectrum for V2V. For example, the American Motorcyclist Association stressed the need for interference-free spectrum to ensure the safety applications will function. V2V, in their view, has the unique capability to address crashes that represent a significant portion of motorcycle crashes (*e.g.,* left turn across path crashes).[91] They also emphasized the importance of a uniform human-machine interface for safety applications (regardless of whether the applications use V2V or vehicle-resident based information).[92] Other safety advocacy groups (*e.g.,* the Automotive Safety Council) covered a large variety of topics (*e.g.,* emphasizing the importance of interoperability, the ability of V2V to work in conjunction with vehicle-resident systems, and expressing concern that the security system described in the report would not sufficiently protect against all forms of ''abuse'' of the V2V environment).[93]

Two standards development organizations also submitted comments. The two organizations (SAE and IEEE) were involved in developing various standards incorporated in this proposed rule. Both generally expressed support for the agency's proposal and stated that—in spite of on-going research—the standards are mature enough to support deployment of DSRC devices and ensure that they are interoperable.[94] Where the standards organizations differed was their opinion concerning spectrum availability. SAE reiterated its concern that ''interference-free spectrum'' is critical for the V2V environment.[95] While IEEE suggested that spectrum sharing is feasible, they opined that DSRC deployment should not wait for further research on spectrum sharing.[96] Instead ''acceptable sharing parameters'' may be determined at a later date after DSRC deployment and further research.[97]

While expressing general support for the technology and NHTSA's efforts in this area, technology/communications device manufacturers expressed two general concerns. Through their trade associations,[98] such manufacturers raised questions about NHTSA's authority to regulate software and mobile devices.[99] In addition, individual companies (*e.g.,* Qualcomm[100]) and other associations (*e.g.,* the Wi-Fi Alliance[101]) expressed their opinion regarding the viability of spectrum sharing with unlicensed Wi-Fi devices and the ability of V2V to flourish alongside other technologies that will benefit automotive and highway safety. Finally, the Information Technology Industry Council stated its belief that NHTSA needs to ensure that connected vehicle technologies are allowed to develop using different technological solutions (*e.g.,* other communications mediums beyond DSRC).[102]

Other government agencies also submitted comments. The NTSB commented that both V2V and vehicle-resident crash avoidance technologies are important and they are complementary—especially when one (vehicle-resident) fills the gap during the deployment of the other (V2V).[103] State agencies also commented.[104] AASHTO also mentioned that interference-free spectrum is critical and commented that supporting future upgrades to the system through software rather than hardware changes would be important for state agencies.[105]

A significant number of commenters also raised privacy concerns with this rulemaking. In addition to a large number of individual commenters, organizations such as EPIC stated that, since a potential rule would create significant privacy risks, they recommend that the government take various actions to protect the information (*e.g.,* establish when PII can be collected, when/where information can be stored, additional encryption

[84] *See e.g.,* Comments from the Alliance of Automobile Manufacturers, Docket No. NHTSA–2014–0022–0603.

[85] *See id.*

[86] *See id.*

[87] *See e.g.,* Comments from Ford Motor Company, Docket No. NHTSA–2014–0022–0953.

[88] *See* Docket No. NHTSA–2014–0022–0655.

[89] *See* Docket No. NHTSA–2014–0022–0414.

[90] *See* Docket No. NHTSA–2014–0022–0266.

[91] *See* Docket No. NHTSA–2014–0022–0646.

[92] Consumers Union discussed the HMI and how warnings need to be effectively communicated to the driver. *See* Docket No. NHTSA–2014–0022–0533.

[93] *See e.g.,* Docket No. NHTSA–2014–0022–0511.

[94] *See e.g.,* Docket No. NHTSA–2014–0022–0597.

[95] *See id.*

[96] *See* Docket No. NHTSA–2014–0022–0693.

[97] *Id.*

[98] CTIA—The Wireless Association and the Consumer Electronics Association.

[99] *See e.g.,* Docket No. NHTSA–2014–0022–0483.

[100] *See* Docket No. NHTSA–2014–0022–0665.

[101] *See* Docket No. NHTSA–2014–0022–0644.

[102] *See* Docket No. NHTSA–2014–0022–0403.

[103] *See* Docket No. NHTSA–2014–0022–0267.

[104] State DOTs from also stress the need to have uniform HMI—serving a purpose similar to the MUTCD for traffic signs and signals. They also commented that other vehicle types that could benefit from V2V (*e.g.,* vehicles with GVWR greater than 10,000) and mentioned the potential of other V2X applications (*e.g.,* vehicle to rail, agricultural equipment, horse-drawn vehicles). Further they opine that mandate is needed to deploy quickly. *See e.g.,* Comment from PennDOT, Docket No. NHTSA–2014–0022–0371; TxDOT, Docket No. NHTSA–2014–0022–0218; Wisconsin DOT, Docket No. NHTSA–2014–0022–0507.

[105] *See* Docket No. NHTSA–2014–0022–0420.

methods, and require adherence to Consumer Privacy Bill of Rights).[106] In addition, Professor Dorothy Glancy expressed concern that NHTSA plans to conduct its privacy analysis after the ANPRM stage of the rulemaking process and is concerned that not all potential data collection is accurately portrayed in the ANPRM.[107] On the other hand, while the FTC agreed that privacy concerns could exist in the V2V environment related to (1) obtaining the vehicle location information and (2) pricing insurance premiums over the driving habits, it believes NHTSA has taken these concerns into account.[108]

Finally, many individual citizen commenters (in addition to the topics covered above) discussed their perception that this rulemaking proposes to mandate a technology that poses a potential health concern. The EMR Policy Institute [109] expressed similar concerns stating that NHTSA should postpone this rulemaking until the FCC changes their guidelines regarding human radiation exposure to wireless communications.

F. SCMS RFI

Approximately 30 days after issuing the agency's Advance Notice of Proposed Rulemaking (ANPRM) [110] and V2V Readiness Report, NHTSA released a Request for Information (RFI) [111] regarding a Security Credential Management System (SCMS) that could support a national deployment of a V2V communication system. NHTSA was interested in hearing from entities interested in establishing components of an SCMS or the SCMS, itself. The RFI was issued separately from the ANPRM and V2V Readiness Report to give potential respondents additional time to review the more-detailed V2V Readiness Report content on the SCMS, allowing time for respondents to formulate informed responses to the Agency's questions about how an SCMS should be designed and whether they would be interested in developing or operating components or the SCMS, as a whole. As discussed in the ANPRM and V2V Readiness Report, we explained that NHTSA would not require the SCMS by regulation and did not expect to establish, fund or operate the SCMS.

Questions in the RFI covered topics such as potential governance structures for the SCMS, requests for estimates of necessary initial capital investment, how respondents believed the SCMS (or the components that they were interested in operating) could generate revenue and be financially sustainable (in order to ensure its uninterrupted operation), what respondents thought of the current SCMS design and, finally, the respondent's interest in standing up and operating some or all of the components of the national V2V SCMS.

NHTSA received 21 responses by the December 15, 2014 response closing date, and approximately 11 respondents indicated an interest in running some or all components of the SCMS. The remaining responses commented more generally on issues of potential governance and liability with two common themes: (1) That the Federal Government should take the lead in standing up and operating the SCMS; and (2) that the Federal Government should indemnify companies participating in the SCMS from liability.

The RFI respondents included vehicle manufacturers, software component developers and suppliers, cryptography experts, certificate management entities, satellite and cellular service providers and academia. Because the process of deploying cooperative V2V technology and supporting establishment of an SCMS both are unprecedented activities, the agency believed it was appropriate to meet with the subset of eleven respondents who expressed interest in operating aspects of the SCMS or the SCMS as a whole. These meetings ensured that the agency and the individual respondents shared a mutual understanding of each respondent's comments, their potential role in an SCMS, and the agency's views on the ways in which an SCMS could be established and deployed.

Meeting discussions covered a wide range of topics—including details of cryptography intricacies, certificate distribution methodologies, root storage and protection, to potential overall SCMS management. NHTSA found these meetings to be very beneficial in terms of introducing the agency to some new potential stakeholders and service providers different than the vehicle OEMs and suppliers with whom NHTSA typically. The diversity of RFI respondents exemplified the multi-stakeholder and cross-cutting nature of the V2V ecosystem.

Additional details on the SCMS RFI responses can be found in Section V.B.4.

III. Proposal To Regulate V2V Communications

A. V2V Communications Proposal Overview

The agency believes that it will not be possible to begin to address the 3.4 million crashes identified in Section II.A, especially the intersection crashes and left-turning crashes, given today's vehicle-resident technology offerings. As described earlier, the limitations of current sensor-based safety systems, in terms of direction and distance, likely will not be able to address intersection and left-turning crashes, among other potential crash scenarios, as effectively as V2V communications could.

The agency's proposal to regulate V2V technology is broken into distinct functional components, some of which have alternatives that could potentially be employed ''in-conjunction-with'' or ''in-place-of'' the agency's proposal. The distinct functional components are: The actual communications technology itself (Section III.E), proposed messaging format and content requirements (Section III.E.2), authenticating V2V messages (Section III.E.3), V2V device misbehavior detection and reporting (Section III.E.4), malfunction indication requirements (Section III.E.5), software and certificate updating requirements (Section III.E.6), and proposed cybersecurity related requirements (Section III.E.7).

B. Proposed V2V Mandate for New Light Vehicles, and Performance Requirements for Aftermarket for Existing Vehicles

NHTSA's proposal would require that new light vehicles include vehicle-to-vehicle communication technology able to transmit standardized BSMs over DSRC as described in Section III.E below, beginning two years after issuance of a final rule and phasing in over the following three years at rates of 50 percent, 75 percent, and 100 percent, respectively. ''Light vehicles,'' in the context of this rulemaking, refers to passenger cars, multipurpose passenger vehicles, trucks, and buses with a gross vehicle weight rating of 10,000 pounds (4,536 kilograms) or less.[112] The agency

[106] *See* Docket No. NHTSA–2014–0022–0689.

[107] *See* Docket No. NHTSA–2014–0022–0331.

[108] *See* Docket No. NHTSA–2014–0022–0502.

[109] *See* Docket No. NHTSA–2014–0022–0682.

[110] 79 FR 49270 (Aug. 20, 2014).

[111] 79 FR 61927 (Oct. 15, 2014).

[112] ''Passenger cars,'' ''multipurpose passenger vehicles,'' ''trucks,'' and ''buses'' are defined in 49 CFR 571.3. Some commenters suggested that the agency's proposal also cover vehicles like motorcycles and horse-drawn buggies (Wisconsin DOT), or heavy vehicles (Bendix, among others). Both motorcycles and HVs were included in the Safety Pilot Model Deployment, but in very small numbers, and the agency believes that more research is needed than what is available at the time of this NPRM before we are ready to propose requirements for those vehicles. The agency will be making a decision on how to proceed with V2V

believes that this amount of lead time and phase-in is needed based on the potential for device supply constraints to generate production-level quantities of devices required by automotive OEMs to meet the standard [113] and to allow flexibility for vehicle refresh and re-design cycles. The proposal also allows vehicles to comply using non-DSRC technologies that meet certain performance and interoperability standards.

In addition to requiring new light vehicles to be able to transmit and receive BSMs over DSRC, the proposal would also require that similarly-capable aftermarket devices achieve the same DSRC performance.

Besides being the first FMVSS to involve vehicles relying on information transmitted by other vehicles, this FMVSS would also be the first to incorporate elements of secure wireless communication protection directly into the performance requirements.[114] New motor vehicles are increasingly computerized, and given the importance of ensuring the availability and integrity of safety-critical systems, we considered which requirements could best be incorporated into an FMVSS and which should be part of the V2V security system instead. V2V security requirements are discussed in Section III.E.3 and Section III.E.7, along with a discussion of privacy and security in Section IV.

The agency has put forth this proposed rule on the basis that a fully-implemented V2V system, as currently envisioned, is a compilation of many elements that provide a data-rich technology platform that ensures secure and interoperable communications enabling safety warnings and advisories for drivers. As described in the V2V Readiness Report, V2V devices send out BSMs to alert other vehicles to their presence, and receive BSMs from other vehicles in order to determine whether to warn their drivers of an imminent crash situation. BSMs must be accompanied by message authentication capabilities so that the receiving V2V communication will allow suppliers and vehicle manufacturers to innovate and spur the market for applications that will provide consumers increased safety.

The agency believes that a mandate for all light vehicles is necessary to achieve the safety goals of this proposal. The two vital pieces in order to achieve these crash avoidance benefits are (1) ensuring interoperable V2V communications, and (2) achieving a critical mass of communicating vehicles in the American fleet. NHTSA believes that this proposal is the only way to achieve these two pieces because of the lagging adoption of advanced safety technologies in the marketplace. As evidenced by the slow voluntary deployment of vehicle sensor-based advanced driving assistance systems, the agency believes that it will be even more difficult to achieve a critical V2V implementation level without a mandate due to the cooperative nature of the V2V system. If it cannot reach a critical deployment level within a certain timeframe, the safety benefits of V2V would drop dramatically, and manufacturers would have much less incentive to develop the safety applications (despite their relatively low costs) because they would not have a reason to make the initial investment to install the V2V communications equipment. This represents a classic ''collective action'' problem, of the sort that government regulation is designed to address. We do not believe that critical mass can be achieved, allowing the life-saving benefits of V2V to come to fruition, in the absence of a government mandate. We seek comment on these tentative conclusions.

NHTSA received a number of comments to the ANPRM and the V2V Readiness Report suggesting that V2V communication technology could be better encouraged through what the agency refers to as an ''if-equipped'' standard rather than a mandate for all new light vehicles—*i.e.,* that NHTSA should simply set a standard saying ''*if* a new vehicle is equipped with devices capable of V2V communications, then it should meet the following requirements.'' While both options are within the agency's regulatory authority, we continue to believe that requiring V2V communication technology for new light vehicles will be the quickest and most effective way to achieve fleet-wide V2V communication technology deployment and ensure the full safety potential of this technology is realized.

Allowing manufacturers to choose whether to apply V2V technology in new vehicles could have two main risks in terms of holding back potential safety benefits. First, it is uncertain how manufacturers would voluntarily deploy V2V capability. Manufacturers typically have implemented new vehicle-resident technologies in their more expensive vehicles first. If manufacturers take this approach for V2V, NHTSA believes that a segmented approach to implementation of V2V technology will not be enough to quickly precipitate the data-rich environment needed to support development of manufacturer-supplied safety applications, or to support the needed establishment of a V2V communications security system. Leaving the pace of that development to the market will, we believe, delay the life-saving benefits of those safety applications because the effectiveness of applications depends on receiving messages from all other vehicles. Second, if fewer vehicles are equipped with V2V, there may be less incentive for industry to develop a sufficient security system, which will feed into concerns from consumers regarding perceived potential privacy and cybersecurity issues. Taken together, the delayed effectiveness of the safety applications plus potentially increased concerns about security may lead manufacturers not to include V2V capability in a significant amount of vehicles at all. For these reasons, NHTSA proposes to require new light vehicles to be V2V-capable.

NHTSA and, we believe other stakeholders, will be working to educate consumers about V2V, and will ensure that the V2V system is designed to minimize security risks and protect privacy appropriately. We believe consumer education will alleviate fear of the unknown as V2V enters the vehicle fleet. Findings from our consumer research between the ANPRM and this NPRM are discussed below in Section IV, and NHTSA will be considering these issues carefully as we move forward.

While we are proposing a V2V communications mandate, we also seek further comment on the costs and benefits of an ''if-equipped'' option, particularly considering the substantial monetary and potential social costs of a mandate. Do commenters believe an if-equipped option would be a preferable approach, and if so, why? What costs and/or benefits should we consider relative to an if-equipped approach, and how do those costs and benefits compare to our analysis of the costs and

capability for HVs at a later date. For buggies, these would not be considered motor vehicles, but we are optimistic that V2X capability may eventually be available for them.

[113] Impact of Light Vehicle Rule on Consumer/Aftermarket Adoption—Dedicated Short Range Communications Market Study, Intelligent Transportation Society of America, FHWA–JPO–17–487, available at *http://ntl.bts.gov/lib/60000/60500/60535/FHWA-JPO-17-487_Final_.pdf* (last accessed Dec 12, 2016).

[114] To be clear, the related performance requirements for V2V communication security will incorporate protections to ensure a secure vehicle communication that are distinct from other types of communications with the vehicle for other data transfers and interconnectivity. The performance requirements for V2V security communications do not and are not intended to provide comprehensive protection for other vehicle wireless communications or internal vehicle connectivity for operational functionality. That responsibility continues to belong to manufacturers.

benefits of a mandate? For instance, we seek additional comment on how an if-equipped option may potentially delay or lead to uncertainty in V2V technology development.

In addition, what benefits may accrue from a more gradual, market-based approach to a technology that has never before been widely deployed? What affect would such an approach have on the ability to iterate and test potential V2V technology solutions, including issues related to costs, reliability, security, and deployment? How would an if-equipped approach affect consumer choice and privacy protections? We also seek examples and information related to the success and failure of other network-reliant technologies, including those that evolved in the absence of a government mandate and those that were mandated and whether the example is applicable or not to a safety sensitive function.

C. V2V Communication Devices That Would Be Subject to FMVSS No. 150

1. Original Equipment (OE) Devices on New Motor Vehicles

NHTSA's research thus far indicates that V2V communications technology is feasible for new light vehicles. The Safety Pilot Model Deployment demonstrated that interoperability is possible and directly informed the requirements in this proposed FMVSS and also in SAE standards such as J2735 and J2945. The agency is confident that V2V devices integrated into light vehicles consistent with these requirements will provide the technical foundation for national deployment of DSRC-based crash avoidance capability.

2. Aftermarket Devices

Many consumers may not be ready to purchase a new vehicle, but may be interested in having V2V capabilities in their current vehicles. NHTSA believes that it is likely that aftermarket products may be developed in response to consumer interest in V2V, and we strongly support the innovation and accessibility that aftermarket devices could foster, all potentially leading to expanded and earlier benefits from V2V communication technology. As the name suggests, ''aftermarket'' refers to products that the vehicle owner purchases and adds to his or her vehicle after the vehicle's manufacture. Aftermarket products are distinguished from ''original equipment,'' which is installed on the vehicle during its manufacture, prior to initial purchase. Allowing aftermarket products to participate in the V2V system will enable the technology to spread faster than if introduced through new vehicles only—thus accelerating safety benefits.

As part of setting standards for aftermarket V2V devices, however, NHTSA recognizes that some aftermarket products may not be able to populate optional BSM data elements if they do not have access to the CAN bus. Aftermarket devices will therefore need to use other methods to populate elements needed to calculate vehicle position in order to support crash avoidance warnings. Some data elements, such as turn signal indication, will not be able to be derived from other methods. As a result, the inability of some aftermarket devices to populate certain optional BSM data elements may impact the fidelity (ability to balance the level of false positive warnings) of safety applications that the aftermarket device supports. In the Safety Pilot Model Deployment, there were three separate types of ''aftermarket'' devices—some that were fully integrated into the vehicle just like original equipment; some that were connected to the vehicle for power, but did not have access to the vehicle's data bus; and some that also only connected for power, and could only transmit BSMs but could not receive them and could not deliver crash avoidance warnings. Based on the information we currently have before us, we think it is reasonable to assume that these three types of aftermarket devices could be available in the rulemaking timeframe.

For example, OEMs may choose to offer their own aftermarket V2V devices that can be retrofitted onto earlier vehicle models (retrofit means the devices can interface with the vehicle data bus), made by that OEM, at one of their retailers. For another example, V2V devices, which are not unlike today's dedicated aftermarket navigation systems (*e.g.,* a Garmin or TomTom), could potentially be developed for drivers to purchase and have installed. The agency also foresees the potential for some form of a multi-use device containing a V2V-related application (''app'') that could be brought into a vehicle (''carry-in'') by a driver. A carry-in device could have the capacity to simply send a BSM without providing any warnings to the driver or potentially provide more capabilities in a potential V2V, or V2I, system. Moreover, in the future, there could be yet other types of aftermarket devices that have V2V capabilities not yet envisioned by NHTSA.

NHTSA does not wish to limit the development of different types of aftermarket devices, but we do seek to ensure that all devices participating in the system perform at a minimum or better performance level for V2V communication. This is important because, in order to ensure safe and secure crash avoidance benefits, all BSMs transmitted need to perform at a minimum performance level such that safety applications can identify imminent crash situations and issue warnings to the driver to avoid a crash. Therefore, the minimum performance requirements need to be the same for all devices with provisions that accommodates the optional data elements that can be used to perform better than the minimum.

The proposed requirements for any V2V devices recognize that, as DOT discovered in the Safety Pilot Model Deployment, installation can significantly impact how devices perform. The agency believes there is high probability that a certified device installer could complete the installation for aftermarket safety devices. It is imperative that all V2V components be properly installed to ensure that an aftermarket device functions as intended. Whereas some vehicle owners may choose to replace their own brakes or install other components on their vehicles themselves, installation requirements for aftermarket V2V devices may not be conducive to a do-it-yourself approach. Improper installation of a GPS antenna has the potential to affect the proper population of BSM data elements. Faulty position data from a transmitting vehicle can result in false warnings, improperly timed warnings, etc. Moreover, an improperly installed aftermarket device may put all other V2V-equipped vehicles it encounters at risk until the given vehicle stops communicating, or until its messages are rejected for misbehavior.

The agency seeks comment on the potential need for certification of aftermarket V2V device installations. If so, please provide any potential recommendations of appropriate retail outlets, the certification mechanisms, and authorizers (vehicle manufacturers, device manufacturers, device retailers, others) that should be employed. Conversely, do commenters believe that future available technology may allow consumers to self-install V2V devices such as web-based tools, or other potential methods, that could verify accuracy of an installation? Research supporting this possibility would be very helpful.

D. Potential Future Actions

1. Potential Future Safety Application Mandate

NHTSA has concluded that V2V communication technology combined with V2V-based safety applications can provide significant safety benefits and potentially help drivers avoid thousands of crashes per year. We believe that by leading with a mandate for V2V communication technology, NHTSA will be able to foster industry development and deployment of new, beneficial safety applications. As previously discussed in the V2V Readiness Report and in the above discussion concerning the safety need, there are a number of these applications that the agency believes could be ready to be deployed soon after a V2V mandate is in effect. In particular, the agency has highlighted two specific applications, IMA and LTA.

The agency focused on these potential safety applications because prototypes of these applications were used during Safety Pilot Model Deployment, because we have sufficient data, and because they can be effectively enabled only by V2V. IMA warns drivers of vehicles approaching from a lateral direction at an intersection, while LTA warns drivers of vehicles approaching from the opposite direction when attempting a left turn at an intersection.

As discussed in the V2V Readiness Report, the agency has and will continue to investigate other potential V2V safety applications that could be enabled by V2V communications.[115] Depending on the market penetration of applications in response to this proposed mandate of the foundational V2V capability, the agency may later decide to mandate some or all of the potential applications discussed in the Readiness Report, and perhaps future applications yet to be developed. If mandated in the future, applications would likely be incorporated into NHTSA's regulations as FMVSSs, and in the interests of clarity, each application mandate would likely be contained in its own FMVSS.

At this time, though, the agency does not have sufficient information to include with this NPRM proposed test procedures or performance standards for LTA and IMA or any other safety applications. To that end, we request comment on any additional information or research on IMA, LTA and any other applications that could inform and support an agency decision regarding whether to mandate safety applications with or shortly after a final rule requiring DSRC.

2. Continued Technology Monitoring

NHTSA's proposal to mandate V2V communications capability for new light vehicles is based upon the best currently-available scientific data and information. Consistent with its obligations under Executive Order (E.O.) 13563, Improving Regulation and Regulatory Review (Jan. 18, 2011), and E.O. 13610 on the retrospective review of regulations, NHTSA will review relevant new evidence and may propose revisions to a subsequent proposed or final rule as necessary and appropriate to reflect the current state of the evidence to provide an effective regulatory program. In obtaining that new evidence, NHTSA may consider collections of information that may trigger the Paperwork Reduction Act, and would notify the public of these collections through the separate **Federal Register** Notices required under that Act. NHTSA may also identify and pursue additional issues for new research or conduct further research with regards to existing issues addressed in this proposed rule. Such modifications may be necessary in the future to accommodate new systems and technology designs, and the agency would consider these modifications in consultation with the public through the notice and comment rulemaking process. We acknowledge that the research relevant for evaluating a new technology would vary depending on the type of technology considered.

E. Performance Criteria for Wireless V2V Communication

In order to ensure that vehicles broadcast basic safety messages to support potential safety applications, the agency is proposing performance requirements for DSRC-based V2V communications. As part of this, the agency is also requesting comment on alternative interoperable technology provisions that would allow other technologies to satisfy the mandate, as long as they meet performance and interoperability requirements, which are based on the capabilities of today's DSRC-based V2V communications.

The agency is proposing to require that V2V devices be capable of broadcasting V2V messages in an interoperable manner, *i.e.,* that devices can both transmit and receive BSMs using V2V communications from all other vehicles equipped with a V2V communications technology. We believe that the requirements described below will ensure interoperability. We aim to ensure a uniform method for sending basic safety information about the vehicle. In this way, any vehicle seeking to utilize the V2V information environment to deliver safety benefits would have a known and uniform method for doing so.

In order to create this uniform method, an FMVSS would need to contain requirements in a few areas. First, it would need to establish the content of the information to be sent to the surrounding vehicles (by not only specifying the type of information to send, but also the measuring unit for each information element and the level of precision needed). Second, the FMVSS would need to specify requirements for the wireless transmission of the content (*i.e.,* how far, how often, etc.). Third, we may need to specify a standard approach to authenticate V2V messages that are received to improve confidence in message contents.

In addition to those three points, the FMVSS would also need to specify other aspects of performance for a V2V-communications system in order to support full-scale deployment and enable full functionality including security. The agency recognizes that some capabilities are not necessarily needed to support operations during the first few years of deployment, but would be required as the V2V vehicle fleet grows.

First, the devices regardless of the communication technology used would need a uniform method for dealing with possible occurrences of high volumes of messages (*e.g..,* potentially reducing the frequency or range of messages in high congestion situations. Second, to help identify and reduce the occurance of misconfigured or malicious devices transmitting BSM messages, the FMVSS may need to specify methods for identifying misbehaving devices. Finally, to support the above functions, vehicles in the V2V environment may need a methods for communicating with security infrastructure such as a SCMS (*e.g.,* in order to obtain new security certificates or report misbehaving devices, and receive information about misbehaving devices).

In short, an FMVSS would explain: (1) What information needs to be sent to the surrounding vehicles; (2) how the vehicle needs to send that information; (3) how a vehicle validates and assigns confidence in the information; and (4) how a vehicle makes sure the prior three functions work in various operational conditions (*i.e.,* broadcast under congested conditions, manage misbehavior, and update security materials). A variety of voluntary

[115] Six potential applications were mentioned in particular: IMA, FCW, DNPW, EEBL, BSW/LCW, and LTA.

standards cover many of these aspects of performance. Our proposal below draws from these voluntary standards but also explains why a particular threshold or requirements from a voluntary standard is appropriate. Finally, we are proposing a test method for evaluating many of these aspects of performance. Having a clear test method helps inform the public as to how the agency would evaluate compliance with any final FMVSS.

Finally, we acknowledge that research is ongoing in a few of the areas we discuss in this section. While research continues in these areas, we have described for the public the potential requirements that we are considering, and the potential test methods for evaluating compliance with those requirements. We believe that the public comments that we will receive in response (coupled with the agency's ongoing research) will produce a robust record upon which the agency can make a final decision.

1. Proposed Transmission Requirements

Our purpose for proposing a standardized set of transmission requirements is in line with our vision for V2V as an information environment that safety applications can use. By creating a standardized method for transmitting the basic safety message, we are creating the information environment with one clear method for accessing it. Our current belief is that anyone who wants to implement safety applications should know how their system can obtain the V2V information as an input for their application.

In order to have a standardized method for transmitting the basic safety message we believe that a few aspects of performance need requirements. We tentatively believe that all devices should be required to transmit:

- With a sufficient power/range to guarantee reaching other DSRC devices, within a minimum radius, that would allow use of the basic safety message information reliably;
- on the same channel, and support using the same data rate(s); and
- at the times required for each data element so that people who have applications know when it will have information.

(a) DSRC Transmission Range and Reliability

In order to ensure that surrounding vehicles within a certain range of each vehicle transmitting basic safety messages can reliability receive the messages, The proposal includes requirements for the transmission range of the messages. While the research to date has included various specifications for the antenna (*e.g.,* power, polarization, location on the vehicle, etc.), we tentatively believe it more appropriate to measure the ability of the vehicle to transmit the packet to a specified device at a specified distance. In other words this transmission range and reliability requirement employs a more performance-oriented approach where our FMVSS would not specify requirements for the antenna itself.

By specifying the requirements in this fashion, we not only set requirements that can more closely follow real-world conditions, but also leave aspects of design open to manufacturer choice (*e.g.,* antenna location on the vehicle). Our method here would simply seek to ensure that the transmission of the basic safety message travels the required distance and is readable by another DSRC device at that range (regardless of how the antenna is configured). Thus, we seek comment on our proposal. We currently believe that specifying the following three areas would be appropriate:

- The three-dimensional (latitudinal, longitudinal and elevation) minimum range that the basic safety message transmission would need to reach;
- a test device (and its specifications, *e.g.,* its receive sensitivity) for testing the range and the locations to measure reception of the basic safety message; and
- the reliability of the reception of the basic safety message (*i.e.,* how often is the message dropped) based on packet error rate (PER).

In addition, our current belief is that the agency would not need to establish specifications for the transmitting device itself. In other words, we request comment on our current belief that the following design-level requirements would not be necessary for an FMVSS:

- Transmission power;
- antenna polarization; and
- antenna placement.

(1) Range

A basic safety message needs to travel far enough to support potential safety applications that we anticipate would take advantage of the information available through DSRC communications. Aside from the basic ''open air'' communication scenarios, it is important to also consider whether devices will be able to communicate with others that are on the same road but, perhaps, not at the same elevation or approach angles (*i.e.,* the road elevation may change).

(a) Longitudinal/Lateral Range

Our strategy we considered regarding what minimum range requirement we should include for transmitting the basic safety message was to balance:

- The information needs for potential safety applications; and
- technical capabilities demonstrated.

In terms of information needs for the safety applications, our research to date used a minimum 300 m transmission range—while recognizing this range would diminish in urban and non ''open air'' environments. The applications tested in the Safety Pilot Model Deployment assumed vehicles were transmitting basic safety messages at the 300 m range. In particular, we believe that DNPW requires the longest communication range for effective operation because it addresses a crash scenario where two vehicles approach each other head-on. Using the target range of 300 m, two vehicles approaching at 60 mph would be afforded approximately 5.6 seconds for the DNPW application to detect the crash scenario and issue a warning. Based on this information, our current belief is that 300 m will serve the needs of the anticipated safety applications.

Based on the existing research, our proposal is to adopt 300 m as the minimum transmission range. We believe that this supports the needs of anticipated safety applications and can be operationally met given current technological capabilities; as demonstrated in Safety Pilot Model Deployment. Currently, we also do not anticipate any safety application requiring more range than 300 m. Thus, we tentatively do not see a reason to increase the minimum transmission range beyond 300 m.

Finally, we have not included a *maximum* range limit. Maximum transmission range can vary by the power of the transmission, and environmental conditions. While our current proposed requirements do not include establishing a maximum transmission range, we request comment on whether such a limit would be appropriate in conjunction with the other requirements the agency is considering.

We ask for comment on this proposed minimum. Is there any reason that the agency should require a *maximum* transmission range as well as a minimum? Should the agency choose a different minimum range requirement? What would be appropriate alternative minimum and maximum transmission range values and why? Please provide data to support your position.

(b) Elevation Transmission Performance

In addition to the 2-dimension range of the basic safety message transmission, we need to consider the potential changes in elevation on roadways. Thus, in addition to establishing a minimum distance that the basic safety message needs to travel, we also need to establish an elevation angle that the message needs to travel.

Safety applications may need information from vehicles at a higher elevation (because of changes in the slope of the roadway, for example). Thus, our current belief is that a proposal to regulate DSRC radio performance should also evaluate whether a vehicle transmitting the basic safety message can transmit said message at an angle that is sufficient to cover potential roadway elevation changes.

Our proposal would require that vehicles transmit the basic safety message not only to 300 m around a vehicle (in all directions—*i.e.,* 360 degrees) but also at an elevation angle of +10 degrees and −6 degrees. We think that the elevation angle range of +10 to −6 degrees 360 degrees around the vehicle is an appropriate range to ensure that the broadcast of the BSM can be received by vehicles in a 300m radius given most roadway characteristics such as changes in roadway grade was what was used to demonstrate capability in Safety Pilot Model Deployment. The agency is continuing to research a larger range of elevation angle (+/−10 degrees) to determine actual transmission coverage range. In particular, if the range would be adequate to support transmission and reception of BSMs on roadway grades up to 15 degrees, which is the current design maximum for many States and localities (excluding San Francisco). However, currently it is not practicable to test the +/−10 degree elevation angle range given current testing equipment.

We ask for comment on this proposed minimum. Should the agency choose a different minimum elevation angle requirement? What would be appropriate alternative minimum elevation angle range values and why? Please provide data to support your position.

(2) Testing the Elevation Transmission Range

In order to give context to our proposed requirement, we are also describing the method the agency would use in assessing the elevation angle range performance requirement (*i.e.,* the test procedure and type of test device). As discussed later in this document, the agency would test these requirements using test devices located within a specified area around the vehicle in a static test to determine whether the vehicle's basic safety message transmissions can reach the required range. In order to conduct this test, we need to define two pieces of information:

- The important characteristics of the test device for the purposes of evaluating this requirement; and
- the area around the vehicle where we can place this test device.

(a) Test Device

As further discussed in the test procedure section of this document, we anticipate that our test method would specify various aspects of the test device for the purposes of evaluating a vehicle's DSRC radio performance. However, for the purpose of evaluating this aspect (*i.e.,* the transmission range) of DSRC radio performance, we believe the receive sensitivity of the test device is the characteristic that would need to be most clearly defined in order to test the transmission range objectively.

Based on the currently-available research, the agency would measure this using a test device with a sensitivity of −92 dBm. We believe that −92 dBm is an appropriate sensitivity for the test device receiving the basic safety message during the test because −92 dBm generally models what average devices (*e.g.,* cell phones) use for their antenna sensitivity. We believe that it is a reasonable assumption that a vehicle seeking to obtain basic safety messages for its safety applications would be designed with, at minimum, this level of sensitivity.

Further, our understanding is that −92 dBm falls on the less-sensitive side of the range of an average wireless device's antenna sensitivity. We believe that using a less sensitive device within that range is appropriate in this instance because it means we are using a more stringent test condition that is still within the range of an average device antenna's sensitivity.

(b) Location of the Test Device

In addition to specifying the device, we also believe it is important to specify the location of the device relative to the vehicle being tested. We are proposing to define a zone around the vehicle where a test device is used to evaluate the ability of the vehicle to receive the basic safety message. Currently, the proposed zone is defined as 300 m 2-dimensional range with an elevation angle that can be set at +10 degree and −6 degrees.

For testing the 2-dimensional (longitudinal and lateral) range, the agency would specify an area within a circle around the vehicle that we may test. The test circle has the following characteristics:

- It is 1.5 m above the test surface.
- It is parallel to the test surface.
- It has a center point that is 1.5 m above the vehicle reference point.[116]
- The circumference of the circle is any point at a 300 m radius from its center point.

In other words, when conducting the compliance test, the agency test engineer may place the test device at any point that is 1.5 m above the ground and within the area of a circle whose center point is 1.5 m above the vehicle reference point and whose radius is 300 m.

For testing the elevation range of the vehicle's transmission, we tentatively believe it is preferable to use two slightly different evaluation methods for the upward elevation versus the downward range. For the upward elevation range, our proposal is that the test engineer may place the test device at any point along the following line:

- The line originates at a point that is 1.5 m above the vehicle reference point.
- The line rises at a +10 degree angle from the test surface[117] proceeding in any direction around the vehicle.[118]
- The line terminates at any point that is directly above the circumference of the circle used in the 2-dimentional range test.

On the other hand, for testing downward elevation range, the agency would place the test device at any point along the following line:

- The line originates at a point that is 1.5 m above the vehicle reference point.
- The line falls at a −6 degree angle from the test surface[119] proceeding in any direction around the vehicle.[120]
- The line terminates at any point where it intersects the test surface.

Test the downward elevation at a point that is likely closer to the vehicle than the upward elevation, we believe that this method would relieve some test complexities while still ensuring

[116] Vehicle reference point is the same point that we defined in the basic safety message content requirements section, above.

[117] Note the line originates at a point that is 1.5 m above the test reference point, but (for simplicity) we are expressing the angle of the line by referencing the test surface (*i.e.,* the ground, which is not where the line begins). The angle of the line could be expressed by referencing any plane that is parallel to the test surface.

[118] In other words, the line can travel in any direction (360 degrees) around the point 1.5 m above the vehicle reference point.

[119] *See* similar note, above.

[120] *See* similar note, above.

that the transmissions will reach surrounding vehicles under real-world roadway elevation changes. Further, we believe that the locations defined above (longitudinal, lateral, and elevation) establish the limits of the potential test conditions in a way that would still enable the agency to measure at the extremities of the proposed range requirement.

As noted above, testing the elevation range would enable NHTSA to test for compliance at any point along those aforementioned lines. While we believe that −92 dBm is an appropriate sensitivity for our test device when it is located 300 m away from the tested vehicle, we request comment on whether the test device should still have a sensitivity of −92 dBm if NHTSA tests the vehicle performance closer to the vehicle along the aforementioned elevation testing lines. What would the appropriate function be to determine the sensitivity based on the test device's location along those testing lines?

We further request comment not only on the test method but also on whether there are other aspects of the test that the agency would need to define in order to clearly evaluate this aspect of performance.

(3) Reliability

The agency is proposing to require that a message packet error rate (PER) is less than 10%. We believe that 10% PER is an appropriate threshold and that vehicles will still be able to receive the basic safety messages so long as the PER is below 10%. The agency believes the PER metric at the proposed rate fulfills the need to evaluate how *reliably* a V2V device can transmit a message for a specified distance.

The Packet Error Rate (PER) is one way of quantifying how reliably a message can travel a given distance. In essence, it measures how often (*i.e.,* the percentage of) parts of the message (*i.e.,* packets) fail to make it to the destination. The research for V2V safety applications to date assumes that vehicles are transmitting the basic safety message to a range of at least 300 m around the vehicle with a PER of less than 10%.

A PER of less than 10% aligns with the ASTM standard E2213–03 (2003) 4.1.1.2 where ''*(2)* DSRC devices must be capable of transferring messages to and from vehicles at speeds of 85 mph with a Packet Error Rate (PER) of less than 10% for PSDU lengths of 1000 bytes and to and from vehicles at speeds of 120 mph with a PER of less than 10% for PSDU lengths of 64 bytes.'' As such, the agency believes this specification, along with the agency's successful Safety Pilot Model Deployment work, makes it appropriate to include this as part of the performance requirements for DSRC devices. Overall, the agency did not observe any dropped basic safety messages (*i.e.,* message did not reach a vehicle within range) due to a high PER, and we believe that the 10% PER threshold will continue to be appropriate in a more full-scale deployment. We request comment on our tentative conclusions and also request comment on what other potential PER thresholds would be more appropriate (and why).

(4) Aspects of Transmission Range Performance Indirectly Tested

We currently believe that testing the range (both 2-dimensional and elevation) and the reliability (PER) of the transmission with a specified test device (−92 dBm) in specified locations is sufficient to determine whether a vehicle would be able to deliver basic safety messages to vehicles around it in the real world (*i.e.,* it would be sufficient for supporting the safety applications currently under active development). However, we recognize that there are a few aspects of performance covered by the V2V research to date that we have not included in this proposal. Our tentative conclusion is that the proposed requirements would cover these aspects of performance indirectly. Further, we believe that Proposal A would avoid unnecessarily restricting manufacturer design choices while still ensuring that the vehicle achieve the safety purpose of transmitting the basic safety message. These aspects of performance are:

- Antenna location on the vehicle;
- antenna polarization; and
- transmit power.

(a) Antenna Location on the Vehicle

The agency and its research partners utilized antenna location mounting requirements on vehicles used in the Safety Pilot Model Deployment activity. However, our tentative conclusion is that it is unnecessary to specify requirements for antenna location. The location of the antenna on a vehicle can affect the ability of the vehicle to transmit the basic safety message to all the necessary locations around the vehicle. However, we believe that testing for reception of the basic safety message at the aforementioned locations around the vehicle would clearly show whether the location of the vehicle antenna is installed at an appropriate location where the vehicle structure would not interfere with the transmission of the basic safety message.

If the antenna location is appropriate enough to transmit the basic safety message to meet the needs of the safety applications, we tentatively see no need to further restrict the location of the antenna on the vehicle (as it is also an important styling decision for the auto manufacturer). However, we request comment on this tentative conclusion. Are there any reasons why the agency should establish requirements for the antenna location on the vehicle? What would these restrictions be? How can they be objectively defined on the vehicle? What data supports your conclusions?

(b) Antenna Polarization

We also tentatively believe that the agency does not need to establish performance requirements for the transmitting antenna's polarization. We are aware that the research to date generally recommended a nominal vertical polarization configuration for the DSRC antennas sending the basic safety message. The research recommended that configuration because vehicle sheet metal can serve as the ground plane and can degrade reception of horizontally polarized waves at or near the horizon.

While we agree that using a non-optimal antenna polarization would lead to increased cost and complexity of the system (*i.e.,* requiring more antennas in order to reach the same transmission coverage), we tentatively do not believe it is necessary to propose limiting such a design. We believe that, for cost considerations, manufacturers are likely to select an antenna polarization that would enable them to achieve the same performance with less antennas. However, so long as the vehicle can transmit the basic safety message to the required range under the conditions specified, we currently see no reason to preclude other antenna polarizations. We also request comment on this tentative conclusion.

(c) Transmit Power

Finally, the requirements and test method also do not directly test for the transmit power. Our current belief is that our test method sufficiently covers this aspect of performance by establishing the range at which the vehicle needs to transmit the basic safety message and the receive sensitivity of the test device. We note that the research to date has recommended various transmission power levels. For example, the SAE J2945/1 standard recommended a minimum radiated power of 15 dBm (under uncongested condtions). However, we believe that our

aforementioned requirements would sufficiently test for this aspect of performance. In essence, by testing whether a device with a sensitivity of −92 dBm can receive messages from a vehicle 300 m away, we are testing whether the transmitting vehicle is doing so with sufficient power to deliver the basic safety message to the required distance.

We currently do not believe it is necessary to further specify the transmit power for vehicles covered by the proposal. Based on the manufacturer's choices regarding antenna location on the vehicle (and potentially other factors such as the body of the vehicle, etc.), a manufacturer may need to make different transmit power choices in order to transmit the message to the required distance. As with antenna location and polarization, we believe that the transmission power is sufficiently addressed (albeit indirectly) by the requirements. We believe that the requirements would establish an appropriate balance between affording the manufacturers design freedom, while still ensuring that they achieve the safety goal of transmitting the basic safety message far enough and reliably enough to support the safety applications. We seek comment on whether there is any reason for the agency to establish a requirement for the transmit power. What should the transmission power be and why?

(5) FCC Transmission Power Restrictions

The agency's proposal is not specifying required transmission power levels for V2V devices. The FCC places restrictions on the transmission power levels of devices utilizing a given spectrum and our expectation is that DSRC devices operating in the designated bandwidth would meet the FCC defined operating specifications. However, we do not believe that our current proposal (*i.e.,* our proposed minimum transmission range and the sensitivity of the test device) would require vehicles to transmit at a power that exceeds FCC regulations.

FCC Part 95L specifies a max EIRP limit of 33dBm for Private OBUs on channels 172, 174, 176, 178, and 184. Our understanding is that devices would be able to meet the these requirements at a power setting lower than the restricted level (Safety Pilot Model Deployment devices were set at a 20 dBm power level).

(b) Channel and Data Rate

In addition to proposing requirements for the transmission range and reliability, we believe it is also important for DSRC-based V2V communications to utilize the same channel and data rate. The channel is a band of frequencies where the transmission occurs. Parties agreeing to use the same channel to communicate are like people that agree to call each other using a particular phone line. The data rate is the speed at which a sender is transmitting information through the channel.

The FCC has statutory authority for allocating spectrum rights and designating band plans for commercial spectrum allocations, including the 5.9 GHz band. DOT defers to the FCC's authority with respect to spectrum rights and channel plans. Based on FCC rules and research to-date, all devices participating in the V2V information environment have utilized the same channel and data rate to transmit BSMs. In relation to DSRC, FCC has specified that BSM transmissions and reception will occur on channel 172, *i.e.* channel 172 will be dedicated to all BSM communications (safety-critical communications). Therefore, throughout this document, references to BSM transmissions and reception will refer to channel 172 while also recognizing the ongoing DOT–FCC–NTIA spectrum sharing studies and the FCC rulemaking concerning the 5.9 GHz band as described in more detail below. Similar to our approach to transmission power, the agency believes that all BSM transmissions should occur on channel 172. Data rate is also important because a receiving device needs to know the speed at which the transmitting device is sending the information in order to process the information. Thus, in order to ensure interoperability of the devices in the V2V information environment, our current belief is that it is necessary to establish requirements for both the channel and the data rate.

As we discuss below, there are various options for both the channel and the data rate—each with advantages and disadvantages. While there are different choices available, each choice should be able to achieve the objective of ensuring interoperability across devices if it is implemented consistently by all devices. Thus, we are proposing to that all vehicles should transmit the basic safety message on Channel 172, via a dedicated radio at a data rate of 6 Mbps). We also request comment on whether there are other choices for these two aspects of performance that the agency should consider.

(a) Channel

(i) Proposed Channel Usage

The FCC currently divides the 5.9 GHz spectrum into seven, ten-megahertz channels consisting of one Control Channel (Channel 178); six Service Channels (Channel 172 for safety-critical communications and Channels 174, 176, 180, 182, and 184 for non-safety-critical communications); and one five megahertz channel, which would be held in reserve. The FCC also allows combining Channels 174 and 176 or Channels 180 and 182 to produce two twenty-megahertz channels, (which would be Channel 175 and 181, respectively).

As we discussed in the sections above, we believe that devices participating in the V2V information environment need exchange messages on the same channel in order to receive each other's broadcasts (*i.e.,* to hear the messages that others send). Up until now, the V2V devices transmitting basic safety messages in the V2V research have used Channel 172 (a 10 MHz channel). The research used a 10 MHz channel as the FCC's current rules for the V2V spectrum divide it into various 10 MHz channels.

Our tentative conclusion is that broadcasting on Channel 172 via continuous mode (radio set to channel 172, a 10 MHz band) is appropriate for devices in the V2V information environment. Thus, we believe that all vehicles should transmit their basic safety messages on the same channel (172). Our tentative conclusion is based on our understanding of the existing research and in alignment with the FCC spectrum allocation. The agency expects that all non-safety-critical communications will occur on the remaining channels allocated for DSRC use by the FCC. The research suggests that a 10 MHz band is sufficient for transmitting the basic safety message to the necessary 300 m range at a sufficient level of reliability PER of less than or equal to 10%.

We seek comment on all related issues we should take into account when considering this proposal, as well as any other potential alternatives.

(ii) Potential Channel Sharing or Re-channelization

NHTSA and the U.S. DOT are committed to finding the best method to develop, successfully test, and deploy advanced automotive and infrastructure safety systems while working to meet existing and future spectrum demands. DOT supports sharing so long as it does not interfere with safety of life communications. In the summer of

2015, recognizing the emerging need to perform further research on DSRC properties in order to prepare for studies on sharing, DOT worked collaboratively with the FCC and NTIA to develop a spectrum research plan. This plan (the ''DSRC-Unlicensed Device Test Plan'') is posted on DOT's Web site and details a comprehensive set of research opportunities. The plan will allow FCC, NTIA, and DOT to collectively tailor research on DSRC devices in the presence of unlicensed devices to understand the prospective impacts within real-world environments.[121] The overall goals and objectives of this research are as follows:

• Overall Goals as listed in the DSRC-Unlicensed Device Test Plan

1. Understand the impacts of unlicensed devices operating in the DSRC band.
2. Develop the capability to evaluate proposed band sharing mechanisms.
3. Define requirements necessary for sharing mechanisms to prevent interference.
4. Collaborate with the NTIA and FCC to provide Congress with results on impacts to DSRC operations from proposed sharing mechanisms.

• Specific Objectives and Goals as listed in the DSRC-Unlicensed Device Test Plan

1. Develop the capability to do accurate and relevant experimental evaluations of band sharing and interference between unlicensed devices and DSRC devices.
2. Characterize the existing radio frequency (RF) signal environment in and near the DSRC band.
3. Measure the effect of unlicensed devices on the background noise level.
4. Measure the impact unlicensed device transmissions have on receiving DSRC messages.
5. Measure DSRC suppression caused by Clear Channel Assessment (CCA) of DSRC devices in the presence of unlicensed device transmissions.
6. Measure other impacts on DSRC channel quality of unlicensed device transmissions (*e.g.,* signal to noise (S/N), packet error rate (PER), etc.).
7. Determine the minimum received power levels at which DSRC and unlicensed devices can sense the other.
8. Investigate how interference and detection (determined in the previous objectives) varies if the bandwidth of the overlapping unlicensed device transmission changes.
9. Measure the impact of DSRC operations on unlicensed device performance recognizing that the two radios may form an interactive system.
10. Investigate mitigation possibilities once potential U–NII–4 devices designed and programmed to share the band with DSRC are available.

This DOT testing effort is part of a larger collaborative testing and modelling effort with the FCC and DOC, encouraged by Congress, to ensure appropriate interference-avoidance and spectrum rights allocation in the 5850–5925 MHz (5.9 GHz) band. Congress called upon DOT to lead, in close coordination with FCC and DOC, the development of 5.9 GHz Dedicated Short Range Communications (DSRC) technology, vehicle safety testing, and DSRC capabilities testing. Furthermore, Congress called upon NTIA to study the possibility of allowing unlicensed operations in the 5.9 GHz band. The U.S. Department of Transportation (DOT), the U.S. Department of Commerce (DOC), and the Federal Communications Commission (FCC) each have core, yet interdependent, roles to play in advancing this research.

Recently, the FCC issued a Public Notice to refresh its record regarding its draft proposal to allow sharing of the 5.9 GHz band by U–NII devices.[122] As part of its Public Notice, the FCC has solicited comments on the two proposed sharing techniques developed by the IEEE DSRC Coexistence Tiger Team (*i.e.,* ''Detect and Avoid'' and ''Re-Channelization''), as well as on other potentially viable approaches to sharing in the band without causing harmful interference to V2V operations.

The FCC described the two proposed sharing approaches as follows: (1) Detect and avoid, under which unlicensed devices would monitor the existing DSRC channels, and if they detected any transmitted DSRC signal, they would avoid using the entire DSRC band. After waiting a certain amount of time the unlicensed device would again sense the DSRC spectrum to determine if any DSRC channels are in use or whether it could safely transmit; and (2) Re-Channelization, under which the DSRC spectrum would be split into two contiguous blocks: one for safety-related communications and one for non-safety-related communications, by moving the control channel and the two public safety channels to the top portion of the band. Additionally, the remaining four DSRC service channels would be reconfigured at the lower end of the band as two 20 megahertz channels rather than maintaining four 10 megahertz channels. The segments designated for safety-related communications would remain exclusive to DSRC, and the remaining spectrum would be shared between the DSRC service channels and unlicensed devices.

We seek comment on the costs and benefits of each sharing proposal, and whether and how we should consider each of these approaches relative to this proposed rule.

(b) Data Rate

In setting a data rate, one is balancing between two competing interests: (1) the speed at which one wants to transmit the information, and (2) how far the information can travel (and how reliably it can travel that distance). In other words, if we send more information in a smaller amount of time, the information cannot reliably travel as great of a distance.

In the context of our rulemaking, our proposal for data rate considers the following technical questions:

• How far do we need the message to travel?
• What is an acceptable PER (*i.e.,* how reliably do packets need to make it to a receiving device in order to ensure that a safety application can function)?
• What bitrate do current systems and voluntary standards under development use? If a final rule used a different set of requirements, how significant would this change be?

In the sections that follow, we first discuss the competing considerations for our data rate proposal. Using the information that we have from our discussion on data rate, we then discuss our proposal for the channel.

(i) Proposed Requirement is 6 Mbps

The agency is proposing to require devices to transmit at 6 Mbps. We believe it is reasonable to expect that transmitting basic safety messages at the 6 Mbps rate can easily cover the necessary range assuming 300 m at a very low PER of 10%. The available research from both CAMP and BAH support this initial conclusion, as described later in this section. Further, while we are requesting comment on changing the bitrate, we note that the current systems and voluntary standards under development all will be able to support multiple bitrates within the ranges examined (*i.e.,* device developers would not need to redesign the current hardware to support a new bitrate).

Finally, while the theoretical analysis by BAH suggests that increasing the bitrate would help to mitigate congestion mitigation, we are unsure given the lack of real-world testing whether altering the bitrate and channel bandwidth is necessary given that the agency is considering other channel

[121]

[122] *https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-68A1_Rcd.pdf.*

congestion mitigation strategies. These strategies involve adjusting the number of basic safety messages that devices would transmit per second and the power/range of those transmission when channel congestion is detected by a device. More detail on these strategies is found in Section III.E.1.b)(b)(ii). The agency is continuing to refine congestion mitigation approaches including device density in real-world conditions, beyond those tested in the specific Safety Pilot testing and Safety Pilot Model Deployment.

We request comment on our potential approaches to conclusions and our questions above. To support the commenting process, we are also presenting alternative choices for bitrate in the section that follows and we seek comment on those alternatives.

(ii) Alternatives for Data Rate Requirements

The BAH research suggested alternate bitrate possibilities that would change based on the level of congestion on the channel. Their rationale behind this approach is that, when the channel is not busy, the transmitting device should use a lower bitrate that can more reliably send the message. However, when the channel congestion is detected, the device should use a higher bitrate to send the message quicker and vacate the channel as soon as possible. This is a logical strategy because when a vehicle is in a congested environment (*e.g.,* a traffic jam [123]); the vehicle does not need to transmit the message as far because the relevant cars are the ones that are fairly close by. In other words, in this scenario, it is important to transit the message fast (not far).

Based on this logic, BAH recommended in its research that devices transmit in the following manner:

- When the Channel Busy Ratio [124] is below 50%, transmit the BSM at a data rate of 9 Mbps;
- when the channel busy ratio exceeds 50%, transmit the BSM at a data rate of 18 Mbps and continue to transmit the BSM at a data rate of 18 Mbps until the Channel Busy Ratio falls below 20%.

While we have proposed to use a standard 6 Mbps bit rate, we request comment on the recommendation from BAH and specifically would seek data regarding the following questions:

- Is it appropriate to change the bitrate based on channel busy ratio if the performance within the relevant range is relatively similar across the bitrates under consideration? Would it be more advantageous to use 18 Mbps at all times?
- For changing message bitrates, our understanding is that the transmitting device sends a basic safety message with a header (the first part of the message) always transmitted at 6 Mbps. Our understanding is that the header instructs the receiving device to switch to another bitrate for the remainder of the message. How does this process impact the speed at which devices in the V2V information environment can transmit and receive basic safety messages?
- Is there any information on how much time one would save between transmitting a basic safety message at 6 Mbps versus 18 Mbps (and other bitrates)? In other words, many more messages can be transmitted within a given timeframe if one were to change the bitrate?
- We note that 3 Mbps, 6 Mbps, and 12 Mbps are bitrates that device makers are *required* to support when they are building a device according to the IEEE 802.11 voluntary standard. The standard affords the option to support other bitrates but does not require it. Is there any information on how many devices support bitrates other than 3 Mbps, 6 Mbps, and 12 Mbps?
- What would the impact be on current systems and voluntary standards under development if the agency were to use a different bitrate (from 6 Mbps) in a final FMVSS?
- BAH suggests that all radios now support 6 and 9 Mbps transmission. (Section 4.3.1 of BAH Report). Is there any information on whether current DSRC radios can support 18 Mbps and dynamically switch between the two bitrates based on channel congestion ratio? What's the cost to implement this change?

(iii) Existing Research on the Impact of Different Potential Data Rates

There are currently two bodies of research available to the agency on the impact that different bitrates can have on the range and reliability of the transmission of the basic safety message, CAMP and work performed by BAH funded by the agency. In essence, the CAMP research showed that there is a small difference in PER between a 6 Mbps and 12 Mbps data rate at 300 m, the assumed minimum range for V2V communications. The BAH research shows that there was a difference in PER between 6 Mbps, 9 Mbps, 12 Mbps, and 18 Mbps. However, most of these differences occurred at a distance exceeding 500 m.

(a) Increasing Data Rate

CAMP conducted a test involving real devices in an outside environment. VSC–A Report Appendix I [125] showed that, given a dedicated DSRC transmission channel, using a 12 Mbps data rate somewhat degraded the ability of the message to reach its destination when compared with a 6 Mbps data rate. In their research, they used a vehicle broadcasting basic safety messages and placed it in different locations around various radios that attempted to receive the vehicle's basic safety messages during the test. When the researchers placed the vehicle close to the radios, there seemed to be little degradation in whether the radios could receive the messages (regardless of bitrate). Using the 6 Mbps data rate, 58 receiving radios picked up the basic safety messages. Using 12 Mbps, 57 receiving radios were still able to pick up the basic safety messages. However, when they placed a vehicle at the ''far edge'' of the range of the receiving radios, 55 radios received basic safety messages at 6 Mbps versus only 45 at 12 Mbps. See Figure III–1 and Figure III–2, below.

[123] In relation to communications congestions the use of the term ''traffic jam'' refers to the analysis presented via the ANPRM that identified a major interchange that includes overpasses as an extreme scenario with the possibility of approximately 800 V2V vehicles transmitting BSMs in the range of one V2V vehicle.

[124] Channel busy ratio describes how congested the channel is. When the ratio is 50%, it means that for a 100 ms timeframe, the device sees that there is someone else within range that is transmitting for 50 ms of the 100 ms.

[125] See Section 3 in Appendix I, *http://www.nhtsa.gov/Research/Crash-Avoidance/Vehicle%E2%80%93to%E2%80%93Vehicle-Communications-for-Safety* (last accessed: Dec 8, 2016).

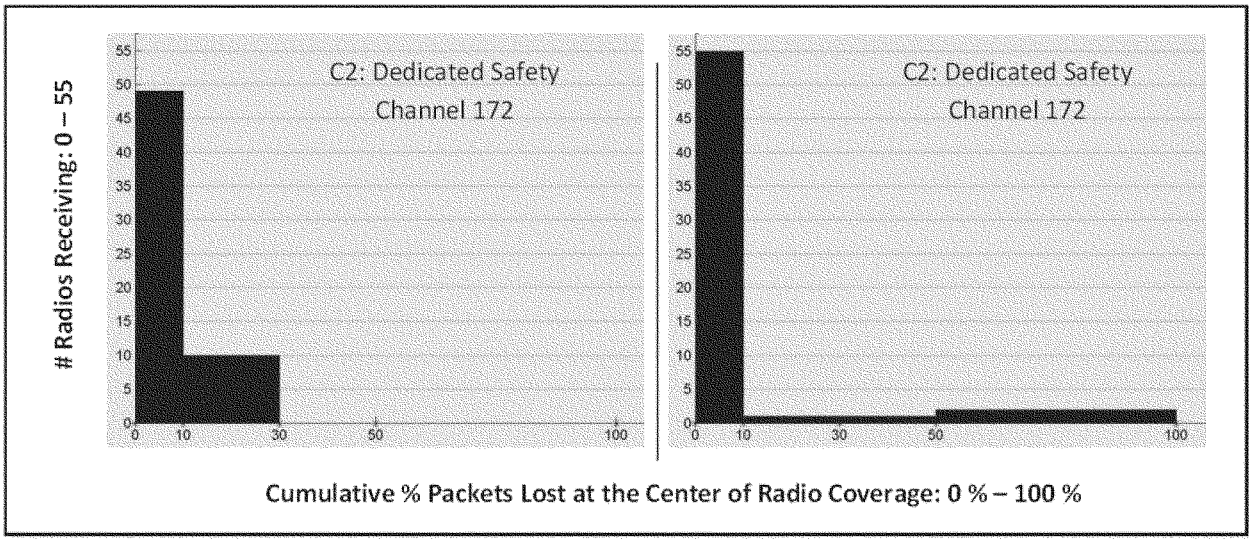


Figure III-1 Cumulative Packet Losses at Center

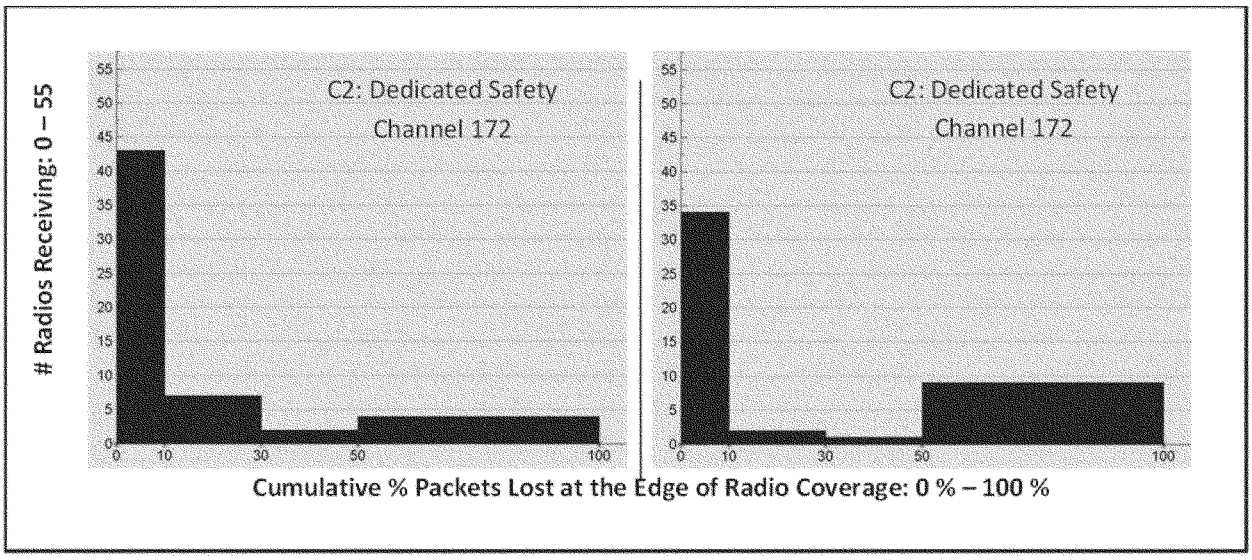


Figure III-2 Cumulative Packet Losses at Edge

In addition, the VSC–A research explored the potential impact of using 12 Mbps as opposed to 6 Mbps within a 300 m test range. As evident in the figure below, when using 6 Mbps, nearly all the devices (up to the 300 m test range) received the messages with a very low PER. However, when switching to 12 Mbps, we observe a small increase in the number of devices that could not receive the messages with a low PER between the range of 100 and 300 m.

The research also examined the impact of different bit rates based on transmission power (*i.e.,* if we transmit with more power, how would the 6 and 12 Mbps bit rates affect the ability of the receiving device to obtain the basic safety message? In the CAMP research, radios were able to receive packets at a somewhat lower transmission power when they were being transmitted at 6 Mbps as opposed to 12 Mbps (*i.e.,* packets failed to reach their destination when the power was −90 dBm when they were transmitted at 12 Mbps versus −94 dBm when they were transmitted at 6 Mbps).

(b) Differing Bitrates

BAH also conducted research comparing the impact of data transmission rate to the reliability and range of the transmission. In their research, involving transmissions sent on a flat and open road at a test facility, 18 Mbps (they also tested 6 Mbps, 9 Mbps, and 12 Mbps) did not perform as well (*i.e.,* a higher PER at a shorter distance) as the lower bitrates. However, their field test indicated that the ability of the transmission to successfully deliver the packet remained rather

constant (regardless of the bitrate tested) up to 500 m.[126]

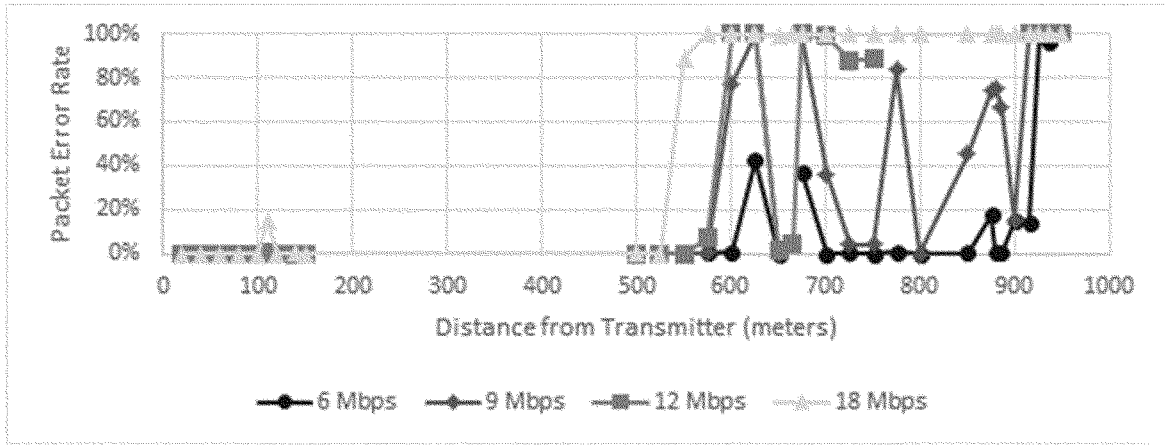


Figure III-3 Packet Error Rate based on Distance

In BAH's report, they surmise that the wide variation of PER at distances above 500 m for all bitrates is attributable to multipath fading.[127] They conclude that an 18 Mbps bitrate seems more susceptible to multipath fading than other, lower bitrates (*i.e.,* the 18 Mbps bitrate might be more sensitive to environmental changes).

(c) Other Aspects of DSRC Transmission Performance

Thea agency recognizes there other BSM transmission performance parameters that will be necessary for real-world implementation. These parameters are found in the applicable application specifications for DSRC message content and performance parameters. The agency does not see a reason to establish requirements for these parameters based on currently available information. However, we request comment and any supporting information from the public on whether there may be advantages to establishing requirements in these areas to support the safety applications and/or ensure interoperability within the V2V information environment.

(1) Age of BSM Transmission

The age of the BSM transmission is monitored by the data element, DE_DSecond. The DSecond data element provides a time value when a BSM is populated with data there may be a lag between the time the data is collected and populated in the BSM—and when the BSM is actually sent. We are proposing that the device should not transmit a BSM if the data within the BSM is over 150 milliseconds old. In the test procedure section in this document, we are specifying a test device for receiving basic safety messages from the tested vehicle. Our rational is that the requirements and test methods requires the device to transmit a timely BSM.

- The system shall set the DE_DSecond with a value corresponding to milliseconds within a minute of the UTC time when the BSM Part I vehicle location data is determined by the positioning source. [MPR–BSMTX–DATAACC–008]
- DE_DSecond shall be accurate to within 1 ms of the corresponding UTC time. [MPR–BSMTX–DATAACC–009]
- DE_DSecond shall have a value less than 150 ms from the UTC time at which the BSM is transmitted (*i.e.,* the age of the time used in DE_DSecond shall be less than 150 ms). [MPR–BSMTX–DATAACC–010]

Note: Other measurements present in the BSM should be aligned to DE_DSecond insofar as possible in the implementation. Since other measurements present in the BSM do not have an absolute time stamp, it is not clear how this is done in practice. Nevertheless, practical implementations to date have used the most recent measurement updates known to the transmitter at the time when the BSM is composed.

(2) Reception

In addition to the issue of transmitting the basic safety message, the V2V research to date also included potential requirements covering the reception of the basic safety message. The potential requirements in this area include the ability of the vehicle to:

- Receive a basic safety message given a particular test device's transmission power and distance from the vehicle;
- translate the 0's and 1's received over the wireless airwaves into the basic safety message (*i.e.,* using the appropriate protocol suite to interpret and unpack the wireless signal into the basic safety message content); and
- authenticate the signature of the basic safety message to confirm that the information is from an authenticated source (*i.e.,* to determine that the message is actually from a vehicle).

While the research (*e.g.,* the V2V safety pilot) included many of these aspects of performance, we tentatively believe that it is unnecessary to separately evaluate the vehicle's ability to receive the basic safety message as a number of indirect methods determining if a vehicle received the information exist in the transmission requirements already, namely congestion detection and mitigation.

Although this may be counterintuitive, we believe that directly evaluating the reception of the basic safety message is best conducted

[126] *See* BAH DSRC Phase II Report Section 4.3.3.2.

[127] Wireless transmission of information through radio signals often travel to a receiver not only through a direct path, but also through reflections off of other objects in the environment. When the objects move and the direct path between the transmitter and the receiver change, the signal may fade in a variety of ways. Thus, the changing environmental conditions (in addition to some of the other

under conditions where the vehicle is using the information from the basic safety message for a particular purpose. For example, when there is a safety application, the receiving and processing the basic safety message transmissions leads to a response from the vehicle (*e.g.,* a warning). In these conditions, the vehicle's reception of the basic safety message is indirectly (and, we believe, sufficiently) tested by exposing the vehicles to basic safety messages with certain information (*e.g.,* information about a vehicle on a collision course with the tested vehicle) and then measuring the vehicle's response (*e.g.,* whether it issues a warning at the appropriate time).

As this proposal does not include requirements for applications, the agency would need to require vehicles to output a log or record of the basic safety messages that they received within a given amount of time in order to assess whether the vehicle is able to complete the three tasks mentioned above. However, we tentatively believe it's unnecessary at this time to include additional requirements to check a vehicle's ability to receive basic safety messages. By requiring the vehicle to mitigate congestion, we believe that the vehicle must incorporate the ability to receive the message.

Regardless of methods employed, congestion mitigation requires the vehicles to determine the local vehicle density inside a given radius as part of the determination of the maximum time between messages. To do this, the vehicle not only has to have the ability to understand the base channel busy ratio, but also decode the message enough to expose the various temporary IDs of the received BSMs to get an accurate vehicle count. To decode the message far enough to get the temporary IDs, the vehicle needs to be able to interpret the BSM and all of its sub-layers.

We also believe that automakers implementing safety applications would ensure that the vehicle would have the capability to receive the basic safety message (including receiving the transmission and processing the transmission to obtain the message) and authenticate the message. Because the performance of an automaker's safety application in a vehicle would rely on the vehicle's ability to reliably receive basic safety messages, we believe that automakers implementing safety applications would also have a strong incentive to implement an appropriate receive capability in their vehicles.

However, we request comment on our tentative conclusion. We seek comment on whether there is any reason that the agency should include direct requirements for receiving the basic safety message (independent of the vehicle's capability to utilize the information for a safety application, congestion control, Misbehavior detection, or other intended uses). Further, we request comment on what performance the agency should assess and how the agency should assess such performance (*i.e.,* how does the agency test the reception of information when the vehicle is not expected to do anything in response to that information?). Finally, the agency seeks comment on whether there is a need to specify requirements for DSRC devices to have message reception filtering for interference from operation in the adjacent unlicensed spectrum. Please provide substantive data and clarifying reasons why or why not this is necessary along with potential filtering strategies that could be employed, if the commenter believes message reception filtering is necessary.

One potential way to establish direct requirements and measure performance of those requirements would be to require vehicles to:

- Store all basic safety messages received within a certain amount of time (*e.g.,* 5 minutes during the test); and
- output the data through a specified interface or collection of interfaces (*e.g.,* OBD–II).

To test this performance, we would use a test device to generate basic safety messages near the tested vehicle. Access the tested vehicle using the specified interface in the standard and download the basic safety messages received file. Verify that the basic safety messages received by the tested vehicle match the basic safety messages transmitted by the test device. We request comment on whether this is a viable method for establishing requirements for this aspect of performance.

(3) Message Packaging and Protocol Suites

Finally, another important part of ensuring interoperability of any network is for all the devices participating in the network to agree to the same communications method (*i.e.,* speak the same language). For electronic devices communicating over a network, the method of taking information and packaging that information (*i.e.,* in multiple steps, converting it into a string of 1's and 0's) so that it can be sent across a wireless (or wired) network is called a protocol stack. Each step in the protocol stack packages the information for the next step. The transmitting device and the receiving device need to agree upon one method of packaging information so that the transmitting device knows how to package the information into 1's and 0's and then the receiving devices knows what to do with the received 1's and 0's in order to extract the information transmitted.

DSRC communications within the 5.85 to 5.925 MHz band are governed by FCC 47 CFR parts 0, 1, 2 and 95 for onboard equipment and Part 90 for road side units. In reference to the OSI model, the physical and data link layers (layers 1and 2) are addressed primarily by IEEE 802.11p as well as P1609.4; network, transport, and session layers (3,4 and 5) are addressed primarily by P1609.3; security communications are addressed by P1609.2; and additional session and prioritization related protocols are addressed by P1609.12.

Further, a variety of communication performance standards specific to the V2V communications and BSM transmission/reception are defined in SAE J2945 while data element and data frame definitions and coding requirements are defined in SAE J2735.

Devices adhering to these standards know how to package the basic safety message for transmissionover the DSRC 5.9 GHz spectrum. They also know how to interpret and unpack transmissions over that spectrum in order to obtain the basic safety message. While our proposed rule does not include explicit requirements for vehicles transmitting basic safety messages to utilize the methods for packaging the basic safety message in IEEE 802.11 and 1609, our proposed performance test (in effect) would require vehicles to do so.

As further discussed in the test procedure section in this document, we are specifying a test device for receiving basic safety messages from the tested vehicle. Our proposed test device would utilize the method for unpacking the basic safety message that is specified in 802.11 and 1609. Thus, in essence, vehicles transmitting the basic safety message will need to package the message utilizing the same method in order to deliver the message to the test device in our test. If the vehicle is unable to transmit a message packaged in a way that can be unpacked by our test device (*i.e.,* using the IEEE method), the vehicle would fail our proposed performance test.

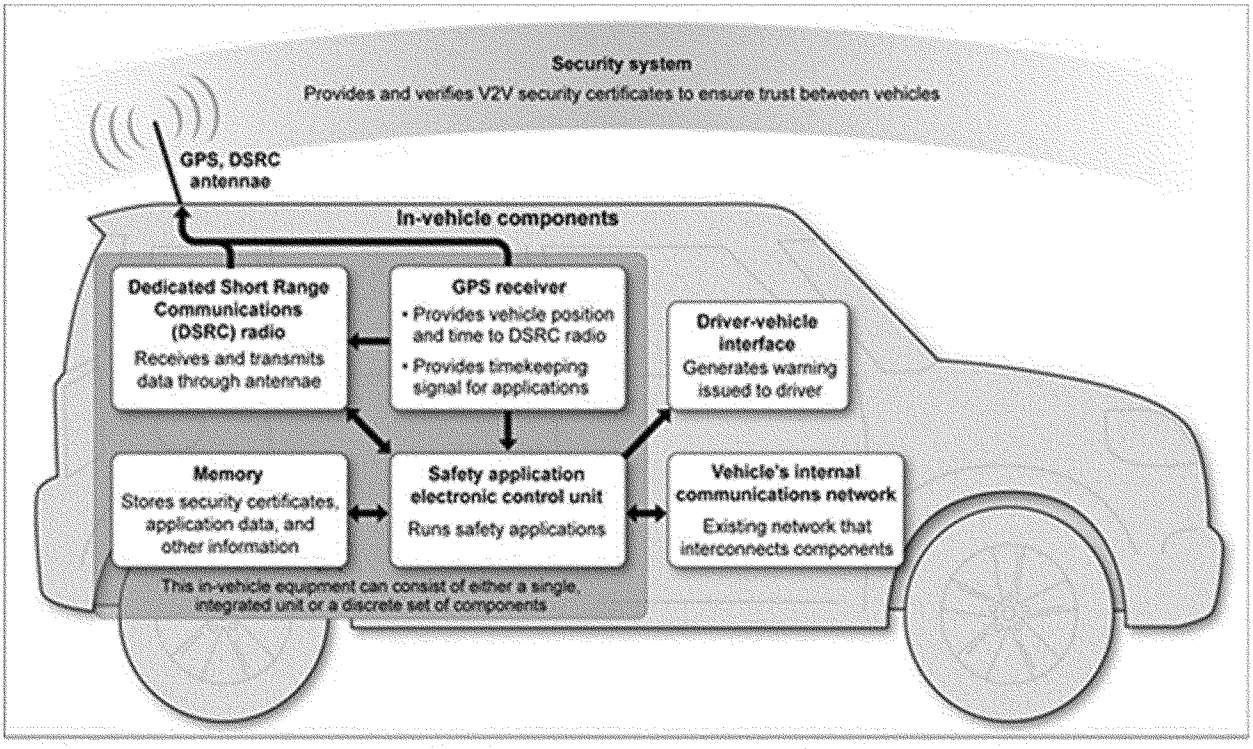
In this manner, we believe we are specifying a protocol stack that would ensure that devices following the packaging method of the protocol stack would be able to transmit and receive basic safety messages on the DSRC 5.9 GHz spectrum. We request comment on our tentative conclusion. Does the

agency need to specify any additional areas of performance in order to ensure interoperability of the devices? In other words, what aspects of the packaging of the data for transmitting cannot be tested by our proposed test method? How does that impact device interoperability and how would the agency test it?

(d) DSRC-Based Communication—Applicable Industry Standards

(1) Standards and DSRC V2V Technology

Vehicle to Vehicle technology incorporates many components to facilitate crash avoidance capabilities. The basis for Vehicle-to-Vehicle crash avoidance is the communication of safety information among vehicles. Figure III–4 identifies the various components that a DSRC-based system would include; the DSRC radio, GPS receiver, Memory, Safety Applications, Vehicle internal communications network, System Security, and the Driver-Vehicle interface.



Sources: Crash Avoidance Metrics Partnership and GAO.

Figure III-4 V2V System Components utilizing DSRC

To support the V2V wireless communications, a set of voluntary consensus standards will need to continue to be developed. These standards define such things as how devices are to communicate over an identified frequency; how to exchange information including instructions for sending and receiving messages; how to structure, format, and understand message content; and the data elements making up the message content.

We expect that V2V communication will be covered by a family of integrated standards from different organizations that deal with different aspects of wireless communications and message exchange. Such standards will facilitate V2V device developers and implementers successfully exchanging safety messages and security information (*e.g.* interoperability). The standards will help ensure interoperability meaning any device identified as a V2V device communicates and interprets the messages in the same way.

(2) Voluntary Consensus Standards

Voluntary consensus standard: The term ''voluntary'' distinguishes the standards development process from governmental or regulatory processes. All interested stakeholders participate, including producers, users, consumers, and representatives of government and academia. Voluntary standards are also made mandatory at times by being incorporated into law by governmental bodies.

A voluntary consensus standards body is defined by the following attributes:

- Openness;
- balance of interest;
- due process;
- an appeals process;
- consensus, which is defined as general agreement, but not necessarily unanimity, and includes a process for attempting to resolve objections by interested parties, as long as all comments have been fairly considered, each objector is advised of the disposition of his or her objection(s) and the reasons why, and the consensus body members are given an opportunity to change their votes after reviewing the comments.[128]

Voluntary consensus standards follow a rigorous, industry inclusive development process where each standard is developed by an established

[128] See ''Standards Glossary'' IEEE, *https://www.ieee.org/education_careers/education/standards/standards_glossary.html* (last accessed Dec 12, 2016).

committee that consists of volunteer representative from interested stakeholders. Examples of such organizations include the Institute of Electrical and Electronic Engineers (IEEE), ASTM International, SAE International (SAE), and the American National Standards Institute (ANSI). Each committee establishes membership protocols regarding voting criteria, structure and format guidelines, and how information is contributed. The committees draft the standards and, once drafted, the standards are presented to the organizations membership for review, comment, and balloting.[129] If the standard is balloted and accepted, the standard is published. If needed, there are processes for a standard to be revised or updated as technology evolves. We anticipate that such bodies will develop the standards that provide the information to develop and implement interoperable V2V communications, but again stress that our performance requirements may permit technologies other than DSRC to perform V2V communications in the future.

In relation to DSRC V2V Communications, to date two voluntary consensus standard organizations have developed separate, however, interrelated standards based on DSRC-enabled V2V communications. These organizations are the Institute of Electrical and Electronic Engineers (IEEE), and the Society of Automotive Engineers (SAE). IEEE has developed two standards, IEEE 802.11p and IEEE 1609.x. IEEE 802.11p establishes how compliant devices will transmit and receive messages using the 5.9 GHz frequency. IEEE 1609.x defines the protocols for radio channel operations, message exchange, and message security. SAE has also developed two standards, SAEJ2735 and SAEJ2945. SAEJ2735 specifies the BSM message set, its data frames, and data elements. SAEJ2945 establishes minimum performance requirements for the BSM data elements in various messages.

The set of standards for DSRC detail the procedures, protocols, and message content to support the broadcast (special communication capability of DSRC) and receipt of the Basic Safety Message and the linked communications needed to transfer security materials to establish a more secure V2V communications environment.

(3) Computer and Wireless Communication Reference Model

To facilitate the communication needed from devices (hardware) to the applications (software) the International Organization for Standards (ISO) established the Open System Interconnect reference model (OSI). The OSI reference model consists of seven layers that define the different stages data must go through to travel from one device to another over a network.[130] Each layer has unique responsibilities including passing information to the layers above and below it.[131] The combination of layers represents protocol stacks. This structure and nomenclature of the OSI reference model is used in the V2V related standards. The Standards cover how data is communicated and interpreted from one V2V device to another device and processed to be used by crash avoidance applications; analogous to how your wireless router transfers data via the internet to an application on your computer such as a web browser.

The layers represent levels of interfaces to enable the bits that represent data to be properly transported and interpreted. The layers are illustrated in Figure III–5. The first layer starts at the bit/hardware device level and indicates how the steam of raw information is sent to the next layer. In relation to V2V this would be the DSRC radio level. In addition to the raw information, layer 2 organizes data packets into network frames that are transported across the V2V wireless network. These first two levels are covered by IEEE 802.11p. The next 3 layers are covered by IEEE 1609.x. Layers 3, 4, and 5 handle the addressing and routing of messages, management of the packetization of data and delivery of packets, and the coordination of message transmissions and authorization (security). Layer 6, session layer, and layer 7, application layer, are covered by SAE J2735 and SAE J2945 and provide for the conversion of incoming data for use by the application and interface protocols with the applications.[132] These layers and associated standards represent the DSRC protocol stack that developers use to design and produce interoperable devices.

[129] For a description of the IEEE ballot process, see *http://standards.ieee.org/develop/balloting.html* (last accessed Dec 12, 2016).

[130] See ''How OSI Works'' *http://computer.howstuffworks.com/osi1.htm* (last accessed: Dec 12, 2016).

[131] See ''Physical Layer'', *http://www.linfo.org/physical_layer.html* (last accessed: Dec 12, 2016).

[132] See ''OSI reference model (Open Systems Interconnection)'' *http://searchnetworking.techtarget.com/definition/OSI* (last accessed: Dec 12, 2016).

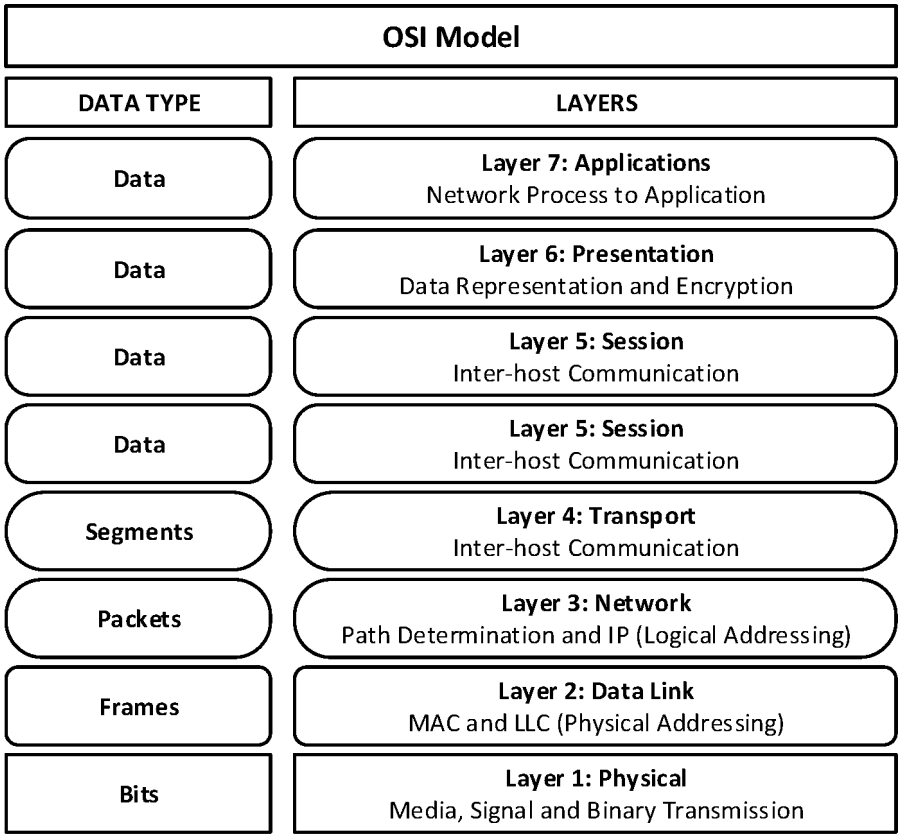


Figure III-5 OSI Stack

(4) DSRC-Based V2V Device Communication Standards

As indicated previously, SAE and IEEE have developed and established standards for DSRC. The DSRC protocol stack and related standards are illustrated in Figure III–6.

Working from the bottom of Figure III–6 and starting with the physical layer, the IEEE 802.11–2012—IEEE Standard for Information technology-Telecommunication and information exchange systems-Local and metropolitan area networks-Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications was published 29 March 2012. The standard covers operations of Wi-Fi devices. A specific section of the standard, 802.11p, covers DSRC communication for V2V and V2I devices that use the 5.9 GHz frequency. The standard describes information exchange between system local and metropolitan networks at the device radio level.

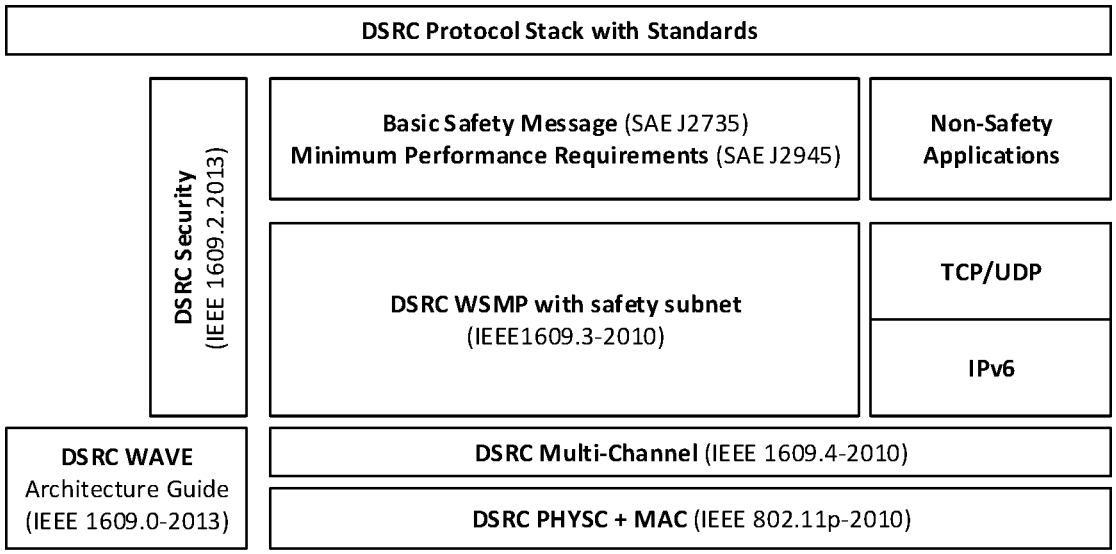


Figure III-6 DSRC Protocol Stack

From the device (hardware) level of 802.11, the IEEE 1609.x family of standard establishes the protocols for Wireless Access in Vehicular Environments (WAVE). These standards support the network, transport, and session OSI layers. The 1609 standards that are relevant to DSRC include the following:

- 1609.0—Guide for Wireless Access in Vehicular Environments (WAVE) Architecture—This section of the standard describes the full set of 1609 standards and their relationships to each other and other relevant standards such as 802.11. The guide was published 11 December 2013.
- 1609.2—Security Services for Application and Management Messages—Describes the secure message formats and processing for use by WAVE devices, including methods to secure WAVE management messages and methods to secure application messages. It also describes administrative functions necessary to support the core security functions. The V2V security design is based on this standard and incorporates an expanded application of Public-Key infrastructure to secure V2V communications and appropriately protect privacy. This standard is associated with Layer 5, session layer, and Layer 6, presentation layer. This standard was published 26 April 2013.
- 1609.3—Networking Services—In relation to Layers 3 and 4, network and transport, this standard describes the Internet Protocol (IP), User Datagram Protocol (UDP), and the Transmission Protocol (TCP) elements of the internet model and management and data services for WAVE devices. This standard was published 13 July 2012.
- 1609.4—Multi-Channel Operations—This standard crosses layers 2 through 5 to support multi-channel operations of the DSRC radio. Wireless radio operations that include the use of other channels need to provide instructions concerning the operation of the control channel (CCH), the service channel (SCH), interval times, priority access, channel switching, and routing. The current design for a V2V DSRC device uses two radios. One radio is tuned to channel 172 for transmission and reception of the safety-critical communication of the BSM. The second radio uses multi-channel operations to set the CCH and SCH, and use the other channels to support other messages transmission such as the messages associated with security materials. This standard was published 7 February 2011, however, a draft corrigendum that corrects errors is pending publication.
- 1609.12—Identifier Allocations—For the WAVE system this standard describes the use of identifiers and the values that have been associated with the identifiers for use by the WAVE system. This standard was published 21 September 2012.
- Layers 6, Presentation, and Layers 7, Application, are supported by the two SAE standards that define the elements and the minimum performance requirements for the BSM data elements.

SAE J2735—DSRC Message Set Dictionary specifies a message set, and its data frames and data elements specifically for use by application intended to utilize the 5.9 GHz frequency. For crash avoidance safety, the standard identifies the Basic Safety Message (BSM). The standard includes an extensive list of BSM data elements divided into two parts. Part one includes elements that are transmitted with every message. Part two includes elements that are included in the transmission when there is a change of status. The BSM is exclusive to the support of crash avoidance safety applications. Section III.E identifies the BSM elements that are identified as minimum performance requirements for V2V devices.

SAE J2945—DSRC Minimum Performance Requirements—This standard resulted from research indicating a need for a separate standard that would describe the specific requirements for the data elements that would be used in the BSM. The standard will also cover other DSRC messages; however, the first part of the standard will specify the performance requirements for the BSM data elements. The draft of the first part of the standard is being developed using results of V2V research. The standard for BSM performance requirements is scheduled to be completed and balloted late 2015.

The standards explained above represent voluntary consensus standards that have been developed by standards development organization. These standards are not regulatory. These standards, however, do provide a basis of investigation as to what is needed in relation to identifying the minimum performance requirements that if met ensure the proper and safe functionality of V2V DSRC device that will result in the avoidance of crashes.

(5) Relevance to DSRC-Based Communications

The SAE and IEEE standards supporting DSRC discussed are not performance requirements *per se.* Performance requirements and standards are interrelated and indicate, at different levels, how a system or device must function. Performance requirements are developed to indicate how a device or system needs to perform. In terms of V2V, performance requirements are associated with an installed device and are viewed from the top of the design and development process. Performance requirements may incorporate various standards that are identified in Section III.D, however, most of the standards are related to sub-systems and components that support the development of design specifications. The higher level performance requirements indirectly verify lower level standards were used by verifying the design performs at the integrated system level.

Figure III–7 illustrates our understanding of the hierarchical relationship associated with performance requirements and how standards are used at different component design specification levels. The bulk of the V2V related standards support primarily support product development specifications at the Controller Spec level and the Component Technical Spec level. The specifications are verified at each level by different component test and sub-system tests. The Auto OEMs conduct tests at the system level to verify design and system operations. After installation, OEMs conduct vehicle integration tests to verify installation and system operation in relation to design specification and regulation identified performance requirements. Once the integration is verified, the Auto OEMs verify compliance with the performance requirements. This hierarchy demonstrates how top level performance requirements supported by standards provide the information to successfully design and implement V2V components that will be interoperable and meet identified system level performance requirements.

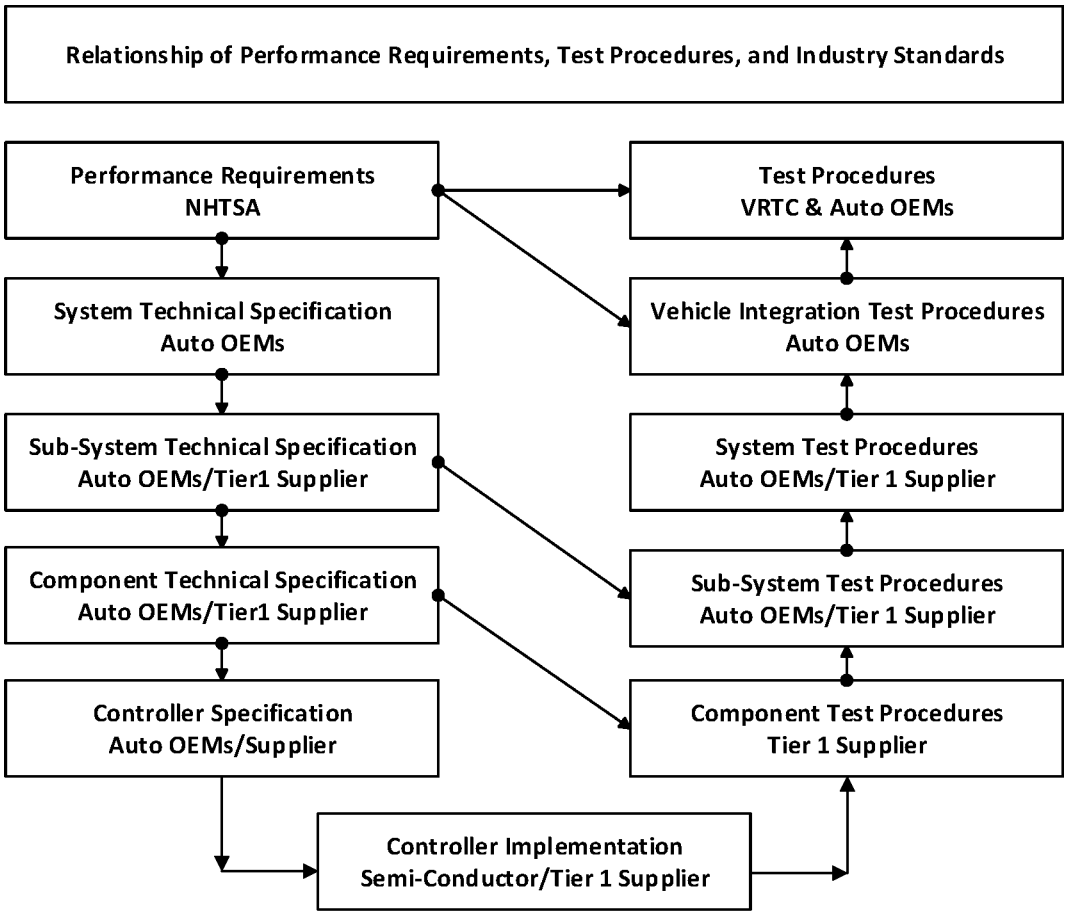


Figure III-7 Relationship of Performance Requirement to Production Product

The voluntary consensus standards provide information that support both performance requirements and design specifications, and are the bridge for connecting the requirements to the specifications. In relation to the NPRM, the work performed by NHTSA in relation to performance requirements is to identify, and define performance requirements and verification tests that will indicate that V2V device have been designed and implemented such that these devices will operate to provide the DSRC communications and security that will support crash avoidance applications.

(6) Summary of DSRC-Based BSM Transmission Requirements

TABLE III–1—SUMMARY OF BSM TRANSMISSION REQUIREMENTS

Requirement	Proposal	Basis	Relationship to standards	Reason
Range (longitudinal & lateral)	Minimum 300m; 360 degrees around vehicle.	CAMP—application tested in SPMD also calculation of range needed for DNPW.	SAE J2945/1	The setting is based on the need to provide accurate and timely safety alerts. The setting was obtained by extensively testing commercially available equipment and automotive sensors in a wide variety of driving environments.
Range (Elevation)	At elevation angle of +10 degrees and −6 degrees.	CAMP and BAH research and testing capabilities.	SAE J2945/1	Same as above.
Reliability	Packet Error Rate <10%	CAMP and BAH	SAE J2945/1	Same as above.
BSM Radio Channel	All BSM transmissions and receptions on 172 (safety-critical communications).	FCC rules	SAE J2945/1	Same as above.
Data Rate	6 Mbps	CAMP and BAH research—CAMP research shows PER degradation using 12 Mbps. BAH research indicates problems after 500m, also BAH test done under ''open field'' conditions.	SAE J2945/1 (one of the bitrates included in 802.11).	Same as above—Also Current developers support a 6 Mbps data rate. More data and testing is needed to change the data rate and determine if a changing rate can be used and support crash avoidance.
Transmission Frequency	10 times per second under non-congested conditions.	CAMP—trade-off between long inter-packet delays experienced by V2V safety applications and heavy wireless channel utilization.	SAE J2945/1	Accepted among experts to support V2V crash avoidance.
Staggering Transmission Time	Random transmission of BSMs every 100 +/− ms between 0 and 5 ms.	Mitigate channel congestion if all devices transmitted at same time—CAMP and BAH research.	SAE J2945/1	Due to accuracy of devices need to mimic the stagger experienced during SPMD to avoid message collisions to facilitate efficient channel usage.

(e) Alternative (Non-DSRC) Technologies

This section is intended to recognize and support the continual progression of communication technology. It proposes alternative interoperable technologies performance requirements grounded in today's DSRC technology, which would enable the deployment of potential future V2V communications technologies that meet or exceed the proposed performance requirements, including interoperability with all other V2V communications technologies transmitting BSMs.

This section provides performance-based requirements that would support transmitting the basic safety message via alternative interoperable technologies. The proposed requirements are limited to the transmission of the BSM only. Potential security and privacy requirements and alternatives are discussed in those respective sections of this proposal.

Alternative technologies would need to meet the same message transmission requirements as DSRC-based devices, minus any DSRC-specific requirements such as channel or data rate specifications.

(1) Transmission Range and Reliability

Alternative technologies would need to support the same message transmission range and reliability requirements as DSRC-based devices, minus any specific references to DSRC.

(i) Range

Alternative technologies would need to support the same message transmission range requirements as DSRC-based devices, minus any specific references to DSRC.

(ii) Longitudinal/Lateral Range

Alternative technologies would need to support the same message transmission longitudinal and lateral range requirements as DSRC-based devices, minus any specific references to DSRC.

(iii) Elevation Transmission Performance

Alternative technologies would need to support the same message transmission elevation performance requirements as DSRC-based devices.

(2) Testing the Elevation Transmission Range

Alternative technologies would need to support he same message transmission elevation test requirements as DSRC-based devices.

(a) Test Device

Alternative technologies would need to support the same message transmission elevation transmission performance test device requirements as DSRC-based devices, minus any reference to DSRC.

(b) Location of the Test Device

Alternative technologies would need to support the same message transmission elevation test device location requirements as DSRC-based devices.

(3) Reliability

Alternative technologies would need to support the same message transmission reliability requirements as DSRC-based devices, minus any reference to DSRC.

(4) Aspects of Transmission Range Performance Indirectly Tested

Alternative technologies would need to support the same message transmission range performance indirect tests as DSRC-based devices.

(a) Transmit Power

Alternative technologies would need to identify the same transmit power as DSRC-based devices, where applicable for a specific communication medium.

(5) Channel and Data Rate

A final rule will need to indicate the range at which the vehicle needs to transmit the basic safety message and

the receive sensitivity for alternative technologies.

(6) Transmission Timing

Alternative technologies would need to meet the same transmission timing requirements as the DSRC-based proposal minus any DSRC-specific requirements, such as channel and data rate. In keeping with the more general nature of the standards for alternative technologies, specifying aspects such as channel congestion or the need for staggering or synchronizing message transmission is assumed not to be needed and assumed to be handled by any protocol or communication medium used for V2V communication.

(a) Default Transmission Frequency

Alternative technologies would need to support the same message transmission frequency as DSRC-based devices, 10 times per second (10 Hz).

(b) Staggering Transmission Time

Alternative technologies would need to address the same issues for staggering transmission timing as DSRC-based devices, minus any direct reference to DSRC.

(7) Other Aspects of Alternative Interoperable Technologies

Alternative technologies would need to address the same issues for staggering transmission timing as DSRC-based devices, minus any direct reference to DSRC.

(a) Age of BSM Transmission

Alternative technologies would need to support the same message age monitoring requirements as DSRC-based devices.

(b) Reception

Alternative technologies would need to support the same message reception requirements as DSRC-based devices, minus any references to message congestion mitigation, misbehavior detection, and DSRC-specific messaging content.

Additionally, NHTSA does not seek comment on the need to specify requirements for reception interference from operation in the adjacent unlicensed spectrum given this would be spectrum dependent.

(c) Interoperability

V2V devices using alternative technologies would need to be capable of transmitting and receiving an established message from other V2V devices, regardless of the underlying technology (*i.e.* the BSM that has specified content of information, but also the measuring unit for each information element and the level of precision needed) Interoperability with DSRC-based devices would, in particular, be necessary. We seek comment on what test procedures or other safeguards would be required to ensure interoperability.

2. Proposed V2V Basic Safety Message (BSM) Content

At the core of this proposal is the basic safety information that we believe vehicles need to send in order to support potential safety applications. In order to realize the safety benefits discussed above, safety application designers need to know what consistent set of information will be available, what units will be used to express that information, and the level of accuracy that each information element will have. This uniform expression of the basic safety information is important because a safety application needs to rely on the information in the messages and assume that the information is accurate to within a given tolerance. The requirements proposed in this section are consistent across any potential communication technology employed in V2V communications.

To date, the automotive industry (through SAE) has been developing voluntary consensus standards [133] to help standardize these details of the basic safety message. The general approach of our proposal is to incorporate the data elements from the current draft SAE standards in order to facilitate interoperability between devices that would comply with the proposed FMVSS and any potential future developments of the SAE standards. Further, we are considering each data element and associated tolerance requirements for each of those elements in the context of addressing the safety need of avoiding crashes. Each of the data elements we are proposing to require provide values that collectively contribute to the calculations of possible vehicle interactions and evaluating the imminent crash potential of these interactions. Moreover, the required and optional data elements would create a data-rich environment that can be used to not only identify imminent crash situations, but also ensure the drivers can be given advanced warning of these situations so these drivers can take appropriate evasive action to avoid crashes. Based on our analysis, we are proposing requirements for some, but not all, of the data elements in the SAE standards. However, in order to preserve interoperability with vehicles that may choose to send additional data elements, we are generally proposing to permit vehicles to transmit a data value that either conforms to the SAE standard or is the SAE-specified ''data unavailable'' value.

Finally, we are also proposing to exclude certain data elements from being transmitted as a part of the BSM. We are proposing this limitation in order to balance the privacy concerns of consumers with the need to prove safety information to surrounding vehicles.

While we request public input on any of the issues discussed in this section, we especially would like input on whether we have appropriately selected (1) the data elements to include/make optional/exclude, and (2) the tolerance levels for each data element.

(1) Required Data Elements and Their Performance Metrics

In the work completed by SAE thus far,[134] the automotive industry separated the information transmitted in the basic safety message into two parts (Part I and Part II). As we explained in the Readiness Report, Part I information is core information intended to be sent in every basic safety message. Part II is additional information intended to be sent as needed. In this section, we cover data elements from both Part I and II that our proposed requirements would include the performance metrics for each.

(a) Message Packaging

Before reaching the actual elements that support safety applications, the basic safety message needs certain preliminary elements that help a receiving device to know what it is receiving. The three elements that fall into this category are the Message ID, the Message Count, and the Temporary ID. We tentatively believe that all three of these elements are necessary as they allow the receiving device to interpret the digital code it is receiving and the safety information inside the message. The three elements provide the information needed for the device to properly process a sequence of messages that delivers vehicle position and motion data needed to interpret possible crash situations.

(i) Message ID

The first element is the Message ID. This data element explains to the receiving device that the message it is receiving is a basic safety message. SAE Standard J2735 specifies that this data

[133] E.g., SAE Standard J2735, J2945.

[134] SAE J2735 and J2945.

element is one byte from 0 to 15.[135] Each number represents a different type of message that could be sent over DSRC. We are proposing to V2V devices sending basic safety messages transmit a ''2'' as the Message ID. Based on SAE Standard J2735, ''2'' indicates to the receiving device that the content of the message is a basic safety message and that it should interpret the data accordingly.

(ii) Message Count

The second element here is the Message Count. In SAE Standard J2735, the Message Count assigns each basic safety message a number in sequence between 0 and 127.[136] Once the device's Message Count reaches 127, the idea is that the next message it sends would have a Message Count of 0. This count helps the receiving device know that it has all the messages sent by the sending device and which order to put them in. For example, if I receive messages 11, 13, 14, and 15 from a particular device, I will know that they are in order but I will know that I am missing message 12 from that particular device. The agency's proposal would require that vehicles follow the requirements of the SAE standard and assign the Message Count for each message in sequence between 0 and 127. We believe that this Message Count data element will enable safety applications that receive these messages to appropriately put the messages in order and be aware of any missing messages that could affect the overall information being processed by the safety application software.

(iii) Temporary ID

Finally, the Temporary ID is a four-byte string array randomly-generated number that allows a receiving device to associate messages sent from the same device together. While the identity of the sending device is not important for a safety application to take appropriate actions during a crash-imminent situation, it *is* important for a safety application to know that it is receiving, for example, ten messages from one device rather than five messages from two devices. In other words, the Temporary ID balances the safety need of associating basic safety messages with each other (to know if they originate from the same device), with the privacy need to avoid tracking/identifying particular users.

In order to accomplish these goals, we propose that vehicles transmit a Temporary ID as specified in SAE Standard J2735. Based on the SAE standard, the Temporary ID is a randomly-generated four-byte sequence of numbers selected from 4,294,967,296 combinations.[137] There are many acceptable techniques to generate a random sequence of numbers for the Temporary ID and it does not need to be specified; however, the performance can be tested. Further, the randomly-generated ID is changed to another randomly-generated ID every five minutes, when the BSM security certificate changes. Having the ID and the certificate change at the same time reduces some of the risk that a relationship between the ID and certificate could be developed to track a device. Given the current research available, changing security certificates at five minute intervals helps to reducing the risk of tracking which helps to protect consumer privacy. Additional research is being conducted to further investigate the ability or limitation of the five minute time period to mitigate the potential for tracking and protect privacy.

(b) Time

In addition to the data elements necessary for packaging the basic safety message, the Time data element is critical because all of the information within the basic safety message (*e.g.,* the vehicle location, speed, etc.) being used to enable safety applications needs to be expressed in the context of time. Based on time, the safety application is able to determine when a surrounding vehicle was in a given location and assess where that vehicle may go. Thus, it is important for the Time element not only to be expressed precisely but also using a uniform system among the devices participating in the V2V information environment.

In order to accomplish this purpose, we propose a standard system for vehicles to express time in the basic safety message and a requirement for the accuracy of the time. DSRC-based devices would be required to adhere to SAE Standard J2735[138] and devices would be required to use the UTC[139] standard for time. The UTC standard is widely accepted. It is also the predominant standard for time for internet devices and GPS devices—two groups of technologies that are closely related with V2V devices. Thus, we believe that the UTC standard is an appropriate standard method for expressing time. Further, we tentatively believe that the UTC method for expressing time contains an appropriate level of accuracy—including a method for accounting for leap seconds.[140]

In addition to using the UTC standard, we propose to require vehicles to transmit the Time data element to an accuracy of 1 ms (*i.e.,* within +/− 1 ms of the actual time). Given the proposed requirements for transmitting the messages, we believe that requiring the time information accompanying each basic safety message to be within 1 ms of the actual time is appropriate. As further discussed below, we are proposing that vehicles transmit a basic safety message 10 times a second (unless specific conditions require otherwise). In the discussions that follow, we are also proposing that vehicles broadcast the messages (in order to help avoid vehicles broadcasting at the same time) at a staggered time (a random value of +/− 5 ms from every tenth of a second). Given these requirements where the broadcast time of a message can vary by as little as 1 ms, we tentatively believe it is appropriate to require that the Time data element be accurate to within 1 ms.

(c) Location

This set of data elements form the foundation of the basic safety message because it is the information that enables all the safety applications being developed to utilize the V2V information environment. The location information of the surrounding vehicles enables a safety application on a vehicle to know whether a crash imminent situation exists or is likely to exist in the near future. For example, an application such as IMA would use location information of surrounding vehicles to determine whether another vehicle is heading into the intersection and likely to cause a crash.

For location, longitudinal and lateral (2D) data, and also vertical (elevation) data would be required. We acknowledge that longitudinal and lateral data are more commonly used in V2V safety applications (since vehicle travel is mostly two dimensional). However, elevation also is important in a number of respects. For example, safety applications such as FCW or LDW can potentially take into account elevation information for merging traffic in on-ramp situations. Further, applications currently under development such as IMA are already taking elevation into account to

[135] SAE Standard J2735, page 171.

[136] *Id.* at page 212.

[137] *Id.* at page 252.

[138] *Id.* at page 62.

[139] Coordinated Universal Time International Telecommunications Union Recommendation (ITU–R TF.460–6), *See* BAH Report Section *4.3.6.2pubrec/itu-r/rec/tf/R-REC-TF.460-6-200202-I!!PDF-E.pdf.*

[140] See ''Leap Seconds'' *http://www.endruntechnologies.com/leap.htm* (last accessed Dec 12, 2016).

differentiate cross traffic that is on an overpass from situations where the cross traffic is on the same plane of travel (*i.e.,* could potentially lead to a crash).

(i) Vehicle Position Reference Point

In order for vehicles to accurately communicate their position in a basic safety message to each other, all vehicles need to agree to a single point on the vehicle as the reference point. Without such a point, the reported position for each vehicle could vary by meters depending on the size of the vehicle and the point on the vehicle that the message is reporting. Thus, we are providing a proposed definition for a vehicle reference point—based upon which the agency would evaluate the compliance of the vehicle location information in the basic safety message.

Our proposal is to define the vehicle reference point as the theoretical point projected on the surface of the roadway that is in the center of a rectangle oriented about the vehicle's axis of symmetry front-to-back. This rectangle encompasses the farthest forward and rearward points and side-to-side points on the vehicle, including original equipment such as outside side view mirrors on the surface of the World Geodetic System-84 (WGS–84) ellipsoid (see Figure III–8). The position reference is obtained from measurements taken when the vehicle is situated on level ground/roadway, *i.e.* where there is no difference in grade in any direction and all tires contact the ground/roadway evenly. This position provides the BSM position reference of the center of the vehicle along all axes that can be used to determine the outer perimeter of the vehicle in relation to vehicle movement. The position reference is also used to configure the GPS antenna if the antenna cannot be placed at the vehicle's center point.

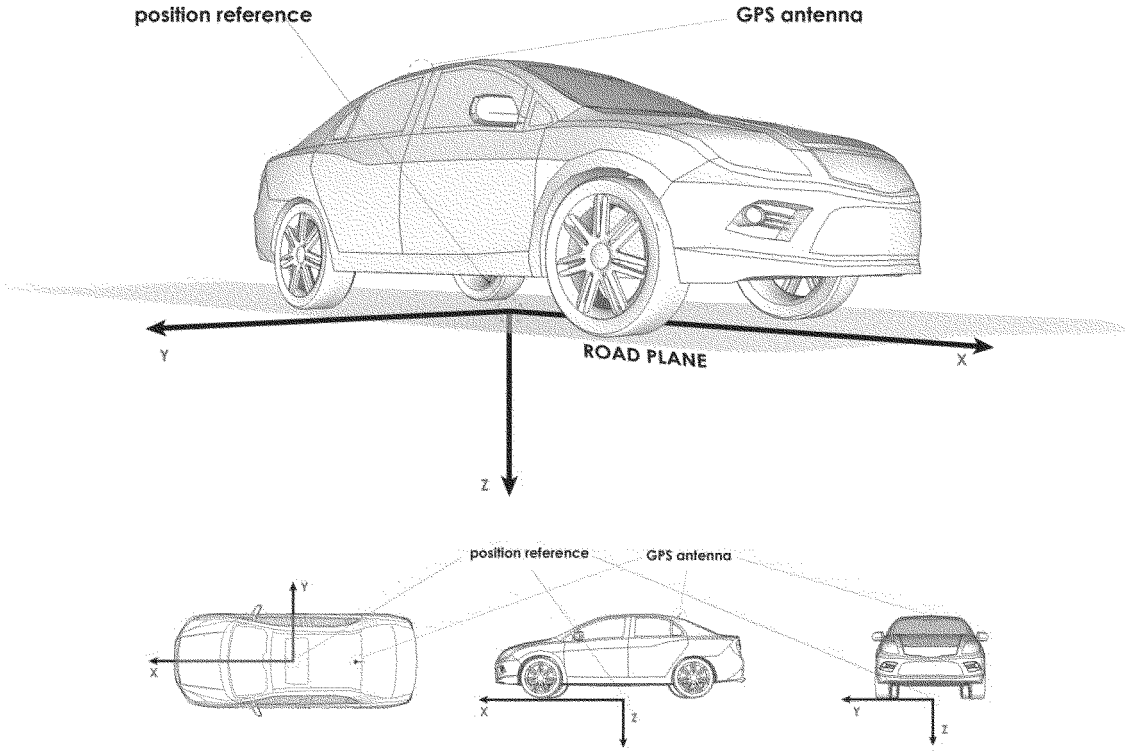


Figure III-8 Vehicle Positioning in World Geodetic System-84 (WGS-84) ellipsoid

(ii) Longitude and Latitude

Longitude and latitude position would require that vehicles report a position that is within 1.5 m of their actual position at a Horizontal Dilution of Precision (HDOP) [141] less than or equal to 1.5 within the one sigma absolute error. For the 2D location we tentatively believe that 1.5 m is appropriate because it is half of the width of a lane of traffic. Therefore, if vehicles provide position data within this level of accuracy, safety applications should be able to determine whether another vehicle is within its lane of travel. Further, the requirement to stay within the 1.5 m of tolerance at an HDOP smaller than five, within the one sigma absolute error, accounts for some of the variation in position that may occur with GPS due to failure to receive signals from a sufficient number of satellite signals.[142] If the HDOP is larger than five, there is a high probability that the accuracy of the position of the vehicle will not be accurate enough to support the 1.5m of position. As we anticipate that most vehicles, if not all vehicles, will use GPS to ascertain their location, we currently believe that it is appropriate to account for this potential error in our proposed location requirement in the

[141] HDOP is a measure of the geometric quality of a GNSS satellite configuration in the sky. HDOP is a factor in determining the relative accuracy of a horizontal position based on the number of visible satellites. The smaller the DOP number, the better the geometry and accuracy. HDOP less than 5 is a general rule of indicating a good GNSS condition that can provide the desired level of accuracy. However, a lower DOP value does not automatically mean a low position error. The quality of a GPS-derived position estimate depends upon both the measurement geometry as represented by DOP values, and range errors caused by signal strength, ionospheric effects, multipath, etc.

[142] As noted above, there are other factors that may lead to degradation of the GPS information—*e.g.,* ionospheric interference, multipath, etc.

basic safety message. Our engineering judgment is that an HDOP smaller than five within the one sigma absolute error appropriately accommodates the potential variation in GPS and provides a monitoring function that can be measured to determine if the GPS within the DSRC device can calculate a position at an accuracy level that supports the 1.5m relative position accuracy needed for DSRC crash avoidance.

(iii) Elevation

Due to the different situations in which elevation is relevant, vehicles would be required to report elevation in the basic safety message with an accuracy of three meters—rather than 1.5.[143] In terms of elevation, our tentative belief is that the information does not need to be as exact as the longitude and latitude location. Our proposal currently uses three meters (approximately 10 feet) because it provides sufficient distance to distinguish between a vehicle crossing an overpass versus those that are on the same level as the vehicle with a safety application. Further, our current judgment is that reporting the elevation with greater specificity would be counter-productive for certain safety applications. The elevation should be relative to each vehicle being interacted with within 300M. A tolerance of 3m (10ft) provides for low bridges but takes into account changes in grade that change as vehicles close on each other. Therefore, in specifying the elevation tolerance, we tentatively believe that we are balancing the competing safety interests.

(d) Movement

In addition to knowing the vehicle's position, a safety application should also consider the characteristics of that vehicle's movement. Rather than extrapolating these characteristics (with less accuracy) based on the position information, safety applications currently under development already consider movement information about the surrounding vehicles in determining whether a crash-imminent situation exists. For the basic safety message, we tentatively believe that speed, heading, acceleration, and yaw are the most relevant pieces of information about a vehicle's moment.

We are proposing characteristics for message content related to speed, heading, acceleration, and yaw rates. Essentially, we propose to measure the rate at which the sending device's location is changing and also any changes to that rate at which a device's location is changing. Because a safety application is generally concerned with the potential future locations of the device (rather than just its present location), it is likely that safety applications will utilize this type of information.

For example, through combining the speed and heading information with a devices's current location, a safety application can calculate whether a surrounding vehicle can collide with the safety application's vehicle. Further, having information about the vehicle's acceleration will make that prediction more accurate because it tells a safety application whether the vehicle is speeding up or slowing down. Yaw rate also affects the predicted location of the vehicle because it measures the rate at which the vehicle's direction is changing (*i.e.,* the rate at which the vehicle's face is pivoting towards the left or the right). The tendency of the vehicle to change direction during its travel (like acceleration) also affects the ability of a safety application to predict its location.

(i) Speed

We are proposing that vehicles report their speed in the basic safety message accurate to within 0.28 m/s (1 kph). We tentatively believe that this is the appropriate accuracy for the Speed data element based on the agency's experience in the Safety Pilot Model Deployment, where systems reporting speed information accurate to within 1 kph effectively supported the tested safety applications. We are not aware of any instances during the Model Deployment where an application warned at the incorrect time (*i.e.,* false positive) or failed to warn (*i.e.,* false negative) due to any inaccuracies in the Speed data element. As the available information indicate that the 1 kph tolerance requirement is technically feasible and that it supports the safety applications, we tentatively believe that it would also be an appropriate requirement for a final regulation.

We note that the basic safety message requirements in SAE J2735 state that the speed is reported in increments of 0.02 mph. We currently believe that it is appropriate, in addition to the tolerance of 1 kph established above, to also specify the incremental units to be used by the vehicle in reporting its speed. While it may not be technically feasible to report the speed information with a tolerance of only 0.02 mph, we believe that (by requiring the vehicle to report speed in incremental units of 0.02 mph) we can capture better information about the vehicle's change in speed. Further, by establishing these consistent requirements, vehicles will be able to better rely on the information they are receiving from the surrounding vehicles. As with our rationale for the tolerance of 1 kph in the preceding paragraph, our rationale for proposing that vehicles report the speed information in increments of 0.02 mph is based on our experience in the Safety Pilot testing. In the Safety Pilot, vehicles reported information using these specifications and it provided effective information for the safety applications tested in that program.

We request comment on these tentative conclusions. Is there any data that suggest that the agency should adopt a different tolerance level for the speed information reported in the basic safety message? Is there similar data for the incremental values for reporting speed that we propose to require?

(ii) Heading

Heading in relation to BSM and crash avoidance is defined as the ''actual'' heading in relation to the vehicle position reference point (explained above) that indicates the course of the vehicle's motion regardless of the vehicle's orientation to that motion, *i.e.* where the front of the vehicle is pointing. Knowing the ''actual'' vehicle heading is needed in order to accurately identify conflict and imminent crash situations.

For Heading, the agency would require different levels of accuracy based on the vehicle's speed. We tentatively believe that this is appropriate because we anticipate that most vehicles will be determining vehicle heading using GPS information. We recognize that the accuracy of GPS-determined heading varies based on speed. We also tentatively believe that heading information might not be as critical at lower speeds. Therefore, we believe it is appropriate to provide more flexibility at lower vehicle speeds. Thus the requirements for heading need to support V2V crash avoidance would read as follows:

- When the vehicle speed is greater than 12.5 m/s (~28 mph), it is required to report vehicle heading accurately to within 2 degrees; and
- when the vehicle speed is less than or equal to 12.5 m/s, it is required to report the vehicle heading accurately to within 3 degrees.

We tentatively believe that 2 degree accuracy for speeds above 12.5 m/s is appropriate because research indicates that at approximately 12.5 m/s (28 mph)

[143] We would measure the elevation data element under the same conditions as the longitudinal/lateral data element—*i.e.,* the accuracy needs to be 3m when the HDOP is less than 5 within the 1 sigma absolute error.

sensors and vehicle dynamics can accurately report heading within 2 degrees. At speeds less than 12.5 m/s the research indicates that the sensors and vehicle dynamics cannot reliably report vehicle heading within 2 degrees, but can reliably and accurately report within 3 degrees of accuracy. Given that at lower speeds vehicles travel less distance and driver-initiated evasive actions can be more effective at the lower speeds, our tentative conclusion is also that a three degree accuracy is appropriate for speeds below 12.5 m/s.

In addition to providing different requirements for accuracy at different speeds, we tentatively believe it is appropriate to require that vehicles ''latch'' [144] the GPS information at very low vehicle speeds. In other words, when the vehicle speed is very low (and a GPS cannot accurately determine the heading) we are proposing to require that the basic safety message transmit the last heading information prior to the vehicle dropping below a given speed.

In this case, the agency is proposing to require the system to latch the heading when the vehicle drops below 1.11 m/s (~2.5 mph). We tentatively believe that 1.11 m/s is an appropriately low threshold where, at speeds lower than 1.11 m/s, the heading information is not as crucial because the vehicle is not changing its location at a significant pace. For reference, a NHTSA 2006 study measured the idling speed of the vehicles (*i.e.,* speed when vehicle is in gear and no brake or throttle is being applied). Of the vehicles that NHTSA measured in that study, the idling speed ranged from 4.0 mph to 7.0 mph.[145]

Further, the agency is proposing to require vehicles to unlatch their heading information (and transmit a heading value that is within 3 degrees of its actual heading) when its speed exceeds 1.39 m/s [146] (~3.1 mph). As a vehicle's speed increases towards its idling speed, we propose requiring that the vehicle calculate its heading and report that information in the basic safety message.

(iii) Acceleration

For Acceleration, the agency would require vehicles to report horizontal (longitudinal and lateral) acceleration with an accuracy of 0.3 m/s^2 and vertical acceleration to 1 m/s^2. The requirement is based on the need to provide accurate and timely safety alerts for the crash scenarios and corresponding potential safety applications identified in Table III–2. The requirement was obtained by extensively testing commercially-available equipment and automotive sensors in a wide variety of driving environments, and the numbers were proven to be reasonable based on the equipment and sensor capabilities, while also supporting safety alerts from the appropriate safety application at timings that would enable a driver reaction sufficient to avoid the corresponding crash scenario.

(iv) Yaw Rate

Finally, for Yaw Rate, the agency would require vehicles to report this information to an accuracy of 0.5 degrees per second. The requirement is based on the need to provide accurate and timely safety alerts for the crash scenarios and corresponding potential safety applications identified in Table III–2. The requirement was obtained by extensively testing commercially-available equipment and automotive sensors in a wide variety of driving environments, and the numbers were proven to be reasonable based on the equipment and sensor capabilities, while also supporting safety alerts from the appropriate safety application at timings that would enable a driver reaction sufficient to avoid the corresponding crash scenario.

TABLE III–2 POTENTIAL SAFETY APPLICATIONS RELIANT ON ACCELERATION AND YAW RATE INFORMATION

	EEBL	FCW	BSW/ LCW	IMA	LTA	CLW
Lead Vehicle Stopped		✓				
Control Loss without Prior Vehicle Action						✓
Vehicle(s) Turning at Non-Signalized Junctions				✓	✓	
Straight Crossing Paths at Non-Signalized Junctions				✓		
Lead Vehicle Decelerating	✓	✓				
Vehicle(s) Changing Lanes—Same Direction			✓			
Left Turn Across Path—Opposite Direction					✓	
Lead Vehicle Stopped		✓				
Control Loss without Prior Vehicle Action						✓
Vehicle(s) Turning at Non-Signalized Junctions				✓	✓	
Straight Crossing Paths at Non-Signalized Junctions				✓		
Lead Vehicle Decelerating	✓	✓				
Vehicle(s) Changing Lanes—Same Direction			✓			
Left Turn Across Path—Opposite Direction					✓	

(e) Additional Event Based Information

In addition to the information discussed thus far, the agency would require additional data conveying the transmitting vehicle's path history, future predicted path, and exterior lights status to also be transmitted as part of the Vehicle Safety Extension (Part II) for V2V safety communications. The data element, Event Flags, shall also be transmitted as long as a defined event is active. For exterior lights status and other, similar data where access to the vehicle databus may be necessary, the agency assumes all integrated devices will have access this information. Aftermarket, standalone devices may or

[144] ''Latch'' in this context refers to a software operation that holds a value in memory and attached to a specific variable as long as a specified condition is reached and maintained.

[145] *See* Mazzae, E.N., Garrott, W.R., (2006) Experimental Evaluation of the Performance of Available Backover Prevention Technologies. National Highway Traffic Safety Administration, DOT HS 810 634.

[146] The speed threshold for unlatching the vehicle heading is different from the speed threshold for latching. The reason for the latching speed to be lower than the unlatching speed is because a system should not need to latching and unlatch the vehicle heading repeatedly when the vehicle speed is hovering around a given threshold speed (*e.g.,* 1.11 m/s). By having different (but similar) speeds for latching and unlatching, the system will be able to latch the speed once when the vehicle is decelerating and unlatch once when the vehicle is accelerating without having to repeat the action multiple times if there are vehicle speed fluctuations during the vehicle's general acceleration or deceleration trend.

may not be able to access this information.

(i) Path History

Path history, which provides an adaptable, concise representation of a vehicle's recent movement over some period of time and/or distance, consists of a sequence of positions selected to represent the vehicle's position within an allowable error. The path history can be used not only by safety applications on the transmitting vehicle, but also by other vehicles, which can use this information to predict the roadway geometry and for target vehicle classification with reference to the roadway.

For the Path History (PH) data frame, the agency would require that the vehicle use a history of its past GNSS locations (as dictated by GNSS data elements including UTC time, latitude, longitude, heading, elevation, etc.), sampled at a periodic time interval (typically, 100 ms) and interpolated in-between by circular arcs, to represent the vehicle's recent movement over a limited period of time or distance.

Path history points should be incorporated into the Path History data frame such that the perpendicular distance between any point on the vehicle path and the line connecting two consecutive PH points shall be less than 1 m. In this way, the points present in the path history will concisely represent the actual path history of the vehicle based on the allowable position error tolerance (1 m) between the actual vehicle path and its concise representation. Objective testing of applications as part of the VSC–A Project showed that a PH error tolerance of 1 m satisfies the needed accuracy for target vehicle classification and meets the performance requirements of the safety applications that were developed and demonstrated.

For the subset of the available vehicle path position data elements, a minimum number of PH points necessary to satisfy the required error tolerance between the vehicle path and its PH representation (1 m) should be selected to populate the Path History data frame. Populating the Path History data frame with the minimum number of PH points possible offers significant savings in over-the-air wireless bandwidth when transmitting the PH information to other vehicles wirelessly. Additionally, vehicles should report the minimum number of PH points so that the represented PH distance (*i.e.,* the distance between the first and last PH point) is at least 300 m and no more than 310 m, unless initially there is less than 300 m of PH. We believe that this range is appropriate because the operational range for DSRC is approximately 300 m, and the maximum required signal range for safety applications currently under development is 300 m. However, if the number of PH points needed to meet both the error and distance requirements stated above exceeds the maximum allowable number of points (23), the Path History data frame shall be populated with only the 23 most recent points from the computed set of points. Effectively, the distance requirement shall be relaxed in order to reduce over-the-air bandwidth.

Lastly, to ensure the most accurate representation of the vehicle's current trajectory, the Path History data frame shall be populated with time-ordered PH points, with the first PH point being the closest in time to the current UTC time, and older points following in the order in which they were determined. And, so as to permit safety applications to operate properly, the Path History data frame shall not include any additional data elements/frames in the BSMs intended for vehicle safety communications.

(ii) Path Prediction

Not only is it important to determine where a vehicle has been, it is also useful for safety applications to know where a vehicle is headed, or its future path. This future trajectory estimation can significantly enhance in-lane and out-of-lane threat classification.

Trajectories in the Path Prediction (PP) data frame are represented, at a first order of curvature approximation, as a circle with a radius, R, and an origin located at (0,R), where the x-axis is aligned with the transmitting vehicle's perspective and normal to the vehicle's vertical axis. The vehicle's (x,y,z) coordinate frame follows the SAE convention. The radius, R, will be positive for curvatures to the right when observed from the transmitting vehicle's perspective, and radii exceeding a maximum value of 32,767 are to be interpreted as a ''straight path'' prediction by receiving vehicles.

The radius, R, can be derived using various means, including map databases, vision systems, global positioning, etc. Alternatively, simple physics equations can be used to compute a curvature based on instantaneous dynamics information (vehicle speed and rate of change of heading, or yaw rate) provided by the vehicle. This curvature can then be extrapolated forward (as a continuous radius of curvature) to provide an estimate of the vehicle's likely intended future trajectory, or path. To minimize the effect of sensor noise and in-lane driver wandering, however, it is also necessary to use low-pass filtering techniques (time constant greater than 2 ms typically) in instances where the radius is derived from instantaneous vehicle information, such as from rate sensors and velocity.

Confidence in the predicted path based on the rate of change of the vehicle dynamics can also be computed in order to infer non-steady-state conditions, such as those stemming from lane changes, curve entry and exit points, curve transitions, and obstacle avoidance, where large changes in vehicle yaw rate occur over a short period of time. In such situations, path estimations may be largely inaccurate and, as such, confidence levels would be low. Conversely, a high confidence value would be reported during steady-state conditions (straight roadways or curves with a constant radius of curvature).

When a deviceis in steady state conditions over a range from 100 m to 2,500 m in magnitude, the agency is proposing to require that the subsystem populate the PP data frame with a calculated radius that has less than 2% error from the actual radius. The agency believes that this range and error rate is appropriate to ensure the effectiveness of safety applications that rely on such information. For the purposes of this performance requirement, steady state conditions are defined as those which occur when the vehicle is driving on a curve with a constant radius and where the average of the absolute value of the change of yaw rate over time is smaller than 0.5 deg/s^2.

After a transition from the original constant radius (R1) to the target constant radius (R2), the subsystem shall repopulate the PP data frame within four seconds under the maximum allowable error bound defined above.

Lastly, when the transmitting vehicle is stationary, we propose requiring that a device report a ''straight path'' radius of value 32,767 and confidence value of 100%, which corresponds to a value of 200 for the data element.

(iii) Exterior Lights

For the Exterior Lights data element, the agency is proposing to require that the subsystem shall set the individual light indications in the data element to be consistent with the vehicle status data that is available. If meaningful values are unavailable, or no light indications will be set, the data element should not be transmitted.

The data element, Exterior Lights, provides the status of all exterior lights on the vehicle, including parking lights,

headlights (including low and high beam, and automatic light control), fog lights, daytime running lights, turn signal (right and left), and hazard signals. This information can be used not only to enhance the operation of safety applications running on the transmitting vehicle, but it can similarly be used by other vehicles within range of receiving messages sent by the transmitting vehicle.

(iv) Event Flags

The data element, Event Flags, conveys the sender's status with respect to safety-related events such as antilock brake system (ABS) activation, stability control activation, hard braking, and airbag deployment, among others. Similar to that mentioned for the Exterior Lights data element, the additional information conveyed in the Event Flags data element can serve to augment the other BSM information used by applications when determining whether to issue or suppress warnings. Furthermore, because the inclusion of the Event Flag data element suggests that an unusual, safety-related event has occurred, vehicles receiving a message containing an Event Flag element may choose to process it differently than a message that does not.

The Event Flags and respective criteria the agency proposing to require in the BSM are defined in SAE J2735 as follows:

- *ABS Activation:* The system is activated for a period of time exceeding 100 ms in length and is currently active.
- *Stability Control Activation:* The system is activated for a period of time exceeding 100 ms in length and is currently active.
- *Hard Braking:* The vehicle has decelerated or is decelerating at a rate of greater than 0.4 g.
- *Air Bag Deployment:* At least one air bag has been deployed.
- *Hazard Lights:* The hazard lights are currently active.
- *Stop Line Violation:* The vehicle anticipates that it will pass the line without coming to a full stop before reaching it.
- *Traction Control System Activation:* The system is activated for a period of time exceeding 100 ms in length and is currently active.
- *Flat Tire:* The vehicle has determined that at least one tire has run flat.
- *Disabled Vehicle:* The vehicle considers itself to be disabled.
- *Lights Changed:* The status of the external lights on the vehicle has changed recently.
- *Wipers Changed:* The status of the front or rear wipers on the vehicle has changed recently.
- *Emergency Response:* The vehicle is a properly authorized public safety vehicle, is engaged in a service call, and is currently moving. Lights and/or sirens may not be evident.
- *Hazardous Materials:* The vehicle is known to be carrying hazardous materials and is labeled as such.

If a stated criterion is met, the sender shall set the Event Flag to 1. If, and only if, one or more of the defined Event Flags are set to 1, the subsystem shall transmit a BSM with the corresponding Event Flags within 250 ms of the initial detection of the event at the sender. The Event Flags data element shall be included in the Vehicle Safety Extension data frame for as long as an event is active. Messages containing Event Flags may also include related optional data. When one or more criteria associated with an event are no longer satisfied, the sender shall set the flag to zero in any Event Flag data element that it sends.

The agency is requesting comment on the appropriateness of each of the Event Flags and corresponding criteria described above.

(f) Vehicle Based Motion Indicators

In addition to describing the location and the motion of vehicles, the device can use other pieces of information to verify state and motion, if the device has access. The agency assumes all integrated devices will have access this information. Aftermarket, standalone devices may or may not be able to access this information. This type of information in the basic safety message can collectively identify operational status and motion that can be used to confirm calculated position and future position of surrounding vehicles. Thus, it helps safety applications determine whether a potential crash imminent situation could exist.

Two pieces of information help fulfill this objective. They are the Transmission State and Steering Wheel Angle data elements. The Transmission State provides an indication concerning the operational direction of the vehicle in relation to its reference point. This information puts the speed, heading, location, etc. information into context. The steering wheel angle (which is not the same as the vehicle heading because this indicates the direction of the steering wheel control itself and not the vehicle) is a data element that indicates which way the wheels are turned, providing another possible indication of direction (in some cases the vehicle's wheels can be turned, however, the vehicle could be skidding in a different direction.).

(i) Transmission State

This data element would require that vehicles report whether they are in a gear in the forward or reverse (or neutral) direction. We tentatively believe that the relevant information for a safety application is whether the vehicle is in gear to begin moving; and if so, whether it will do so in the forward or reverse direction. Thus, our proposal currently does not include any requirement for reporting the gear ratios of the vehicle.

(ii) Steering Wheel Angle

This data element would require that vehicles report the direction of the steering wheel angle to within 5 degrees of the actual steering wheel angle. Here, we are seeking to use another element to confirm actual heading of the vehicle. Thus, the Steering Wheel Angle data element describes the movement of the steering wheel itself (*i.e.,* it does not consider how such movement would affect the direction of the tires). Taking into account steering wheel angle provides a check of the position and motion calculations based on the actual state of the vehicle. We tentatively believe that expressing the steering wheel angle to an accuracy of 5 degrees is sufficient because we believe that a 6 degree change in steering wheel direction provides an indication of vehicle direction.[147] In other words, steering wheel angle changes of less than 6 degrees can be small adjustments in steering used to maintain current heading. However, steering wheel angle changes greater than 6 degrees result in a measurable change in actual heading of the vehicle. Thus, we tentatively conclude that an accuracy of 5 degrees would be sufficient to confirm (check plausibility) actual heading of the vehicle; *i.e.* if the actual heading is left are the wheels also turned to the left.

(g) Vehicle Size

This data element is also an element that is fundamental for a safety application's determination of whether a crash scenario might occur. In addition to knowing where a vehicle is, the characteristics of its motion (to predict where the vehicle will be in the near future), and some aspects of the

[147] NHTSA's past research used 6 degree changes in steering input to indicate a situation in the research project where the test driver intended to conduct a maneuver. *See* NHTSA Light Vehicle Antilock Brake System Research Program Task 5.2/5.3: Test Track Examination of Drivers' Collision Avoidance Behavior Using Conventional and Antilock Brakes, DOT HS 809 561, March 2003, page 32.

driver's intent, a safety application needs to know how large the vehicle is in order to know whether a crash might occur. However, we also acknowledge that this data element has more potential privacy impacts than other data elements. As further discussed in this document, the V2V information environment uses multiple strategies to omit as much potentially identifying information as possible in the basic safety message, security credentials, etc. However, we acknowledge that if the vehicle size information is too specific, it could potentially facilitate an effort to identify basic safety messages to a particular vehicle over time. The agency believes the performance metric for this data element balances not only the safety need for accurate information about the vehicle size, but also the privacy needs of the driver.

Thus, we tentatively believe that having a 0.2 m tolerance is an appropriate balancing of those competing interests. This level of specificity meets the need to identify the physical extent of the vehicle for crash avoidance given that vehicle size is to be rounded up which will still provide for the appropriate calculation of a warning such that the driver can take appropriate action to avoid a crash. The additional size for some vehicles will only present an insignificant amount of additional warning time (0.0022 seconds at 25 mph to 0.007 seconds at 65 mph using a 3 second time to collision baseline) that will be transparent to all drivers.

In addition to considering different tolerances for the vehicle length and width data elements, another option is to use vehicle size categories or only express the vehicle length and width in increments of a given value. For example, requiring that the vehicle length be expressed in only increments of 0.2 m would mean that a vehicle with a 10.12 m length and a vehicle with a 10.01 m length would have the same value of 10.2 for the vehicle length in the basic safety message. This type of requirement could have the advantage of aggregating many different vehicles into particular size categories and potentially help discourage identifying a basic safety message to a particular vehicle. We request comment on these potential options (*i.e.,* not only the potential tolerances for these data elements but also the potential to use size categories).

(h) Optional Data Elements

SAE J2735 also contains a variety of additional data elements that the agency is not proposing requirements for in this notice. We tentatively believe that these data elements are elements that may be useful in safety applications that may be used by various suppliers to enhance the operation of an application to issue a warning or suppress a warning. While these data elements will add more information on a status of the vehicle (especially with regard to whether a vehicle is under control), we do not currently have enough information to determine how such information might be applied to an application and thus tailor such information to that application (or applications). Thus, we tentatively believe it is premature to propose requirements for these data elements but are preserving the possibility for these data elements to potentially be employed to ensure future interoperability as technology evolves. The agency is proposing to require that devices either adhere to SAE J2735 for these data elements, or transmit the ''unavailable'' data value for each of these elements (in accordance with SAE J2735) These data elements are:

- Brake applied status
- Traction control state
- Stability control status
- Auxiliary brake status
- Antilock brake status
- Brake boost applied
- Location Accuracy

(i) Excluded Data Elements

When identifying the data elements to include in the BSM, the agency considered those that would be needed to support possible future applications and the suppression of warnings to reduce the number of false positive warnings. The use of some applications may be limited only to authorized vehicles—for example, only law enforcement and emergency vehicles might have access to an application providing traffic signal priority or pre-emption for emergency or enforcement purposes. To support identification of authorized vehicles, the agency considered including in the BSM optional elements such as the Vehicle Identification Data Field, which includes: VIN string, Owner code, Temporary ID, and Vehicle type. These data elements could identify and verify an emergency or law enforcement vehicle to a traffic control device for signal preemption purposes. However, our privacy experts identified VIN and other data elements directly linked to specific private vehicles and their owners as potential sources of privacy risk to individuals.

To help reduce the privacy risk that could stem from the transmission of information that could be used to associate V2V messages with individual consumers, our proposal excludes certain data elements from transmission as part of the BSM. Specifically, V2V transmissions via DSRC or any future interoperable V2V communications technology may not include data directly identifying a specific private vehicle or individual regularly associated with it, or data reasonably linkable or linkable, as a practical matter, to an individual.[148] NHTSA intends for the terms ''reasonably linkable'' and ''as a practical matter linkable'' to have the same meaning, specifically: Capable of being used to identify a specific individual on a persistent basis without unreasonable cost or effort, in real time or retrospectively, given available data sources.

NHTSA seeks comment on these tentative conclusions. Specifically, we request comment on our proposed exclusion from the BSM of data elements that directly identify, or are reasonably linkable or linkable as a practical matter, to a private individual. Do commenters have thoughts on whether, as a practical matter, any data element (or combination of data elements) currently proposed as part of the BSM is reasonably linkable to an individual on a persistent basis? We seek comment on whether this aspect of NHTSA's proposal appropriately balances consumer privacy with safety—or whether, by declining to identify definitively those data elements that are, or may be, ''reasonably linkable'' to an individual (and therefore must be excluded from the BSM under NHTSA's proposal), NHTSA will undermine the NPRM's overarching goal of establishing a standardized data set for the BSM and providing adequate data for safety applications.

(2) Proposed BSM Data Initialization Requirements

In addition to the content of the basic safety message, we are aware that participants in the V2V Safety Pilot have included data persistency performance in their on-board V2V systems in order to minimize the time needed for vehicles to begin transmitting basic safety messages after the vehicle starts up.

The advantage of doing so is that when the vehicle starts up, it already has information about its last known location, heading, etc. that was accurate when it shut down. The premise is that upon device startup, the device could begin transmitting sooner rather than waiting for new information, such as receiving a new heading or calculating

[148] See FN 3 above.

path history, both of which would require the device to acquire GPS data and start moving. In many instances, this would reduce the time to initialize the first (after startup) transmission of the BSM. As the vehicle most likely did not travel while it was shut down, the information it saved during shut down should still be accurate upon startup. However, there could be scenarios when the last known heading and path history will be inaccurate, such as when parking ''head'' or ''tail'' in (higher frequency) or if the vehicle has been towed (hopefully, very low frequency).

NHTSA recognizes that the practice of saving vehicle data over vehicle on-off-on events is typically used to enhance feature performance, improving consumer acceptance. However, NHTSA does not believe at this time that a minimum requirement for data persistency is needed, nor that we need to identify specific data elements that should be stored upon shutdown and retrieved at startup.

Based on the available information, we currently agree with the research to date that minimizing the time it takes for a vehicle to begin transmitting the basic safety message is desirable as it helps ensure that vehicles will be providing information into the V2V environment as soon as possible after they begin moving. We also agree with the research to date that including data persistency performance in vehicle V2V systems is a good way to accomplish this task.

Instead, the agency's proposal would require that vehicles begin transmitting basic safety messages within a specified amount of time after startup without specifying the method that a manufacturer would choose to meet that requirement. While a manufacturer may use data persistency techniques to meet the performance requirement, we believe that this method for achieving the safety goal appropriately gives the manufacturer more design flexibility.

While the basic safety message transmitted from one vehicle can be useful to other vehicles when the vehicle is stationary, we currently believe that (at a minimum) the vehicle should begin transmitting basic safety messages at a time when we might reasonably expect people to begin driving their vehicle after getting into it. In other words, our current thinking is that the vehicle should begin transmitting before the vast majority of drivers begin driving the vehicle.

The proposed requirements are that a vehicle shall begin transmitting the basic safety message within 2 seconds after a vehicle key on event has occurred. This proposed requirement is based on the final performance requirement associated with FMVSS No. 111 for rear visibility systems. While a V2V system and rear visibility system are not identical, the agency believes the research and decisions leading to finalizing the two second system startup requirements are fungible to V2V and the overarching safety goal.

In NHTSA's rear visibility rulemaking, our naturalistic driving data indicated that 90% of drivers do not select reverse and begin the backing maneuver less than 4.25 seconds after opening the vehicle door.[149] While in this case, the safety technology proposed for the vehicle is not one that would only be used when the vehicle is traveling in reverse, we believe that the data is a reasonable proxy for when drivers would put the vehicle in gear (forward or reverse) and begin driving. Since our safety goal in this situation is to ensure that the vehicle is transmitting the basic safety message before the vehicle begins to move, we believe that using a performance requirement based on the rear visibility rule's image response time requirement (and test procedure) would be appropriate.

While based on FMVSS No. 111, this proposed requirement for V2V initialization time would need to adjust the test procedure in a few ways to account for the characteristics of a vehicle's V2V system. First, we note that vehicle's V2V system needs to be active whether the vehicle is moving in reverse or moving forward. Thus, the test procedure and requirements should not be based solely on reverse gear. Second, while the temperature condition of the test would affect the rear visibility system display's response time, the temperature condition is not as relevant for a vehicle's V2V system. Instead, the test should specify environmental conditions that approximate the level of access to characteristics of its surrounding environment that a vehicle would normally have to populate the information in the basic safety message (*e.g.,* open sky access to GPS signals, potential saved location/heading information from the basic safety messages prior to vehicle shutdown, etc. Thus, the preconditioning test applied to the vehicle would need to be modified in these ways.

In summary, NHTSA is proposing to require that, after a conditioning procedure, vehicles begin transmitting basic safety messages with the required content and at the required frequency within 2.0 seconds after the driver puts the vehicle into the forward or reverse gear. The conditioning procedure would specify that the vehicle is under open sky conditions as in our test procedure for evaluating the content of the basic safety message. Then the procedure would specify that the test technician:

- Drives the vehicle in any heading at any speed for five minutes;
- stops the vehicle and deactivates the vehicle for any amount of time between 30 minutes to an hour;
- checks to ensure that the V2V system components are in a powered off state;
- opens the driver's door to any width,
- closes the driver's door;
- activates the starting system using the key; and
- selects any gear (forward or reverse) at any time not less than 4.0 seconds and not more than 6.0 seconds after the driver's door is opened. The driver door is open when the edge of the driver's door opposite of the door's hinge is no longer flush with the exterior body panel.

We acknowledge that this procedure may not be representative of a small number of real-world scenarios. For example, if a vehicle is in a parking structure like a garage, it might not have access to open skies. However, for these instances we do not think that there is any practicable way for the vehicle to ascertain its position quickly using GPS. Thus, we cannot determine a way to ensure that a test specifying those conditions would be a practicable test. We also note that the proposed procedure does not include moving the vehicle between shut down and startup. While vehicles might be moved when shut off, we think those are special circumstances (*e.g.,* when the vehicle is towed). Those conditions are a small portion of real-world scenarios and they are situations where the driver is likely to spend more time with the car active before encountering other vehicles (*e.g.,* when starting up in a towed vehicle lot, the vehicle may not interact with other moving vehicles until it reaches the roadway).

We request comment on our proposal for helping to ensure that vehicles begin broadcasting basic safety messages before a vehicle begins to move. More specifically, NHTSA requests comments in relation to whether a data persistency requirement is needed, and specifically in relation to:

- Supporting the interoperability of V2V devices;
- The performance of BSM transmission and how data persistency can be used to properly reduce the time of the initial transmission; and
- The possible impacts to crash avoidance functionality.

[149] *See* 79 FR 19220.

Please provide any supporting evidence that the agency can used to make an informed decision.

(3) Summary Table of BSM Content Requirements

TABLE III–3—SUMMARY OF BSM CONTENT REQUIREMENTS [150]

Requirement	Proposal	Basis	Applicable standards	Reason
Message Packaging	Message ID—(2) for BSM Message Count—sequence No. Temp ID—random No. from specific device.	Preliminary elements need to ID, process, and sequence BSMs.	SAE J2735	Allows device to interpret message and obtain safety information.
Time	Use UTC standard to set time.	UTC is accepted standard for setting universal system time.	SAE J2735, J2945/1	Need time standard to related messages to time critical conflict situations.
Position (Longitude & Latitude).	Longitude and Latitude within 1.5m of actual position at HDOP <5 and 1 sigma absolute error.	Per CAMP research to develop relationship between measurable absolute position and relative position.	SAE J2735, J2945/1	Provides for accurate relative vehicle position need to support crash avoidance—(CAMP).
Position (Elevation)	3m (10 feet) (more difficult to calculate than lat/long).	Accurate elevation reduces false positives—SPMD.	SAE 2735, J2945/1	3m provides for low bridges and changes in grade for crash avoidance.
Movement (Speed)	Accurate within 0.28 m/s (1 kph).	Same as EDR rule—tighter accuracy then identified by CAMP. Changed to be consistent with existing standard.	SAE J2735, J2945/1	The setting is based on the need to provide accurate and timely safety alerts. The setting was obtained by extensively testing commercially available equipment and automotive sensors in a wide variety of driving environments.
Movement (Heading)	Speed >12.5 m/s accuracy within 2 degree—Speed >12.5 m/s within 3 degrees.	Research indicates that above 12.5 m/s sensors and vehicle dynamics can support 2 degrees—under 12.5 m/s can support 3 degrees.	SAE J2735, J2945/1	Same as above.
Movement (Acceleration)	Longitudinal & Lateral accuracy 0.3 m/s^2—Vertical accuracy 1 m/s.	CAMP research and testing.	SAE J2735, J2945/1	Same as above.
Movement (Yaw rate)	Accuracy within 0.5 degrees per second.	CAMP	SAE J2735, J2945/1	The setting is based on the need to provide accurate and timely safety alerts. The setting was obtained by extensively testing commercially available equipment and automotive sensors in a wide variety of driving environments.
Vehicle Motion Indicator (Transmission).	Report if vehicle is in forward or reverse gear, or neutral.	CAMP	SAE J2735, J2945/1	Same as above.
Vehicle Motion Indicator (Steering Wheel Angle).	Report the direction of steering wheel angle within 5 degrees of actual.	CAMP	SAE J2735, J2945/1	Same as above.
Vehicle Size	Vehicle length and width within 0.2m tolerance.	CAMP and MITRE privacy research.	SAE J2735, J2945/1	Balance the need to know the physical extent of the vehicle for crash avoidance and still protect privacy.

[150] NHTSA intends for the BSM Content Requirements identified in Table III–3 to be in accordance with the proposal's overarching requirement that BSMs may not contain data elements linked or reasonably linkable to an individual.

TABLE III–3—SUMMARY OF BSM CONTENT REQUIREMENTS [150]—Continued

Requirement	Proposal	Basis	Applicable standards	Reason
Excluded Data Elements: No data elements directly or, as a practical matter, linkable to a specific individual or vehicle (including but not limited to VIN string, Owner code, Temporary ID, Vehicle Type).	Mandate that these optional data element cannot be populated for device in privately owned light vehicles.	MITRE privacy research ...	SAE J2735, J2945/1	To protect consumer privacy by reducing privacy risk.
Path History	Provides concise representation of vehicles recent movements with accuracy of min 23 points and required to be transmitted with BSM.	CAMP research to support crash avoidance.	SAE J2735, J2945/1	Use in calculations to identify vehicle conflict situations.
Path Prediction	Perpendicular Distance—1M; Radius error—2%; Transmission Time 4s.	CAMP research	SAE J2735, J2945/1	The setting is based on the need to provide accurate and timely safety alerts. The setting was obtained by extensively testing commercially available equipment and automotive sensors in a wide variety of driving environments.

3. Message Signing and Authentication

(a) Purpose and Safety Need for Confidence in the BSM

As discussed previously, V2V safety applications can utilize the data in the basic safety message (such as position, heading, and speed) about other vehicles around it to determine whether it and another vehicle are in danger of crashing. In other words, a safety application would determine whether it is necessary to take action (*e.g.,* issue a warning) based on the information coming from another, nearby vehicle. Even in a warning system, it is important for safety applications to have accurate information available to make their decisions. Incorrect warnings can (at worst) directly increase safety risks and (at minimum) affect the driver's acceptance of the warning system. If the driver of a V2V-equipped vehicle receives a large number of warnings when there is no crash imminent situation (*i.e.,* false warnings), then the driver may lose confidence and not respond appropriately when there is a true crash-imminent situation.

Thus it is important that the safety application can place as much confidence as possible in the data contained within BSM messages and detect when messages are modified or changed while in transit. To help improve the level of confidence in BSM messages the agency's primary message authentication proposal describes a Public Key Infrastructure (PKI) approach to message authentication.

In addition two alternatives are presented for comment. This first alternative for message authentication set out for comment is less prescriptive and defines a performance-based approach rather than a specific architecture or technical requirement. The second alternative set out for comment stays silent on message authentication and does not specify a message authentication requirement, leaving authentication at the discretion of V2V device implementers.

(b) Public Key Infrastructure Proposal

The agency is proposing to mandate requirements that would establish a message authentication approach based on a Security Credential Management System (SCMS) that uses Public Key Infrastructure (PKI) digital signatures to sign and verify basic safety messages. This would include requiring devices to sign each message, send a valid certificate with each message, and periodically obtain up-to-date security materials.

(1) How does the Public Key Infrastructure validate messages?

When transmitting a BSM, the sender uses a security certificate issued by a certificate authority to digitally sign each BSM. The security certificate is composed of the following elements:

- A date range describing the validity period for the certificate
- A Public key corresponding to a private key
- Digital signature from a certificate authority

When a nearby device receives a properly formed BSM, it can use the certificate included in the BSM to verify that the digital signature in the BSM is valid. Furthermore, the receiving device can also verify that the security certificate included in the BSM is valid as well. The receiving vehicle can verify that digital signature on the certificate included in the BSM is digitally signed by the certificate authority that issued it to the sending device. The receiving device should already have a copy of the authorizing certificate for the authority stored on-board. In the event that it does not, the receiving device would need to request the authorizing certificate from the sending device. Once the authorizing certificate is obtained, the receiving device can verify that the certificate authority is valid and the certificate used to sign the BSM is also valid. This process can be repeated for any number of certificate authorities that are in the PKI hierarchy, up to the root certificate authority, which authorizes the entire system. This process allows receiving devices to verify a sender's credentials. For detailed information on the proposed Security Credential Management System, see Hehn, T., et al., ''Technical Design of the Security Credential

Management System'', 2014, Docket No. NHTSA–2015–0060–0004.

The SCMS organization certifies that a device is indeed authorized to participate in the V2V environment and then issues credentials to the device. Thus, a receiving device can have more confidence in the information contained in a BSM message because it knows that the SCMS previously confirmed the sender is an approved device and issued these credentials.

In addition to the SCMS device certification, a device also needs to properly sign the basic safety message. The following sections discuss how the device utilizes the certificates from the SCMS and how the agency can confirm that devices are doing so.

(a) Signing the Basic Safety Message for Transmission

The process for signing the basic safety message involves the use of two ''keys,'' one public and one private. [151] The signature process uses the private key and an original string of numbers as inputs to generate an encoded string of numbers (an otherwise meaningless set of numbers). The public key associated with that private key is then used by the signature verification process to reverse the signature process (*i.e.,* take the encoded string of meaningless numbers and reverse it to generate the original string of numbers). Therefore, the receiving device takes the information from the sending device and (using the characteristics of these equations) can verify the signature of the sender.[152]

The agency employed this signing process in V2V devices used throughout its research activities and was proven through the Safety Pilot Model Deployment activity. Devices in these activities have been signing the basic safety message and constructing the security credentials of the message by combining the message content with the certificate, the signature, and the time stamp of the information.

Table III–4 shows how the public key, private key, and signature fit together with the other parts of the basic safety message.

TABLE III–4—BASIC SAFETY MESSAGE KEY COMPONENTS

Certificate	Message content	Signature	Timestamp
Pseudonym Certificate • *Public Key* ..... • Signature of the Pseudonym Certificate Authority. Validity Period ..... • Says when certificate effective and when expires.	(*i.e.,* the speed, heading, location, etc. information that supports the safety applications).	Produced from the following steps: • Compute hash of the Message Content and Timestamp. • Use your *private key* to create an encoded string of numbers. • The encoded string of numbers is your *signature*.	(*i.e.,* when the information is transmitted.]).

When the transmitting device sends a basic safety message it assembles each of the parts of the message in Table III–4 above. The vehicle uses a combination of the message content, timestamp, and a private key to generate the signature. The device also attaches the certificate to the message. The certificate includes the public key, corresponding to the private key used to sign the message, the validity period of the certificate, and the signature from the Pseudonym Certificate Authority. The pseudonym certificate contains the signature of the PCA from the SCMS allowing message receivers to verify the pseudonym certificate. The validity period is used to determine if the certificate is valid or if the receiving device should reject the credentials if they are expired.

The vehicle constructs the signature by using the message content and the time stamp portions of the message as inputs into the following process:

(a) Create a hash [153] of the message content and timestamp (*i.e.,* a shortened version of the message content/time stamp that is fixed length—*e.g.,* 32 characters). A standard NIST formula (SHA–2) [154] governs the creation of the hash.

(b) Input the hashed contents through an Elliptical Curve Digital Signature Algorithm [155] (the equation that creates the encoded string of numbers). The resulting number is the ''digital signature.''

(b) Verifying the Signature Upon Receipt

A device receiving the basic safety message performs the following sequence of steps in order to verify the signature:

(a) Generate the hash of the basic safety message content and timestamp using the same NIST defined formula used for generating the signature.

(b) Input the message hash, public key, and digital signature into the signature verification function (ECDSA) to verify the BSM digital signature is valid.

(c) Verify the pseudonym certificate (from the sending device) is within the validity period.

(d) Verify the digital signature of the pseudonym certificate back to the root certificate authority ensuring the SCMS issued the credentials.

(e) Verify the pseudonym certificate is not listed on the Certificate Revocation List.

[151] The V2V device generates the private key & public keys. The public key is sent to the SCMS to incorporate into a certificate that is signed by the PCA. The private key is always kept secret with the V2V device. The private key is vital to the signing process and must be kept secured at all times.

[152] See ''Using the Elliptic Curve Digital Signature Algorithm effectively'' *http://www.embedded.com/design/safety-and-security/4427811/Using-the-Elliptic-Curve-Digital-Signature-Algorithm-effectively*, Feb. 2, 2014 (last accessed Dec 7, 2016).

[153] A hash function is any function that can be used to map data of arbitrary size to data of fixed size. The values returned by a hash function are called hash values, hash codes, hash sums, or simply hashes.

[154] See ''Secure Hashing'' *http://csrc.nist.gov/groups/ST/toolkit/secure_hashing.html* (last accessed Dec 7, 2016).

[155] See FIPS publication 186–4 at ''FIPS Publications'' *http://csrc.nist.gov/publications/PubsFIPS.html* (last accessed Dec 7, 2016).

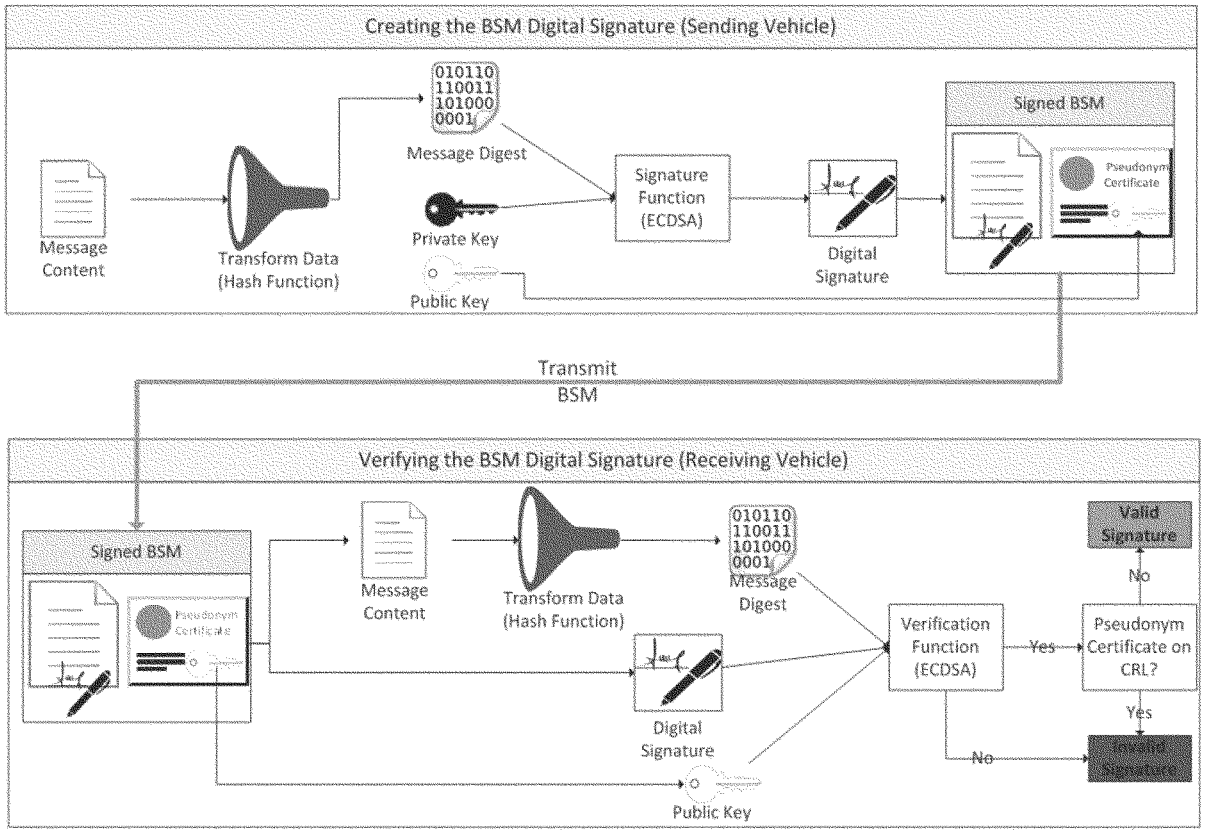


Figure III-9 BSM Digital Signature Generation

As discussed in the next section, the agency is considering a potential test method that would mimic many of the functions of the receiving device in order to assess whether devices are properly signing their messages with valid credentials when they are transmitting basic safety messages.

(2) Potential Requirements and Testing for Message Signing and Authentication

The agency is currently considering evaluating a device's ability to properly sign the basic safety message by utilizing a test device to receive basic safety messages during a static test. The test device would perform the key functions described above to verify the authenticity of the sender and of the message. Following is discussion of the general testing framework and the potential performance requirements that the agency is considering within the context of such a test.

(a) Potential Message Authentication Test Method

The agency currently envisions testing message authentication for compliance as executing a message security and signage protocols test in a static test environment (*i.e.,* a ''security credentials test''). The test would be conducted using a vehicle resident V2V device and an agency developed test device positioned in close proximity to each other.

In effort to replicate real-world conditions, the agency's current strategy is to define a test device that can perform the following functions as described in SAE J2945/1 v1.0 [156] (which itself references specific clauses and sections of relevant IEEE P1609 and 802.11 standards).

- If the full pseudonym certificate is included in the BSM, then the device will need to extract the public key from the pseudonym certificate of the test vehicle.
- If the certificate digest (hash of the full certificate) is included in the BSM, then the device will need to perform a look-up in cached memory of the full certificate and then extract the public key from the pseudonym certificate of the device under test.
- Confirm that the public key and the credentials in general are indeed from the SCMS (*i.e.,* verify the pseudonym certificate authority all the way up to the root certificate authority).
- Use the public key to verify the signature section of the basic safety message (*i.e.,* execute the ECDSA verification algorithm).

In terms of specific procedures, we tentatively believe that using many of the test conditions from our static test evaluating the transmission range and content of the basic safety message would be appropriate. In essence, we believe that the same test could be used to also evaluate whether the vehicle is appropriately signing its basic safety messages. Tentatively, we believe that including the following additional step in the static test would be sufficient to evaluate this area of performance.

- Collect basic safety messages from a transmitting device for at least 100 minutes and repeat the test at least seven days later.[157]
- Using the messages collected in this test, the agency's test device should be able to verify the device under test is properly signing the basic safety message.

[156] See ''On-Board System Requirements for V2V Safety Communication'' at *http://standards.sae.org/j2945/1_201603/* (last accessed Dec 7, 2016).

[157] As discussed later in this section, the timeframes for this test accommodate our current proposal for changing certificates.

• The data collected should also reveal that the device under test is sending the required certificate (from the pseudonym certificate authority) or the certificate digest.

• The agency's test device should also be able to determine whether the device under test is using credentials issued by the appropriate authority (*i.e.,* is the root certificate ultimately one that is authorized by the SCMS?).

• Finally, the test duration timeframes of this additional step should enable our test device to determine whether the vehicle is changing its certificates at the required interval.

We request comment on this test method and commenter's input on a potential test device that could be used to execute this proposed test schema. Would a test device that performs all of the functions outlined above sufficiently mimic real world conditions and also define those conditions sufficiently to achieve a repeatable test method? What other details should the agency explore and define? Are there other test methods that the agency should consider that can confirm that the transmitting vehicle signs the basic safety message properly with a less complex test?

The agency is also proposing to adopt a static test to evaluate the transmission range and other requirements (see Section III.E.1.a)). As testing experienced is gained, it may prove more efficient to combine the security credential, RF transmission, and possible other tests. The agency invites comment on the potential to combine and streamline test where possible.

(b) Signing the Message

Using the potential test method described in the previous section, we believe the agency would be able to verify that V2V devices are properly signing their basic safety messages, authenticating themselves as accurate sources of information. In essence, by using a test device that would be able to verify the digital signature using the ECDSA algorithm, the proposed test schema confirms that:

• The sending device produced the correct hash of the message content/timestamp;

• the sending device appropriately sent its pseudonym certificate; and

• the public key could decode the signature created by the sender's private key.

By comparing the hash created by our test device to the hash decoded from the basic safety message we received from the device under test, our test procedure should be able to confirm the device under test is correctly signing the basic safety message. Further, we anticipate that the test device would also identify the root certificate authority and validate up to the root certificate authority.

(c) Certificates and Certificate Digests

The agency is considering including requirements to reduce the size of the basic safety message by requiring that vehicles not transmit parts of the basic safety message when they are not necessary. In theory, this could potentially conserve bandwidth in higher volume scenarios. The pseudonym certificate included in the basic safety message is an area under evaluation where message size could be reduced.

A receiving V2V device requires pseudonym certificates to decode the signature and confirm the identity of the sender. However, the agency does not anticipate that every message will need to carry the full certificate as the pseudonym certificate does not change for every message. This allows a period of time where the same certificate and potentially allowing for messages to only part of the entire pseudonym certificate. Therefore, the agency believes it would be appropriate, under certain circumstances, for devices to transmit a certificate digest which would be a hash of the full certificate.

A potential challenge to this approach is requiring a receiving device to support capture and storage of full certificates and certificate digests, as transmitting only a digest necessitates relating the digest to a full certificate. In addition to the capture and storage of certificates, the agency is also evaluating a potential requirement for the interval between the transmission of a full certificate and certificate digests. Current research suggests that the vehicle should transmit the full certificate twice per second and the digest the remaining times. However, if there is an event flag (*e.g.* hard braking event) in the BSM, the agency believes the full certificate should be transmitted at the next immediate opportunity. At this time our current proposed requirements do not cover this aspect of the device and but the agency requests comment concerning the need to employ certificate digests in place of the entire certificate.

We tentatively believe that a final rule on V2V would need to establish at least a minimum interval for transmitting the full certificate so that surrounding vehicles will know the maximum amount of time that they will need to wait in order to be able to confirm the identity of a transmitting vehicle. Without such a requirement, we question whether the standard would be able to ensure that vehicles transmitted their pseudonym certificate at a sufficient frequency to support the safety applications that other vehicles may use. However, we request comment on whether a minimum requirement for transmitting the full certificate is necessary. If so, what the minimum time should be and whether a maximum time (or a specified interval such as 1 time per second) would be appropriate for this aspect of performance.

Thus, for this aspect of performance, our final performance requirements could specify minimum (and potentially maximum) times for transmitting the full certificate and requirements for what types of information need to be in the certificate digest. Thus, in addition to the testing method that we described above, our test device for that test method would also need to ensure that:

• The vehicle is transmitting the full certificate at the required interval;

• the vehicle is transmitting the certificate digest (which identifies the full certificate and when the full certificate was transmitted with all other messages that do not have the full certificate; and

• the certificate or digest transmitted along with a basic safety message is valid (*i.e.,* it is a valid certificate issued by the SCMS/has the appropriate credentials from the root certificate authority).

(d) Changing Certificates and Privacy

As part of the process of signing a V2V message using the proposed SCMS approach, a vehicle could use a single certificate that is valid for a long period of time (*e.g.,* years) to sign all basic safety messages that it transmits. This would help ensure that safety applications would be able to differentiate between authenticated sources of information and other less reliable sources of information when making judgements about their surroundings.

However, this approach could create additional privacy risk for consumers, as use of a single certificate could enable an observer collecting V2V transmissions to associate the basic safety messages coming from a single V2V device with a single sender. While associating a group of messages with a specific driver would need additional information outside of the V2V system, additional information would not be needed to know that all messages using the same certificate come from the same vehicle. To help mitigate this risk, we propose that vehicles frequently change or rotate certificates so that it will be more difficult to associate a large

number of basic safety messages with the same V2V device or vehicle. Also, we are proposing that certificates not be valid for long periods of time to reduce the risk that they be collected and used to identify a specific vehicle at a future date and time.

(i) Current Research on Changing Certificates

Recent research evaluated several models for changing certificates. In the Safety Pilot Model Deployment, certificates had a validity period of 5 minutes and were completely discarded after use. Changing certificates on a more frequent basis helps to minimize potential privacy risk for individuals, it requires a large volume of certificates for a vehicle to manage, approximately 100,000 certificates for one year of operation. Model Deployment researchers determined that this approach would be inefficient as the majority of the time a vehicle is not in operation but certificates were still expiring even when the vehicle was not in operation. Based on the experiences learned from this project, the researchers developed a more efficient design where a vehicle will have 20 valid certificates per week and changes certificates at least once every 5 minutes. Under this design, only 1,050 certificates would be needed per year. This is believed to strike a balance between privacy and efficiency by using certificates that rotate every five minutes and are valid only for one week. This alternative certificate usage model is currently under development and will be tested in the field as a part of the SCMS Proof-of-Concept projects.

(ii) Potential Performance Metric

We recognize that methods of changing certificate credentials exist on a spectrum between the competing interests of maximizing privacy protections and technological practicability. For example, it would afford the most privacy protection for consumers to use a different set of credentials with every basic safety message (*i.e.,* change certificates 10 times per second). However, this would be impracticable because it is unreasonable to expect the SCMS to produce enough certificates to service all V2V devices when they use ten new certificates every second.[158] On the other hand, using the most technically simplistic method for authenticating the sender of the message would be to use one set of credentials for every message. However, as we described above, that would create significant privacy risk by associating all basic safety messages sent from a single source with each other.

In order to balance these competing interests, our tentative conclusion is that the current method for changing certificates used in the research would be a reasonable compromise that protects privacy in a technically feasible way. By rotating among 20 certificates every five minutes, we are ensuring that no group of basic safety messages will be linked to more than 5 minutes of other safety messages at a time. In other words, a person obtaining basic safety messages from a device may not be able to associate those messages with each other because their certificate is only used for 5 minutes out of every 100 minutes. Further, a device shutting off at one particular location would unlikely use the same certificate upon startup. Finally, in order to ensure that a person could not obtain all 20 certificates for a particular device, we are proposing for devices to completely discard their certificates each week and replace them with 20 new certificates.

We request comment from the public on our proposed method for changing certificates and privacy concerns. Have we appropriately balanced the privacy interest with the interest in maintaining the technical feasibility of producing and storing certificates in vehicles? Is periodically rotating certificates the right approach to limiting the privacy impact of having signed messages? Have we established the appropriate thresholds for the method for changing certificates (*i.e.,* have we selected the correct duration for when devices need to rotate certificates and change the certificates to new ones altogether?). Further, should the agency establish requirements for rotating the 20 certificates (*i.e.,* should the device rotating among 20 certificates every five minutes use the same order for rotating through the certificates or should the device use a different order the next time it cycles through the 20 certificates? What method should the agency choose for changing the cycling order of the 20 certificates?).

(iii) Test Method

As we discussed in Section III.E.3.b)(2)(a), our static test method for assessing whether a device is appropriately signing their basic safety messages can also assess whether a device is changing its security credentials as required if our test lasts for an appropriate amount of time. Based on our proposed requirements, we believe that it is appropriate to test the device for 100 minutes twice, separated by 7 days.

Testing the device for a 100 minute duration would sufficiently assess whether the device is rotating certificates every five minutes and using a different certificate every five minutes for the duration of 100 minutes (*i.e.,* 20 certificates × 5 minutes per certificate). Finally, conducting this test twice (separated by 7 days) would allow the test to confirm whether the device is using 20 new certificates that are different from the certificates the device used in the first test.

(e) Preventing Message Transmission Without Valid Certificates From a SCMS

The agency is also considering whether to require that devices stop transmitting basic safety messages if they lack valid security credentials, *i.e.* device transmission problems or being identified as a misbehaving device. The purpose would be for devices to avoid sending basic safety messages due to incorrect credentials. However, at this time, the agency does not have performance requirements or a test method for assessing this aspect of performance. In order to test this aspect of performance, the agency would need a method for exhausting the certificate supply of a vehicle and observing whether the vehicle would continue to transmit basic safety messages. We request comment on whether there is a practicable and repeatable way for producing these conditions in a vehicle under test. We also request comment as to whether this aspect of performance should be included in the final rule.

(3) Potential Regulatory Text for SCMS Based Message Authentication

The agency has included no regulatory text for SCMS-based message authentication and instead has a bracked placeholder for where it would be if this were to be part of a final rule. The agency expects that regulatory text in any final rule would include:

- Additional definitions in S.4 Definitions for '' SCMS-based message authentication, which would be consistent the discussion in this proposed rule and any public comments.
- A provision on signing the BSM, which would require that the device must generate a signature for each BSM.
- A provision on rotating certificates.

(c) Alternative Approach—Performance-Based Message Authentication

(1) Overview

The agency is also bringing forth potential alternatives to the SCMS-based

[158] A certificate is expected to be 117 bytes. The number of unique certs/year * size of one certificate. (103680 * 117 = 12.13MB for one vehicle for one year). *300 million vehicles = 3,639,168,000,000,000. Or 3.6 exabytes.

proposal for V2V message authentication. This first alternative takes a far less prescriptive approach to authentication and defines a performance-basedbased approach but not a specific architecture or technical requirement for message authentication. The basis of this alternative is to let V2V device implementers define their own approach for improving the integrity and authenticity of V2V messages.

The fundamental approach to this first alternative only requires that the receiver of a basic safety message be able to validate the contents of a message such that it can reasonably confirm that the message originated from a single valid V2V device, and the message was not altered during transmission. This alternative would broadly require that implementations utilize government-audited and approved cryptographic algorithms, parameters, and approaches.

(2) Illustrative Example

For illustrative purposes, consider the following example technical implementation. The sender of a BSM could use a security certificate issued by a certificate authority to digitally sign each BSM. The security certificate could be composed of the following elements:

- A date range describing the validity period for the certificate
- A Public key corresponding to a private key
- Digital signature from a certificate authority

(3) Potential Requirements Under This Alternative

(a) Test Method and Test Device

This alternative's less prescriptive approach for message authentication results in a general testing requirement that would similar in context as the proposed PKI based authentication but leaves the extent of the proposed requirement undefined, or yet to be defined, static test procedures. This approach is inherently aligned with recognizing that potential future communication and their potential message authentication needs would be varied and, therefore, requires varied test methods for message signing and authentication.

NHTSA seeks comment on potential test methods and the test devices that could accommodate other, future, or yet-to-be-developed message signing and authentication schemas that could be applied to V2V communications. The agency is interested in details on how a test device could fulfill the general requirement to sufficiently reflect real-world conditions and also define those conditions sufficiently to achieve a repeatable test method that ensure verified communications between V2V devices, using varied communication mediums? What other details should the agency explore and define? Are there other test methods that the agency should consider that can confirm that a transmitting V2V device signs the basic safety message properly?

(d) Alternative Approach—No Message Authentication

This second potential alternative set out for comment does not specify any message authentication requirements for devices participating in a V2V communications. Under this second potential alternative, BSM messages would still need to be validated with a checksum or other integrity check and employ some form of through a misbehavior detection system to attempt to filter malicious or misconfigured messages. However, there would be no specific message authentication requirement. Implementers would be free to include such a feature as an optional function. The agency would not establish any performance requirements or test procedures under this potential alternative. The agency seeks comment on this no message authentication approach.

4. Misbehavior Reporting

(a) Proposal—Misbehavior Reporting to a SCMS

NHTSA is proposing to establish practices and procedures for devices participating in V2V communications to recognize device misbehavior, both internally and by other devices. The fundamental purpose of misbehavior detection is to provide a means for V2V devices to identify and block messages from other misbehaving or malfunctioning V2V devices. V2V devices would be required to report device misbehavior to a central authority, namely the Security Credential Management System, once misbehavior is confirmed via a series of self-diagnosis or plausibility checks on incoming messages. This includes identifying methods for device self-diagnosis of both hardware and software to ensure that the device has not been altered or tampered with from intended behavior.

If an anomaly is detected and confirmed by a series of secondary plausibility checks, a ''misbehavior event'' would be identified, and a sample of BSM information such as geo-location, time-stamp, and a digitally signed (encrypted) certificate from the misbehaving device would be recorded as ''evidence'' of the event. The reporting device would then transmit its misbehavior report to the SCMS misbehavior authority (MBA) using a secondary communications channel.

The intent of the MBA is to gather misbehavior reports by all devices participating in the network. These reports would be analyzed in accordance with established and governed policies for global misbehavior detection determine if and when a particular vehicle should be placed onto a Certificate Revocation List (CRL). More accurately, is and when information related to a particular device's certificates should be placed onto the CRL such that other vehicles can use the information to identify the misbehaving device, assume it cannot be a trusted device, and ignore its messages. The CRL would be updated periodically by the MBA and distributed to participating V2V devices.

The agency views misbehavior detection as a key feature of the proposed security architecture: That misbehaving devices are able to be efficiently detected, and their identity made available to other devices participating in the network. At the highest level, confidence in the V2V messaging could be eroded if misbehaving devices are not detected and reported to a centralized authority.

As indicated in Table II–5, additional research is being conducted to better understand the data, processing, and algorithm development necessary to implement misbehavior detection at both the local (device) level and global (SCMS) level. For misbehavior to be effective, techniques must be identified, developed, and implemented in both devices and at a central authority for the system to secure V2V messages. The proposed requirements concerning detection and reporting support misbehavior detection functionality, but do not include at this time the actual techniques to detect and identify misbehavior. Research is being conducted; however, the actual nature of misbehavior in the V2V ecosystem has yet to be defined given the lack of misbehavior data to support actual development of techniques and algorithms. Initial data will be available once the SCMS Proof-of-Concept (Section V.B.6.e) is operational and supporting the security of the Connected Vehicle Pilot activities. The agency seeks comment regarding the requirements to support misbehavior detection, the investigation of detection and identification techniques, and possible implementation issues including the need to evolve detection

and identification algorithm capabilities over time.

(1) Reporting

The agency has worked extensively with its research partners to develop a comprehensive set of proposed reporting requirements for misbehavior detection. The reporting requirements attempt to strike a balance between frequency, the amount of data reported, and the need to effectively and efficiently identify misbehavior to mitigate any potential effects. As described previously, the purpose of the misbehavior reports is to:

- Indicate potential misbehavior and misbehaving devices, and
- indicate suspicious activities around the reporting device.

(a) Report Content

The agency is proposing that a misbehavior report is a message signed by the reporting device and shall include at a minimum the following data:

- The reporter's certificate.
- GNSS coordinates (latitude, longitude and elevation) at the location where the misbehavior was initially identified.
- The GNSS coordinates where the misbehavior appears to have ended. This field is optional as it may not apply to all misbehavior. This could be useful for indicating where a DoS attack begins and where it ends.
- BSMs from both host device and remote threat device.
- Warnings present at time of misbehavior detection, if any.
- List of neighboring devices.
- The Coordinated Universal Time (UTC) at which the misbehavior was detected.
- Information identifying the detection method that triggered the report.

The agency seeks comment on the proposed inclusion of the above data in a misbehavior report. Specifically, we would appreciate commenters providing any potential additional data that should be included. The agency also asks commenters to provide feedback on the potential for inclusion of any personally identifiable information (PII) related to misbehavior and the potential positives and negatives of such an inclusion.

Additionally, the agency is also seeking comment on the potential inclusion of the following items in the misbehavior report:

- The average Channel Busy Percentage observed if a Denial of Service is detected
- List of vehicles (device/certificate IDs) within communication range when misbehavior is detected
- Abstracted (non-V2V related) sensor information if such sensor information is available to the device
- Averaged speed of vehicles within communication range of the reporting vehicle

(b) Misbehavior Report Generation and Transmission

A misbehavior report shall be generated as follows:

- A misbehavior report shall be created at the time a misbehavior is detected
- Misbehavior reports shall be signed and transmitted with the same credentials as those of BSMs
- A misbehavior report shall be signed by the reporting device at the time of the report creation
- The misbehavior reports shall be encrypted with the public key of the misbehavior authority and transmitted to the central authority through a secured communication channel

(c) Misbehavior Report Storage

Misbehavior reports shall be stored as follows:

- The V2V device shall allocate sufficient persistent memory storage for 1600 KB of misbehavior event reports
- Misbehavior reports shall be stored persistently in non-volatile memory to avoid report erasure during vehicle shut-down and start-up cycles
- A misbehavior report shall be stored in persistent memory for at least 20 weeks
- If the allocated misbehavior report memory capacity is to be exceeded due to a new incoming misbehavior report, the oldest report or reports shall be overwritten to allow the storage of the newest report
- If misbehavior reports are to be stored in unencrypted storage medium, the content shall be encrypted

(2) CRL Processing

- If the credentials of a locally detected misbehaving device are already on the locally stored CRL it shall not be re-reported to the central authority

(3) SCMS Security

The agency recognizes the misbehavior mechanism identifies anomalies that could indicate malfunctions or malicious activities that could adversely impact proper operation of individual devices or the system; possibly causing unsafe or unreliable operation if trusted. Misbehavior operations and subsequent device requirements ensure that the device perpetrating the misbehavior can be rendered innocuous by revoking the device's security certificates effectively making them an untrusted source to properly functioning devices. The agency is therefore proposing the following the requirement is applied to a central authority, namely the SCMS, responsible for global misbehavior and management:

- The agency requires that a central authority employ protocols that establish a disposition based on reporting from various sources to mitigate the potential for misbehavior detection to become a gateway for an easy cybersecurity threat for denial of service.

(4) Request for Comment

The agency believes the proposed misbehavior reporting requirements could help reduce the number of misbehaving devices whose messages would be accepted by the V2V network and thus help reduce the chance of false safety warnings. The agency seeks comment on the misbehavior reporting approaches describe in this section along with potential other approaches the agency should consider.

More specifically, the agency appreciates thorough explanation of any suggested alternative approaches to misbehavior reporting, as well as sufficient description of why you believe that the proposed approach is, or is not appropriate. Additionally, the agency would appreciate suggestions on how to properly and reasonably test for misbehavior in a V2V system.

(5) Potential Regulatory Text for SCMS-Based Misbehavior Detection and Reporting

The agency has included no regulatory text for SCMS-based misbehavior detection and reporting and instead has a bracked placeholder for where it would be if this were to be part of a final rule. The agency expects that regulatory text in any final rule would include:

- A provision on detecting misbehavior related to both malfunctioning sensors and physical tampering.
- A provision addressing a BSM failing any plausibility check, which would require the device to generate a misbehavior report that meets certain minimum requirements.
- A provision concerning creating and sending misbehavior reports. This provision would set requirements about what data would need to be included in a misbehavior report (which would include the information listed above).

Further, it would include provisions on how a misbehavior report must be generated and transmitted, which would include that it would need to be created within 2 seconds after the misbehavior is detected, and thensigned,encrypted and transmitted to SCMS.

- A provision detaling how misbehavior reports would need to be stored
- A provision concerning the credentials of a locally-detected misbehaving device already on the locally-stored CRL.
- A provision concerning communicating with the SCMS.In addition, the agency would need to include additional regulatory text on test procedures including the ability to detect misbehavior and receive certificates from the SCMS.

(b) Alternative Approach—No Misbehavior Reporting

In contrast to the primary misbehavior detection proposal, the agency is seeking comment on an alternative approach to misbehavior detection where there are no requirements to report misbehavior or implement distribution of information to facilitate blocking based on misbehavior reports to an authority. Implementers would be free to include such features as reporting the detection of any misbehavior or a malfunction as optional functions. Independent of this alternative approach, the agency is proposing to require that implementers identify methods that would check the functionality, including hardware and software, of a V2V device ensuring that the device has not been altered or tampered with from intended behavior.

The agency appreciates commenter's views on this potential alternative approach including reasons why or why not this potential would be appropriate for identifying misbehaving or malicious devices participating in V2V communications. We also encourage commenters to provide any suggested alternative approaches to misbehavior reporting, as well as sufficient description of why you believe that the proposed approach is, or is not appropriate. Additionally, the agency would appreciate suggestions on how to properly and reasonably test for misbehavior in a V2V system.

5. Proposed Malfunction Indication Requirements

(a) Overview

The agency is proposing to require that all V2V devices be equipped with a mechanism for notifying users that the device and/or its supporting equipment is not operating normally and some form of repair is necessary. The requirements proposed in this section are consistent across any potential technology employed in V2V communications. The agency is not specifying a format for the notification mechanism, as elaborated below—it can be an illuminated telltale, a message in the message center, or something else—but it must be presented in the vehicle itself for OBE or on the device itself for non-integrated aftermarket products. This proposed requirement aligns with the proposed misbehavior requirements and cost estimates, in that misbehavior detection requires devices to perform self-diagnostics and report to users a failure condition. Likewise, the cost estimates for the proposal include costs for some type of malfunction indicator and reflect what we would consider to be a ''minimalist'' approach.

The agency has a long history of requiring both diagnostics and malfunction indicators. FMVSSs for electronic stability control (No. 126), tire pressure monitoring systems (No. 138), and air bags (No. 208), among others, include requirements for indicating when the system is in a failure condition. In these cases, the agency believed, and therefore required, that proper maintenance to ensure system operation is vitally important to driver and passenger safety. The agency has no reason to believe any differently for V2V devices, other than potentially strengthening those beliefs based on the cooperative nature of V2V and how the benefits are a ''networked good,'' where one device has the potential to benefitting many others.

(b) Malfunction Indication Requirements

- Any device participating in the V2V system shall clearly indicate to their users a malfunction condition occurring in the device, its supporting equipment or the inputs used to form, transmit, and receive a basic safety message. Malfunction indication shall be provided in instances such as:
  - Device components not operating properly
  - Input sensor data not within appropriate tolerances
  - On Board memory failures
  - GPS receiver failures
  - Unable to transmit or receive basic safety messages
  - Any other failure that could prevent normal operation
- Malfunction indication shall be clearly presented to device users in the form of a lamp or message
- Owner's information shall clearly describe the malfunction indication, potential causes, and if needed, the need to have the device serviced
- The malfunction indication shall remain present until the V2V device is returned to normal operating state
- The malfunction indicator shall illuminate the malfunction indicator as part of power up initial system diagnostics to confirm the indicator is operating properly

The agency seeks comments on these proposed requirements. More specifically, the agency would like commenters to give their views on malfunction indication, the best ways to convey device malfunction to users, and why they believe this to be the case.

6. Software and Security Certificate Updates

The agency anticipates that, over time, V2V devices and the system overall will require periodic updates to address functionality, potential security, or potential privacy issues as they arise after a vehicle owner or operator takes possession of a vehicle. The agency is proposing that V2V devices allow for over-the-air (OTA) software and certificate updates and those device users be notified of any consent required for periodic device updates.[159] The agency believes that over-the-air devices updates will be viable and commonplace by the time a final rule to this proposal is finalized.[160] [161]

We anticipate this highest potential for periodic updates will come in two primary forms: Device software updates and security credential updates. In either case, the agency believes user notification and consent would be required to execute the update. The approach of this proposal is provide the basic platform to enable V2V communications where the hardware needed is the most technologically basic enabler, essentially a radio transmitter and receiver. The device complexity, intellectual property and overall V2V operation is primarily rooted in the firmware and software loaded into a V2V device's hardware. The agency

[159] See below for the agency's discussion of its legal authority. This proposed requirement is similar to many other existing requirements to warn drivers via telltales or messages about potential issues with required safety technologies, for example, the ESC or TPMS malfunction telltales. The difference in this case is simply that the agency expects a need to illuminate the telltale with some regularity, given that certificates will periodically run out and need to be replenished.

[160] ''OTA updating brings benefits, challenges'' SAE Automotive Engineering, August 16, 2016, *http://articles.sae.org/14946/* (last accessed: Dec 7, 2016).

[161] ''International Truck offers over-the-air programming for 2017 Cummins engines'' SAE Automotive Engineering, May 19, 2016, *http://articles.sae.org/14834/* (last accessed: Dec 7, 2016).

anticipates any updates to the device hardware would be manifested by a malfunction, device failure that would be subject a recall and/or warranty provisions if the device warranty is still valid.

Over the air updating will provide significant flexibility for updates, not only to V2V devices but many vehicle-resident components, to fundamental device operation but also, following suit of smartphone devices, enable ''pushing out'' new applications to automotive devices. The agency believes this approach can and will best exploit the V2V communications ''platform'' contained in this proposal.

As discussed throughout the proposal and more specifically, the legal authority section, the agency believes V2V device users will need to consent to both software and security certificate updates. Therefore, the agency is proposing to require that devices participating in the system provide users with indication, in the form of a descriptive telltale or text message displayed in a vehicle message center that is in clear view of the driver, that device software or security certificate updates are available and that users need to consent before the update can occur. The indication and consent mechanism must reside in the vehicle or device.

The agency seeks comment on this proposed requirement for software and certificate update. Do commenters agree with the proposed approach, why or why not? Do commenters have alternative suggestions for how V2V device users can seamlessly consent, without burden, to software and/or certificate updates? More specifically, how do commenters perceive potential mechanisms for receiving notification and consenting, or not, to any potential updates. What potential implications may result from the anticipated need for updates and consent? What real-world experience do commenters have performing over the air updates for devices? Please provide any supporting information that may help the agency explore and finalize an approach.

7. Cybersecurity

(a) Cybersecurity Overview

Today's electronics, sensors, and computing power enable the deployment of vehicle safety technologies, such as forward-collision warning, automatic-emergency braking, and vehicle-to-vehicle technologies, which can keep drivers from crashing in the first place. NHTSA strongly believes in the need for cybersecurity, which is essential to the public acceptance of increasingly computerized vehicle systems, to the safety technology they govern, and to the realization of the safety-enhancement potential they offer.

Cybersecurity, within the context of road vehicles, is the protection of automotive electronic systems, communication networks and nodes that interface with vehicles, control algorithms, software, users, and underlying data from malicious attacks, damage, unauthorized access, or manipulation. The agency has been taking a holistic approach to vehicle cybersecurity, considering that all access points into the vehicle could potentially be compromised, and is focused on solutions to harden the vehicle's electronic architecture against potential attacks and to ensure vehicle systems take appropriate and safe actions, even when an attack may be successful.[162] A layered approach to vehicle cybersecurity within a risk-based framework reduces the probability of an attack's success and mitigates the ramifications of a potential unauthorized access.

NHTSA's vehicle cybersecurity approach is built upon the following principles:

- Based on the risk-based prioritized identification and protection of safety-critical vehicle control systems and personally identifiable information;
- Provides for timely detection and rapid response to vehicle cybersecurity incidents in the field;
- Designs-in methods and measures to facilitate rapid recovery from incidents when they occur, and;
- Institutionalizes methods for accelerated adoption of lessons learned across the industry through effective information sharing, such as through participation in the Auto ISAC.

Our vehicle cybersecurity research program considers all access points into the vehicle, more broadly than, but also including V2V. This approach makes a distinction between

(1) how vehicle architectures should be designed that interface with the outer world such that risks to safety-critical system functionality could be effectively mitigated; and

(2) how each unique access point could be protected such that an appropriate relationship could be established for the messages exchanged over that medium.

[162] See ''NHTSA and Vehicle Cybersecurity'', *http://www.nhtsa.gov/staticfiles/administration/pdf/presentations_speeches/2015/NHTSA-VehicleCybersecurity_07212015.pdf* (last accessed Dec 12, 2016).

(b) Agency's Cybersecurity Approach To Hardening Vehicle Architectures in General

Related to hardening the vehicle architectures to be cyber-resilient agnostic of the type of communications interface, NHTSA is pursuing a best-practices approach, which is based on the National Institute for Standards Technology's (NIST) proven cybersecurity framework that includes five principal functions: Identify, Protect, Detect, Respond, and Recover.

This approach suggests that all interfaces between the vehicle electrical architecture and the external world (personal or aftermarket devices, cars, infrastructure, cloud, etc.) need to be carefully considered for risks and appropriate mitigation strategies be implemented. These include not only protection methods, but also intrusion detection techniques, rapid remediation strategies and fast adoption of new lessons learned, because we assume that all entry points into the vehicle, such as Wi-Fi, infotainment, the OBD–II port, V2V, and other points of potential access to vehicle electronics, could be potentially be or become vulnerable over time. We suggest that the industry should make cybersecurity a priority by using a systematic and ongoing process to evaluate risks. And, this process should give explicit considerations to privacy and cybersecurity risks through the entire life-cycle of the vehicle. Further, safety of vehicle occupants and other road users should be an overriding consideration when assessing risks.

We continually monitor the industry as they move towards a more cyber-aware and cyber-resilient posture and will take necessary actions to ensure that there are no unreasonable safety-risks.

(c) V2V-Specific Cybersecurity Considerations

NHTSA does not overlook the potential risks of interfacing the V2V vector with vehicle systems; however, we believe that the holistic approach we are taking in the broader sense as outlined above apply to the common characteristics of various different communications interfaces in the same manner.

In this section, we will primarily focus on the unique attributes of the V2V communications interface and present key steps that are being taken to mitigate the potential incremental risks they could pose.

Key attributes of V2V communications interface, as they relate to cybersecurity risks include the following:

(1) Security and privacy by design through a message authentication,

(2) Broadcast-listen protocol,

(3) Well-defined and fairly limited message structure,

(4) Communications range is limited to about 1000ft,

NHTSA's primary proposed message authentication alternative for V2V communications employs a PKI-based security. Each broadcast message is signed with cryptographic keys to facilitate a method for the receiving units to validate the authenticity and integrity of the transmitted message from its source.

Both the primary and performance-based alternatives for message authentication seek to ensure the integrity of messages between communicating units to help assert that the message has not been altered during transmission or been sent from a malicious sender. It is important to note that this approach does not necessarily validate the accuracy of the message content received.

We consider the cybersecurity risks associated with

(1) the PKI authentication method, and the infrastructure supporting it,

(2) the contents of the messages received, and

(3) the V2V communication interface as a potential channel to inject malware

(1) PKI–SCMS Cybersecurity Requirements

In Section V, the primary message authentication proposal describes the SCMS. The system described is focused on the security functions and requirements necessary to help secure the V2V communications environment. Implementations of the performance-based alternative for message authentications may also need similar compensating approaches depending on the approach taken. While the proposed primary message authentication architecture provides well-recognized security protections, we further consider the potential cybersecurity vulnerabilities and discuss how they are expected to be mitigated.

(a) On-Vehicle Security Materials (Cryptographic Information)

• The OBE will contain security materials that are critical to the operation of the V2V device, and the system as a whole. This includes long term enrollment certificates, short term pseudonym certificates, public/private keys, SCMS security policies, and misbehavior reports. All of this data, if retrieved by unauthorized parties, could allow potential ''bad actors'' to transmit messages that may appear valid to the general ecosystem of devices because these messages are using actual credentials given to a trusted device.

• Attempts to retrieve valid security materials could involve targeting physical OBEs. In addition to having access to OBEs on personal vehicles, OBEs on vehicles that are at their End-of-Life (EOL) decommissioning phases (such as those that can be taken from vehicles in junkyards) could also create a pathway. In the event that a vehicle with a device has met with the end of its useful life, it is foreseen that the device could have up to three years' worth of valid security certificates, assuming that it has regular communication with the SCMS.

• One method that could mitigate the risk associated with retrieval of security information through physical access to the OBE would involve hardware security against tampering such as the use of FIPS [163] Level 3 hardware security module. This specification level is consistent with requiring the zeroisation of cryptographic information in the event that the device is tampered with. While this would protect against malicious attempts, it would likely result in managing the legitimate serviceability needs of the units, likely incurring additional costs for maintenance.

• The agency believes that the current environment regarding cybersecurity and protecting the public warrants a level of hardware security that goes beyond evidence of tampering to actually protecting cryptographic information in the event of a device breach with malicious intent. Therefore, the agency is proposing to require that V2V devices have a minimum of FIPS–140 Level 3 security protection. The agency also believes that at, a minimum, the following information shall be stored in FIPS–140 Level 3 storage:

- All individual pseudonym certificates
- RA, Intermediate CA, and PCA certificates
- the RA address
- system configuration files
- security policies
- Root CA certificate
- Device Enrollment certificate
- All system private keys
- The System CRL
- All unsent misbehavior reports

• The level of security requirements defined by FIPS–140 Level 3 is somewhat different than the historical regulatory authority approach exercised by NHTSA. NHTSA issues performance based requirements which can be found in the many safety standards issued and managed by the agency, although we can be specific in equipment requirements if it is necessary to meet a safety goal. Evaluating security protection ability does not necessarily conform to a performance requirement and compliance test paradigm followed by the agency. As such, NHTSA anticipates device compliance to be conducted by the agency through third party testing laboratories with expertise in confirming the appropriateness of device's hardware security.

• NHTSA seeks comments on this approach (FIPS–140 Level 3 requirement) and on what constitutes tampering, applicable triggers for zeroisation, and how the triggers could be implemented such that routine vehicle maintenance activities can be accomplished without undue burden on the V2V device. The agency seeks comment on the proposed FIPS–140 Level 3 device security requirements. In specific, the agency seeks comment on the FIPS and CCP security approaches briefly described in this section and the pros/cons of each, potential compliance approaches including verification schema for information that should be contained in a functioning, secure device, and views on the whether the proposed level of protection is sufficient for anticipate cybersecurity needs.

• Another approach that could address the more specific EOL OBE security exposure could be for the SCMS to establish a process and procedure by which responsible entities could notify the SCMS of end-of-life devices (entities that deal with old, junked, crashed or otherwise unusable vehicles that contain OBEs.) This would require the entity that determines the device is at its EOL be able to report to the security certificate information the SCMS would need to remove the device from the system by including the

[163] The FIPS families of standards contain a set of standards that pertain specifically to cryptographic storage models, FIPS–140 which the industry uses to store sensitive cryptographic information. The device long and short term certificates along with the devices public/private key pairs are generally regarded as cryptographic information. The FIPS–140 set of standards define various levels of security for cryptographic information storage ranging from 1 through 4, with increasing security measures as the levels get higher. Of particular interest to the OBE are levels 2 and levels 3. Amongst other differences, the agency is interested in the tamper capabilities of these levels. Level 2 is considered tamper evident storage. This can be achieved by placing seals on enclosures (like stickers on over the counter medication that say ''do not use if seal is broken''), by using tamper evident screws and mounting hardware, and other such methodologies. Level 3 adds to this by requiring devices to be tamper resistant. There are many ways to achieve tamper resistance; however, one common method for protecting data is to have the device zero out cryptographic storage in the event that a device is tampered with.

device's security credentials on the system ''blacklist,'' rendering the security information useless. This approach could pose challenges in practical application where the vehicle or device may not be operating properly. Secondly, enabling a method to obtain security information from a device could open up a potential security vulnerability that could be used by others to obtain security materials

We request comments on whether a process approach can succeed and whether there may be other means to secure the on-unit security information.

(2) Potential Regulatory Text for Physical Security for SCMS-Based Message Authentication Proposal

The agency has included no proposed regulatory text to support the cybersecurity requirements discussed in the primary proposal for message authentication based on the SCMS. However, the agency expects that regulatory text in any final would include a provision requiring that V2V devices have a minimum security protection of FIPS–140 Level 3, as described above.

NHTSA seeks comments regarding the cybersecurity needs and requirements and how regulatory language could be crafted to appropriately express the requirements in terms that industry can implement and in terms by which performance can be objectively evaluated.

(3) Performance-Based Physical Security Alternative

The agency has included no proposed regulatory text to support the cybersecurity requirements discussed for a performance-based message authentication alternative. However, the agency expects that regulatory text in any final rule would include a provision requiring that V2V devices have a minimum security protection of FIPS–140 Level 3 for storage of cryptographic certificate, key, and other sensitive data. In addition, a V2V device connected to a vehicle data bus would need to incorporate isolation measures (firewalls) to prevent the V2V module from being a conduit allowing malicious outside actors to gain access to the vehicle data bus and other vehicle modules connected to the data bus.

(4) No Physical Security Alternative

The agency has included no proposed regulatory text to support the cybersecurity requirements discussed for a no message authentication alternative. However, the agency expects that regulatory text in any final rule would include a provision requiring that a V2V device connected to a vehicle data bus would need to incorporate isolation measures (firewalls) to prevent the V2V module from being a conduit allowing malicious outside actors to gain access to the vehicle data bus and other vehicle modules connected to the data bus.

(d) SCMS Cybersecurity Considerations

For the primary message authentication proposal, the SCMS provides key services and security. Key functions of the SCMS include:

- Communications with DSRC devices to transfer of security certificates,
- CRL maintenance and communications to the vehicles.

Section III.E.3.b) explained how security certificates are obtained, when and why certificates are changed, and how additional certificates would be requested and obtained. SCMS provides this service and uses encryption methods to facilitate secure communications to protect security information in transit.

CRLs are distributed to appropriate end-points in the same manner. The credentials and message encryption protect the communication between devices and the SCMS.

The security system of the SCMS is complex and intricate; due in part to privacy protection, therefore the agency requests comments regarding the cybersecurity viability of V2V security and invites comments concerning the relationship of V2V security to the larger vehicle security universe.

(e) Cybersecurity and V2V Message Content

While the security overlay of the V2V communications establishes confidence between authentic entities, the message content indicating the vehicle's behavior is obtained from sensors (such as GPS) and vehicle data buses. It would be possible to manipulate the sources of data to the OBE, which could send a BSM message with inaccurate message content to its surrounding. In cases, the message could be constructed intelligently that could make the messages sent from that vehicle not correspond to the sending vehicle's physical behavior.

Such manipulation could result in surrounding vehicles responding with warnings to the driver early on. The misbehavior detection mechanisms set out in this proposal are designed to detect the anomaly, however it is possible that specifically crafted messages could be delivered and accepted by safety applications.

In the case of the primary misbehavior detection proposal, the misbehaving sender would also hopefully be detected and the sender added to the CRL. However, it is important to examine what could happen if the message is not detected as misbehavior and the time period before the sending vehicle is added to CRL. OEMs treat V2V as a new sensor for the vehicle and applications designed using this message would assess the safety-risks associated with this sensing mechanism being wrong. Generally, warning systems imply less severity than active control. OEMs indicate that they would take safety-conscious approach, which would be different for different applications. They further indicate that for active control, they tend not to rely on any single sensor even in modern systems and expect that to be the same when V2V becomes available to get in the mix of their sensor suite. The impact of such malicious act would be limited vehicles within the communications range of the unit (~1,000 ft).

The broader impact on GPS or timing spoofing/jamming may have similar impacts, or result in limited denial of service. Misbehavior detection is projected to help in such cases and could also help identifying and enforcing rules against jammers.

Given there has been more reports of GPS jammers being used,[164] we seek information and comment regarding how industry is addressing the GPS jamming issue. Are there techniques to identify when GPS jamming is occurring? If the GPS signal is being jammed or spoofed, does industry have plans to notify the driver, and what will be the context of the notification? During GPS jamming, will industry suspend operation of systems that rely on GPS information?

In addition, we solicit comment on whether our assessment of cybersecurity risks due to spoofed and potentially malicious BSM message data is reasonable. We also solicit input from OEMs and Suppliers on how they expect to handle potential single point failures associated with BSM signal contents. What risk-based criteria and process would be appropriate for V2V safety applications to help ensure the validity of the BSM message data received from other vehicles relative to vehicle-local sensor readings? If data from a vehicle's onboard sensors suggest a different outcome as compared to data from an incoming BSM message, how

[164] See ''GPS Under Attack as Crooks, Rogue Workers Wage Electronic War'' at *http://www.nbcnews.com/news/us-news/gps-under-attack-crooks-rogue-workers-wage-electronic-war-n618761* (last accessed Dec 7, 2016).

might V2V safety applications balance the trust on conflicting data? How should V2V safety applications handle a situation where incoming BSM message data is the only source of information available to make a safety decision? How does the nature of the systems' planned reaction (warning vs nature of control) impact such a decision? What new vehicle sensors may be possible in the next 15–20 years that may significantly improve such sensor fusion and decision processes?

(f) Cybersecurity and Potential Malware

One of the cybersecurity risks that needs considered is whether V2V communications could be used to insert malware to the OBE, unexpectedly change configuration, or result in unwanted behavior. Since the V2V channel will be mandated on all new cars, this medium would likely become one of the dominant wireless access points on the vehicle fleet in the field over time.

Further, it should be considered that, since the V2V protocol is based on broadcast and listen methodology, and does not establish networks between participating units the way a traditional network protocol does. Instead, communications takes place through a well-defined BSM message structure.

- It is well established that many software and hardware vulnerabilities occur at the communications interfaces of systems. Security of the interfaces must be the highest priority when developing a system. Therefore, we believe that implemented systems should provide adequate controls to prevent malformed, incomplete or erroneous messages that do not fit the specifications to pass to the OBE.
- The DARPA HACMS program has shown that formal verification can be used to mathematically prove the correctness of systems or interfaces. Formal verification uses mathematical techniques to formalize software as a mathematical proposition to be proved. While testing provides incomplete evidence of correctness, a proof guarantees correctness of the system. In an active project, we are pursuing the development of a formally verified reference parser for the V2V communication interfaces that could provide the industry guidance on one way to ensure that only expected range of BSM Part 1 and Part 2 would be accepted by the OBE. While we do not anticipate requiring the use of a formally verified parser, we expect that industry will pay attention and utilize such tools or other means to ensure that common communication interface vulnerabilities do not exist in implemented V2V units.
- NHTSA also anticipates pursuing fuzz-testing of production-level implementations of V2V hardware with and without the use of a formally verified parser. We also intend to develop a framework of test protocols and message sets that manufacturers could use to test their implementations.
- We reemphasize the importance of securing the V2V communication channel. If the V2V interface is not properly secured (whether by design or in implementation), we need to consider the possibility of a ''worm'' [165] type malware where the malware could potentially self-replicate and propagate in an epidemic manner to other systems with the similar vulnerability (*e.g.* systems from the same manufacturer) that come into communications range. The potential imminent-safety impact of such malware would depend on many factors and most certainly depend of how the vehicle databus interfaces are designed. Even if the impact may not be safety-critical, this risk could potentially lead to large scale denial of service for the mandated V2V technology. The manufacturers should plan for detection and rapid remediation methods to address such issues. This need is similar for other wireless channels. For example, in the 2014 hacking of a Fiat-Chrysler vehicle,[166] which led to eventual recall [167] of approximately 1.5 million vehicles, the researchers documented that they could have designed a vehicle worm for the cellular communication based vulnerability in that particular case.

We solicit input on whether the overall need for rapid remediation methodologies would imply different requirements for the V2V communication interfaces as opposed to others (such as cellular, Bluetooth, Wi-Fi). Further, we solicit comment that exploitation of a potential vulnerability in the V2V OBE does not immediately imply safety-critical system compromise.

The cybersecurity environment changes continually and at times rapidly. Capabilities designed into systems should take the whole lifecycle of the vehicle into account and provide for rapid response methods to potential incidents in the field. These methods could take various forms but should consider both the issue containment and practical remediation needs.

Generally, first important step is having a method to identify cybersecurity issues and share them with the broader community. We and the industry believe that the Automotive Information Sharing and Analysis Center (Auto ISAC) established in 2015 will have a major role in this respect. We anticipate that V2V related intelligence sharing through Auto-ISAC will accelerate the identification of issues and remediation actions. As part of this process, it should be foreseen that various aspects of the V2V design may need updates over the life of systems in the field, such as:

- Security certificates and protocols,
- Misbehavior detection algorithms and policies
- CRL contents and policies
- Device firmware

In the case of primary message authentication approach, the SCMS can update certificate and security protocols that are inputs to each device, but the actual software that performs the security management for different devices can and will be implemented differently by different manufacturers. Each device supplier will need to manage handling of potentially required security updates. It is likely that there will need to be coordination among the SCMS and various devices suppliers to facilitate such updates. It may be the SCMS through the Misbehavior Authority that identifies the need for an update and communicates this to suppliers so that updates can be prepared.

There are many methods by which updates can be implemented. As seen with the different kind of devices that exist today, like tablets/iPads, there are various options and issues. Automated updates to computer systems can be implemented wired or wirelessly. Some of the updates; however, require consent; that screen that asks if you agree to the terms related to the update that may go on for pages. Some methods (personally updating device firmware) require technology savvy that many consumers do not possess. Others require owners bringing their cars to dealers, which are not often followed well.[168] The growing trend is towards building in capabilities for remote software updates.

[165] Worm refers to a standalone malware that replicates itself in order to spread to other systems.

[166] ''Remote Exploitation of an Unaltered Passenger Vehicle'', Charlie Miller and Chris Valasek. Page 48. Available at *http://illmatics.com/Remote%20Car%20Hacking.pdf* (last accessed Dec. 7, 2016).

[167] NHTSA Recall Campaign Number: 15V461000.

[168] According to online Web site Autotrader, the recall completion rate in 2015 was approximately 48 percent, down from 56 percent in 2014.

According to a study released by IHS in September of 2015,[169] OEMs are going to begin implementing software updates over-the-air (OTA); similar to how smart phones are updated currently. In fact the study estimated that software-related repair might soon be able to be wirelessly installed on the vehicle without the owner ever leaving home.

Japanese OEMs pioneered navigation map updates in Japan via their telematics systems. BMW, VW, and Tesla have announced OTA procedures for updating navigation maps. In fact, both Tesla and BMW have already documented utilizing OTA updates to fix security issues onboard their vehicles.

With new vehicles having more connectivity with the Internet and other wireless media, IIHS is predicting that upwards of 160 million cars will partake of OTA updates globally by 2022. In fact many of these may already be available to cars now. XM radios can potentially be utilized to download OTA updates to vehicles and in fact are pre-installed on upwards of 70 percent of all new light vehicles. 4G services, as well as onboard Wi-Fi units are penetrating further into the vehicle fleet as well.

Given that V2V operational and security software may need to be updated securely and widely while systems are in service, it may be unreasonable to expect that non-OTA software updates may have the desired impact and effectiveness (based on experiences in non-OTA domains for recalls). As such, NHTSA is soliciting feedback on whether it should consider requiring that V2V enabled vehicles have built-in OTA capability to have critical software updates, and seeks comment on the practicability of requiring this in future vehicles. NHTSA also solicits feedback on whether vehicle owners should be given the option to decline critical security updates.

In addition, there will be situations when a security vulnerability may be known to NHTSA and manufacturers but not all V2V-equiped vehicles will have installed the patches or updates to mitigate the flaw. During this period, vehicles in the fleet may be vulnerable until the patch or update is installed. NHTSA is seeking comment on how this period of vulnerability should be managed, the time period over which updates or patches should be installed, how the number of patched and unpatched vehicles should be measured to determine patch adoption, and how to manage the situation when vehicles do not receive patches or user refuse to accept or agree to the update.

(g) Enforcement Mechanisms

The National Highway Traffic Safety Administration (NHTSA), under the U.S. Department of Transportation, is the U.S. government agency that was established to carry out safety programs under the National Traffic and Motor Vehicle Safety Act of 1966, re-codified as Title 49 U.S.C. Chapter 301, Motor Vehicle Safety (the Vehicle Safety Act). Under that authority, NHTSA issues and enforces Federal motor vehicle safety standards (FMVSS) that apply to motor vehicles and to certain items of motor vehicle equipment. Associated regulations are found in Title 49 of the Code of Federal Regulations (CFR), Parts 500–599.

The Vehicle Safety Act requires that motor vehicles and regulated items of motor vehicle equipment as originally manufactured for sale in the United States be certified to comply with all applicable FMVSS. NHTSA does not play any part of the certification process. NHTSA does not approve any motor vehicles or motor vehicle equipment as complying with applicable FMVSS. Instead, under 49 U.S.C. 30115, each vehicle manufacturer and equipment manufacturer is ultimately responsible for certifying that its vehicles and equipment comply with all applicable FMVSS.

When establishing the FMVSS, NHTSA must ensure requirements are practicable, meet the need for motor vehicle safety, and are stated in objective terms. Each FMVSS specifies the minimum performance requirements and the objective test procedures needed by the agency to determine product compliance with those requirements.

The Office of Vehicle Safety Compliance (OVSC) is the office within NHTSA's Enforcement Division that is responsible for compliance verification testing. OVSC funds independent test laboratories throughout the United States to execute the verification tests. The verification tests are not certification tests since the vehicle manufacturers are ultimately responsible for vehicle certification, but are used to verify that tested motor vehicles appear to meet the requirements of the FMVSS. OVSC utilizes the test procedures specified in each FMVSS as the basis for developing a more detailed test procedure that includes test conditions, set-ups, test equipment, step-by-step test execution, and data tables. Each funded test laboratory is required to utilize the OVSC test procedure to establish even more detailed test procedures with step-by-step approaches documented including check-off lists and data tables.

In most cases, when OVSC and a contracted test laboratory perform FMVSS tests, the test vehicle appears to meet the requirements of the applicable standard; however, in some instances, test failures are identified. When an apparent test failure is identified, the following steps will be followed by OVSC to resolve the possible noncompliance.

- The contracted test laboratory notifies OVSC of any potential test failure.
- The test laboratory verifies that the test procedure was executed exactly as required and that all laboratory test equipment utilized has up-to-date calibration information attached.
- The test laboratory provides detailed test results to OVSC for evaluation.
- The laboratory may be directed to recalibrate any critical test equipment to ensure proper operation.
- The vehicle manufacturer is notified of the test failure and the test data is shared.
- OVSC requests the manufacturer provide documentation and its basis for certification.
- The vehicle manufacturer may choose to conduct additional internal testing to gather additional data for evaluation.
- Meetings will be held as required with test laboratory and vehicle manufacturer personnel to identify test execution related problem or possible vehicle noncompliance.
- Additional verification tests on same vehicle or identical vehicle may be executed to validate test results.
- If noncompliance is identified and confirmed by vehicle manufacturer, the manufacturer is required to submit a 49 CFR part 573 report of noncompliance report within five working days after a noncompliance has been determined.
- The manufacturer will work with NHTSA to ensure a fix has been developed to correct the identified noncompliance.
- Follow-up tests may be executed to verify the fix does in fact correct the problem.
- The vehicle manufacturer will work with NHTSA to ensure no new noncomplying vehicles are sold and that the vehicles on the road are recalled to fix the confirmed noncompliance.

The above steps are not necessarily in the exact order they may occur based upon the type of test failure and because

[169] "Over-the-air Software Updates to Create Boon for Automotive Market, IHS Says" at *http://press.ihs.com/press-release/automotive/over-air-software-updates-create-boon-automotive-market-ihs-says* (last accessed: Dec. 7, 2016).

many of the steps are occurring simultaneously. Furthermore, the actual steps required to resolve any potential test failure will be predicated on the technical attributes of the failure and the difficulties associated with the ultimate resolution of the problem.

(h) Compliance Test Procedures

To ensure that light vehicles equipped with a V2V communications system, On Board Equipment (OBE), is interoperable and compliant with the minimum performance requirements, the regulatory text of this proposal includes static, dynamic, and simulated performance tests. These tests have the potential for evaluating the performance of the V2V Radios and verifying the accuracy of the Basic Safety Message (BSM) safety message, Part I.

Overall, we anticipate devices being tested will be instrumented with independent measurement sensors, devices, and a data acquisition system (DAS) in order to collect V2V system data. The independent measurement equipment will collect Differential Global Positioning System (DGPS) information, vehicle speed, vehicle 3-axis accelerations, vehicle yaw rate, vehicle systems status information, and radio performance data.

IV. Public Acceptance, Privacy and Security

A. Importance of Public Acceptance To Establishing the V2V System

In the Readiness Report, NHTSA extensively discussed the importance of consumer acceptance to the success of V2V, given that as a cooperative system that benefits from network effects, V2V depends on drivers' willingness to participate. V2V needs vehicles to be equipped in order to broadcast messages that other vehicles can ''hear,'' but in order for equipped vehicles to join the roads, consumers must be willing to recognize the benefits of a V2V system and support its adoption by the U.S. vehicle fleet via the purchase of the new, equipped vehicles, or by adding V2V capability to their existing vehicles through aftermarket devices. Thus, consumers must *want* V2V in order for V2V to reach its full potential. If consumers avoid the technology for some reason, it will take longer to achieve the network effect, and safety benefits will be slower to accrue.

Additionally, the courts have determined that public acceptance of a mandated technology is necessary to ensure that the mandate fulfills the requirements of the Safety Act. As discussed further in Section V.C below, if the public rejects a technology that the agency has required for new vehicles, the courts have found that the standard may neither be practicable nor meet the need for safety in the absence of public acceptance. If vehicle manufacturers literally cannot sell V2V-equipped vehicles because consumers *en masse* refuse to buy them, then it is possible that a court would conclude that the standard was not consistent with the Safety Act.

NHTSA must therefore consider the potential elements of a V2V requirement that may affect public acceptance, and do what we can to address them, both through carefully considering how we develop the mandate, and through consumer education to improve understanding of what the technology does and does not do. Additionally, we expect, simultaneously, that vehicle manufacturers subject to the eventual mandate will likewise work to improve public understanding of the benefits of V2V, boosting consumer acceptance overall. We also seek comment on the extent to which an if-equipped approach potentially may alleviate some consumer acceptance concerns.

B. Elements That Can Affect Public Acceptance in the V2V Context

Based on our review of the research conducted so far and the responses to the ANPRM and Readiness Report, NHTSA believes that the several elements of the V2V system discussed below may affect public acceptance.

1. False Positives

A ''false positive'' occurs when a warning is issued to a driver and the warning is unnecessary (or when the driver believes the warning is unnecessary), because there is no immediate safety risk that the driver has not already accounted for. False positives can startle and, if there are too many, annoy a driver, causing drivers to possibly lose confidence in the system's ability to warn them properly of danger and desire to have the warning disabled; reducing overall system benefits. If the driver does not notice immediately that a false positive is in fact false, the driver might carry out an unnecessary evasive maneuver, potentially increasing the risk of an accident.

In the SPMD, we initially saw fairly high numbers of false positive warnings for some V2V applications.[170] Further analysis indicated this was due largely to the fact that the safety applications under evaluation were still prototypes. Part of the goal of the SPMD was to provide vehicle manufacturers with the opportunity to gain real-world experience with V2V safety applications; providing the opportunity to improve their ''tuning'' to maximize safety while minimizing false positives. Driver complaints, particularly regarding IMA warnings triggered by cloverleaf highway on-ramps and elevated roads that crossed over other roadways, led manufacturers to adjust the safety applications to accommodate the these originally-unexpected ''warning'' conditions. The SPMD experience proved that these adjustments significantly reduced false positive warnings for this application.

At this time, NHTSA cannot account preemptively for the possibility of future false positive warnings. Given that we are only proposing today to mandate V2V transmission capability and are not yet requiring specific safety applications, we are not developing requirements for how safety applications must perform, and we recognize that doing so would be a significant undertaking. We do expect, however, that manufacturers will voluntarily develop and install safety applications once V2V communications capability is required available. As with existing advanced crash avoidance systems and as in the SPMD, we expect manufacturers to address false positive issues that arise in use in order to improve customer satisfaction. Because false positive issues with V2V-based safety applications are typically a software issue rather than a hardware issue Manufacturers may even be able to solve by deploying solutions to such problems through over-the-air software updates, rather than requiring vehicles to be brought in for adjustment. Data from the SPMD suggests that it is possible to reduce false positives in production safety applications and thus we believe it should not pose a significant public acceptance issue for V2V. Additionally, if NHTSA determines in the future that false positives in the field create an unreasonable risk to safety, NHTSA could pursue remedies for them through its enforcement authority.

2. Privacy

If consumers fear that V2V communications will allow their movements to be ''tracked,'' either for government or private purposes, and that such information could be used to their detriment, they may avoid buying new cars with V2V systems installed, or attempt to disable the V2V systems in

[170] See, *e.g.,* Nodine et al., ''Independent Evaluation of Light-Vehicle Safety Applications Based on Vehicle-to-Vehicle Communications Used in the 2012–2013 Safety Pilot Model Deployment,'' USDOT Volpe Center, DOT HS 812 222, December 2015, Section 5.1. Available at Docket NHTSA–2016–0126.

their own vehicles. Concerns about privacy directly implicate consumer acceptance. For this reason, in addition to NHTSA's obligation under federal privacy law to identify the privacy impacts stemming from its regulatory activities,[171] the Agency also must consider consumer privacy carefully in our development of V2V requirements. For example, as discussed above, SAE J2735 BSM specification contains a series of optional data elements, such as vehicle identification number (VIN), intended to be broadcast as part of the V2V transmission that enables safety applications. Because the Agency has determined that transmission of VIN and other information that directly identifies a specific vehicle or its driver or owner could create significant privacy risks for private consumers, this proposal contains performance requirements that exclude from the BSM such explicitly identifying data. The Agency also is concerned that other data elements in the BSM potentially could be used to identify specific individuals when combined over time and with data sources outside of the V2V system. For this reason, we have proposed a more general exclusion of ''reasonably linkable'' data elements from the BSM to minimize consumer privacy risk that could result from associating BSMs with specific individuals. We discuss our privacy risk analysis in more in detail in Sections IV.C and IV.D, and in the draft PIA published concurrent with this NPRM.

NHTSA expects manufacturers to pursue a privacy positive approach to implementing the proposed V2V requirements. In furtherance of the Fair Information Practice Principles (FIPPs), especially those of transparency and notice, we have developed a draft privacy statement that we will require manufacturers to provide to consumers, included in the regulatory text below. In order to ensure effective notice, we intend for manufacturers to provide this statement to consumers in understandable, accessible formats and at multiple easily identifiable locations and times, including but not limited to the time of sale. We seek comment from the public on the most effective time and means of providing such multi-layered notice to individuals purchasing new and used vehicles with V2V systems. We note that the industry has developed a set of voluntary privacy principles for vehicle technologies and services, which have been accepted by members of both the Alliance and Global Automakers, covering the significant majority of motor vehicle manufacturers.[172] We also seek comment from the public on how these principles would apply to V2V communications, as detailed in this NPRM, and the extent to which application of these voluntary minimum principles in the V2V context would provide adequate notice and transparency to consumers.

To date, vehicle technologies that have raised privacy concerns for consumers have been ''opt-in,'' meaning that either consumers expressly agree to the use of these technologies in their vehicles (and thereby provide explicit consent) or consumer purchase vehicles containing technologies not mandated by NHTSA (and thereby, arguably, provide implicit consent). V2V presents a somewhat different situation, as we are proposing that at least 50 percent of new vehicles will be required to have V2V devices starting in model year 2021. Since this would be a mandated technology, consumer choice will be limited to the decision of whether or not to purchase a new car (all of which eventually would contain V2V technology, if mandated). From a privacy perspective, such implicit consent is not an optimal implementation of the FIPPs principle of consumer choice. However, as discussed below in Section VI.C., the agency has determined that there are no viable alternatives to a mandate of V2V technology. In the agency's view, the absence of consumer choice is required to achieve safety in the V2V context, increasing the significance of ensuring that industry deploys V2V technology in a privacy positive, transparent manner and provides consumers with effective, multi-layered privacy notice. Consumers who are privacy-sensitive tend to feel more strongly when the government is mandating something that creates potential privacy risks to individuals, as compared to when they voluntarily choose whether to purchase and use such technology. NHTSA and vehicle manufacturers will continue to work to ensure that V2V does not create the type of privacy impacts frequently raised in comments, and will need to educate consumers about the potential privacy impacts and privacy-enhancing controls designed into the V2V system. That said, NHTSA seeks comment on the extent to which an if-equipped approach potentially may provide consumers with more of a choice to ''opt in'' to V2V technology—or whether, if mandated, consumers should be provided an ''opt out'' option for privacy reasons.

3. Hacking (Cybersecurity)

If consumers fear that V2V will allow wrongdoers to break into their vehicle's computerized systems and take control of vehicle operation, then, as with privacy concerns, they may avoid purchasing new vehicles equipped with V2V or attempt to remove already-installed V2V in their own vehicles. This fear is really a two-part concern: (1) That V2V equipment can be ''hacked,'' and (2) that *if* V2V equipment can be hacked, the consumer's safety may be at risk.

Regarding the concern that V2V equipment can be hacked, as discussed in much more detail in Section III.E.7 above, counter measures have been identified using a risk-based approach to determine the types of threats and risks to the equipment that may occur. We are proposing to require additional hardening of the on-board V2V equipment beyond normal automotive-grade specifications to help reduce the chance of physical compromise of V2V. In addition we have included alternatives for message authentication and misbehavior reporting to solicit comment regarding to further reduction of cybersecurity risk in V2V message exchange. We seek comment on what additional requirements, if any, we might consider adding to the standard to mitigate infiltration risk yet further. If commenters believe additional steps are needed, we ask that they describe the protection mechanism and/or approach as fully as possible, and also provide cost information to accomplish them—or whether, if mandated, consumers should be provided an option to disable V2V for cybersecurity reasons.

Regarding the concern that V2V equipment, if hacked, can create a safety risk, NHTSA expects manufacturers to ensure that vehicle systems take appropriate safe steps to the maximum extent possible, even when an attack may be successful.[173] These can include protective/preventive measures and techniques like isolation of safety-critical control systems networks or encryption and other hardware and software solutions that lower the likelihood of a successful hack and diminish the potential impact of a successful hack; real-time intrusion

[171] Section 522 of the Consolidated Appropriations Act, 2005, Public Law 108–447.

[172] ''PRIVACY PRINCIPLES FOR VEHICLE TECHNOLOGIES AND SERVICES'' available at *http://www.autoalliance.org/?objectid=865F3AC0-68FD-11E4-866D000C296BA163* (last accessed dec 7, 2016).

[173] Additional information about NHTSA's approach to automotive cybersecurity is available at *http://www.nhtsa.gov/About+NHTSA/Speeches,+Press+Events+&+Testimonies/NHTSA+and+Vehicle+Cybersecurity* (last accessed Sept. 23, 2015).

detection measures that continually monitor signatures of potential intrusions in the electronic system architecture; real-time response methods that mitigate the potential adverse effects of a successful hack, preserving to the extent possible the driver's ability to control the vehicle; and information sharing and analysis of successful hacks by affected parties, development of a fix, and dissemination of the fix to all relevant stakeholders. In July 2015, in response to NHTSA's challenge, the auto industry created an Information Sharing and Analysis Center (''ISAC'') to help the industry proactively and uniformly address cybersecurity threats, and we would expect that such a body could be a useful forum for addressing V2V-related security risks, if any. A number of auto manufacturers are also rapidly ramping up internal teams to identity and address cybersecurity risks associated with new technologies.[174]

In March 2014, researchers from Galois, Inc. issued a white paper with specific recommendations for reducing security risk associated with V2V communications, which they stated would ''automatically rule out a whole class of security vulnerabilities'' at low cost with known technologies.[175] The recommendations were as follows:

- All legal inputs shall be specified precisely using a grammar. Inputs shall only represent data, not computation, and all data types shall be unambiguous (*i.e.,* not machine-dependent). Maximum sizes shall be specified to help reduce denial-of-service and overflow attacks.
- Every input shall be checked to confirm that it conforms to the input specification. Interface messages shall be traceable to mission-critical functionality. Non-required messages should be rejected.
- Parsers and serializers shall be generated, not hand-written, to ensure they do not themselves introduce any security vulnerabilities. Evidence should be provided that
  - *parse(serialize(m)) = m,* for all messages *m,* and
  - parse(i) = REJECT, for all non-valid inputs i.
- Fuzz testing shall be used to demonstrate that implementations are resilient to malicious inputs.
- A standardized crypto solution such as AES–GCM shall be used to ensure confidentiality, integrity, and the impossibility of reply attacks.

DARPA staff, in discussing V2V cybersecurity issues with DOT researchers, recommended these techniques be included in any V2V requirements going. NHTSA seeks comment on whether these specific techniques should be incorporated into the proposed FMVSS requirements, and if so, how; alternatively, NHTSA seeks comment on whether these techniques should be incorporated prior to vehicle manufacturer certification with the FMVSS, and if so, how, and how NHTSA would verify their incorporation.

4. Health

As discussed in more detail below in Section IV.E, a number of individual citizens commented to the ANPRM and Readiness Report that they were concerned about what they believed to be potentially negative health effects that could result from a DSRC mandate. As discussed in Section IV.E below, NHTSA has considered this issue carefully, and whether there are ways to mitigate these concerns without obviating the very real safety benefits that a V2V mandate will enable. We believe that consumer education, undertaken both by the Federal government and by vehicle manufacturers, may help to alleviate some of these concerns.

5. Research Conducted on Consumer Acceptance Issues

Working with Booz Allen Hamilton, NHTSA has conducted additional research on consumer acceptance issues since the ANPRM and Readiness Report. The objective of the research was to conduct both qualitative and quantitative research to broaden our understanding of consumers' acceptance of V2V technology and to inform future outreach and communication efforts to the public. The qualitative phase included focus groups held in Spring of 2015. Focus group participants were shown a brief video on what V2V communications are, how they work, and how they contribute to vehicle safety, and then asked to discuss a series of questions about the technology, their understanding of it and interest in it, and benefits and drawbacks. Overall, on a scale of 1 to 10, the majority of focus group participants rated their interest in V2V as a 5 or higher for the next car. However, participants also expressed concern that the technology would not be effective if it were not universally adopted, and that over-reliance on or distraction by V2V warnings could cause drivers to become less attentive and increase risk. Although most focus group participants believed that V2V would allow drivers to be tracked, few were concerned with the privacy implications of tracking.[176]

Following the conclusion of the focus groups and analysis of their findings, a survey was developed for online quantitative testing to examine these issues further. The survey was conducted by Ipsos, under contract to BAH. The survey sought to evaluate several objectives:

- What is the degree of public acceptance of V2V?
- What proportion of people are concerned about each barrier? How much importance is attached to that concern?
- What proportion of people agree with the potential benefits of V2V? How much importance is attached to that benefit?
- How does the population differ on the above viewpoints (age, gender, urbanicity, etc.)?
- What are predictors of acceptance of V2V technology (age, gender, urbanicity, etc.)?

Over 1,500 people responded to the survey, and the sample was matched to the target population on age, gender, ethnicity, income, and region. Respondents viewed a brief informational video about V2V, and then answered 35 questions. Approximately half of respondents were interested in having V2V in their next car, with ''accepters'' tending to be male, older, urban, and more educated. All responses had a margin of error of ±2.5 percent

In terms of barriers or concerns, 69 percent of respondents believed that V2V would encourage other drivers to be too reliant and less attentive to the driving task, and over 50 percent expressed concern about cybersecurity and the need for enough vehicles to be equipped for the benefits to accrue. Between 30 and 40 percent expressed concern about tracking by the government or law enforcement and about the risk that they themselves could become too reliant and inattentive to driving. Only 20 percent expressed concern about health risk from electromagnetic activity. Of those concerns, however, some were deemed

[174] See, *e.g.,* King, Rachel, ''GM Grapples with Big Data, Cybersecurity in Vehicle Broadband Connections,'' Wall Street Journal, Feb. 10, 2015. Available at *http://blogs.wsj.com/cio/2015/02/10/gm-grapples-with-big-data-cybersecurity-in-vehicle-broadband-connections/* (last accessed Dec 7, 2016).

[175] See Launchbury, John, Dylan McNamee, and Lee Pike, Galois Inc., ''A Technique for Secure Vehicle-to-Vehicle Communication,'' Mar. 9, 2014. Available at *http://galois.com/wp-content/uploads/2014/07/whitepaper_SecureInterfaces.pdf* (last accessed Dec 7, 2016).

[176] ''Vehicle to Vehicle Crash Avoidance Safety Technology: Public Acceptance Final Report'' December, 2015. Available at Docket No. NHTSA–2016–0126

more important than others (that is, simply because respondents identified a risk, did not necessarily mean that they considered it an *important* risk). Respondents viewed law enforcement and government tracking as less important, but cybersecurity, other drivers' inattentiveness, and health risks as more important, when they were concerned about them.

In terms of benefits of V2V, 55 percent of respondents believed that V2V would reduce the number and severity of vehicle crashes, 53 percent believed that it would make driving more convenient and efficient, and 50 percent believed that V2V could lower insurance rates. As for barriers, respondents tended to believe that benefits for others would be somewhat greater than the benefits that they themselves would experience. Importance did not vary as much for benefits as it did for barriers.

In terms of how opinions about benefits and barriers correspond to whether a respondent wanted V2V in their next car, the survey results found that, on balance, all respondents were concerned about barriers, but ''accepters'' of V2V rated the benefits more highly. When asked how much they would be willing to pay for V2V, 78 percent of respondents were willing to pay less than $200.

Based on the research conducted thus far and assuming that the survey respondents are, as intended, reasonably representative of the nation as a whole, it appears that while there may be work yet for the agency and manufacturers to do in order to reassure consumers of V2V's benefits, there may not be a sufficient public acceptance problem that an FMVSS requiring V2V communications in new vehicles would face clear legal risk on that issue. NHTSA intends to continue researching approaches to consumer outreach on V2V and will work with industry and other relevant stakeholders in doing so. We seek comment on what the agency should consider in developing those approaches to best ensure the success of a future V2V system.

6. User Flexibilities for Participation in System

In the ANPRM, we sought comment on whether there were any issues relating to consumer acceptance that the agency had *not* yet considered, and asked how the agency should consider them for the NPRM. In response, a number of individual commenters expressed concern that they experience extreme sensitivity to electromagnetic radiation, and that therefore DSRC should not be mandated, or that if it was mandated, that the agency should allow drivers to disable it. Health issues raised in comments are covered below in Section IV.E, but the question of whether the agency should require or permit an ''off switch'' for V2V communications arose when commenters suggested it as a way to mitigate concerns over health effects. A handful of other individual commenters stated that the agency should allow drivers to turn off DSRC for privacy or security reasons, out of concern that DSRC transmissions could allow their movements to be tracked, or that the device could be hacked by malicious third parties to obtain personal information about the driver. A number of individual commenters raising these concerns about health or tracking suggested that they would attempt to disable V2V in their vehicles, or only purchase older vehicles without V2V.

While NHTSA had asked in the ANPRM whether commenters had thoughts regarding whether V2V-based *warnings* should be permitted to be modified or disabled,[177] in the interest of maximizing safety benefits, NHTSA had not considered allowing manufacturers to provide consumers with a mechanism to disable V2V itself, whether temporarily or permanently.

Generally, if NHTSA concludes that a vehicle system or technology provides sufficient safety benefits that it should be required as an FMVSS, NHTSA has not permitted it to be disabled. In fact, Congress expressly prohibits manufacturers, distributors, dealers, and motor vehicle repair businesses from knowingly making inoperative any part of a device or element of design installed on or in a motor vehicle in compliance with an applicable motor vehicle safety standard prescribed by NHTSA.[178] In some cases, however, NHTSA has established FMVSSs that permit system disablement or alteration when there is a clearly-defined safety need for doing so.

For example, FMVSS No. 126 for electronic stability control (ESC) allows manufacturers to include an ''ESC Off'' control that puts the system in a state where ESC does not meet the FMVSS performance requirements, as long as the system defaults to full ESC capability at the start of the next ignition cycle and illuminates a telltale in the meantime to warn the driver that ESC is not available.[179] NHTSA allowed the ESC Off control because we were aware that in certain driving situations, ESC activation could actually make driving *less* safe rather than *more* safe—if a driver is stuck in deep snow or sand and is trying to free their vehicle, quickly spinning wheels could cause ESC to activate when it should not. Additionally, the agency was concerned that drivers who did not have the option of disabling ESC when absolutely necessary might find their own, permanent way to disable ESC completely. Having an off switch that reverted to full functionality at the next ignition cycle at least allowed ESC to continue providing safety benefits the rest of the time. NHTSA concluded that allowing temporary disablement was better than risking the permanent loss of safety benefits.[180]

As another example, FMVSS No. 208 for occupant crash protection allowed manufacturers to include a device up until September 1, 2012, that deactivated the right front passenger seat air bag, but only in vehicles without a second row of seating, or in vehicles where the second row of seating is smaller than a specified size.[181] Like the ESC Off function, the ''passenger air bag off'' function also requires a telltale to illuminate to warn the driver that the air bag is disabled; unlike the ESC Off function, the passenger air bag off function, if present, remains deactivated until it is reactivated by means of the deactivation device (*i.e.,* the driver presses the button again, rather than the air bag simply reactivating at the start of the next ignition cycle).[182] In establishing this option, the agency noted public acceptance issues with advanced air bags, and stated that allowing on-off switches for some period after all vehicles were equipped with advanced air bags would help parents feel more confident about the system's reliability based on real-world experience.[183]

[177] *See* 79 FR 49270, at 49272 (Aug. 20, 2014) (Question 13 in the ANPRM asks whether commenters believe that V2V-based warnings should be permitted to be modified or disabled).

[178] *See* 49 U.S.C. 30122(b).

[179] *See* 49 CFR part 126, S5.4. We note that despite the overarching requirement to return to full functionality at the new ignition cycle, S5.4 does not require ESC to return to full functionality if the vehicle is in a mode for ''low-speed, off-road driving,'' or if the front and rear axles are locked because the vehicle is in some sort of 4WD mode.

[180] 72 FR at 17279–80 (Apr. 6, 2007).

[181] *See* 49 CFR part 208, S4.5.4.

[182] *Id.*

[183] Deactivation of the ''advanced'' right front passenger air bag was primarily intended to address the possibility that, in vehicles with no (or very small) back seats, a child seat might have to be placed in the front passenger seat rather than in the back. The primary mechanism to mitigate the risk of the front passenger air bag deploying when a child seat is present is a suppression system, but the agency allowed vehicle manufacturers to include an off switch for several years to improve parents' confidence that the suppression systems were working successfully in the field. *See* 65 FR at 30723 (May 12, 2000).

Thus, in prior instances when NHTSA has allowed drivers the option of changing or disabling the functionality of a required safety system, it has been in the interest of providing *more* safety. Similarly, were V2V to impose substantial new safety risks, there could be a safety reason to disable transmission and reception of messages. To the extent that consumers may wish that the agency allow a way for them to disable V2V because of concerns about privacy or cybersecurity, we reiterate our position as discussed in Sections IV.B and IV.C on privacy and Section V on security we have worked to design requirements that reduce the possibility of such threats. To the extent that consumers wish a mechanism to disable V2V devices out of concern over potential health effects, we note simply that disabling your own V2V unit would not help you avoid V2V transmissions, because other light vehicles will also be equipped with the technology, and if you have your own vehicle it is presumably for the purpose of traveling to places where other vehicles also go. Turning V2V off for this reason would forfeit the safety benefit of being ''seen'' by other vehicles'' and ''seeing'' other vehicles, without providing any other benefit.

Moreover, unlike for most of the prior technologies in which NHTSA allowed drivers the option of changing or disabling the functionality of a required safety system, allowing V2V communications to be disabled would affect the safety of more drivers than just the driver who turned off their own V2V device. A cooperative system like V2V protects you by making you more ''visible'' to other drivers and by letting you know when they pose imminent risks to you. A driver who disables V2V on their vehicle makes their vehicle less visible to other drivers, potentially affecting their own relative safety risk and the safety risk to those around them. The safety benefits from a cooperative system could be undermined by allowing drivers to opt out. If there is no safety benefit from opting out, and doing so would undermine safety benefits both for the driver who opts out and for drivers around them, opting out may not be justified.

However, V2V is a novel technology concept in the transportation context, which differs in some ways from other technologies covered by the FMVSS. NHTSA recognizes that, as discussed elsewhere in this notice, any technology that is required to transmit and receive information on a persistent basis creates potential privacy and cybersecurity risks. NHTSA is making every effort to reduce these risks while setting requirements that would provide life-saving benefits. That said, we acknowledge that there may be circumstances when there could be a need to deactivate the V2V device on a vehicle. These may include individuals or groups with specific privacy needs, the emergence of unanticipated cybersecurity threats, or other reasons. To address these cases, NHTSA is requesting comment on possible approaches to deactivating V2V related hardware and software as and when appropriate, as well as the costs and benefits of such approaches. These could include deactivations initiated by drivers, manufacturers, or the government; with different scopes, such as vehicle-specific or broader deactivations; with different lengths, such as for a single key start or more long-lasting; and with different levels of ease, such as an accessible consumer-friendly method or one that would require mechanical expertise.

C. Consumer Privacy

NHTSA takes consumer privacy very seriously. Although collection of data by on-board systems such as Event Data Recorders and On-Board Diagnostic systems is nothing new, the connectivity proposed by the Agency will expand the data transmitted and received by cars. V2V systems will create and transmit data about driver behavior and the surrounding environment not currently available from most on-board systems. For this reason, V2V and future vehicle to infrastructure and pedestrian (V2X) technologies raise important privacy questions.

The agency is committed to regulating V2V communications in a manner that both protects individuals and promotes this important safety technology. NHTSA has worked closely with experts and our industry research partners (CAMP and the VIIC) to design and deploy a V2V system that helps protect consumer privacy. As conceived, the system will contain multiple technical, physical, and organizational controls to reduce privacy risks—including those related to vehicle tracking by individuals and government or commercial entities. As proposed, V2V messages will not contain information directly identifying a vehicle (as through VIN, license plate or registration information) or its driver or owner (as through name, address or driver's license number), or data ''linkable, as practical matter,'' or ''reasonably linkable'' to an individual. NHTSA intends for these terms to have the same meaning, specifically: Capable of being used to identify a specific person on a persistent basis without unreasonable cost or effort, either in real time or retrospectively, given available data sources. Our research to date suggests that using V2V transmissions to track the path and activities of identified drivers or owners, while possible, could be a complex undertaking and may require significant resources and effort.[184] The Agency has concluded that excluding ''reasonably linkable'' data elements from the BSM will help protect consumer privacy appropriately and meaningfully while still providing V2V systems in vehicles with sufficient information to enable crash-avoidance safety applications.

We request comment on the proposed mandate that the BSM exclude data elements ''reasonably linkable'' to an individual (as that term is defined above) and whether this appropriately balances consumer privacy with safety. Additionally, will exclusion from the BSM of ''reasonably linkable'' data elements undermine the need for a standard BSM data set in furtherance of interoperability or exclude data required for safety applications?

NHTSA, with the support of the DOT Privacy Officer and NHTSA's Office of the Chief Information Officer, conducted an interim privacy risk assessment of the V2V system prior to issuance of the Readiness Report and ANPRM. The interim assessment was intended to provide the structure and serve as a starting point for NHTSA's planned PIA, which is a more in-depth assessment of potential privacy impacts to consumer privacy that might stem from a V2V regulatory action, and of the system controls that mitigate those risks. On the basis of then available information and stated assumptions, NHTSA's interim privacy assessment identified the system's business needs, relevant system functions, areas of potential risks, and existing/other risk-mitigating technical and policy controls.

NHTSA received a significant number of comments on the issue of privacy in response to the ANPRM and Readiness Report. Generally, the privacy comments related to consumer acceptance and reflected consumer and industry concerns that the V2V system would be used by government and

[184] See Reports: FHWA–JPO–15–237—''Final Design Analysis Report'' September 18, 2015, FHWA–JPO–15–236—''Privacy Issues for Consideration by USDOT Based on Review of Preliminary Technical Framework (Final-Rev A)'' February 24, 2016, FHWA–JPO–15–235—''Final Requirements Report'' September 11, 2015, and ''Technical Memorandum: Modeling and simulation of Areas of Potential V2V Privacy Risk'' March 8, 2016 located in Docket No. NHTSA–2016–0126.

commercial entities to track the route or activities of individuals, or would be perceived by individuals to have that capability. A vast majority of the privacy comments addressed one or more of the following areas:

1. NHTSA's privacy impact assessment;
2. ''privacy by design'' and data privacy protections;
3. data access and privacy;
4. consumer education; and
5. Congressional or other government action related to V2V data.

Since receiving these comments, NHTSA has worked closely with privacy experts to identify and prioritize for further analysis specific areas of potential privacy impact in the V2V system. Additional privacy research, such as dynamic modeling related to location tracking and analysis of PKI best practices, is underway that will refine NHTSA's approach to mitigating potential privacy impacts stemming from the V2V system. On the basis of the PIA, comments received on the NPRM and PIA, and ongoing privacy research, agency decision-makers will be in an informed position to determine whether any residual risk (*i.e.,* risk in the system that cannot reasonably be mitigated) is acceptable—and, in the alternative, whether functionality should be sacrificed in order to achieve an acceptable level of residual risk, and if so, what functionality.

1. NHTSA's PIA

Over a dozen organizations requested that NHTSA conduct a privacy impact assessment (PIA) of the V2V system as proposed in the NPRM. Many of these commenters noted additionally that a PIA will be critical to consumer acceptance of V2V. Several organizations requested that NHTSA take steps (in addition to conducting a PIA) to help enhance and speed consumer acceptance of V2V technologies. Comments relating to the scope of NHTSA's PIA included a request that NHTSA broaden the scope of its privacy analysis to include privacy impacts associated with vehicle to infrastructure (V2I) and vehicle to ''other'' (such as pedestrians) (V2X) applications, and also that NHTSA release privacy research underlying its PIA.

The Alliance of Automobile Manufacturers (Alliance) suggested that NHTSA hold public workshops with the Federal Trade Commission (FTC) to thoroughly investigate privacy issues related to the V2V system. It also recommended that NHTSA expand the scope of the PIA so that it ''considers all possible uses of the envisioned transportation communications network including all potential internal and external abuses, and other challenges not solely those concerned with safety, mobility and the environment.'' The Automotive Safety Council recommended that an independent third party review the PIA. Finally, the Electronic Frontier Foundation (EFF) and Privacy Rights Clearinghouse requested that NHTSA release all initial risk assessments and research on which its initial risk assessment and PIA are based, including those related to location tracking and identification capabilities. Additionally, the Alliance took the position that PIA should analyze the privacy concerns relating to the broader V2X communications infrastructure, which includes commercial venture, law enforcement, and taxation issues. The FTC requested that NHTSA take into account the Fair Information Practice Principles (FIPPs) framework in regulating the V2V system.

NHTSA agrees with commenters emphasizing the critical importance of issuing a PIA detailing the agency's analysis of the potential privacy impacts of the V2V system as proposed in the NPRM. Not only is NHTSA required by law [185] to do so, but the FIPPs-based privacy-risk analysis documented in the PIA has informed NHTSA's proposal significantly, and helped to refine the privacy controls that NHTSA and its research partners designed into the V2V system to mitigate potential privacy impacts, including that related to vehicle tracking. NHTSA intends to work closely with the FTC, which is the primary federal agency with authority over consumer privacy and data security, on consumer privacy issues related to the V2V system. Such intra-governmental collaboration is likely to include coordination on the PIA and ongoing privacy research. It may also include conducting joint public meetings or workshops with stakeholders following issuance of the NPRM and PIA, which has undergone intra-governmental review. For a variety of reasons, NHTSA did not (and could not) have it reviewed by non-governmental third parties prior to publication. However, NHTSA looks forward to receiving comments on the privacy issues discussed in the NPRM and PIA from a broad range of stakeholders and other interested entities.

With regard to the scope of NHTSA's PIA, the agency wishes to emphasize that, to the extent possible in the context of a still evolving V2V ecosystem, our PIA intentionally is scoped to take into account potential internal and external threat actors and potential abuses of the V2V system—not solely those directly related to safety, mobility or environmental applications. As discussed in the PIA Summary section below, NHTSA's PIA focusses not on specific V2V system components or applications. Rather, it focuses on data transactions system-wide that could have privacy impacts, and the controls that mitigate those potential impacts. To the extent that specific V2V data transactions might be vulnerable to privacy impacts, our risk-analysis broadly considers potential threats posed by a wide range of internal and external actors, including foreign governments, commercial non-government entities, other non-governmental entities (such as research/academic actors and malicious individuals or groups). Additionally, our analysis takes into account potential privacy impacts posed by internal V2V system actors.

2. Privacy by Design and Data Privacy Protections

Many commenters requested that NHTSA deploy the V2V system in a way that ensures drivers' privacy and the security of the system. Some sought specific privacy protections, such as ''total anonymity'' if drivers cannot opt out of the V2V system, the protection of any PII associated with the system, and avoidance of using any PII at all. Commenters also sought end-to-end encryption of any PII, no local or remote V2V data storage, and limitations on V2V data collection, as well as technical and administrative safeguards on any V2V data collected.

Mercedes-Benz commented that the security entity envisioned to secure the V2V system, called the Security Credential Management Server (SCMS), must have security and privacy controls to protect against external threats and internal abuses. Fiat Chrysler Automobiles (FCA) expressed concern about the potential privacy impacts of the security system's design, called the certificate revocation list (CRL). The National Motorists Association emphasized safeguarding V2V messages sent via mandated V2V devices. Infineon Technologies pointed out that the unique cellular subscriber number would defeat the privacy and tracking requirement in the system, as proposed, to the extent that cellular is used as a V2V communications media. American Trucking Association requested that NHTSA protect the confidentiality of proprietary information, such as lane

[185] Section 522 of the Consolidated Appropriations Act, 2005, Public Law 108–447.

density, vehicle specifications, and trip origin and destination. The Association of Global Automakers (Global) and GM stated that V2V, as envisioned, does not pose significant risks to the privacy of individuals. By contrast, EFF stated the exact opposite, noting its concern that the V2V system as discussed in the ANPRM and Readiness Report does not protect the privacy of drivers adequately.

Based on our exploration of privacy impacts and analysis of the V2V system design to date, we respectfully disagree with the position espoused by EFF that the V2V system fails to protect driver privacy. The system contains multiple technical and organizational controls to help mitigate unreasonable privacy risks posed by external actors including those posed by SCMS insiders. V2V transmissions would exclude data directly identifying a private motor vehicle or its driver or owner and reasonably linkable to an individual via data sources outside of the V2V system or over time. V2V devices would transmit safety information in only a limited geographical range. Neither the V2V system, nor its components (including OBEs) would collect or store the contents of messages sent or received, except for a limited time to maintain awareness of nearby vehicles for safety purposes or case of device malfunction. Additionally, the system described in our proposal would be protected by a complex PKI security infrastructure designed specifically to help mitigate privacy impacts and create a secure V2V environment in which motorists who do not know one another can participate in the system without personally identifying themselves or their vehicles.

As discussed in the PIA and demonstrated by the data flows detailed in that document, the CRL discussed in the misbehavior reporting section of our primary proposal also would be designed to mitigate privacy impacts to individuals. It would contain specific information sufficient to permit V2V devices to use certificate information to recognize safety messages that should be ignored, if received. However, the CRL would not contain identifying information about specific vehicles or specific certificate numbers—nor would the information on the CRL permit third parties or SCMS insiders to identify specific vehicles or their owners or drivers.

The Agency understands that concern about whether the V2V system can or will be used by government and commercial entities to track the route or activities of individuals is critical to consumer acceptance and the viability of NHTSA's proposal. DOT is continuing to work with privacy experts to identify additional controls that might further mitigate any privacy risks (including that of tracking) in the V2V system, no matter how remote. The planned implementation by DOT of a proof of concept (PoC) security entity (discussed in Section V.B.6.e)) and related policy research will provide an operational environment in which to continue to explore the viability of additional privacy controls applicable to the V2V system, as currently envisioned and designed.

That said, as we noted in the Readiness Report, it is important to emphasize that residual risk stemming from the V2V system will never be zero due in part to the inherent complexity of the V2V system design and the diversity/large number of interacting components/entities, both technological and human. Additionally, technology changes at a rapid pace and may adversely impact system controls designed to help protect privacy in unforeseen ways. For these reasons, as is standard practice in both the public and private sectors, NHTSA has performed a PIA to identify potential areas of residual risk and resulting privacy consequences/harms that might result from its proposal. The current status of NHTSA's PIA is summarized below. The technical framework for the V2V system has gone through many iterations and adjustments during the conduct of the V2V research program, as the system has evolved to meet revised or additional needs and to incorporate the results of research. For this reason, while the current technical framework is sufficient for purposes of NHTSA's rulemaking proposal, DOT's assessment of the potential privacy impacts that could result from the V2V proposal necessarily will be an ongoing process that takes into account future adjustments to the technology and security system required to support the technology, as well as ongoing privacy research. After reviewing comments on the NPRM and PIA and working closely with the FTC and stakeholders to address privacy concerns, NHTSA will issue an updated PIA concurrent with its issuance of a V2V final rule.

3. Data Access, Data Use and Privacy

The issue of data ownership arose in the comments of Ford, Auto Care Association, and others. All of these commenters requested clarification of who owns the data generated by the V2V system. Many commenters asserted that vehicle owners should own V2V and other data generated by motor vehicles, generally. Systems Research Associates requested a specific regulation vesting ownership in vehicle owners, not manufacturers. Another commenter expressed concern about ownership of data inherent in the context of car sharing and rentals arrangements.

The inherently related concept of consumer consent also appeared in many privacy comments. Civil liberties organizations suggested that NHTSA mandate that consumers provide ''active consent'' in the form of express written consent before manufacturers may collect data containing personally identifiable information (PII). Manufacturers requested that NHTSA ensure transparency by requiring that consumers authorize collection of PII through either consent or contract, and that manufacturers inform vehicle owners of what information will be collected and how this information will be used. This approach to transparency is consistent with industry privacy principles adopted in 2014 by members of the Alliance and the Association of Global Automakers, entitled ''Consumer Privacy Protection Principles for Vehicle Technologies and Services'' (OEM Privacy Principles or Principles), discussed in prior sections. Several manufacturers and civil liberties organizations, including EPIC and EFF, suggested that these voluntary industry principles should serve as a baseline for data privacy protections in the V2V context. EPIC also suggested that NHTSA follow the White House's Consumer Privacy Bill of Rights.

NHTSA feels strongly that in the context a V2V system based on broadcast messages, the critical consumer privacy issue is not that of data ownership, but that of data access and use—ensuring that the consumer has clear, understandable and transparent notice of the makeup of the V2V message broadcast by mandated V2V equipment, who may access V2V messages emanating from a consumer's motor vehicle, and how the data in V2V messages may be collected and used. For this reason, NHTSA proposes that motor vehicle manufacturers, at a minimum, include the following standard V2V Privacy Statement (set forth below) in all owner's manuals (regardless of media) and on a publicly-accessible web location that current and future owners may search by make/model/year to obtain the data access and privacy policies applicable to their motor vehicle, including those specifically addressing V2V data and functions. We also seek the public's assistance in identifying additional formats and methods for providing this privacy statement to consumers that

with the goal of achieving the timely and effective notice desired—notice that has increased significance in the context of a V2V mandate that effectively (and by design to achieve safety ends) limits consumer choice and consent.

4. V2V Privacy Statement

(a) V2V Messages

The National Highway Traffic Safety Administration (NHTSA) requires that your vehicle be equipped with a Vehicle-to-Vehicle (V2V) safety system. The V2V system is designed to give your vehicle a 360 degree awareness of the driving environment and warn you in the event of a pending crash, allowing you to take actions to avoid or mitigate the crash, if the manufacturer of your vehicle has installed V2V safety applications.

Your V2V system periodically broadcasts and receives from all nearby vehicles a V2V message that contains important safety information, including vehicle position, speed, and direction. V2V messages are broadcast ten times per second in only the limited geographical range (approximately 300 meters) necessary to enable V2V safety application to warn drivers of pending crash events.

To help protect driver privacy, V2V messages do not directly identify you or your vehicle (as through vehicle identification number or State motor vehicle registration), or contain data that is reasonably or, as a practical matter, linkable to you. For purposes of this statement, V2V data is ''reasonably'' or ''as a practical matter'' linkable to you if it can be used to trace V2V messages back to you personally for more than a temporary period of time (in other words, on a persistent basis) without unreasonable expense or effort, in real time or after the fact, given available data sources. Excluding reasonably linkable data from V2V messages helps protect consumer privacy, while still providing your V2V system with sufficient information to enable crash-avoidance safety applications.

(b) Collection, Storage and Use of V2V Information

Your V2V system does not collect or store V2V messages except for a limited time needed to maintain awareness of nearby vehicles for safety purposes or in case of equipment malfunction. In the event of malfunction, the V2V system collects only those messages required, and keeps that information only for long enough to assess a V2V device's misbehavior and, if a product defect seems likely, to provide defect information to your vehicle's manufacturer.

NHTSA does not regulate the collection or use of V2V communications or data beyond the specific use by motor vehicles and motor vehicle equipment for safety-related applications. That means that other individuals and entities may use specialized equipment to collect and aggregate (group together) V2V transmissions and use them for any purpose including applications such as motor vehicle and highway safety, mobility, environmental, governmental and commercial purposes. For example, States and localities may deploy roadside equipment that enables connectivity between your vehicle, roadways and non-vehicle roadway users (such as cyclists or pedestrians). These technologies may provide direct benefits such as use of V2V data to further increase your vehicle's awareness of its surroundings, work zones, first responders, accidents, cyclists and pedestrians. State and local entities (such as traffic control centers or transportation authorities) may use aggregate V2V safety messages for traffic monitoring, road maintenance, transportation research, transportation planning, truck inspection, emergency and first responder, ride-sharing, and transit maintenance purposes. Commercial entities also may use aggregate V2V messages to provide valuable services to customers, such as traffic flow management and location-based analytics, and for other purposes (some of which might impact consumer privacy in unanticipated ways). NHTSA does not regulate the collection or use of V2V data by commercial entities or other third parties.

While V2V messages do not directly identify vehicles or their drivers, or contain data reasonably linkable to you on a persistent basis, the collection, storage and use of V2V data may have residual privacy impacts on private motor vehicle owners or drivers. Consumers who want additional information about privacy in the V2V system may review NHTSA's V2V Privacy Impact Assessment, published by The U.S. Department of Transportation at *http://www.transportation.gov/privacy*.

If you have concerns or questions about the privacy practices of vehicle manufacturers or third party service providers or applications, please contact the Federal Trade Commission. *https://www.ftc.gov*.

5. Consumer Education

Many commenters emphasized the need to educate consumers about the V2V system to enhance public acceptance through a coordinated and wide-spread information campaign utilizing traditional print and television outlets and the web, including the AAA, Global, Arizona Department of Transportation, Cohda Wireless, GM, Infineon Technologies, National Motorists Association, Pennsylvania Department of Transportation, Toyota, TRW Automotive, Automotive Safety Council, and Delphi Automotive.

Comments from the Automotive Safety Council, TRW Automotive, and Delphi Automotive suggested that such education should focus on the V2V safety message, what it contains, and how any information in the BSM will be used. The National Motorists Association recommended that NHTSA educate motorists on the system's privacy protection assurances. AAA recommended educating the public on how the V2V system will benefit them, and on the privacy and security protections built into the system. Toyota suggested that NHTSA educate the public about the fact that the V2V system will not transmit or store PII. The Privacy Rights Clearinghouse suggested that NHTSA educate the public on how the V2V system works. Honda focused more on educating the public on the security designed into the V2V system.

NHTSA agrees with commenters that educating the public about this important new safety technology, and the security and privacy protections designed into the V2V system, will be critical to consumer acceptance. For this reason, as suggested by many commenters, the agency plans to work closely with the FTC, motor vehicle manufacturers, privacy advocates and other stakeholders to design a comprehensive public education strategy on the topic of privacy in the V2V system for consumers. Any claims regarding security or privacy made as part of NHTSA's public outreach will necessarily be justified by evidence based on the best scientific knowledge regarding security and privacy. Development of a consumer education strategy will likely be among the privacy-specific topics addressed in public meetings and/or workshops held by the agency after issuance of the NPRM and PIA.

6. Congressional/Other Government Action

NHTSA received comments from civil liberties groups and manufacturers that included calls on Congress to take action to protect consumer privacy in the V2V system. EFF and Privacy Rights Clearinghouse took the position that

Federal legislation is imperative to protect driver privacy. The Alliance called on Congress to coordinate the relevant Federal agencies ''to articulate a framework for privacy and security before further rulemaking proceeds'' because, in its view, NHTSA alone does not have the authority to address V2V privacy and security issues. Honda and EPIC emphasized the need for ensuring that data is legally protected from third party access, and that unauthorized access is legally punishable. EPIC's comment focused on legal protections from OEM access, while Honda's comment focused on legal protections from government access.

NHTSA understands why legislation making it illegal for third parties or government agencies to collect V2V messages, or limiting those parties' retention or use of V2V messages, would be attractive to stakeholders—and the Alliance is correct in its assertion that such government action is outside the scope of the agency's regulatory authority over manufacturers of motor vehicles and motor vehicle equipment. As noted above, the introduction of V2V technology creates new privacy risks that cannot be fully mitigated. That said, in the agency's view, the V2V system is protected by sufficient security and privacy measures to mitigate unreasonable privacy risks. NHTSA seeks comment on these tentative conclusions—and on whether new legislation may be required to protect consumer privacy appropriately.

D. Summary of PIA

1. What is a PIA?

Section 522 of the Consolidated Appropriations Act, 2005 (Pub. L. 108–447) requires that Federal agencies conduct privacy impact assessments (PIAs) of proposed regulatory activities involving collections or system of information with the potential to impact individual privacy. A PIA documents the flow of information and information requirements within a system by detailing how and why information is transmitted, collected, stored and shared to: (1) ensure compliance with applicable legal, regulatory, and policy requirements regarding privacy; (2) determine the risks and effects of the proposed data transactions; and (3) examine and evaluate protections and alternative processes for handling data to mitigate potential privacy impacts. It is a practical method of providing the public with documented assurance that the agency has identified and appropriately addressed potential privacy issues resulting from its activities. A PIA also facilitates informed regulatory policy decisions by enhancing an agency's understanding of privacy impacts, and of options available for mitigating those potential impacts.

After reviewing a PIA, members of the public should have a broad understanding of any potential privacy impacts associated with a proposed regulatory action, and the technical and policy approaches taken by an agency to mitigate the resulting privacy impacts.

2. PIA Scope

The V2V system is complex and involves many different components, entities, communications networks, and data flows (within and among system components). For this reason, NHTSA opted not to analyze the potential privacy impacts in the V2V system on a component-specific basis. Rather, NHTSA focused its PIA on discrete data flows within the system, as an organic whole. NHTSA worked with privacy experts to zero in on discrete aspects of the V2V system most relevant to individual privacy for impact assessment purposes, identify and prioritize potential privacy impacts requiring further analysis (such as dynamic modeling), and validate the privacy-related requirements in NHTSA's regulatory proposal.

The V2V NPRM PIA identifies those V2V transactions involving data most relevant to individual privacy and the multiple technical, physical and policy controls designed into the V2V system to help mitigate potential privacy impacts.

To place our discussion of potential V2V privacy issues in context, NHTSA's PIA first briefly discusses several non-V2V methods of tracking a motor vehicle that currently exist.

3. Non-V2V Methods of Tracking

For comparative purposes, it is useful to consider the potential privacy impacts of the V2V system in the context of tracking mechanisms that do not involve any aspect of the V2V system (non-V2V tracking methods). These non-V2V methods of tracking inform the Agency's risk analysis because, to the extent that they may be cheaper, easier, and require less skill or access to a motor vehicle, they are relevant to our assessment of the likelihood of an individual or entity attempting to use V2V as a method of tracking. Examples of mechanisms that currently may be used to track a motor vehicle target include physical surveillance (*i.e.,* following a car by visual observation), placement of a specialized GPS device on a motor vehicle, physical access to Onboard GPS logs, electronic toll transactions, cell phone history, vehicle-specific cell connections (*e.g.,* OnStar), traffic surveillance cameras, electronic toll transponder tracking, and databases fed by automated license plate scanners. As compared to the potential approaches to V2V tracking discussed below, many of these non-V2V tracking methods appear may be cheaper, easier, require less (and/or no skill) under certain scenarios.

4. V2V Data Flows/Transactions With Privacy Relevance

As a starting point for the analysis that underlies this PIA, NHTSA identified and examined all data flows within the V2V system to determine which included data fields that may have privacy impacts, either alone or in combination. We identified three data flows relevant for privacy impact purposes:

- Broadcast and receipt of V2V messages (also called Basic Safety Messages (BSMs)
- Broadcast and receipt of Misbehavior Reports
- Distribution of Certificate Revocation List (CRL)

Below, we describe these three data flows and detail the technical, policy and physical controls designed into the system to mitigate potential privacy impacts in connection with each flow. We then discuss the potential privacy impacts that remain, notwithstanding existing privacy controls. These constitute potential areas of residual risk for consideration by decision-makers.

(a) Broadcast and Receipt of the Basic Safety Message (BSM)

BSMs are one of the primary building blocks for V2V communications. They provide situational awareness information to individual vehicles regarding traffic and safety. BSMs are broadcast ten times per second by a vehicle to all neighboring vehicles and are designed to warn the drivers of those vehicles of crash imminent situations.

Under NHTSA's proposal and any future adaptation of the technology, BSMs would contain information regarding a vehicle's GPS position, speed, path history, path trajectory, breaking status and other data, as detailed above in Section III.E. As discussed below, some data transactions necessitated by the security system may result in additional potential privacy impacts, some of which may be residual.

(b) Broadcast and Receipt of Misbehavior Messages

Under NHTSA's proposal, when a vehicle receives a BSM from a neighboring vehicle, its V2V system validates the received message and then performs a cross check to evaluate the accuracy of data in the message. For example, it might compare the message content with other received messages or with equivalent information from onboard vehicle sensors. As a result of that cross check, the vehicle's V2V system may identify certain messages as faulty or ''misbehaving.'' NHTSA's primary proposal for misbehavior reporting proposes that the V2V system then prepares a misbehavior report and sends it to the V2V security entity. The security entity evaluates the misbehavior report and may identify a defective V2V device. If it does, the V2V security entity will update the Certificate Revocation List (CRL) with information about the certificates assigned to the defective V2V device. The CRL is accessed by all V2V system components and vehicles on a periodic basis and contains information that warns V2V system participants not to rely on messages that come from the defective device. The security entity also might blacklist the device, in which case it will be unable to obtain additional security credentials from the security entity.

Also under our proposal, organizational and/or legal separation of information and functions within the security entity are important privacy impact-mitigating controls that are designed to prevent a single component or insider from having sufficient information to identify certificates assigned to a specific vehicle or owner. NHTSA plans to work closely with stakeholders to develop policies and procedures to institutionalize appropriate separation of data and functions within the National SCMS.

Under the second alternative for misbehavior reporting, the no misbehavior reporting proposal would not involve any additional broadcast or transmission of reports to V2V security entities. This means that no additional privacy risk would be imposed under the no misbehavior reporting alternative.

(c) Misbehavior Reports

As described above, NHTSA's primary proposal for misbehavior reporting proposes that the V2V equipment in vehicles send misbehavior reports to the V2V security entity. Such reports will include the received BSM (which appears to be faulty) and other information, such as:

- Reporter's pseudonym certificate
- Reporter's signature
- Time at which misbehavior was identified
- 3D GPS coordinates at which misbehavior was identified
- List of vehicles (device/pseudonym certificate IDs) within range at the time
- Average speed of vehicles within range at the time
- Suspicion type (warning reports, proximity plausibility, motion validation, content and message verification, denial of service)
- Supporting evidence
  - Triggering BSM(s)
  - Host vehicle BSM(s)
  - Neighboring vehicle BSM(s)
  - Warnings
  - Neighboring devices
  - Suspected attacker

(d) Distribution of Certificate Revocation List

As explained above, by evaluating misbehavior reports, the security entity envisioned may identify misbehaving V2V devices in vehicles and place information about those devices on the CRL. The security entity then would make updated CRLs available to V2V system participants and other system parts on a periodic basis to alert OBEs to ignore BSMs coming from the defective V2V equipment. There is only one type of CRL. Current system design plans do not include placing individual security certificates on the CRL. Rather, each CRL would contain information (specifically, linkseed1, linkseed2, time period index, and LA Identifiers 1 and 2) that OBEs could use to calculate the values of the certificates in messages that should be ignored.

5. Privacy-Mitigating Controls

From the inception of the research program that would result in V2V technology over a decade ago, NHTSA has worked with its research partners, CAMP and the VIIC, to purse an integrated, privacy positive approach to the V2V system. For this reason, the V2V system described in our proposal would contain multiple layers of technical, policy and physical controls to help mitigate potential privacy impacts system-wide. Below, we discuss the privacy impact-mitigating controls that would apply to each of the three privacy-relevant data flows discussed above. In the course of this discussion, we detail some of the key privacy controls that we expect to see in a National SCMS (based on the current SCMS technical design, see Section V.B.2).

(a) Privacy Controls Applicable to the Broadcast and Receipt of the Basic Safety Message (BSM)

(1) No Directly Identifying or ''Reasonably Linkable'' Data in V2V Transmissions

Under our proposals, the BSM would not contain information that directly identifies a private motor vehicle (as through VIN, license plate or registration information) or its owner or driver. BSM transmissions also would exclude data ''reasonably linkable'' or ''as a practical matter'' linkable to a specific individual.

(2) Rotating Security Credentials

Another critical control would help mitigate privacy risks created by signing messages. At the time of manufacture, a vehicle's V2V equipment would receive 3 years' worth of security certificates. Once the device is initialized into the V2V security system, the security system would send to the device keys on a weekly basis that will unlock 20 certificates at a time. During the course of the week, a vehicle's V2V equipment would use the certificates on a random basis, shuffling certificates at five minute intervals. These certificates would enable a vehicle's V2V system to verify the authenticity and integrity of a received BSM or, in the alternative, identify V2V messages that should be ignored (*i.e.,* those that the security entity has identified as coming from misbehaving V2V equipment and placed on the CRL). The shuffling and random use of certificates every five minutes also will help minimize the risk of vehicle tracking by preventing a security certificate from becoming a de facto vehicle identifier (also referred to as a ''quasi-identifier'').

(3) Limited Transmission Radius

V2V equipment in vehicles would transmit safety information in a very limited geographical range, typically only to motor vehicles within a 300 meter radius of a V2V device. This limited broadcast is sufficient to enable V2V crash avoidance applications in neighboring vehicles, while limiting access by more geographically distant vehicles that cannot benefit from the safety information.

(4) No BSM Data Collection or Storage Within the V2V System

Neither V2V devices in motor vehicles, nor the V2V system as a whole would collect or store the contents of V2V messages sent or received, except for the short time period necessary for a vehicle to use messages for safety applications or in the limited case of

device malfunction. These technical controls would help prevent in-vehicle V2V equipment or the V2V system, as a whole, from after-the-fact tracking of a vehicle's location by accessing and analyzing a vehicle's BSMs. Although specialized roadside and mobile equipment would be able to access and collect BSMs, the V2V data collected would contain no information directly identifying or reasonably linkable to a specific private vehicle or its driver or owner, because the transmission of such information would not be allowed by the V2V rule. Research is ongoing on the methods, cost and effort required to use collected BSMs in combination with other available information or over time to track a specific, targeted vehicle or driver. The Agency believes that such linkage between collected BSMs and a specific vehicle or driver is plausible, but has not yet determined whether it is practical or reasonable, given the resources or effort required. This additional research will help to ensure that our proposed V2V FMVSS incorporates all available, appropriate controls to mitigate unreasonable privacy risk related to collection of BSM transmissions by roadside or mobile sensors. We acknowledge that introduction of this technology will result in residual privacy risk that cannot be mitigated. We seek comment on these tentative conclusions.

(5) FIPS–140 Level 3 HSM

NHTSA has proposed performance requirements that include use of FIPS–140 Level 3 hardware security module (HSM) in all V2V equipment in motor vehicles. This physical computing device would safeguard and manage a vehicle's security certificates and guard against equipment tampering and bus probing. This type of secure hardware provides evidence of tampering, such as logging and alerting of tampering, and tamper resistance such as deleting keys upon tamper detection.

(6) Consumer Notice

NHTSA would require that motor vehicle manufacturers, at a minimum, include a standard V2V Privacy Statement in all owner's manuals (regardless of media) and on a publicly accessible web location that current and future owners may search by make/model/year to obtain the data access and privacy policies applicable to their motor vehicle, including those specifically addressing V2V data and functions, as detailed in Section IV.C. As discussed above, NHTSA also considering the possibility of requiring additional methods for communicating the V2V Privacy Statement to consumers and seeks comment on the most effective methods for providing such notice.

(b) Privacy Controls Applicable to Broadcast and Receipt of Misbehavior Messages

When a V2V device in a motor vehicle appears to malfunction, the V2V system would collect and store only BSMs relevant to assessing the device's performance, consistent with the need to address the root cause of the malfunction if it is, or appears to be, widespread.

(1) Encryption of Misbehavior Report

Like all security materials exchanged between V2V equipment in vehicles and a security authority, misbehavior reports would be encrypted. This would help limit but not prevent potential privacy risks that could stem from unintended or unauthorized access to data in misbehavior messages. Specifically, this would reduce the possibility that BSMs contained in misbehavior reports may provide information about the past location of a reporting vehicle (and thereby of the vehicle owner's activities and relationship between the two vehicles), or of vehicles located nearby the reporting vehicle.

(2) Functional/Data Separation Across SCMS Components

A key privacy-mitigating control applicable to this data stream is the technical design for the security entity proposed by NHTSA, which provides for functional and data separation across different organizationally and/or legally separate SCMS components. This technical control is designed to prevent individual SCMS entities or insiders from using information, including from misbehavior messages, for unauthorized purposes. The technical separation of information and functions within the security entity could be overcome only by a specific entity within the security organization (called the Misbehavior Authority or MA) after determining, based on misbehavior messages, that a vehicle's V2V equipment is malfunctioning and needs to be blacklisted (*i.e.,* prevented from obtaining any additional security certificates). In order to do so, the MA would need to gather information from the various independent, separate parts of the security entity to identify the device to be blacklisted.

(3) Misbehavior Reports Are Stripped of Geographic Location Information

An example of information separation serving as a privacy control is evident in one particular component of the security organization—the Location Obscurer Proxy (LOP). Misbehavior messages (like other communications between a vehicle's V2V equipment and the security entity) travel through the LOP entity to get to other parts of the security organization. The LOP would strip out information from the misbehavior message that otherwise would permit other parts of the security organization (like the MA) to associate a vehicle's V2V messages with its geographic location. This technical separation of geographic information from messages transmitted between vehicle's V2V systems and the security entity is designed to prevent individual security entities or V2V security organization insiders from colluding to use BSM information inappropriately or to track individual vehicles.

(4) Separation of Security Organization Governance

The design for the V2V security entity (or SCMS) calls for the separation of some critical functions into legally distinct and independent entities that, together, make up the SCMS. This legal separation of security entity governance is designed to prevent individual entities or V2V security organization insiders from colluding to use information for unauthorized purposes such as tracking individual vehicles.

(c) Privacy Controls Applicable to Distribution of the CRL List

(1) Misbehaving V2V Equipment in a Vehicle Stops Broadcasting

It is possible that information regarding a vehicle's revoked security certificates could enable all revoked certificates to be associated with the same vehicle. This might be used to persistently identify a vehicle during the vehicles' activities. In order to mitigate this potential privacy risk, once a vehicle's V2V system determines that information about it is on the CRL and that the security organization has revoked its security certificates, it would stop broadcasting the BSM.

6. Potential Privacy Issues by Transaction Type

Based on our analysis of the privacy relevant data flows and controls discussed above, we identified five potential privacy scenarios for further research and/or consideration by the Agency. Table IV–1 below summarizes the scenarios and corresponding system transactions identified for further analysis.

TABLE IV–1—TRANSACTIONS IDENTIFIED FOR FURTHER ANALYSIS

Transaction type	Description
BSM Broadcast Transaction	1. Can data elements, such as location, in the BSM be combined to form a temporary or persistent vehicle identifier?
BSM Broadcast Transaction	2. Can data elements in the BSM be combined to identify vehicles temporarily so that different security certificates can be associated with the same vehicle during the vehicle's activities?
BSM Broadcast Transaction	3. Do the physical characteristics of the carrier wave (*i.e.,* the wave's fingerprint) associated with a vehicle's BSM serve as a vehicle identifier?
Broadcast and Receipt of a Misbehavior Message.	4. Do BSMs in misbehavior reporting provide sufficient information about the past location of the reporting or other vehicles to retrospectively track the vehicle's path?
Certificate Revocation List (CRL) Distribution Transaction.	5. Does information regarding blacklisted vehicles' security certificates enable all vehicle security certificates to be associated with one another and thus, with the same specific vehicle?

As noted above, based on our exploration of privacy impacts and analysis of the V2V system design to date, it is NHTSA's expectation that the multiple technical, policy and physical controls incorporated into the design of the V2V system detailed will help to mitigate privacy risks to consumers. Methods of tracking vehicles, such as surveillance and use of specialized GPS devices already exist and may be easier, less expensive, and require less skill and access than would vehicle tracking using V2V messages or other information in the V2V system in certain conditions. Nevertheless, DOT is continuing to work with privacy experts to perform dynamic modeling and explore the viability of additional controls that might further mitigate any potential impacts demonstrated in the privacy-relevant transactions identified above for further analysis. The planned implementation by DOT of a PoC security entity (SCMS) and related PKI policy research will provide an operational environment in which to continue to explore the viability of additional privacy-mitigating controls applicable to the V2V System, as currently envisioned and designed. We seek comment on whether there are other potential privacy risks stemming from the V2V systems proposed that the agency should investigate and, if so, what specific risks.

E. Health Effects

NHTSA received numerous comments from individuals in response to the ANPRM concerning the potential for V2V technology to contribute to electromagnetic hypersensitivity (''EHS''). Overall, the comments focused on how a national V2V deployment could potentially disadvantage persons that may be electro-sensitive.[186] In response, NHTSA engaged the DOT Volpe Center to review available literature and government agency actions regarding EHS in support of this NPRM. More specifically, NHTSA needed to learn more about the potential conditions causing EHS, actions taken by other federal agencies that have been involved in similar technology deployments or whose mission is primarily human health-focused, and any qualifying actions granted by the Americans with Disabilities Act (ADA) related to EHS among other potential externalities that may affect a potential V2V technology deployment.

1. Overview

According to the World Health Organization (WHO), EHS is characterized by a variety of non-specific symptoms that are attributed to exposure to electro-magnetic frequencies (''EMF'') by those reporting symptoms. The symptoms most commonly experienced include dermatological symptoms (redness, tingling, and burning sensations) as well as neurasthenic and vegetative symptoms (fatigue, tiredness, difficulty concentrating, dizziness, nausea, heart palpitation, and digestive disturbances). The collection of symptoms is not part of any recognized syndrome. Reports have indicated that EHS can be a disabling problem for the affected individual; however, EHS has no clear diagnostic criteria and it appears there is no scientific basis to link EHS symptoms to EMF exposure. Further, EHS is not a medical diagnosis, nor is it clear that it represents a single medical problem.[187]

2. Wireless Devices and Health and Safety Concerns

The Federal Communications Commission (FCC), federal health and safety agencies such as the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) have been actively involved in monitoring and investigating issues related to radio frequency (''RF'') exposure. Federal, state, and local government agencies and other organizations have generally relied on RF exposure standards developed by expert, non-government organizations such as the Institute of Electrical and Electronics Engineers (IEEE) and the National Council on Radiation Protection and Measurements (NCRP).

Several U.S. government agencies and international organizations are working cooperatively to monitor research on the health effects of RF exposure. The World Health Organization's (WHO) International Electromagnetic Fields Project (IEFP) provides information on health risks, establishes research needs, and supports efforts to harmonize RF exposure standards. Some health and safety interest groups have interpreted certain reports to suggest that wireless device use may be linked to cancer and other illnesses, posing potentially greater risks for children than adults. While these assertions have gained increased public attention, currently no scientific evidence establishes a causal link between wireless device use and cancer or other illnesses.[188]

3. Exposure Limits

In the U.S, IEEE has developed limits for human exposure to RF energy, and these limits have been widely influential around the world and require periodic updates. Internationally, the exposure limits for RF energy vary widely in different countries. A few countries have chosen lower limits, in part due to differences in philosophy in setting limits. IEEE and most other

[186] ''Electromagnetic Hypersensitivity Comment Review and Analysis'', NHTSA V2V Support—Task 3, dated March 13, 2015, Noblis.

[187] ''Electromagnetic fields and public health: Backgrounder'', The World Health Organization (WHO), December 2005. Available at *http://www.who.int/peh-emf/publications/facts/fs296/en/* (last accessed Sept. 28, 2015).

[188] ''Wireless Devices and Health Concerns'', Federal Communications Commission (FCC), Consumer and Governmental Affairs Bureau, updated March 12, 2014. Available at *http://www.fcc.gov/guides/wireless-devices-and-health-concerns* (last accessed Dec 12, 2016).

Western exposure limits are designed on the basis of identified thresholds for hazards of RF and thus are science-based. Switzerland, Italy, and a few other countries have adopted ''precautionary'' exposure limits for RF energy. These are not based on identified hazards, but reflect the desire to set exposure limits as low as economically and technically practical, to guard against the possibility of an as-yet unidentified hazard of RF exposure at low levels.[189]

4. U.S. Department of Energy (DOE) Smart Grid Implementation

Many comments to the ANPRM were related to the implementation and expansion of ''smart grid'' or ''smart meter'' technology being deployed in the United States. The ''smart grid'' generally refers to a class of technology used to bring utility electricity delivery systems into the 21st century, using computer-based remote control and automation. These systems are made possible by two-way communication technology and computer processing that has been used for decades in other industries.[190]

Federal legislation was enacted in both 2005 (Energy Policy Act, or ''EPAct'') and 2007 (Energy Independence and Security Act, or ''EISA'') that contained major provisions on demand response, smart metering, and smart grids.[191] The primary purpose of using smart meters and grids is to improve energy efficiency—very precise electricity usage information can be transmitted back to the utility in real-time, enabling the utility to better direct how much electricity is transmitted, and when, which in turn can improve power generation efficiency by not producing more power than necessary at a given time. According to a report prepared by the Federal Energy Regulatory Commission (FERC) in December 2014, approximately 15.3 million advanced meters were installed and operational through the Department of Energy (DOE) Smart Grid Investment Grant (SGIG) program. Ultimately, 15.5 million advanced meters are expected to be installed and operational under SGIG. All SGIG projects are expected to reach completion in 2014, with continued reporting requirements through 2016.[192]

In the last several years, some consumers have objected to deployment of the ''smart'' utility meters needed for DOE's Smart Grid implementation. Smart meters transmit information via wireless technology using electromagnetic frequencies (EMF). Smart utility meters operate in the 902–928 MHz frequency band and the 2.4 GHz range, which is where the human body absorbs energy less efficiently and the Maximum Permissible Exposure (MPE) limits for RF exposure are less restrictive.[193]

Smart utility meters in households or businesses will generally transmit data to an access point (usually on utility poles) once every four hours for about 50 milliseconds at a time. Once the smart grid is fully active, it is expected that smart utility meters will transmit more frequently than once every four hours, resulting in a higher duty cycle.[194] A 2011 report from the California Council on Science and Technology (CCST) showed minimum and maximum exposure levels for various sources, including a smart meter that is always on at two distances from the body. The CCST concluded that RF exposure levels for smart meters in either scenario would be less than microwave ovens and considerably less than cell phones, but more than Wi-Fi routers or FM radio/TV broadcasts.[195] It should also be noted that a 2011 report from the Electric Power Research Institute (EPRI) assessed exposures in front of and behind smart utility meters. It determined that the average exposure levels from smart utility meters, measured from a single meter and from an array of meters, were at levels similar to those from other devices that produce RF in the home and surrounding environment.[196]

A typical ''smart'' utility meter device uses a low power one watt wireless radio to send customer energy-usage information wirelessly.[197] The V2V DSRC devices used for NHTSA research in the Safety Pilot activities are allowed to transmit at up to 33 dBm [198] (approximately 2.0 watts of power output), as defined by FCC specifications.[199] The ''normal'' operating transmission output range for these devices is 20 dBm (or approximately 100mW) for devices operating in the allocated DSRC frequency range. For additional comparison purposes, the typical cellular phone operates at higher power output levels of 27 dBm (approximately 500 mW). Cellular phones are capped at the same maximum transmission power output of 33 dBm.

The public objections to these deployments have been based on concerns over potential health effects. Specifically, some consumers are concerned about exposure to wireless RF emissions emanating from smart meters in their homes, which has led to legal challenges for smart meter programs. Due to these objections, several state commissions authorized an ''opt-out'' provision for individual consumers who do not wish to have smart meters installed in their homes. In response to public perception of the technology, the Department of Energy pursued development of outreach materials citing current scientific and industry evidence that radio frequency from smart grid devices in the home is not detrimental to health. The materials are being provided to state commissions, utilities in the DOE Smart Grid Program, and other community-based organizations in effort to convey

[189] ''COMAR Technical Information Statement the IEEE exposure limits for radiofrequency and microwave energy'', Marvin C. Ziskin, IEEE Engineering in Medicine and Biology Magazine, March/April, 2005. Available at *http://ewh.ieee.org/soc/embs/comar/standardsTIS.pdf* (last accessed Dec. 12, 2016).

[190] Department of Energy ''Smart Grid'' Web site. Available at *http://energy.gov/oe/services/technology-development/smart-grid* (last accessed Dec 12, 2016).

[191] ''Demand Response & Smart Metering Policy Actions Since the Energy Policy Act of 2005—A Summary for State Officials'', Prepared by U.S. Demand Response Coordinating Committee for The National Council on Electricity Policy, 2008. *http://energy.gov/oe/downloads/demand-response-and-smart-metering-policy-actions-energy-policy-act-2005-summary-state* (last accessed: Dec 12, 2016)

[192] ''Assessment of Demand Response and Advanced Metering'', Federal Energy Regulatory Commission (FERC) Report, December 2014. Available at *https://www.ferc.gov/industries/electric/indus-act/demand-response/dem-res-adv-metering.asp* (last accessed Dec. 12, 2016).

[193] Federal Communications Commission, (FCC), 2011. Radio frequency safety, available at *https://www.fcc.gov/encyclopedia/radio-frequency-safety* (last accessed Dec 12, 2016).

[194] ''Review of Health Issues Related to Smart Meters'', Monterey County Health Department, Public Health Bureau, Epidemiology and Evaluation, March, 2011. Available at *https://www.nema.org/Technical/Documents/Smart%20Meter%20Safety%20-%20Marin%20Co%20CA%20whitepaper.pdf* (last accessed Dec 12, 2016).

[195] ''Health Impacts of RF Exposure from Smart Meters'', California Council on Science and Technology, April 2011. Available at *https://ccst.us/publications/2011/2011smart-final.pdf* (last accessed Dec 12, 2016).

[196] ''RF Exposure Levels from Smart Meters: A Case Study of One Model'', Electric Power Research Institute (EPRI), February 2011. Available at *http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000000001022270* (last accessed Dec 12, 2016).

[197] Radio Frequency FAQ, *http://www.pge.com/en/safety/systemworks/rf/faq/index.page* (last accessed Jun. 5, 2015).

[198] dBm or decibel-milliwatt is an electrical power unit in decibels (dB), referenced to 1 milliwatt (mW). The power in decibel-milliwatts (P(dBm)) is equal to 10 times base 10 logarithm of the power in milliwatts (P(mW)).

[199] ''Table I.5a—Maximum STA transmit power classification for the 5.85–5.925 GHz band in the United States'', IEEE specification 802.11P–2010, Page 31. Available at *https://www.ietf.org/mail-archive/web/its/current/pdfqf992dHy9x.pdf* (last accessed Dec. 12, 2016).

these messages to the end-user community.[200]

5. Federal Agency Oversight & Responsibilities

Many consumer and industrial products use or produce some form of electromagnetic energy. Various agencies within the Federal Government have been involved in monitoring, researching, or regulating issues related to human exposure to radio frequency radiation. A summary of the federal Government's role is provided below: [201]

• *Federal Communications Commission (FCC):* The FCC authorizes and licenses most RF telecommunications services, facilities, and devices used by the public, industry, and state and local governmental agencies. The FCC's exposure guidelines that V2V devices are anticipated to follow, and the ANSI/IEEE and NCRP guidelines upon which they are based, specify limits for human exposure to RF emission from hand-held RF devices in terms of specific absorption rate (SAR). Additionally, under the National Environmental Policy Act of 1969 (NEPA), the FCC has certain responsibilities to consider whether its actions will ''significantly affect the quality of the human environment.'' To meet its NEPA obligations, the Commission has adopted requirements for evaluating the impact of its actions (47 CFR 1.1301, *et seq*.). One of several environmental factors addressed by these requirements is human exposure to RF energy emitted by FCC-regulated transmitters and facilities. The FCC's rules provide a list of various Commission actions that may have a significant effect on the environment. If FCC approval to construct or operate a facility would likely result in a significant environmental effect, the applicant must submit an Environmental Assessment (EA). The EA is reviewed by FCC staff to determine whether an Environmental Impact Statement (EIS) is necessary.[202]

• *National Telecommunications and Information Administration:* NTIA is an agency of the U.S. Department of Commerce and is responsible for authorizing Federal Government use of the RF electromagnetic spectrum. Like the FCC, NTIA also has NEPA responsibilities and has enacted similar guidelines and processes to those of FCC to ensure compliance.

• *Food and Drug Administration (FDA):* by authority of the Radiation Control for Health and Safety Act of 1968, the FDA's Center for Devices and Radiological Health (CDRH) develops performance standards for the emission of radiation from electronic products including: X-ray equipment, other medical devices, television sets and microwave ovens, laser products, and sunlamps. The CDRH has not adopted performance standards for other RF-emitting products. The FDA is the leading federal health agency in monitoring the latest research developments and advising other agencies with respect to the safety of RF-emitting products used by the public, such as cellular and mobile devices.

• *Environmental Protection Agency (EPA):* EPA activities pertaining to RF safety and health are presently limited to advisory functions. EPA has chaired an Interagency Radiofrequency Working Group, which coordinates RF health-related activities among federal agencies who have regulatory responsibilities in this area.

• *Occupational Safety and Health Administration (OSHA):* OSHA is responsible for protecting workers from exposure to hazardous chemical and physical agents. In 1971, OSHA issued a protection guide, which V2V devices are anticipated to operate within, for exposure of workers to radiation (29 CFR 1910.97). The guide covers frequencies from 10 MHz to 100GHz. The guide was later ruled to be only advisory and not mandatory.[203]

• *National Institute for Occupational Safety and Health (NIOSH):* NIOSH is part of the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC) and conducts research and investigations into issues related to occupational exposure to chemical and physical agents. NIOSH research is focused on radio frequencies, extremely low frequencies (ELF) and static magnetic fields. CDC/NIOSH provides various guidance documents related to the focused research areas.[204]

• *The Architectural and Transportation Barriers Compliance Board (Access Board):* The Access Board is the federal agency devoted to the accessibility for people with disabilities. In November 1999, the Access Board issued a proposed rule to revise and update their accessibility guidelines. During the public comment period on the proposed rule, the Access Board received approximately 600 comments from individuals with multiple chemical and electromagnetic sensitivities. The Board issued a statement recognizing that people with these sensitivities may be considered disabled under the ADA if conditions perceived to be caused by these sensitivities ''so severely impair the neurological, respiratory, or other functions of an individual that it substantially limits one or more of the individual's major life activities.'' The Board contracted with the National Institute of Building Sciences (NIBS) to establish the Indoor Environmental Quality (IEQ) Project. The overall objectives of the IEQ project were to establish a collaborative process among a range of stakeholders to recommend practical, implementable actions to both improve access to buildings for people with EMS while also improving indoor environmental quality to create healthier buildings for the entire population. The NIBS IEQ Final Report was issued in July 2005 and provides recommendations for accommodations for people with chemical and/or electromagnetic sensitivities. The agency is unaware of any further actions by the Access Board on this issue.[205]

• *Department of Defense (DOD):* The DOD conducts research on the biological effects of RF energy.

6. EHS in the U.S. and Abroad

(a) Americans With Disabilities Act

The Americans with Disabilities Act (''ADA'') does not contain a lengthy list of medical conditions that constitute disabilities. Instead, the ADA provides a general definition for ''disability,'' which requires a showing of a having a physical or mental impairment that substantially limits one or more major

[200] Recommendations on Consumer Acceptance of Smart Grid, Electricity Advisory Committee, Richard Cowart, Chair to Honorable Patricia Hoffman, Assistant Secretary for Electricity Delivery and Energy Reliability, U.S. Department of Energy, June 6, 2013. *http://energy.gov/sites/prod/files/2013/06/f1/EAC_SGConsumerRecs.pdf* (last accessed Dec 12, 2016).

[201] ''Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields'', OET Bulletin 56, Fourth Edition, August 1999, Federal Communications Commission, Office of Engineering and Technology. Available at *https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf* (last accessed Dec 12, 2016).

[202] ''Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields'', Federal Communications Commission, Office of Engineering & Technology, OET Bulletin 65 (Edition 97–01), August 1997. Available at *https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65b.pdf* (last accessed Dec 12, 2016).

[203] OET Bulletin #56, Federal Communications Commission, FCC, available at *https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e3.pdf* (last accessed Dec 12, 2016).

[204] ''EMF (ELECTRIC AND MAGNETIC FIELDS),'' available at *http://www.cdc.gov/niosh/topics/emf/* (last accessed Dec 12, 2016).

[205] ''IEQ Indoor Quality Final Report, National Institute for Building Services, July 14, 2005. *http://apps.fcc.gov/ecfs/document/view?id=7520945309* (last accessed: Dec 12, 2016).

life activities, a history or record of such an impairment, or being perceived by others as having such an impairment. Several states have enacted even more liberal policies on disability rights that afford greater potential protections than the ADA as it relates to EHS.

To date, the agency is unaware of any finding that EHS constitutes a disability. As mentioned above, the NIBS IEQ provided some recommendations, but did not conclude the EHS was in fact a disability. The agency is unaware of any further actions, either by the Access Board or some other entity, which recognized EHS as a disability or any science that would prove this.

(b) Global Recognition

Globally, some nations have heightened awareness of EHS by requiring provisions to accommodate those claiming its effects. In Sweden, for example, these provisions could include unique lighting fixtures and/or computer monitors for places of employment. The Canadian Government, The Canadian Human Rights Commission (CHRC) has also recognized EMS, describing environmental sensitivities as follows: ''The term ''environmental sensitivities'' describes a variety of reactions to chemicals, electromagnetic radiation, and other environmental factors at exposure levels commonly tolerated by many people.'' [206] The CHRC published a series of recommendations for building environments in effort to reduce potential EMS conditions.[207] In 2009, the European Parliament urged member states to follow Sweden's example to provide people with ES protection and equal opportunities.

7. Conclusion

The agency appreciates the ANPRM comments bringing attention to V2V technology and a potential relationship to EHS. The agency takes these concerns very seriously. The literature review conducted by the agency highlighted long, and still ongoing, activities to better understand the relationship to electromagnetic radiation and the symptoms of individuals reporting electromagnetic hypersensitivity. As a Federal government agency focused on automotive safety, NHTSA acknowledges the expertise of our sister agencies such as the Federal Communications Commission and the Food and Drug Administration, among others, which have been involved with electromagnetic fields, in parallel with the pervasiveness of cellular phone deployment in the United States and globally.

The FDA currently states in response to the question, ''Is there a connection between certain health problems and exposure to radiofrequency fields via cell phone use?'' that ''The results of most studies conducted to date indicate that there is not. In addition, attempts to replicate and confirm the few studies that did show a connection have failed.'' [208] However, NHTSA acknowledges that research is still ongoing and, as technology evolves; wireless communications will most likely continue to increase. The agency believes the continued efforts of the Radiofrequency Interagency Work Group (RFIAWG) [209] may yield any potential future guidance for wireless device deployment and usage.

V2V devices are currently certified for use in the 5.9 GHz frequency allocation by the FCC, and the agency additionally anticipates any future certifications by the FCC will ensure that V2V devices will comply with all criteria related to RF emissions.

Currently, the FCC publishes a very helpful guide on ''Wireless Devices and Health Concerns,'' [210] in which the Commission states, ''While there is no federally developed national standard for safe levels of exposure to radiofrequency (RF) energy, many federal agencies have addressed this important issue.'' The Commission acknowledges the efforts the interagency working group, its members, and their ongoing monitoring and investigating issues related to RF exposure.

V2V devices would operate at distances to humans significantly further that the distance relationship of a portable cellular phone to its operator, where the device is generally carried on a person or pressed directly to the ear. V2V devices used in the Safety Pilot operated at similar power levels to handheld cellular phones and the agency expects power levels for production deployment to remain consistent with the levels used in the Safety Pilot activities. Based on these two conditions, we believe it is reasonable to anticipate that any new guidance issued by the RFIAWG and its participating federal agencies on future cellular phone or wireless device usage could potentially be relevant to V2V devices, albeit in a somewhat diminished magnitude based on the distances the devices will operate in relation to persons.

V. Device Authorization

A. Approaches to Security Credentialing

As part of exploring different methods of authenticating V2V messages, the agency has examined in addition to the primary message authentication proposal's PKI base SCMS (single-root approach), two potential approaches to ensuring V2V messages are secure. These include a vehicle based approach, and an approach where multiple roots of confidence would be utilized. Each approach is described in the following sections.

B. Federated Security Credential Management (SCMS)

1. Overview [211]

For V2V communications to work effectively and as intended to facilitate crash avoidance safety applications, it is critical that users of the network have confidence in the validity of basic safety messages received from other system users—indistinct users whom they have never met and do not know personally. For this reason, DOT and its research partners have developed a sophisticated security system that allows for the creation and management of digital security credentials (referred to as ''certificates'') that enable users to have confidence in one another, and the system as a whole. In fact, the security system designed to create confidence in the V2V environment is a more complex and sophisticated version of the same public key infrastructure (PKI) system that consumers and merchants use every day to verify credit card transactions at the supermarket or make on-line purchases (any time you see the ''https,'' for example). PKI systems also have long been used by the Federal government and corporate America,

[206] ''What You Should Know About Electromagnetic Sensitivity (EMS)'', Christiane Tourtet. B.A, International MCS/EMS Awareness, available at *http://www.nettally.com/prusty/CTEMS.pdf* (last accessed Dec. 8, 2016).

[207] Sears, Margaret E., ''The Medical Perspective on Environmental Sensitivities,'' May 2007. Available at *http://www.chrc-ccdp.ca/sites/default/files/envsensitivity_en_1.pdf*. (last accessed Dec. 8, 2016).

[208] Radiation-Emitting Products, ''Current Research Results,'' available at *http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm* (last accessed Dec. 8, 2016).

[209] Group members can be found at *http://www.emrpolicy.org/litigation/case_law/docs/workgroupmemberslist.pdf* (last accessed: Dec 8, 2016).

[210] See ''Wireless Devices and Health Concerns'' *https://www.fcc.gov/guides/wireless-devices-and-health-concerns* (last accessed Dec. 8, 2016).

[211] The SCMS overview and governance discussions in this notice are based in significant part on a report DOT entitled, ''Organizational and Operational Models for the Security Credentials Management System (SCMS); Industry Governance Models, Privacy Analysis, and Cost Updates,'' dated October 23, 2013, prepared by Booz Allen Hamilton under contract to DOT, non-deliberative portions of which may be viewed in docket: NHTSA–2014–0022.

successfully and securely, to verify the identity of their employees for access and security purposes.

In the V2V context, system participants use digital certificates to validate the integrity of safety messages exchanged 10 times per second by V2V devices in motor vehicles. The body of each safety message is unencrypted; the sender signs the message with a digital certificate and the receiver checks to ensure that the signature is valid before relying on the message content. This PKI verification process requires an organization referred to as a Security Credential Management System (SCMS) to provide those necessary signing credentials (*i.e.,* digital certificates) and conduct related security functions, such as identifying and removing malfunctioning V2V devices from the system. The V2V Readiness Report details the SCMS component of the V2V system.[212]

When NHTSA issued its V2V Readiness Report, for a variety of reasons discussed therein, the agency envisioned that the SCMS would be established, funded, and governed primarily by one or more private entities—possibly a consortium of automobile and V2V device manufacturers—with limited Federal involvement. Through comments to the ANPRM, the SCMS RFI process, collaborative research with the VIIC, and additional DOT policy research, NHTSA now has developed several different potential processes by which a V2V SCMS might be stood up, owned, operated, and governed. DOT is committed to playing a central pre-deployment role in developing the organizational framework of a viable and sustainable V2V SCMS, as well as the policies and procedures required to support the SCMS—depending on comments received in response to this NPRM. In order to do so, DOT has expanded the scope of its pre-deployment policy research significantly to include several additional critical activities. DOT intends to work closely with experienced PKI and organizational management consultants and stakeholders to:

- Deploy a Proof-of-Concept SCMS based on the current design to support additional privacy and security research, as well as the certificate needs of CV Pilots funded by DOT and early industry adopters of V2V;
- Develop policies and procedures (based on industry best practices, standards, comparable privacy-sensitive PKIs, and individual input from SCMS and V2V stakeholders) that could be used to govern the organization, accreditation, and operation of a V2V SCMS and its components, including drafts of an SCMS Certificate Policy (CP), Certification Practice Statement (CPS), and Privacy Policy;
- Develop a model for, and then prototype a private, multi-stakeholder governance entity (on the basis of existing multi-stakeholder models) that could support deployment of an operational SCMS.
- Develop one or more public-private governance models (on the basis of existing comparable organizations) that could support deployment of an operational SCMS, given appropriate funding.

We are hopeful that this critical technical and policy research will provide government and private stakeholders with a detailed blueprint of several viable options for standing up an SCMS. One promising path that DOT actively will continue to explore is that of working with a private sector, multi-stakeholder entity that could serve as an SCMS Manager to deploy, govern, and coordinate operation of a fully-operational V2V SCMS, in which DOT would play an ongoing advisory role. However, DOT's planned research also encompasses robust exploration of other paths that could support the deployment of a sustainable, operational V2V SCMS, given appropriate public and/or private funding.

We begin this discussion with a description of the technical and organizational design of the SCMS that will support V2V, V2I, and V2X communications. We then summarize and address comments on the technical design received by NHTSA in connection with the ANPRM, V2V Readiness Report, and RFI process. As the foundation to a discussion of SCMS governance, we identify the diverse group of public and private entities and stakeholders with interests in deployment of a V2V SCMS (together described in this document as members of a ''SCMS ecosystem'' or ''SCMS industry'' requiring governance for successful deployment of V2V communications). We summarize and address governance comments received in response to the ANPRM, V2V Readiness Report, and during the RFI process. We detail DOT's planned deployment of the proof-of-concept (POC) SCMS. We then detail planned work with experts and SCMS ''industry'' participants to develop policies and procedures for the National SCMS, and to flesh out one or more a viable model for organization, ownership, and governance of the National SCMS. Following is a discussion of ICANN as a comparative industry example of successful, private sector multi-stakeholder governance, the evolution of which is instructive to government and private sector stakeholders in the SCMS ecosystem. Finally, we outline NHTSA's plan to issue, on the basis of this additional PKI and organizational research, a policy statement on SCMS governance on which we will seek comment from stakeholders representing all aspects of the SCMS ecosystem.

2. Technical Design

The technical design for a SCMS reflects the processes associated with certificate production, distribution, and revocation, and illustrates how these SCMS functions interact with each other and with OBE. Several functions work together in a PKI system. The V2V SCMS is based on a standard PKI design to which additional functions have been added specifically to address the identified security and privacy needs of V2V, V2I, and V2X technologies. The term ''pseudonym functions'' is used to refer to those functions responsible for creating the short-term certificates used by the OBE in V2V messaging. The term ''pseudonym'' is used to indicate that short-term certificates contain no unique or personally-identifying information about users or their vehicles, but still allow users to participate in the system, in essence allowing use of a pseudonym. The pseudonym functions differ from those functions that take part in the ''bootstrap'' process, described later in this section. Pseudonym functions create, manage, distribute, monitor, and revoke short-term certificates for vehicles.

These functions are listed below in alphabetical order:

- Intermediate Certificate Authority (Intermediate CA)
- Linkage Authority (LA)
- Location Obscurer Proxy (LOP)
- Misbehavior Authority (MA)
- Pseudonym Certificate Authority (PCA)
- Registration Authority (RA)
- Request Coordination
- Root Certificate Authority (Root CA)
- SCMS Manager

Distinct from the pseudonym functions that execute the short-term certificate processes are the functions that carry out the ''bootstrap'' process (the initialization of the device into the system). The bootstrap process establishes the initial connection between OBE and the SCMS. This process is characterized by its chief

[212] See Section IX.B of the V2V Readiness Report.

component, the Enrollment Certificate Authority (ECA), which is responsible for assigning an enrollment certificate to each OBE. The bootstrap functions remain separate from the pseudonym functions because of the potential connection to individual identifying information (like a VIN) during bootstrap.

The functions within the bootstrap process are listed below in alphabetical order:

- Certification Lab
- Device Configuration Manager (DCM)
- Enrollment Certificate Authority (ECA)

A brief description of each SCMS function is provided in Table V–1.

TABLE V–1—SCMS COMPONENTS AND DESCRIPTION

Abbreviation	Function name	Activities
Certification Lab	Certification Lab	Tests OBE and informs ECA that units of a particular type are eligible for enrollment certificates.
DCM	Device Configuration Manager	Coordinates initial distribution with OBE and enables OBE to request certificates from RA.
ECA	Enrollment Certificate Authority	Activates OBE and credentials users.
Intermediate CA	Intermediate Certificate Authority	Shields Root CA from system and provides more flexibility for trust management.
LA	Linkage Authority	Each pair of LAs communicates with the RA to provide linkage values necessary for certificate production, and assists the MA in misbehavior processes.
LOP	Location Obscurer Proxy	Obscures the locations of requesting devices (e.g., OBE requesting certificates) from other functions, such as the RA.
MA	Misbehavior Authority	Collects misbehavior reports from OBE and analyzes system-wide misbehavior. Coordinates with PCA and RA to produce CRL. Other activities include CRL generation, broadcast, and store; internal blacklist manager (IBLM); and global detection.
PCA	Pseudonym Certificate Authority	Generates and signs short-lived certificates.
RA	Registration Authority	Coordinates certificate production with other functions; sends certificates to OBE (during full deployment).
Request Coordination	Request Coordination	Coordinates certificate requests from OBE to RA.
Root CA	Root Certificate Authority	Provides system-wide confidence through CME certificates issued to all CMEs; represents the basis of confidence in the system.
SCMS Manager	Security Credentials Management System Manager.	Defines and oversees standards and practices for the SCMS, related to both technical and policy issues.

The technical design of the SCMS is focused on communications and activities of the various PKI functions. Among other fundamental principles, the technical design for the system incorporates a ''privacy by design'' approach that separates information and organizational functions in order to mitigate potential risks to consumer privacy. The model depicted in Figure V–1 below illustrates one way these functions could be grouped into legal/administrative organizations within the larger SCMS ''industry,'' while still protecting consumer privacy appropriately and ensuring secure, efficient communications.

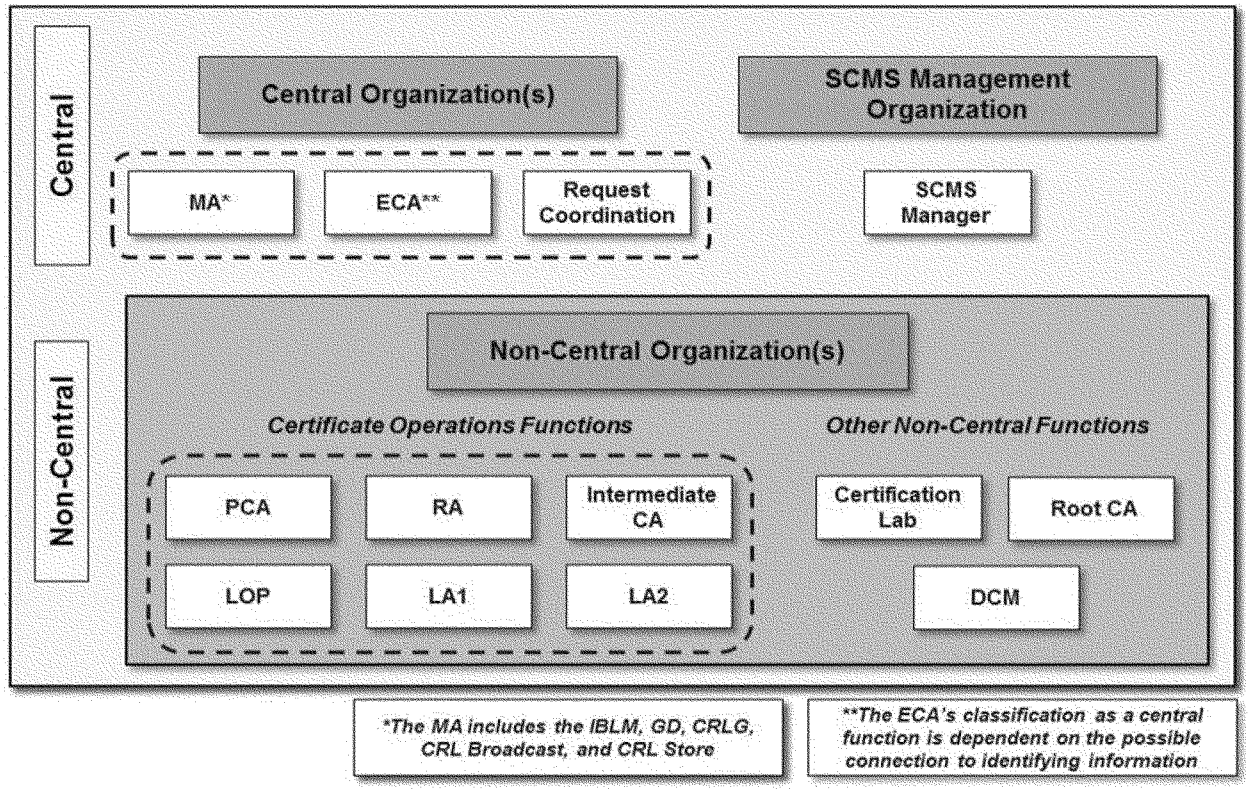


Figure V-1 SCMS Industry Model

Blue boxes in the diagram represent Certificate Management Entities (CMEs), or groupings of SCMS functions. Functions carried out within the CMEs are represented by the white boxes. For purposes of this illustrative model, these groupings clarify those functions that may be owned by multiple organizations, versus those that may be best handled in a more centralized manner. However, as noted in the V2V Readiness Report, ultimately, the decision as to which SCMS functions may be perform by a single entity and whether central and non-central functions may be combined are matters of governance defined by the system's Certificate Policy. For this reason, if this PKI technical design for the SCMS is implemented, the final decision on which organizations can be owners/operators and how scope and responsibility will be divided among the CMEs will likely be a central policy issue determined jointly by NHTSA and the entity that takes the lead in governing and coordinating operation of the V2V SCMS.

3. Independent Evaluation of SCMS Technical Design

The design of the Security Credential Management System has gone through many iterations and adjustments throughout V2V research program as the system has evolved to meet revised or additional needs. Additionally, evolutionary changes have occurred as a result of implementation and operation in support of the USDOT's Safety Pilot Model Deployment.

To better understand maturity and robustness of the SCMS, the USDOT retained the MITRE Corporation to conduct an independent evaluation and risk assessment of both security and privacy design features of the SCMS. This work was used to inform continuing refinements and provide USDOT with a basis for future policy and technical decisions related to deployment.

MITRE was directed to conduct: (1) An independent and comprehensive evaluation and risk assessment of the July 2013 SCMS design for a V2V connected vehicle environment; and (2) a technical analysis of the potential privacy risks of the entire V2V system that includes security but also focuses on the operation of V2V communications in support of crash avoidance safety applications.

The independent evaluation by MITRE identified security requirements needed to support secure V2V communications, and revisited threats and risks in relation to the design and how the identified requirements addressed the potential risks. The results of the SCMS design evaluation are detailed in Final Requirements Report, September 11, 2015, Report Number: FHWA–JPO–15–235, and Final Design Analysis Report, September 18, 2015, Report No: FHWA–JPO–15–237.

The MITRE evaluation was based on the previous 6 years of research that investigated core issues related to: Securing DSRC communications; privacy implications; achieving interoperability; governance and organizational structure; and identifying and addressing communication threats and risks. The Government provided reports associated with these studies to the MITRE Corporation as a basis to conduct their evaluation and identify the minimum requirements of the SCMS that would support the three primary components of the system that are:

1. V2V devices that support DSRC messages broadcast to and received from other devices; and the ability to send/receive messages to/from the Security Certificate Management System for digital security credentials that provide the means of message authentication;

2. A Security Certificate Management System (SCMS) which is the security organization that issues, distributes, and revokes digital security credentials. The

SCMS is comprised of a number of entities and functions. It is also designed to detect and remove misbehaving devices; and

3. A communications network that facilitates two-way encrypted communications between an SCMS and a DSRC device (to include both vehicles and roadside units).

The MITRE evaluation focused on a revised SCMS technical design that benefited and evolved from knowledge gained during operation of a technical prototype implemented as part of the Safety Pilot Model Deployment. This prototype implementation exercised initial technical functionality needed to produce and manage security certificate material for the deployed devices, and, there was a rudimentary technical organization and management structure. This early SCMS prototype provided technical data related to PKI architecture and functions, and there were new insights gained regarding the over-the-air transmission of security materials and use of alternate communication media that include DSRC and cellular.

Prior to the MITRE evaluation were years of research conducted to understand and develop the SCMS design. The first forma research was conducted in 2010. CAMP commissioned 5 leading communication/internet security entities to assess the security needs and identify a security approach for DSRC communications. Security Innovations, Escrypt, Telcordia Technologies Carnegie Mellon University, University of Illinois at Urbana-Champaign, and General Motors India Science Lab investigated aspects of the system and collaborated on recommendations. Security Innovations and Escrypt conducted a risk analysis and identified initial risks related to broadcast communications among vehicles and devices. These risks included denial of service attacks, Sybil attacks, altered messages, replay of messages, and compromised nodes. The risks were rated and mitigation techniques identified. The risk analysis was combined with investigations by: Telcordia Technologies (design and analysis of applicable and scalable PKI systems); Carnegie Mellon and University of Illinois at Urbana-Champaign (adaptations to address privacy); and General Motors India Lab (misbehavior detection solutions). The overall recommendation was a PKI based system with frequently changing certificates.

Two years later after preliminary work was done on the SCMS design, USDOT and CAMP conducted a risk assessment based on the NIST 800–30 publication, Guide for Conducting Risk Assessments. Using the NIST framework, attackers and attack scenarios were identified. Identified attackers included, for example, a clever outsider and a well-funded foreign hostile organization. Attack scenarios included local and widespread Sybil attacks, Root Compromise, Intermediate Certificate Authority Compromise, Registration Authority Compromise, False Misbehavior Report, False Certificate Requests, and Trust Management Compromise. For various attack scenarios risk was estimated based on likelihood and impact. The estimates were based on a modified NIST risk matrix given the NIST matrix did not rate any scenario as ''high''. The risk assessment identified Root Compromise, Intermediate Certificate Authority Compromise, Registration Authority Compromise, and Trust Management Compromise to have high risk even after possible mitigation techniques were considered. This work informed the next stage of SCMS design refinement which included (among other refinements) an objective of finding new innovative techniques to move high risks to medium risks, and medium risks to low risks.

An updated high level SCMS design was completed July 2014 and documented via 4 separate but connected reports that included: (1) Study 1, Security Credential Management System, Final Report, July 2014; (2) Vehicle Safety Communications Security Studies Final Report, July 2014; (3) Study 3 Final Report, Definition of Communication Protocols Between SCMS Components, July 2014; and, (4) Phase 2 Final Report Volume 3: Security Research for Misbehavior Detection, Nov 2014.

These reports formed the base of the information available to MITRE regarding the latest design of the SCMS.

Other reports provided to MITRE included past research findings concerning interoperability, initial communications security needs, and SCMS organizational analysis.

MITRE also had access the standards referenced in the reports that included SAEJ2735, IEEE 1609, and the latest input to SAEJ2945 that was being developed during the MITRE evaluation.

MITRE used the information described above to identify the minimum or essential requirements needed for a SCMS design to support the three primary components identified above (Final Requirements Report—September 11, 2015, Report Number: FHWA–JPO–15–235), and an assessment of how the latest SCMS design aligns with these minimum requirements (Final Design Analysis Report—September 18, 2015, Report No: FHWA–JPO–15–237). The Requirements Report also includes a risk assessment where MITRE reviewed past risk assessments and identified threats, threat actors, attacks, vulnerability, consequence, likelihood, impact severity, and risk in relation to the minimum requirements and latest design information base on the NIST 800–30, Guide for Conducting Risk Assessments.

The risk assessment assessed a number of possible threats to the system, some described by the CAMP reports, others identified by the MITRE team. Of the twenty-one threats identified, MITRE concluded that fourteen may be mitigated by a system design that conforms to the minimum requirements, but for seven of the threats, no system design requirements seemed to apply.[213] In some cases, threats may be mitigated by additional system design features that perform to the minimum requirements. For other threats, no system requirements are listed. These include threats that involve compromises of or unauthorized access to SCMS or OEM system components or databases. For these, mitigation will depend not on system technical design but rather on implementation of security policies and operational practices that would be part of the SCMS operational governance function. Further, MITRE noted that such Governance functions and policies may be captured in documents such as a Certificate Policy and the Certificate Practice Statement. These documents and other governance policies and protocols will be developed as part of the SCMS PoC operations project that will support V2X deployment projects as discussed in Section V.B.6.e).

The MITRE Final Design Analysis report evaluates the SCMS design (as documented in the above listed Reports from CAMP) against a list of derived minimum requirements from the Final Requirements Report.

MITRE noted that the design of the SCMS has several innovative elements that deserve further development and analysis in future design revisions and system operational implementations. The list below identifies areas

[213] The threats list from the MITRE report is not a comprehensive list of threats or risks to overall V2V system success, but are focused on threats to the objectives of providing secure V2V communication, protecting the privacy of vehicle operators, and enabling the identification and removal of bad actors from system participation.

recommended by MITRE for further development:

- Required cyber-resiliency capabilities, such as designs for continuous monitoring for proper operation, anomaly detection functions, and systematic software reset of installed software components.
- Misbehavior Authority (MA) design. The MA constitutes a critical single point of failure as conceived. Additionally, it presents enticing points for adversary compromise against key system objectives surrounding trustworthiness, misbehavior handling, and acceptance.
- Design of capabilities that would enable secure updating of on board equipment (OBE), Security Credential Management System (SCMS), and other component software, especially given the complexity and lifetime of the system and its components.
- Completion and clarification of the specifications of the operation and reporting functions around misbehavior, blacklist, revocation, and of the data elements maintained.
- Evaluation of the reduction of risks in privacy protection with the pseudonym certificate (PC) design instead of other, less complex, yet suitable privacy sensitive designs.

The above areas will be addressed by USDOT and its industry partners as the SCMS design continues to be refined, and as part of the implementation and operation of the first-ever fully representative SCMS proof of concept (PoC).

Further, even though it is not yet clear whether the SCMS should be designated as a ''critical national infrastructure'', once the SCMS Proof-of-Concept becomes operational, USDOT intends to apply the NIST Framework for Improving Critical Infrastructure Cybersecurity, (currently, Version 1.0, February 12, 2014). Much of the guidance provided in The Framework for Improving Critical Infrastructure Cybersecurity is directed at organizational practices to identify cybersecurity risks; protect against threats and detect cybersecurity events; and respond to and recover from cybersecurity breaches. As the SCMS PoC organizational design and governance policies mature and are actually being implemented, then USDOT will be able to apply the NIST Framework to help identify and mitigate residual risks.

In should be noted that USDOT (and MITRE) were precluded from applying the NIST Framework for Improving Critical Infrastructure Cybersecurity because the design of the SCMS was only conceptual (not yet implemented) and detailed organizational designs, governance structures, and operational policies and procedures remained to be completed and implemented. However, the risk assessment performed by MITRE did follow the basic process of identifying the state of the current system and developing a target state of cybersecurity to obtain through refinement and additions to technical, operational and governance aspects of the system. Examples include the MITRE risk assessment, the investigation regarding the role, functions, and governance responsibilities of an SCMS manager, and the analysis and evaluation of cybersecurity protection needs that moved the protection requirement from FIPS–140 Level 2 to Level 3. The SCMS design continues to mature to address risks such as Root Compromise [214] and software updates. Continued refinement is also evident through the ''SCMS Proof-of-Concept End-Entity Requirements and Specifications Supporting SCMS, Software Release Version 1.1, being used by Connected Vehicle Pilots as they prepare to connect to the SCMS PoC for security.[215]

Further, it should be understood that the SCMS PoC is being implemented at this time by USDOT to serve USDOT sponsored demonstrations and early deployments—and to allow for a better understanding both technically and operationally of how the SCMS may be deployed at a national level. To this extent, the designs, methods, policies and procedures implemented to ensure secure communications, manage privacy risks, and address cybersecurity threats will need to be accepted and implemented by the private entities that choose to establish and operate a National SCMS.

We welcome comment concerning: The cybersecurity risks associated with the SCMS; the analysis methods used to date to assess risk; and what framework/assessment methods should be used during SCMS PoC implementation and operation; and any other information regarding possible threats and risk that have not yet be identified.

4. SCMS RFI Comments and Agency Responses

As discussed in Section II.F, NHTSA issued a Request for Information (RFI) [216] regarding a potential Security Credential Management System (SCMS) that could support the National deployment of a secure V2V communication system.

The purposes of the RFI were to help the agency: (1) Become aware of private entities that may have an interest in exploring the possibility of developing and/or operating components of a V2V SCMS; (2) Receive responses to the questions posed about the establishment of an SCMS provided in the last section of the RFI; and (3) Obtain feedback, expressions of interest, and comments from all interested public, private, and academic entities on any aspect of the SCMS.

NHTSA received twenty-one responses to the RFI with approximately eleven of the responses indicating an interest in running aspects of, or the entire, SCMS. The respondents included vehicle manufacturers, software component developers and suppliers, cryptography experts, certificate management entities, satellite and cellular service providers, and academia.

Deployment of a V2V communications system, and of an SCMS to support confidence in V2V communications, are unprecedented activities. For this reason, the agency believed it was appropriate to meet with a subset of respondents, the eleven expressing interest in operating aspects of the SCMS or the SCMS as a whole, to ensure there was a shared understanding of respondents' comments, potential role in an SCMS, and the agency's position on a possible SCMS creation and implementation. The agency was able to meet with ten of the eleven respondents that had indicated interest in operating aspects of a potential SCMS. One respondent, Verizon, was not able to meet with the agency. The meetings took place between January and March of 2015 at DOT headquarters either in person or via teleconference.

Overall, the meeting discussions were very informative and the agency greatly appreciated the time and effort the respondents expended following-up their RFI responses. In general, based on the RFI comments and the discussions with respondents, the team identified the following key themes concerning various aspects of the SCMS.

- Government must play a significate role in the establishment and management of the SCMS.
- Business opportunities are seen at the CME and Security services levels.

[214] See Root Elector System Design at *http://www.mycreativeregistry.net/IPCOM/000245336* (last accessed Dec 4, 2016).

[215] The EE Requirements and Specifications can be found via the following link: *http://www.its.dot.gov/pilots/pdf/SCMS_POC_EE_Requirements.pdf* (last accessed Dec 7, 2016).

[216] 79 FR 61927 (Oct 15, 2014).

• Security system entities understand the relationship of the design to privacy, with some indicating they may be able to find some efficiency as they develop their systems.

• One respondent indicated that the design sets a new paradigm that other regions may adopt in the future.

• An SCMS Board of Directors needs to be initialized by the Federal Government—specifically citing the existing ICANN Model,[217] charged with managing the world-wide-web domain and server naming allocation and standard, as an example framework that could transcend to V2V.

• Establishment of the SCMS Manager would require capital/initial funding.

• One entity discussed being the SCMS Manager.

• One entity indicated they would build and operate the entire SCMS system but would need another entity to be the SCMS Manager.

• Little information provided about potential financial models.

• Possible revenue sources included: CME license fees, certificate subscription fees, yearly service fees.

• To move forward with development/deployment, all indicated they need more information regarding the Government role, the SCMS Manager, and details about the security design.

• Liability was a major concern, with a strong interest from all participants in some form of Federal indemnification.

(a) SCMS RFI Comments

(1) UMTRI

The University of Michigan's Transportation Research Institute (UMTRI) met with representatives from the NHTSA V2V NRPM Team to discuss their SCMS RFI response. UMTRI's response provided views regarding privacy, governance, potential SCMS component separation and linkage. UMTRI's RFI response indicated other parties may be better suited to respond on specific governance organizational aspects but supported a public-private partnership model for overall governance, a potential model discussed in the V2V Readiness Report. UMTRI went one step further by offering the suggestion of an additional ''public-private-academic'' model that could potentially benefit from an academic partner's fundamentally neutral stance, little commercial interests and direct access to significant research resources. More specifically, UMTRI expressed interest in participating in the SCMS Manager and potentially being ''a proper candidate'' for operating the two Linkage Authorities identified in the current system design. UMTRI indicated their regular work on classified projects, existing infrastructure, and their experience ''running highly privacy sensitive computer systems such as the University of Michigan Health System support their interest in operating the Linkage Authorities.''

UMTRI indicated other parties may be better suited to provide a response regarding financial sustainability. In our meeting, however, UMTRI indicated they could possibly pose the SCMS financial sustainability proposition to their MBA students as a potential project.

When discussing potential SCMS operational and policy standards, UMTRI indicated support for NHTSA's approach that SCMS components like the CME should be legally distinct. Support for keeping SCMS components legally separate is rooted in the need to ensure privacy and based on the key notions that firewalls within a single legal entity might not be sufficient to ensure privacy, different legal organizations will most likely protect a data center with a differing technologies, and that distinct legal organizations inhibit the possibility of a single point of entry into multiple systems.

UMTRI suggested two types of operational policies, Type 1 for applications that are under governance of SCMS Manager (*e.g.,* V2V safety applications) and Type 2 for applications that are not under the governance of SCMS Manager but are part of the V2X application portfolio (*e.g.,* mobility applications provided by third party providers).

(2) Certified Security Solutions, Inc.

Certified Security Solutions, Inc. (CSS) represented the exposure to new potential stakeholders, suppliers, and services V2V is bringing to NHTSA. CSS supplies security solutions such as security certificate management systems and managed public-key infrastructures (PKI). CSS also provides digital security consulting services related to PKI and identity and access management. Historically, the agency has not interacted with suppliers such as CSS in the course of regulating vehicle manufacturers and, similarly, CSS has been involved with industries far removed from the auto industry, such as supporting digital certificates for surgical devices like heart pacemakers.

CSS indicated interest in three areas of the SCMS: (1) Participation in an advisory board regarding the policy, specifications, and requirements of the SCMS, V2V initiative, and its components, (2) creating components and solutions, such as the Registration Authority or Device Configuration Manager, and (3) creating software and/or managed service offerings for operations and oversight such as ''dashboards'' used for monitoring system performance.

CSS's response to the RFI centered on the first question related to governance. CSS foresees a large and diverse array of participants involved in the operation of a National SCMS deployment. As such, CSS indicated examples of ''self-governance'' advisory boards that have, ''proven to be relatively effective in improving the interoperability and overall security of their respective areas.'' In their view, CSS suggested that this sort of overall model ''makes the most sense when considering the magnitude and importance of an initiative such as the SCMS.'' These examples included:

• The certification authorities (CA)/Browser forum (*https://cabforum.org*), comprised of CA and web browser vendors with a focus on defining a coordinated set of guidelines to improve browser and SSL security.

• The Internet Engineering Task Force (IETF) (*www.ietf.org*) and its collection of specific Working Groups.

• The Industrial Internet Consortium (*www.iiconsortium.org*), an industry-driven working group aimed at solving the challenges posed by large-scale machine-to-machine (M2M) communication.

The agency's meeting with CSS yielded additional details on their written response along with ideas for potential approaches to a National SCMS deployment. At the highest level, CSS indicated a potential SCMS advisory board would be responsible to define the appropriate certificate policy standards to ensure consistent and successful implementations that will be required for the anticipated multiple CAs deployed across multiple systems.

CSS indicated that utilizing multiple root CAs may benefit from redundancy versus a single root CA, and also brought forth the notion of ''bridged'' root CAs that could be cross-signed to allow different vehicle or device manufacturers to ''trust'' each other while maintaining their own ''root of trust,'' enhancing confidence in message exchanges.

SCMS financial sustainability discussions were limited to existing approaches for certificate management services, where per certificate fees could potentially be avoidable.

[217] See, *e.g., https://www.icann.org/resources/pages/chart-2012-02-11-en* (last accessed Dec. 7, 2016).

(3) Trustpoint Innovation Technologies, Ltd.

Representatives from Trustpoint Innovation Technologies met with the V2V NPRM Team to discuss their submission to the RFI response. Trustpoint was founded in 2012 by Dr. Scott Vanstone and Sherry Shannon. Mr. Vanstone was also a co-founder of Certicom, whom also provided a response the SCMS RFI, which was acquired by BlackBerry in 2009.

Trustpoint has been involved with the SCMS and security design research conducted with the agency's research partner, CAMP. Trustpoint's response to the RFI focused on their interest in helping to develop deployment-ready SCMS components such as the Pseudonym CA, Registration Authority, Linkage Authority, Enrollment CA, Intermediate CA, and Root CA.

Trustpoint indicated that significant investment and development in software and testing will be necessary to deploy a National SCMS. This is based on their belief the PKI approach used for SCMS research will need to be extended and extensively proven for a production system, based on the need for a new software stack [218] built around new cryptography and protocols. Trustpoint is interested in being part of a consortium to deploy production SCMS components.

When meeting with the agency, Trustpoint expanded on their views of a National SCMS deployment. The key discussion points included cryptography approaches, attack vectors, participation in a consortium, and thoughts on production deployment that includes clear policies and procedures, and thoughts on device level security. In addition, Trustpoint reviewed the cost model the agency provided with the ANPRM and V2V Readiness Report.

Trustpoint discussed how Elliptic Curve Cryptography (ECC) is, in their opinion, the only feasible security solution for resource-constrained environments where processing power, power consumption, storage space, and bandwidth are limited. In comparison to RSA,[219] an early wide-spread remote device security mechanism, ECC is much more compact yet provides a higher level of security. Trustpoint indicated that 500 bits of ECC information is equivalent to nearly 1500 bits of RSA cryptographic information.

Trustpoint supported the development of a ''test bed'' for components that could operate in a National, deployed system. Successful deployment and verified operation in the test bed could be considered ''certified for deployment.'' Components certified in the test bed would support an ''off-the-shelf'' software component approach that, for example, would yield Registration Authorities for each manufacturer. Trustpoint stressed the need to have standardized components for consistent system interaction while allowing each OEM to manage their vehicle fleets individually versus a central management approach. The SCMS Proof of Concept project currently under development by the agency and CAMP, to support connected vehicle test beds that will be deployed regionally along with expansion of the Safety Pilot Model Deployment environment more broadly throughout southeastern Michigan, could potentially serve as a test bed for broader, National system deployment. Trustpoint suggested, however, that additional definition and implementation will be needed in the areas of operation, management, and auditing for a successful National SCMS deployment.

Trustpoint suggested the cost model provided by the agency and used in the V2V Readiness Report cost calculations needed some adjustment in the areas of bandwidth, hardware security module, and software development costs. More specifically, Trustpoint indicated replication for hardware security would be needed for redundancy and continuous, uninterrupted system operation. Trustpoint estimates the annual issuance of 36 million certificates will have additional bandwidth needs beyond that estimated in the cost model. Finally, Trustpoint believed the software development cost used in the cost model was substantially underestimated.

(4) DURA Automotive Systems, LLC

Dura Automotive Systems, LLC is a Tier 1 supplier to the automotive industry supplying structural body systems, mechatronic control systems, and exterior systems including window systems and exterior trim. Dura responded to the SCMS RFI with a vision of how the SCMS Manager could be formed, implemented and sustained. Dura indicated they would like to fulfill the role of developing and implementing the SCMS governance board and participating as a member. Dura was the only respondent indicating interest in taking the role of developing functions at the SCMS Manager level and above.

Dura favored a private model governance approach for the SCMS, excluding some identified issues. In their response, DURA identified two successful examples of both private and public models currently in place that address requirements similar to those identified in the RFI. A private model example is the Internet Corporation for Assigned Names and Numbers (''ICANN''),[220] a private, not-for-profit corporation established in 1998. The public model cited by Dura is the operating arrangement for the Federal Aviation Administration (FAA) and the national air traffic control system.[221]

DURA specifically suggested, ''a policy statement from the Department of Transportation advising the public that the U.S. government is prepared to enter into an agreement with a new, not-for-profit corporation formed by private sector transportation multi-stakeholders to administer the Security Credential Management System'' and suggested the corporation be referred to as, ''the Inter-Connected Automotive Safety Network (''ICASN''). Additionally, Dura suggested that its incorporation, governance and operation mirror as much as possible to that of ICANN.''

Dura suggested a subscription-based approach for ongoing SCMS sustainability and further recommended ''aligning the subscription period with vehicle licensing/annual license plate renewal.'' Dura also commented on how liability for system operation could influence costs; more specifically, from an insurance cost perspective.

(5) Bosch—ESCRYPT

Robert Bosch LLC affiliate ESCRYPT provided a response to the SCMS RFI with comments on potential governance strategies and expressed interest in implementing the Pseudonym Certificate Authority (PCA) and Linkage Authority (LA) components.

Bosch-ESCRYPT supported a private-public collaboration versus a self-governance model and commented that SCMS ownership should take a multi-layered approach, with high level

[218] A software stack is a set of programs that work together to produce a result; typically an operating system and its applications. For example, a smartphone software stack comprises the operating system along with the phone app, Web browser and other basic applications. See *http://www.pcmag.com/encyclopedia/term/51702/software-stack* (last accessed Dec. 8, 2016).

[219] RSA is a cryptosystem for public-key encryption, and is widely used for securing sensitive data, particularly when being sent over an insecure network such as the Internet. See *http://searchsecurity.techtarget.com/definition/RSA* (last accessed Dec. 8, 2016).

[220] For more information on the ICANN private model, see *https://www.icann.org/resources/unthemed-pages/icann-mou-1998-11-25-en* (last accessed Dec. 8, 2016).

[221] For more information on the public FAA model, see *http://www.faa.gov/about/office_org/headquarters_offices/agc/pol_adjudication/agc400/litigation/* (last accessed Dec. 8, 2016).

policies residing within the USDOT and lower level implementation responsibility given to private organizations. ESCRYPT supported having the SCMS spread amongst differing, distinct organizations to help maintain privacy, and recommended a governance board to fulfill the SCMS Manager function, with membership defined by NHTSA but to include representatives from government, vehicle manufacturers, private organizations, and privacy groups.

ESCRYPT expressed interest implementing a production SCMS PCA and LA based on their support of the Safety Pilot Model Deployment. In their SCMS RFI response, ESCRYPT proposed an architecture that utilizes two types of certificates to ensure privacy. The first is short term pseudonyms, lasting from seconds to hours and being switched frequently. The second is long-term certificates along with three Certification Authorities: Long-Term; Pseudonym; and a Resolution Authority, the latter of which strips anonymity from pseudonym certificates that are believed to be a potential threat.

When meeting with the agency, Bosch-ESCRYPT expressed the importance of regional policy harmonization and stable standards, indicating that, once implemented, these important pieces will be not be changed easily or quickly.

The agency asked ESCRYPT for their experience on device management and how ESCRYPT has handled conditions such as managing and closing security breaches, device ''end of life'' management, and hardware security to help inform potential approaches for this NPRM. ESCRYPT indicated that over-the-air (OTA) software update is the best approach to closing potential security breaches and in support of NHTSA's vital recall efforts. When discussing device ''end of life'' scenarios, ESCRYPT suggested the approach of revoking existing certificates for an identified device and preventing future certificate updates allowing, in theory, the device to ''fade away'' from the system. Finally, when discussing potential hardware security needs, Bosch indicated they have experience with hardware security modules (''HSM'') and secure hardware extensions (''SHE'') successfully deployed in Europe and that, in terms of V2V, a lower-security implementation limits potential use cases of a system. The agency interprets this discussion, overall, that proposing a hardened device could extend a device's capability and contribute to overall system confidence.

(6) Certicom/Blackberry Technology Solutions

Certicom, a wholly owned subsidiary of Blackberry Ltd., provided a response to the SCMS RFI and also met with the agency to follow-up their response. Certicom provides ''applied cryptography and security solutions for the embedded market'' including engagement with governments and vehicle OEMs. Certicom has experience implementing Elliptic Curve Cryptography (ECC), ''which provides the most security per bit of any known public key cryptosystem.'' Certicom's parent company, BlackBerry, builds devices used by government and enterprise organizations, and operates a global secure network and mobile messaging platform. BlackBerry Technology Solutions also operates BlackBerry's QNX group which has presence in automotive telematics implementations.

Certicom supported a private consortium to manage a V2V SCMS, indicating that this approach could help ''accelerate the deployments of V2X systems'' serving both infrastructure and aftermarket devices. They stated that a possible ''concern could arise if regulation unnecessarily limits the opportunity for participants to drive commercial innovation.'' Certicom expressed interest in the SCMS operational roles of the Certificate Management Entity (CME) such as operating a Certification Authority (CA) and/or a Registration Authority (RA). However, Certicom indicated revenue models and costs would need to be better understood before committing definitively to any portion of the system operation.

Certicom commented that long-term viability of the SCMS is highly dependent on public acceptance. As such, participants in the system need a strong public identification (brand) and experience with successful security, safe, reliable and privacy implementations.

During the agency's meeting with Certicom, the discussion focused on clarifying the RFI responses but also in key areas of revenue generation, security approaches, and certificate and device management approaches used for Blackberry devices and other implementations that Certicom has supported, which includes public utility installed residential ''smart meters.''

Certicom indicated there could be many reasons that entities would want to participate in a National SCMS and there could be potential opportunities presented such as the support of the security needs for manufacturing and system operations. In addition, expanded future roadside equipment could lead to yet-unknown revenue generation opportunities. Overall, V2V and a supporting SCMS could, in theory, ''create a whole new market.'' Certicom also suggested participants in the SCMS could generate on-going revenue by royalties from device manufacturers.

In terms of approaches to device security, Certicom indicated there are at least three security key-scenarios for devices. The following table provides an overview of these approaches and a corresponding, relative level of security provided by each.

TABLE V–2—OVERVIEW OF SECURITY APPROACHES

Security Method	PKI	Keys/Certificates sent to device at time of manufacture.	In device chipset (''silicon'').
Example	Thermostat	Telematics	Blackberry.
Relative Security	Sufficient	Better	Best.

When discussing device and certificate management, Certicom provided an overview of three certificate distribution and management systems: Blackberry PKI, the ZigBee Smart Energy public utility residential meter system, and Certicom's approach to certificate and asset management for device original equipment manufacturers (OEMs).

The certificate service for Blackberry devices is designed for scalability, and secures devices from ''birth'' where a registration ''seed'' is embedded in the a device's onboard microchip (''silicon'') at the time of device manufacturer. The registration seed could be viewed like a V2V enrollment certificate, all of which is linked to the ''root of trust'' for the Blackberry ecosystem.

Certicom's overview of the ZigBee public utility smart meter certificate system varies from Blackberry devices,

in that devices participating in that system are supplied from various manufacturers—similar to how V2V device implementation is envisioned, but the ecosystem itself could be viewed as localized.

In this implementation, ZigBee ''Smart Energy'' device certificates utilize an EQCV format issued in batches of one million. Certicom indicated they are able to issue approximately one million certificates in approximately one and half hours of processing. Each device participating in the system is identified by unique vendor identification, and verification is performed to confirm that each device's media access control (MAC) [222] address is unique. Key pairs for each device are then bound to the device MAC address and vendor ID through the certificate. Figure V–2 shows a graphic representation of the ZigBee certificate management system.

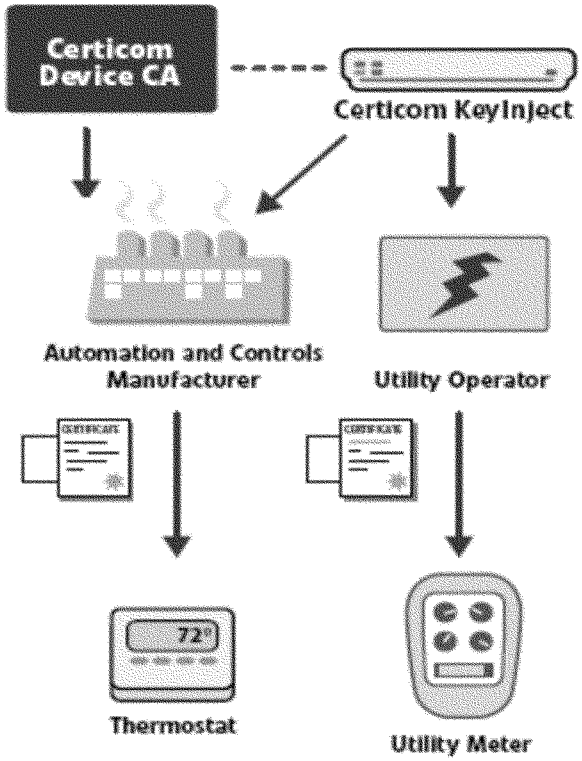


Figure V-2 ZigBee Smart Energy Certificate System

Finally, Certicom provided an overview of a certificate authority and asset management system that they are able to supply for device original equipment manufacturers. The system is designed to enable OEMs and silicon vendors to remotely secure devices that are assembled at geographically-dispersed locations, similar to how vehicles are assembled. The system described provides operational visibility and control of secure key injection into a device at time of manufacture or initialization, secure device serialization and tracking, and support for anti-cloning and anti-counterfeiting. Figure V–3 provides a representation of this system and shows the remote management across various locations. The ''tester'' would be the point of security key injection into a device.

[222] Media Access Control address refers to the unique 48-bit serial number in the network circuitry of Ethernet and Wi-Fi devices that identifies that machine from every other globally. See *http://www.pcmag.com/encyclopedia/term/46422/mac-address* (last accessed Jul. 14, 2015).

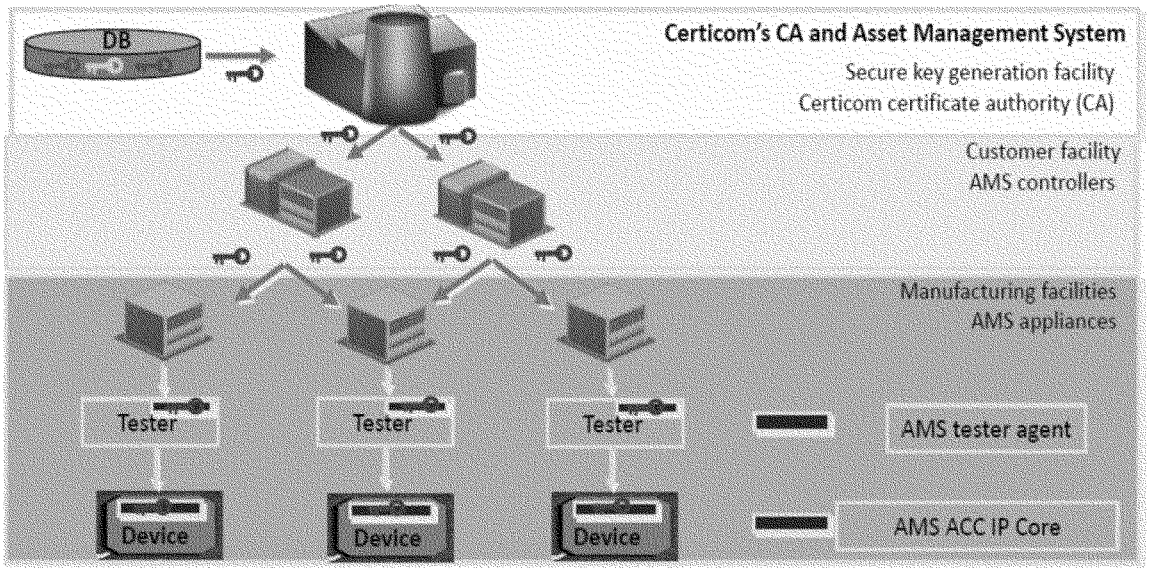


Figure V-3 Certicom Certificate Authority and Asset Management System

Certicom indicated that this system enables OEMs to manage and distribute the sensitive security keying material, along with potentially other sensitive information, to an untrusted contract manufacturing environment supplying components for their end product. Figure V–4 shows the process flow for loading security information to a device in an untrusted manufacturing environment.

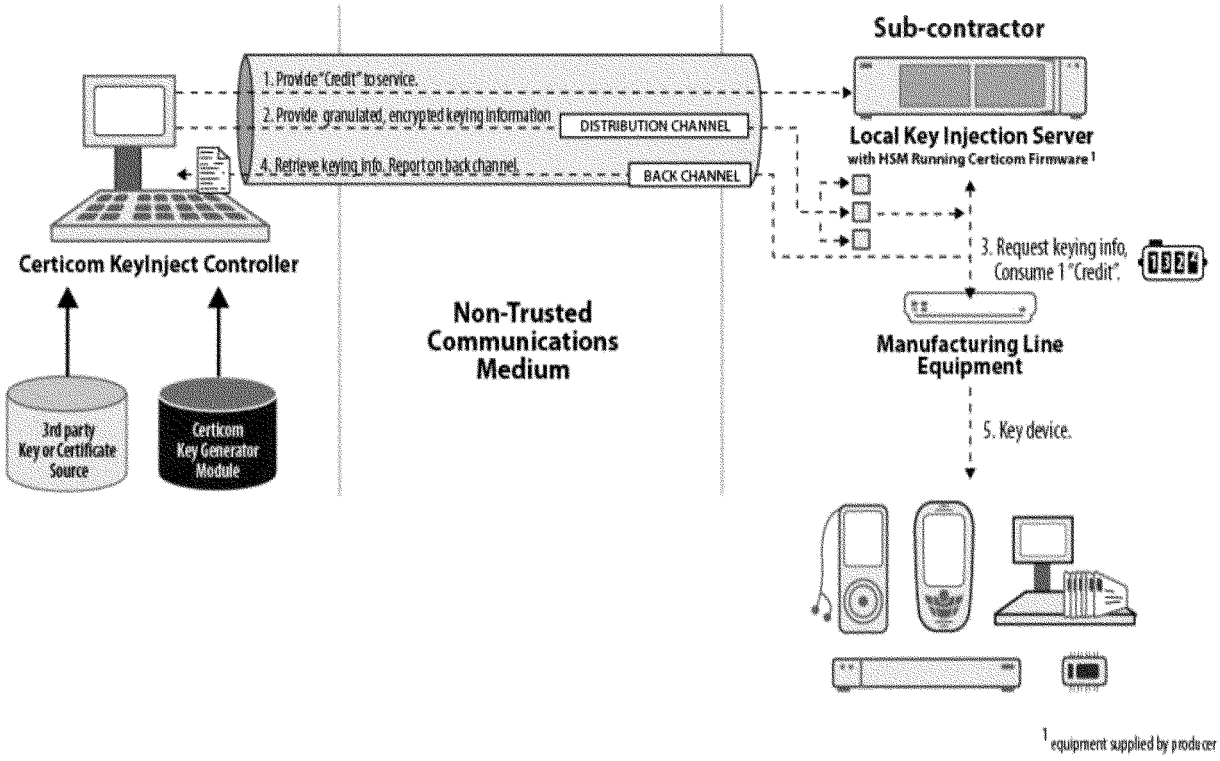


Figure V-4 Secure device manufacturing in an untrusted environment

As mentioned elsewhere in this section, device management also involves potential updates to device software to support technology updates and, importantly, in support of potential device recall scenarios. Certicom discussed Blackberry's OTA update service used for updating, configuring, and managing software and applications. Their updates leverage the existing Blackberry exclusive secure infrastructure for global distribution. This system also gathers status and data to support fleet monitoring capabilities for device operation. A graphic overview of the system is shown in Figure V–5.

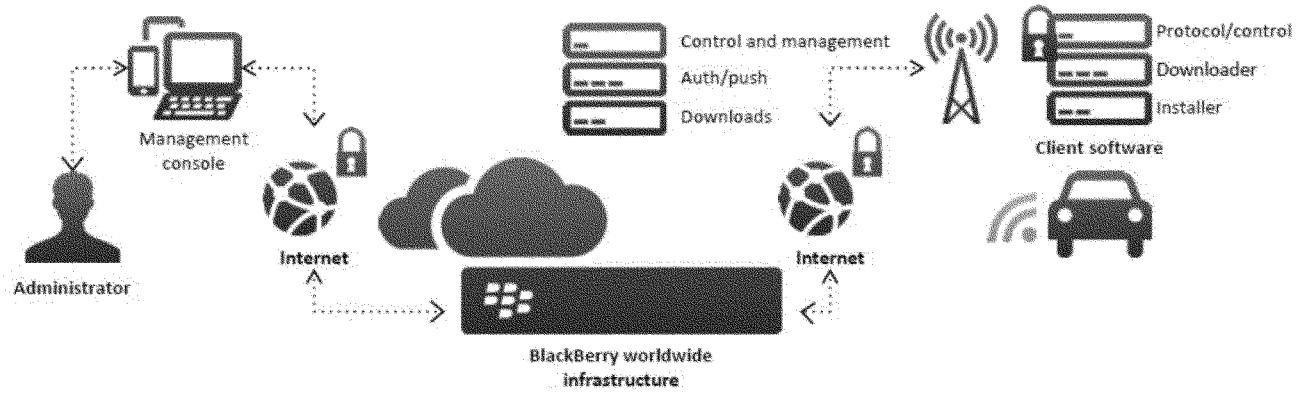


Figure V-5 Blackberry over the air (OTA) device update system

With end-of-life and misbehavior being key elements of a national V2V deployment, the agency inquired about approaches for managing devices under these conditions. Certicom indicated that Blackberry devices can be remotely made non-functional (''bricked'') when a device is determined to be out of service, stolen, not functioning properly or potentially ''misbehaving.'' Reactivation of a ''bricked'' device requires interaction with Blackberry.

(7) SiriusXM Satellite Radio

SiriusXM Satellite Radio provided a response to the SCMS RFI and also met with the V2V NPRM team as follow-up. Their written response to the RFI focused on the opportunity for satellite transmission to perform non-safety-critical, ''back haul'' type operations for a SCMS. This could include certificate distribution, over the air updates, and certificate revocation list distribution, among other potential supporting transactions. SiriusXM commented that employing a satellite network as an alternative distribution path for safety certificates and the CRL would promote the development of a V2V system by enhancing scalability and the SCMS network footprint, and enable faster distribution of security information for V2V-equipped vehicles.

SiriusXM indicated that satellite transmission could potentially ''bridge the gap'' between initial V2V deployment and roadside unit deployment and, in the longer term, support more remote regions that may not have roadside units deployed. SiriusXM indicated that their infrastructure ''could provide the ubiquitous, simultaneous, and robust distribution of security certificates and the certificate revocation list (''CRL'') in a V2V system.'' SiriusXM's satellite network covers the contiguous United States and portions or Canada and Mexico, which could possibly assist with potential cross-border challenges. Their network also includes signal repeating equipment to supplement service in urban areas where satellite reception could be blocked by buildings or other obstacles.

According to SiriusXM, 69 million vehicles are currently equipped with their radios, and they expect this to increase to 100 million vehicles by 2017 as approximately 70% of new vehicles are equipped with their receiver.

When discussing privacy, SiriusXM indicated that no subscription would be required to receive satellite V2X data and that it would be available to any vehicle equipped with their satellite receiver. SiriusXM did not present any potential revenue generation concepts during the discussion. Additionally, SiriusXM stated V2X will be a transparent data service on its system, meaning that no V2X-related data is collected on the vehicle, and that the satellite delivery system has no knowledge of which vehicles are active and receiving data or where vehicles are located.

In terms of device management, SiriusXM suggested a hardware security module (HSM) for V2V-enabled devices as part of a trusted, secure data exchange environment. SiriusXM provided very detailed technical descriptions of how device-level security could be implemented and managed using satellite radio service. This included discussing the potential use of group codes, interaction with the HSM, in-use certificate downloads, available service channels, and revoked vehicle identification, all of which leverages its experience with the development and deployment of its satellite radio network that appears to have addressed many similar challenges found in V2V device deployment and management.

(8) Ford Motor Company and Volkswagen Group of America

Ford Motor Company (''Ford'') and Volkswagen Group of America (''Volkswagen'') submitted joint comments to the SCMS RFI. Together, Ford and Volkswagen indicated they are encouraged by the progress made in the collaborative activities between NHTSA and CAMP, in which they participate. However, they state in their comments that remaining items need resolution to enable an effective deployment of a V2V communications system, such as: (1) NHTSA's authority to mandate an SCMS; (2) an acceptable and stable funding model, and; (3) measures to address potential liabilities associated with participating in and/or being subject to a SCMS.

Ford and Volkswagen commented that the SCMS cannot be a private entity because vital functions of the SCMS cannot be delegated to a ''private'' entity, ''which lacks the authority to require all participants in a V2V (let alone V2X) communication system to adhere to the system's necessarily rigorous operational policies, and enforce revocation based on unacceptable performance.'' Ford and Volkswagen stated that they, other OEMs, and others that will necessarily rely on the SCMS must have a role, along with government, in establishing SCMS operational policy. Additionally, they stated that Federal authority over the SCMS is essential and a binding governance board for SCMS management is needed.

Finally, Ford and Volkswagen stated that funding for centralized SCMS components or functions should come from a federal source. They do not support any funding model relying on the sale of data to third parties, and, additionally, the SCMS funding model ''should not be based on a potential requirement that specific services must be enabled within the vehicle to offset operational costs.'' Conversely, non-centralized components, like the certificate management entity (CME) or registration authority (RA), could be established independently for their own use.

(9) SAE International

The Society of Automotive Engineers (''SAE'') responded to the RFI with interest in playing a supporting role in SCMS deployment. SAE indicated interest in working with SCMS stakeholders in a partnership and/or larger consortium to support the SCMS functions, ''through a combination of standards development, conformance programs and training.''

SAE International standards J2735 and J2945 were revised and are being developed to support a national V2V deployment by providing a consistent, standardized approach to V2V device implementation across the industry.

(10) The American Motorcyclist Association

The American Motorcyclist Association (''AMA'') commented to the SCMS RFI by urging DOT to test the V2Vcommunication systems to ensure that motorcyclists' safety and privacy are secure. AMA expressed their support for DOT's position ''for further testing before adopting the rule authorizing U–NII devices (*e.g.,* Wi-Fi) to operate in the band to ensure vehicles using advanced crash-avoidance and vehicle-to-vehicle technologies are not compromised.'' AMA also expressed concern about the potential for ''hacking'' into a future V2V network, and specifically, the potential to manipulate traffic signals which could be ''especially disconcerting for motorcyclists who comprise the most vulnerable roadway user group.'' AMA closed their comments stating that the safety of all highway users should always be a priority whenever new technologies are considered.

(11) Alliance of Automobile Manufacturers, Inc.

The Alliance of Automobile Manufacturers, Inc. (''Alliance'') reiterated their comments to NHTSA's V2V ANPRM where they ''agreed with NHTSA's assessment that a strong SCMS is necessary for a properly functioning V2V communications system.'' The Alliance also reiterated its ANPRM comments expressing concerns with how a privately-run SCMS could address the broad structural and governance challenges that an SCMS manager would need to address, such as:

- Funding, deployment, operation and maintenance of a DSRC-based V2X security communications network
- Sustainable funding for V2X PKI security system operations and management
- Governance of a V2X security system (Rules of Use, Certification, and system access)
- Protection of consumer privacy
- Liability, risk management, and intellectual property protections
- International considerations including possible Canada-US-Mexico cross-border traffic, international agreements, or standards harmonization.

The Alliance maintained in its RFI response that addressing the above policy issues, which are necessarily national in scope, requires strong unified Federal leadership, not just presence.

(12) Association of Global Automakers

The Association of Global Automakers (''Global Automakers'') provided general comments along with direct responses to the RFI questions. In its comments, Global Automakers strongly supported a public-private partnership model for SCMS operation by stating that ''the agency has underestimated the necessary governmental role in managing the SCMS and too narrowly constrained the participation of other agencies in SCMS operations. Contractor operation of many aspects of the SCMS is feasible but must be conducted under the authority and supervision of a significant governmental entity.''

Global Automakers further stated that, to be effective, the SCMS must be a monopoly, which is not allowed under law for a private entity, and that funding for the SCMS should come from the government rather than from revenue generated by consumers; less potential consumer subscription funding opportunities for some potential V2I services. Additionally, the SCMS should be developed to support V2V and V2X holistically, at the outset, in partnership with the Federal Highway Administration (FHWA) and possibly other agencies such as the Federal Communications Commission and the Federal Trade Commission where privacy is of concern. Global Automakers stated that cross-agency coordination and harmonization is critical to the effective operation of the SCMS.

Global Automakers expressed concern with the potential approach for the ''Device Non-compliance and Potential Recalls'' discussion in the RFI materials, specifically, that it believed that the approach suggested by the agency would undermine consumer privacy, be impractical, and be redundant to systems that are already in place to manage recalls. It commented that the proposed ''link between specific installed V2V devices or production lots of devices and enrollment certificates'' would create a potential perception that V2V communications could be traced to individual vehicles and drivers.

(13) Verizon Communications, Inc.

Verizon Communications' RFI response focused on potential steps and pathways to achieving a National SCMS deployment and focused on three key approaches to SCMS policies and operations standards and potential adjustments to the PKI implementation. In more detail, Verizon suggested that: (1) NHTSA should define a system of policies, regulations, workflows, and technical interoperability that provides for the management and control of the overall SCMS; (2) implement an ''identity PKI'' as a baseline and ''bootstraps'' anonymously allowing linkage between certificates and supporting potential device recalls; and (3) an ''anonymity PKI'' solution that allows the device to perform any necessary operations anonymously.

(14) General Motors, LLC

General Motors, LLC (''GM'') submitted comments to the SCMS RFI that also included broader V2V rulemaking comments. GM stated, in the

broader context of V2V, that they support NHTSA's rulemaking initiative for all passenger cars and light trucks to be sold in the United States, and that ''a comprehensive and connected ecosystem must be developed and implemented offering seamless and trusted communication between vehicles'' to obtain all the potential benefits of V2V technology. GM commented that it strongly believes that a NHTSA rulemaking process is the only method to successfully establish a V2V ecosystem; that, as envisioned, the system cannot be established and managed by a single manufacturer or industry group.

Focused comments regarding the SCMS stated its belief in the requirement for Federal oversight of the SCMS Manager, the central root authority organization, direct engagement with the Misbehavior Authority and coordination of certification labs.

(15) CTIA—The Wireless Association

CTIA is an international nonprofit organization representing the wireless communications industry. CTIA's members include wireless carriers and their suppliers, as well as providers and manufacturers of wireless data services and products. CTIA's comments to the SCMS RFI focused on the benefit of leveraging existing authentication and security technology, along with utilizing existing networks and infrastructure to promote standardization and interoperability. CTIA also stated that the private sector is best positioned to address V2V SCMS cybersecurity and privacy concerns and should be utilized to help implement cybersecurity best practices.

(16) Tesla Motors, Inc.

Tesla Motors, Inc. (''Tesla'') commented primarily on the security of the SCMS design presented in the V2V Readiness Report by urging NHTSA ''to ensure that all possible security aspects are considered and accounted for when implementing its chosen design.'' Tesla commented that much more analysis and consideration needs to be given to the SCMS before it is implemented as proposed. Tesla acknowledges that it has not been involved with the Crash Avoidance Metrics Partnership (CAMP) consortium and that this brings a new perspective to the CAMP SCMS design.

Tesla believes that, as envisioned, the CAMP system fails to consider adequately how the system could be attacked or the vast amounts of information that will necessarily pass between vehicles and that NHTSA's proposed system has gaps that must be addressed before it is implemented.

Tesla narrowed its primary concerns into the following: (1) Because inputs are insecure, false messages are likely, even with secure V2V subsystems; (2) vehicles must have some way to determine whether messages, particularly misbehavior reports, are legitimate; (3) certificate revocation lists (''CRLs'') do not scale well for widespread use; (4) public-key cryptography is poorly suited to the demands of an embedded, high-speed environment; and (5) transmitted messages could be the source of privacy breaches.

Tesla concluded their comments by stating that ''the Company believes that the CAMP system has fundamental issues and challenges that must be revisited in order to allow for successful implementation of the SCMS.''

(17) Intercede Ltd.

Intercede, Ltd. is a software company solely focused on producing and delivering identity and credential management solutions to entities such as Government, Aerospace and Defense, Finance, Healthcare, Large Corporations and Managed Service Providers. Intercede's response to the RFI focused on the need for the SCMS to provide a secure and trusted environment for V2X, and stated that it will be necessary to consider the V2X communication devices over their entire lifetime, which was defined as:

- Initial manufacture;
- Upgrade;
- Maintenance;
- Transfer of ownership;
- Renewal;
- Compromise;
- Natural end of life.

Intercede's response went on to state that ''it is also important to consider the interactions beyond the communication channels that must be established into a secure trust system. Failure to do so would open up potential back doors into this trust system that could allow for compromise to occur from within.'' Follow-up discussion with Intercede stressed its views regarding the need for a complete, systems approach to security—encompassing ''cradle to grave'' for devices. And that, ''By adopting a controlled and secure approach to device identity management, NHTSA will enable a strong trust environment to be established that can then be built on for large-scale key generation during the lifetime of the device in the field for V2X communications.''

(b) SCMS RFI Agency Response

The RFI responses and subsequent meetings benefitted NHTSA greatly by providing additional technical perspectives on the SCMS PKI design. For example, DOT had originally dismissed the use of satellites as a viable communications media for transmission of security materials between the SCMS and OBE, but our meeting with Sirius XM Radio brought to NHTSA's attention the fact that, due to advances in technology and the close working relationship between the auto and satellite industries, satellite could in fact be a technologically and economically viable, secure and private media for such security transmissions. Similarly, the PKI technical model put forth by NHTSA in its Readiness Report assumes that a single root must form the basis for trust system-wide. However, as a result of meetings with CSS, NHTSA now is aware of the possibility that, through use of a trust bridge, one or more SCMS organizations, possibly representing different regions or even manufacturers, may be able to co-exist and together, provide more redundancy in security for V2V and V2X DSRC communications.

5. SCMS ANPRM Comments and Agency Response

(a) ANPRM SCMS Comments

With limited exception, comments received in response to the ANPRM generally endorsed the PKI design as an appropriate security solution for V2V and V2I DSRC communications. For example, GM, the Alliance, Toyota, and the Automotive Safety Council all concurred that the SCMS design described in the ANPRM and the V2V Readiness Report should provide the required level of security while also protecting the privacy of the end users. Throughout all the comments there were two major concerns with the SCMS design that were cited by multiple commenters: (1) The overall complexity of the design; and (2) a fallback plan for a compromised root.

One of the recurring comments in the ANPRM focused on the overall complexity of the design of the SCMS and the plan for implementing such a system. The design of the SCMS is more complicated than any existing PKI systems due primarily to the need to protect the privacy of the end users both from outsider and insider attacks. As such the various functions in the system are separated logically and organizationally in an attempt to ensure that one organization does not have access to all the information needed to identify the end users. Therefore, this

level of complexity is necessitated by the system requirements.

The second technical concern highlighted in the comments is the impact on the system if the private key of the SCMS root certificate authority is compromised. If the root CA is compromised, then this would compromise certificates for all V2V devices, roadside infrastructure devices, and SCMS components. Reissuing the certificates for over 350 million end users would require a significant amount of time and resources to complete. For example, all V2V devices would need to be re-initialized in order to receive a new enrollment certificate; however, this process must occur over a secure communications channel. This may require all devices to return to the dealership or service center in order to have access to the secure communications channel required for the initialization process.

(b) ANPRM Agency Response

In response to the first concern, the agency agrees that the level of complexity of the design does increase the risk associated with the implementation and deployment of this system. To combat that risk, one commenter suggested that the system be implemented through a phased development approach where components of the system are developed, tested, and deployed incrementally. This approach would ensure that the deployed components are secure and reliable for additional components are deployed into the system. The agency agrees with this recommendation and is employing in it the development of the SCMS Proof-of-Concept. This system is being developed using an incremental approach that focuses on first implementing and testing the core components of the system, followed by the non-core components. After the system is developed and tested, it will be operated for a significant period of time by DOT. During this operational period, existing V2V and V2I test beds will be integrated with the SCMS POC, and it will provide the necessary security credential materials to these test beds. The knowledge gained from the operation of the SCMS POC will inform the development of the National SCMS that will be required to support an eventual FMVSS.

The agency also concurs that it would be a catastrophic event for the root CA to be compromised, and as such we are exploring various approaches for disaster recovery that can be implemented to mitigate this risk. The SCMS Proof-of-Concept will implement and test root management and disaster recovery solutions that will allow a root CA to be revoked without requiring the recall and re-initialization of all the V2V and V2I devices in a secure environment. One of the solutions to be tested in the SCMS POC is a distributed root management approach that utilizes root electors to manage the trust relationships in the system. Another solution being evaluated includes the use of redundant root CAs where only a single root is active at any one time. These approaches will be tested and evaluated during the operation of the SCMS POC to ensure that in the event of a compromised root, the system can be recovered without the need to recall every V2V and V2I device.

6. SCMS Industry Governance

(a) The SCMS ''Industry''

Deployment of an SCMS PKI to secure V2V DSRC communications will require governance of a wide range of complex functions and involve numerous public and private stakeholders, which together we refer to here as the SCMS ''industry'' or SCMS ''ecosystem.'' We expect that SCMS stakeholders will include: Manufacturers of OBE, RSU, and aftermarket safety devices (ASD); certification labs that test OBE (and potentially ASDs); organizations supporting V2V communications; auto manufacturers; standards organizations; PKI experts; State and local government users, and others. In Figure V–6, below, the shapes represent different groups of organizations that interact with the SCMS in some way. Some of these organizations will need to be stood up, while others currently exist today and will likely expand their operations to play a role in the SCMS. The overlapping of shapes represents mutual reliance in executing operations, and the arrows represent communication and the need for inter-organizational arrangements. The SCMS is the focal point of the certificate management industry, as it encompasses the CMEs that oversee all PKI functions responsible for establishing the foundation of security in the V2V/V2I/V2X system.

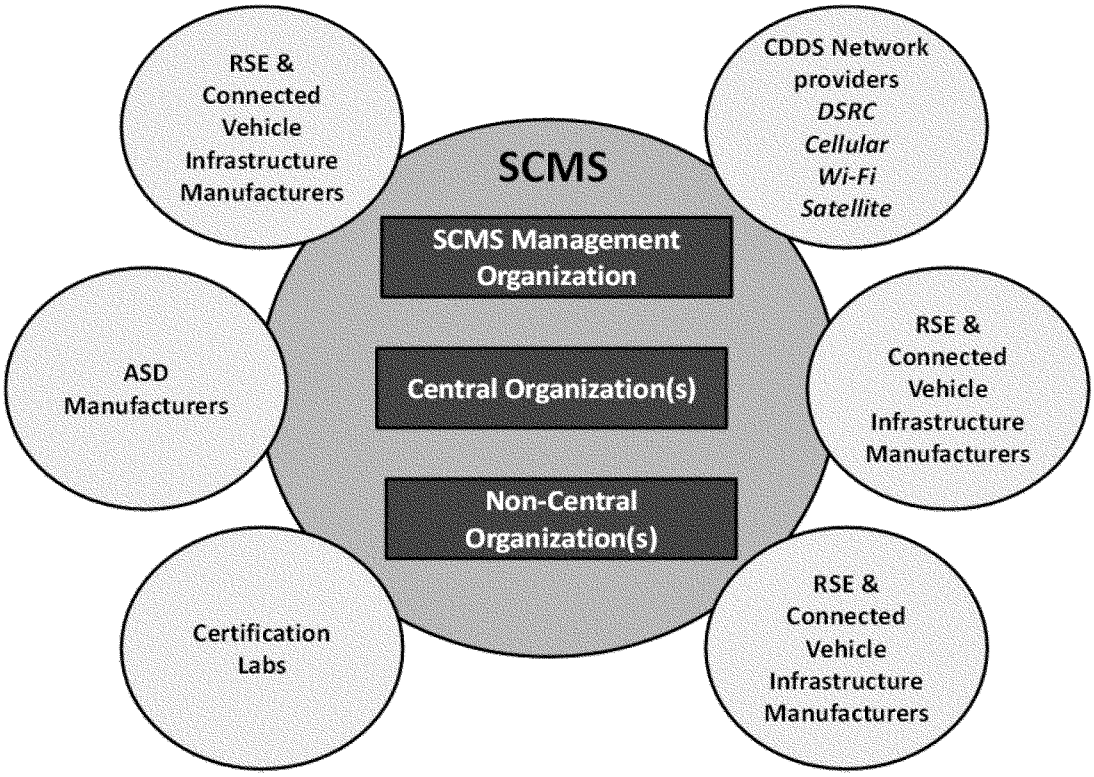


Figure V-6 Certificate Management Industry Diagram

Some of the questions that NHTSA raised in the V2V Readiness Report about industry governance structure for the SCMS include:

- How and by whom are decisions made about various policies, standards, requirements, and practices?
- Who has the authority to mandate and enforce compliance with the policies, standards, and industry requirements?
- Who makes up the overseeing financial, legal, management, and executive operations of the entities in the SCMS?
- Is there a central industry body and, if so, who oversees it? Who is part of this central industry body?
- How do the various entities interact with each other?
- How is risk and liability allocated across the organizations?
- Who will own the intellectual property (data and software) of the system and how will it be licensed (allocated) among responsible entities?

In answering these questions, NHTSA continues to explore a variety of governance models (ranging from public to public-private to private) as potential options for governing the SCMS industry. Due primarily to the absence of Federal funds to support a public SCMS, to date NHTSA has focused primarily on fleshing out a model of private SCMS ownership and governance that assumes costs will be covered by increases in the purchase price of new vehicles and V2V safety devices. As we noted our V2V Readiness Report, in a private SCMS industry the organizational structure and operation of the SCMS would be determined largely by private owners and operators of CME components, under oversight of an SCMS Manager (ideally an industry-wide coalition of CME owners and other stakeholder representatives who, together, agree on the terms of self-governance and system-wide rules and policies). The SCMS Manager would provide critical system management by enforcing and auditing compliance with uniform technical and policy standards and guidance system-wide. Uniform standards and guidance would establish and ensure consistency, effectiveness, interoperability, sustainability, and appropriate privacy protections across the CMEs to facilitate necessary communications, sharing of information, and operational connections, and would be based in large part on existing technical and policy standards applicable to PKI systems.

The Readiness Report explained NHTSA's view that, in the context of a privately owned SCMS ''industry,'' a private model could be a viable mechanism for SCMS governance in which NHTSA would have only a minimal role in ensuring system integrity, largely through its traditional regulatory activities. We also indicated that NHTSA's existing legal authority would accommodate the use of grants, cooperative agreements, or other agreements to facilitate stakeholder—and even DOT—input into governance of a private SCMS.

(b) ANPRM Governance Comments

Comments to the ANPRM and Readiness Report relating to SCMS ownership and governance came mostly from members of the automotive industry and their trade groups. While agreeing with NHTSA's assertion that a V2V system is not complete without a robust SCMS, almost without exception, industry commenters vehemently disagreed that a private self-governing industry coalition could be a viable mechanism for SCMS system governance. Commenters believed that a private SCMS could not provide the security, privacy, certainty, stability, long-term functionality, or management of costs and risk required for a nationwide SCMS to support V2V DSRC communications, and lacked the legal authority to address cross-border issues

or require industry-wide participation and compliance with uniform requirements. For these reasons, virtually all industry commenters took the position that a strong leadership role for the Federal government in the SCMS would be required for successful deployment of V2V and V2X DSRC communications.

For example, both the Alliance and Mercedes described the SCMS as a ''core government responsibility.'' Noting that ''for V2V to work effectively, every vehicle manufacturer will have to participate in the SCMS and abide by its rules,'' the Alliance explained that:

> a private organization, such as a voluntary coalition of manufacturers, cannot compel unwilling manufacturers to join the organization, and cannot enforce deviations from the organization's rules except by expelling misbehaving members. There is no effective mechanism to ensure the universal participation of all manufacturers and to compel their obedience to the necessary common SCMS requirements. . .

The Alliance also stated that ''resolution of policy issues requires coordination among multiple federal agencies (FHWA, FTC, FCC, EPA),'' and that ''Congress was best positioned to provide the needed coordination and nationwide-scope for addressing infrastructure, governance of networks and SCMS, consumer privacy, sustainable funding, international cross-border and liability/IP policy issues.''

Global commented that ''private sector options for operating the Security Credential Management System (SCMS) do not guarantee certainty over the management or the cost of operation the system and its long-term stability.'' GM, likening the issuance of security certificates to the minting of coinage by the Federal government, argued that ensuring a secure V2V system would require that the Federal government: (i) Operate or support operation of a central root CA that all V2V certificates must use, or mandate that all V2V certificates use a central root CA; and (ii) review and approve minimum levels of security for the keys and cryptography used by the root CA and subordinate CAs authorized by the root CA. Mercedes described the SCMS as a ''backbone infrastructure, which must be set up and controlled with the leadership of state and federal authorities'' and echoed the comments of the Alliance that only Federal government oversight would ensure industry-wide participation in an SCMS and compliance with its requirements. Similarly, Honda commented that the federal government should be responsible to ensure the safe and efficient operation of the V2V security framework, and should consider a public-private partnership as an option for the operation and management of the SCMS, with federal oversight, supervision and funding.

The agency agrees with commenters that, for a variety of policy reasons, ideally the Federal government should play a more central leadership role in the establishment and governance of a V2V SCMS. For this reason, as detailed above, DOT now has taken the lead in working with SCMS stakeholders to develop the policies and standards that should form the basis for governance of a National V2V SCMS, as well as to model and prototype organizational options for a governance entity to manage SCMS operations.

(c) A Comparative Industry Example: ICANN

In analyzing SCMS governance options, NHTSA and its research partners have investigated a variety of industries with characteristics similar to those seen as critical for a V2V SCMS governance model, including security, privacy protection, stability, sustainability, multi-stakeholder representation and technical complexity.[223] We investigated an array of public, public-private and private governance models, with particular emphasis on safety-critical and privacy-sensitive systems. We also examined how risk was managed in the context these models. Some of the industries researched included:

- Internet Corporation for Assigned Names and Numbers (ICANN)
- DTE Energy Company
- Aeronautical Radio Incorporated (ARINC)
- End of Life Vehicle Solutions Corporation (ELVS)
- The FAA's Next Gen Air Transportation System
- The FRA's Positive Train Control
- Smart Grid
- The Rail/Transit Train Control Systems (ATC and CBTC)
- FMCSA's EOBR
- Coast Guard's MSSIS
- Army Corp of Engineer's MRGO
- Medical Devices failure and liability
- Security in nuclear industry and liability
- Warning/Signal Failures
- UAVs
- HIPAA/Health Care industry/ Electronic Health Records (EHRs)/ CONNECT system
- Credit Card Payment industry and PCI standards
- Hospital/Health care industry

Of the governance models we examined, governance of the internet naming protocol systems (DNS) by the Internet Assigned Numbers Authority (ICANN) possessed numerous characteristics that seem to translate most directly to a private or public-private governance model for the V2V SCMS. ICANN is a private, not-for-profit corporation created by private sector entities in direct response to efforts by the Federal government to privatize certain Internet-related tasks in a manner that permits robust competition and international participation in its management. ICANN is managed by a multi-stakeholder Board of Directors (representative of the functional and geographic diversity of the Internet) that oversees a number of Internet-related functions previously performed directly on behalf of the Federal government by other organizations, notably the Internet Assigned Numbers Authority (IANA) (formerly located within the Department of Commerce but now operated by ICANN). Pursuant to various Memoranda of Understanding with ICANN (ICANN MOUs), the Department of Commerce agreed gradually to transfer to ICANN certain Internet-related functions, with the goal of having ICANN carry out operational responsibility for these functions in a financially self-sustaining manner after a limited transition period. At the same time, the Department of Commerce also entered into a series of funded project agreements with ICANN, on a sole source basis, to perform technical and policy activities required to facilitate the transition of authority for those functions to ICANN.[224]

The ICANN MOUs and project agreements called for the Federal government to exercise significant oversight of ICANN's activities until such time as ICANN was stable and could provide certain stability, sustainability and policy assurances to the Federal government. After 11 years, the Department of Commerce gave up its oversight of ICANN with respect to the operation and governance of specific Internet naming protocol functions, but committed to ongoing participation in ICANN's Governmental Advisory Committee (GAC). ICANN continues to perform certain technical maintenance tasks under contract to Commerce, as do other Commerce contractors. In 2014,

[223] VIIC Assessment of Key Governance Policy Considerations for a Connected Vehicle Cooperative Safety Communications System,'' dated March 12, 2013, at page 11 *http://www.regulations.gov/#!documentDetail;D=NHTSA-2014-0022-0046* (last accessed Dec. 8, 2016).

[224] ICANN background information, contract and agreement content can be found at *http://www.ntia.doc.gov/page/docicann-agreements* (last accessed Dec. 8, 2016).

Commerce announced its intention to work with ICANN to privatize key Internet domain name functions still remaining under its control.

How is ICANN relevant to governance of the V2V SCMS? ICANN provides NHTSA with a potential road map for how it can work with public and private stakeholders to develop a successful governance structure for a multi-stakeholder, geographically and functionally diverse technology-intense system not unlike V2V. Like the V2V SCMS, successful deployment of an Internet naming protocol required uniform and consistent application of technical and policy standards enabling interoperability and system-wide confidence. As would be required for enforcement in a privately governed SCMS, ICANN uses a binding Registry Agreement as the enforcement mechanism through which it ensures that its policy and technical standards are applied Internet-wide. Like the SCMS ecosystem or ''industry,'' the Internet ''industry'' involves numerous commercial, academic, geopolitical, and other private and public stakeholders involved in a broad range of Internet-related functions, the success of which requires system-wide, coordinated governance. As would be likely in the SCMS context, ICANN was developed and operates on a foundation of the fundamental principles of security, stability, resiliency, multi-stakeholder participation, openness, fairness and robust completion. Additionally, as detailed in the ICANN MOUs, after a period of direct government oversight and funding, the privatized functions governed and coordinated by ICANN were designed to be financially self-sufficient (*i.e.* financed by fees paid for services).

We agree with Dura and the VIIC that ICANN's organizational structure could translate well to a potential V2V SCMS governance model. The details of ICANN's mission, core values, powers, responsibilities, governing principles and procedures are set forth in its Articles of Incorporation, Bylaws, Charter, and other publicly available documents. In accordance with those documents, ICANN is governed by the binding decisions of a Board of Directors, consisting of both voting Directors and non-voting liaisons. The voting Directors consist of members selected by a functionally and regionally diverse nominating committee that reflects the diversity of Internet ecosystem, as a whole: the Address-Supporting Organization (ASO), the Country-Code Names Supporting Organization (CCNSO), the Generic Names Supporting Organization (GNSO), the At-Large Community and the President ex officio. Directors may not be officials of countries or multinational geo-political entities. Only ICANN's President can be both a Director and ICANN employee. Non-voting liaisons are a means for the Board to obtain input from world-wide governments, through the Government Advisory Committee (GAC), and three function-specific expert committees, the Internet Engineering Task force (ETF), Security and Stability Advisory Committee (SSAC) and Root Server System Advisory Committee (RSSAC). The organization has an Ombudsman appointed by the Board to act as a neutral dispute resolution practitioner and provide an independent internal evaluation of complaints by members of the ICANN community who believe that the ICANN staff, Board or an ICANN constituent body has treated them unfairly.

NHTSA also found quite instructive the procedures used by the Department of Commerce to effectuate the process of successfully privatizing certain Internet-related functions. In July 1997, the Department of Commerce first published a Request for Comments on behalf of an interagency working group examining the appropriate future role of the Federal government in the DNS and other issues related to the administration of the DNS. The following year, in early 1998, based on the 1400 pages of comments it received to its Request for Comments, it issued a rulemaking notice proposing certain actions designed to privatize the management of Internet names and addresses in a manner that allowed for the development of robust competition and facilitates global participation in Internet management.[225] The proposed rulemaking addressed a variety of issues relating to DNS management including private sector creation of a new not-for-profit corporation (the ''new corporation'') managed by a globally and functionally representative Board of Directors. The rulemaking proposed, among other things, the new corporation's authorities, detailed the role of the federal government in policy oversight during the transition, identified funding, and contained a detailed proposed governance structure (specific to the number of seats on the Board of Directors) with substantive stakeholder participation and openness requirements. The rulemaking explained that, the new corporation would:

> Act much like a standard-setting body. To the extent that the new corporation operates in an open and pro-competitive manner, its actions will withstand antitrust scrutiny. Its standards should be reasonably based on, and no broader than necessary to promote its legitimate coordinating objectives. Under U.S. law, a standard-setting body can face antitrust liability if it is dominated by an economically interested entity, or if standards are set in secret by a few leading competitors. But appropriate processes and structure will minimize the possibility that the body's actions will be, or will appear to a court to be, anti-competitive.[226]

Later the same year, in July 1998, the Department of Commerce opted to proceed with privatizing management of the internet DNS not through rulemaking but by issuing a Statement of Policy expressing the Government's intent to ''recognize, by entering into agreement with, and to seek international support for, a new, not-for-profit corporation formed by private sector Internet stakeholders to administer policy for the Internet name and address system.'' [227] In a July 7, 2000 report,[228] the GAO confirmed the appropriateness of the Department of Commerce's actions. The GAO determined, among other things, that:

- Department of Commerce had the authority to support privatization of the DNS on the basis of its general authority [229] to foster, promote, and develop foreign and domestic commerce and NTIA's more specific authority to coordinate the telecommunications activities of the executive branch; [230]
- The APA notice and comment requirements did not apply to the Department of Commerce's general statement of policy, as it contained not substantive regulatory requirements but a general framework for privatizing the DNS;
- Establishment of ICANN by the private sector was not subject to the Government Corporation Control Act or various other legal requirements applicable to entities that are part of or controlled by the Federal Government;
- Department of Commerce had authority to enter into the MOUs,

[225] *http://www.gpo.gov/fdsys/pkg/FR-1998-02-20/html/98-4200.htm* (last accessed Dec. 8, 2016).

[226] *http://www.ntia.doc.gov/files/ntia/publications/022098fedreg.txt*, at page 8818 (last accessed Dec. 8, 2016).

[227] See *https://www.ntia.doc.gov/federal-register-notice/1998/statement-policy-management-internet-names-and-addresses* (last accessed Dec. 8, 2016).

[228] See *Department of Commerce: Relationship with the Internet Corporation for Assigned Names and Numbers,* July 7, 2000 (B–284206) *http://www.gao.gov/new.items/og00033r.pdf* (last accessed Dec. 8, 2016).

[229] In so doing, GAO noted that ''there is no explicit legislation requiring the government to exercise oversight over the domain name system.'' *Id* at 3.

[230] 47 U.S.C. 902(b)(2)(H).

cooperative agreements and sole source contracts with ICANN based on its general legal authority to work with and enter into these types of agreements with non-profit entities.

It must be noted that the circumstances that led to creation of ICANN are different, in significant respects, than those that now necessitate the creation of an SCMS to support V2V DSRC communications. When it issued its Policy Statement, Department of Commerce had funds dedicated to administration of the DNS it sought to privatize and already had taken on responsibility for performing that function, in accordance with Federal law. For this reason, the Department of Commerce had a legal obligation closely to oversee ICANN's assumption of responsibility for the DNS during a transition period. It also continued to fund ICANN in the performance of certain additional functions previously performed by IANA, even after it ceased to oversee ICANN's policies and operation of the DNS in 2009. By contrast, to date, NHTSA has not assumed responsibility for carrying out any security functions relative to mandated automobile equipment, so no infrastructure or funding for this purpose now exists. Additionally, NHTSA seeks not to privatize existing federal security functions or infrastructure, but to work closely with public and private V2V stakeholders to take the technical design, intellectual property and body of policy developed through DOT's SCMS research and facilitate the creation of a new operational entity—a National SCMS to support V2V, V2I, and V2X DSRC communications.

Despite these differences, NHTSA believes that ICANN serves as a strong comparative industry model of how NHTSA can work with stakeholders in the SCMS ecosystem to facilitate creation and support of a multi-stakeholder private sector entity to govern and coordinate operation of the V2V SCMS.

(d) Potential SCMS Implementation Model

It is clear that there are numerous different paths that government and private stakeholders theoretically could follow in implementing a National SCMS to support the V2V ecosystem—paths the organization, governance and financial viability of which DOT expects its expanded policy research to develop and assess. There may even be other viable security models that could provide sufficient confidence and consumer privacy protection to V2V messages. However, if NHTSA mandates V2V communications equipment in light motor vehicles and moves forward with implementing the SCMS technical design described above, the agency believes that one promising path was that pursued by Department of Commerce when it spurred private sector establishment of ICANN. Specifically, DOT could facilitate the creation of a multi-stakeholder entity capable of governing and coordinating operation of a National SCMS. DOT's expanded policy research, including stakeholder input, modeling, and prototyping of potential governance models, as well as comments on the NPRM, will help determine whether such an SCMS should be a purely private entity in which DOT plays an advisory role—or whether the Federal government should assume control over some critical SCMS functions (for example, ownership of the definitive root).

The process followed by the Department of Commerce as it privatized certain DNS functions could be a useful roadmap for how NHTSA might work with the private sector to establish a new, multi-stakeholder entity to take on governance and coordinate operation of a V2V SCMS. NHTSA's 2014 ANPRM, V2V Readiness Report and SCMS RFI could be viewed as the first steps in this process. NHTSA used the input the agency received in response to these public documents, in meetings with RFI respondents, and through SCMS policy research performed by the VIIC and others, to expand the scope its planned SCMS governance and policy research discussed in Section V.B.6. This critical SCMS policy research is intended to give DOT a central role in, and direct control over, development of draft policies, procedures and standards that could the basis for governance of a National SCMS, including draft a Certificate Policy, Certificate Practice Statement, Registration Agreements, and Privacy Policy. Another central aspect of DOT's planned SCMS policy research will be working with PKI and organizational consultants and stakeholders to prototype a multi-stakeholder governance structure (much like ICANN's Board of Directors) capable of satisfying the needs of the broad range of diverse participants in the SCMS ecosystem. If successful, this prototype could serve as a model for a private sector entity that could establish and oversee a deployed National SCMS.

If appropriate based on the Department's planned research, DOT then could issue a draft V2V SCMC Policy Statement describing a process (similar to that followed by DOC and ICANN) by which the Department could, if it chooses to, work collaboratively with a new multi-stakeholder private entity to develop the binding policies and technical standards required for stable and sustained operation of a V2V SCMS. After an initial period of joint policy development and direct DOT oversight under contract, prior to full SCMS deployment, DOT gradually could terminate some or all its oversight of the new entity's activities, completing the transition of authority prior to full SCMS deployment. Thereafter, representatives of NHTSA and other Federal government agencies, both within DOT (DOT–R, FHWA, FMCSA, and the others) and elsewhere in the Federal Government (FCC, FTC), could serve in an advisory capacity on a Government Advisory Committee or as nonvoting SCMS Manager Board Members.

(e) SCMS Proof-of-Concept Operational Model Development Plan

As a result of a better understanding obtained from operating the prototype security system during Model Deployment, as well as feedback from the SCMS Request for Information, ITS–JPO and NHTSA realized that expanding to a National level SCMS would require an intermediate step. Specifically, that additional research was required to prove the concept and develop a SCMS working model that allows for investigating the full range of technical, policy, and organizational elements involved in deploying and operating the SCMS. Investigating these components includes providing security certificate management services to continuing vehicle communications research activities and early deployments.

As part of developing a working SCMS model, DOT will:

- Develop and implement a proof of concept SCMS (the SCMS PoC) that is fully representative of the Final SCMS design, and which will provide certificate management services to early deployments and demonstrations, including but not limited to CV pilots,
- Act as the overall SCMS PoC Manager, including developing policy and procedures that will govern the interactions between the various entities involved in the V2X eco-system, and
- Based on stakeholder input, will advanced and adapt SCMS PoC policies and protocols such that they would represent possible policies and protocols suitable for the establishment and operations of a SCMS that could support a national deployment of vehicle communication technology.

The SCMS proof-of-concept (PoC) will be fully representative of a production SCMS in terms of functionality, features, and capabilities. It will support all certificate management ''use-cases'' envisioned for a production system, and incorporates all elements of the final design developed by DOT and its industry partners. While not intended to be ''full-scale'', the SCMS PoC will be capable of servicing up to 17 million vehicles annually. The SCMS PoC is being developed to:

1. Support end-to-end testing of the certificate management use-cases thus demonstrating feasibility and practicality of system;
2. Demonstrate the extensibility of the SCMS design (multiple non-central components);
3. Support scalability testing through modeling, simulation, and real-world deployments;
4. Support integrity, robustness and system vulnerability testing;
5. Will be used in actual connected vehicle operations by servicing a variety of early deployments and demonstrations including the Connected Vehicle pilots (Tampa, NYC, Wyoming), the Smart City Challenge program recipient, as well as other government sponsored (state & local) and private sector deployments that we anticipate emerging over the next several years; and
6. Will be able to support future connected vehicle application demonstrations programs for FMCSA, FTA, and FRA (*e.g.,* wireless roadside inspections; electronic credentialing; grade-crossing safety; transit-pedestrian safety; and other applications).

NHTSA and its industry partners (CAMP) are currently in the process of prototyping an SCMS system that is capable of executing all the core use-cases associated with the security certificate management life cycle including enrollment, certificate generation, certificate request and fulfillment, and revocation. This proof-of-concept SCMS (the SCMS PoC) is being developed to support real-world operations of early V2V deployments at connected vehicles pilots sponsored by DOT (in Florida, New York City, and Wyoming and elsewhere). NHTSA and its industry partners will continue to refine, test and mature the design of the SCMS—including addressing the functions and features listed above—by leveraging this prototype environment. To support these refinement efforts, we are establishing multiple instantiations of the SCMS including Production, Quality Assurance and Development environments. Further, we are in the process of retaining an additional (in addition to MITRE) independent cyber-security testing and evaluation Team to conduct a thorough design review on the Final SCMS design, and to complete focused penetration testing and vulnerability discovery on the actual SCMS prototype by leveraging the Development environment platform.

DOT will develop, operate, and manage the SCMS PoC through multiple contract/agreements with multiple entities, illustrated via Figure 1. Figure 1 identifies five research activities including the SCMS PoC Governmental Management that represent the SCMS PoC Manager Environment. This environment depicts the boundaries of the SCMS PoC Governmental Management activities. DOT has already established an agreement that is currently developing an initial prototype of the SCMS PoC that will be the basis for the operational environment and support ongoing functional (refinement) development. SCMS PoC Governmental Management includes the development of policies that support the technical processes and procedures and the organizational protocols that establish interfaces (communications) between entities that support policy and operational execution. DOT, with the support provided by the Governmental Management contractor, will be the SCMS Manager and set policies and protocols that will address threats in relation to access and change authority. The SCMS Manager will develop and establish a Certificate Policy and Certificate Practice Statement that sets the policies and protocols that must be accepted and followed to be approved to participate in the SCMS environment.

A separate agreement will establish the operational SCMS PoC (provides the technical functions that enables generation, distribution and monitoring of SCMS security materials). Related to the separate agreement that establishes PoC operations is an agreement that provides for the technical management that encompasses the development and documentation of technical process and procedures end entities will use to initialize devices and obtain security materials. Another contract will provide Connected Vehicle Support Service that supports the initial interactions regarding end entity applications for device initiations, technical support questions, and questions about policies and procedures. The Connected Vehicle Support contractor will establish and operate the initial interface with end users.

Beyond the SCMS PoC manager environment, the SCMS PoC Governmental Manager will in most cases indirectly interface with other research activities such as the CV Pilots, and other support entities that include Certification Service entities, and Device Suppliers. The most direct outside relationship will be with the National SCMS Prototype Policy Development research. The SCMS Governmental Management effort will need to interface with the National SCMS Prototype Policy Development research to support national level SCMS prototype policy development.

The SCMS PoC environment, together with the connected vehicle pilot sites sponsored by DOT, will provide an opportunity to refine the SCMS Manager concept and other non-technology related policies and procedures needed to address security threats.

(f) SCMS Request for Comment

NHTSA has invested considerable resources and effort in refining and maturing the Security Credential Management System Design. The Agency has enlisted the assistance of leading PKI experts in developing the design, and the design has been formerly reviewed by MITRE Corporation (see Section V.B.3 for summary of MITRE review) and other Federal Agencies including DARPA and NIST have also reviewed the design. NHTSA believes that the SCMS concept and design offers a practical, efficient and effective means for addressing the need for confidence in V2V and V2I communications—while simultaneously addressing privacy concerns arising from potential vehicle tracking using V2V communications. Nevertheless, a fully representative prototype of the SCMS system has not yet been developed and tested, although NHTSA and the JPO are in the process of doing just that, (see Section V.B.6.e) for details).

In addition, the SCMS concept calls for periodic (or routine) communications between the vehicle and various certificate management entities (which reside in the ''infrastructure'' on the internet) to execute a variety of certificate management life-cycle services including: re-provisioning of on-board pseudonym certificates; distribution of certificate revocation lists; and potential a component for sending misbehavior detection reports from vehicles to the Misbehavior Authority of the SCMS as described in the Proposal. While NHTSA believes that such periodic vehicle to infrastructure communications can readily be accommodated thru either V2V DSRC communications (using roadside units, or RSUs), or through the rapidly

increasing connectivity of vehicles using commercial wireless services (cellular or satellite services that are either integrated into vehicle or made available through links with an operator's cell phone), NHTSA nevertheless recognizes that security certificate management concepts that inherently minimize the need for such periodic V2I communications may offer advantages relative to maintaining proper on-board certificate credentials.

To manage the normal risk associated with any new and complex information security system, and to address a means for potentially reducing the need for V2I security communications, NHTSA has been, and continues to investigate alternatives to the SCMS concept.

NHTSA seeks comments on all aspects of the SCMS. In technical design, development, and potential deployment, including DOT's proposal to expand its governance role in development of a viable organizational model and policies and procedures applicable to a National SCMS, and the use of ICANN as a possible roadmap for how to facilitate establishment of a private, multi-stakeholder entity to manage and oversee operation of the National SCMS.

C. Vehicle Based Security System (VBSS)

In late 2012 NHTSA began investigating a certificate management concept termed the ''vehicle based security system'' (VBSS). VBSS is based on principals associated with Group Manager concepts for managing cryptographic materials—and adapted for vehicular application by NHTSA engineers.

The major difference between SCMS and VBSS is in generating short-term certificates. The SCMS approach relies on individual vehicles to periodically request pseudonym certificates from infrastructure-based entities, (most notably a Pseudonym Certificate Authority, or PCA) which in turn generates and signs short-term certificates. Vehicles then download batches of certificates which are used to digitally sign BSM messages. In contrast, the VBSS concept calls for delegating this authority to individual vehicles, and as a result the communications with the infrastructure are reduced.

DOT funded a Feasibility Study of the VBSS concept in 2014 (completed by Oakridge National Laboratory, ORNL) and the first phase of study was completed in December, 2015.[231] Figure X depicts a high level comparison of the VBSS and SCMS architectures.

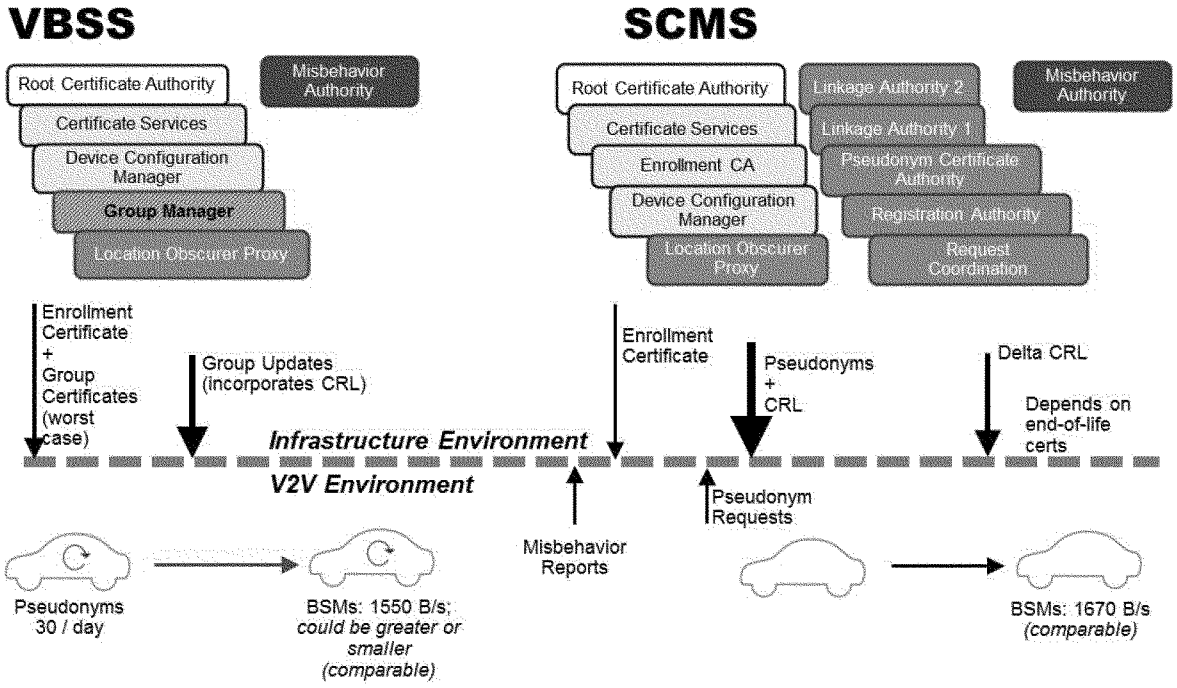


Figure V-7 VBSS versus SCMS High Level Architecture

Under the VBSS concept, the Pseudonym Certificate Authority (PCA), Registration Authority (RA), Linkage Authorities (LAs) and Request Coordination, that are fundamental components in SCMS, are eliminated. VBSS establishes a Group Manager/ Group Managers (GM) to provide credentials that make it possible for each vehicle to act as a certificate authority—an entity that can generate short-term certificates.

Each vehicle is a member of a group and is assigned a unique membership secret, a signing key. All member signing keys for a particular group are associated with a single group certificate. A vehicle generates its own ephemeral pseudonym certificates by signing the public key from a self-generated key pair with its group signing key; vehicles act as subordinate Certificate Authorities and pseudonyms are generated on demand based on travel requirements. Pseudonym verifiers use the group certificate to authenticate the pseudonym certificate,

[231] ''Vehicle Based Safety Systems: A Feasibility Study: December 23, 2015, ORNL.

and then the pseudonym certificate to verify safety messages. The pseudonym generator remains anonymous, since the receiver uses a single group certificate to authenticate signatures made by all members from a particular group. Groups are managed by one or more infrastructure-based authorities. Members may be removed from groups by distributing information that allows participants to update their group credentials; this provides a means to revoke misbehaving vehicles since the pseudonyms they create will no longer be authenticated by vehicles that have updated their group credentials.

Use of pseudonyms (short-lived identifiers) and separation of distributed identifiers are the primary means of achieving an acceptable level of privacy. Within a VBSS, how groups are designed will also affect the preservation of individual privacy. As the number of distinct groups increases within a geographical area, privacy protection decreases; if every vehicle within a geographic area were in its own group (the extreme case); the group identifier becomes a unique vehicle identifier. This situation can be mitigated by ensuring group diversity is minimized regionally.

Misbehavior detection and reporting, and revocation are maintenance operations that are common to both SCMS and VBSS. There are misbehavior reporting alternatives discussed in SCMS security section of this proposal. In relation to misbehavior and revocation, VBSS may offer some advantages relative to managing communications associated with revoked vehicles. With SCMS, as the number of revoked vehicles grows—including those vehicles revoked because they are at the end of their useful life, the CRL list must also grow. NHTSA and its industry partners are investigating mechanisms for managing the size the CRL but nevertheless remains a challenge. With VBSS, instead of sending out CRLs to revoke vehicles, a Group Broadcast (GB) distributes group credential updates to participating vehicles; this occurs when a sufficient number of vehicle misbehavior reports have been validated resulting in one or more revocations; otherwise, group credentials do not change. With comparison to the SCMS using CRL list to remove compromised devices from the V2V communication system, the size of CRL will increase with the number of compromised devices, VBSS revocation mechanism's advantage is that the size of group credential updates will not increase with the number of compromised devices.

The Phase I study of VBSS and comparisons with other approaches suggests VBSS is feasible because group-based credentials provide a means to delegate infrastructure-based operations to vehicles in an effective way while facilitating the basic requirements of authentication, privacy, and maintenance of confidence. However, while Group-based signature schemes are an active area of research they are evolving and much less mature than other cryptographic systems. For this reason, VBSS remains in its preliminary stages.

NHTSA is continuing its research of the VBSS concept and is beginning a Phase II research Study in 2016. This work will focus on modeling a Group Manager and enhancing our understanding of the Group Manager software engineering requirements. NHTSA seeks comment on the viability of the VBSS certificate management approach including potential advantages and disadvantages relative to the SCMS approach. Specifically, we seek comment on the following:

—Could requirements to update an entire group's credentials (to enable revocation of selected vehicles) actually increase V2I communications during early deployment (versus distribution of a CRL)?

—Are there CRL distribution schemes that could limit, or otherwise manage, the growth of the CRL—particular as vehicles reach the end of their life and are place on the CRL?

—How will requirement to self-generate short-term certificates onboard the vehicle impact processing and memory requirements onboard the vehicle—as well as the need to provide high integrity hardware security modules to support such operations?

D. Multiple Root Authority Credential Management

U.S. DOT research, performed in partnership with European, Australian, and Japanese partners, has recognized that the world will evolve into a multi-root world and that crypto-agility will be a required capability as a response to increasing cybersecurity attacks.[232]

While these capabilities are not required at the initiation of a connected, cooperative environment, they are useful technical and policy constructs to incorporate as the threat profile shifts and as the operational environment grows.

There are three potential paths to consider, all with advantages and disadvantages (we further note that these paths are not exclusive and that as the technologies evolve, they may converge):

(1) There is the path of establishing a single chain to the Root Authority that allows for devices/equipment or operational entities to become enrolled and implicitly trusted by the system. In such a system:

a. The Root Authority requires a significant level of security to ensure that it is not comprised.

b. The root authority can authorize intermediate certificate authorities which can support a diversity of operational parameters. However, all intermediate certificate authorities under a single root authority must operate with the allowable policies of the root authority.

c. There is a requirement for a mechanism to manage root authorities which is capable of transitioning the fundamental cryptographic elements if the Root Authority is compromised. This mechanism must be similarly as highly secured as the root authority and has the ability to revoke the compromised root and add a new root in a controlled and efficient way for all participants in the security system.[233] While allowing for some diversity of operational usage within the policies of the root, there is a minimum of interfaces between the root and other nodes, consequently, the threat surface remains smaller.

d. The mechanism for managing the root, although requiring (and incurring costs for) a high level of security, allows for orderly migration of the security system to incorporate root replacements and cryptographic improvements (as long as the devices within the system are capable of adopting such new cryptographic processes), thus future-proofing the overall system to the extent possible within known parameters.

This is the path that the US is taking to establish initial operations to support emerging connected vehicle environments.

(2) There is the path of establishing multiple, co-existing roots in which each Root Authority must have an agreement with other root authorities that describe an appropriate level of trust. Based on the trust level, a host of interfaces have to be enacted for data transfer that assures one operational root that the other operational root remains trusted. See the report titled,

[232] This work and its outcomes are described at: *https://ec.europa.eu/digital-single-market/news/harmonized-security-policies-cooperative-intelligent-transport-systems-create-international.*

[233] See Root Elector System Design at *http://www.mycreativeregistry.net/IPCOM/000245336* (last accessed Dec 4, 2016).

''Cooperative-ITS Credential Management System Functional Analysis and Recommendations for Harmonization Document HTG6–4 Version: 2015–09'' [234] for greater details on the trust levels and how to enact the trust levels from both a policy perspective as well as a data flow perspective.

A benefit to this path is that with multiple operational roots, if one is compromised, another root could potentially take over operations (although this is highly dependent upon the trust levels—if the other operating root that has to take over does not trust the credentials of the compromised root (even if the credentials in use are still valid and not compromised), then all actors enrolled in the compromised root will have to cease operations of the cooperative applications until they can be proven to be trusted actors and enrolled in the uncompromised root authority).

Understanding the different trust levels is the key to understanding whether there are benefits to a multiple root world. A key conclusion to the analysis on how to enact different trust levels is that adding even one additional root to the system increases the number of interfaces among entities which exponentially increases the attack surface of the inter-related systems. This model also increases costs of running different organizations, increases the costs associated with data analysis, and increases the costs of auditing and updating policies. In addition, it seems that agreement of common security policies under the initialization of parallel operational roots, operated by different organizations with different priorities, is likely to be very difficult, adversely affecting the level of trust that may be established among various root authorities.

Furthermore the Government will have no authority to compel one Root Authority to interface with another Root Authority. This would adversely affect interoperability given the equipment under the different roots would not interact in crash avoidance situations reducing the effectiveness of V2V. For example a group of OEMs could be covered under one Root Authority were as a group of aftermarket suppliers could be covered under a different Root Authority. If the OEM group decides that the aftermarket devices do not meet the OEM level of performance then no agreement would be implemented and equipment in the OEM group would not interact with equipment in the aftermarket group. This could create market disparity and reduce consumer choice.

(3) There is one additional path that is very similar to path #2, but also incorporates the use of different types of security credentials (or security certificates). The use of the NIST elliptical curve SHA–256 offers a significant advantage over other types of credentials in that it includes the lowest amount of overhead for an appropriate level of trust and authentication among vehicle moving at very high speeds.

This version of the model would allow for different credentials (such as ''brainpool'' or other curves) to also be used in operations. This version of the model significantly increases the complexity of the system. While it offers greater crypto-flexibility, having the ability to recognize and use different credentials will require that ALL equipment/devices/applications will have to be able to recognize and trust messages created with either type of credential in order to ensure continued interoperability. This path may increase the cost and complexity of equipment on the vehicle and/or change the nature of the equipment, as the receivers will have to recognize the different cryptographic technologies and perform additional/different validity checks for the different cryptographic technologies. Also, this capability/path is not yet proven and would need to be demonstrated under a number of conditions to ensure that the transactions and timing can still meet the safety applications requirements for latency of the exchange and scalability of the dedicated spectrum available for low-latency communications, such as the V2V Basic Safety Message.

This is the path that is under consideration within the European Union at this time.

All of these paths are, in some sense, multi-root in that it is necessary to have at least a back-up root as part of an internal system. The analysis of the different paths highlights some of the key issues that will need to be addressed as the future evolves:

- Security credentials: At some point, we can expect that the security credentials based upon the current cryptographic level will be broken due to quantum computing and that new security approaches and/or new cryptographic curves will be needed. Research is needed into new curves to ensure that new security approaches do not significantly increase the communications overhead in order support the latency requirements for V2V communications.
- Governance/Certificate Policies: New root management and recovery solutions will need to be developed as the initial, smaller connected vehicle environments evolve into more complicated, region-wide, overlapping environments that may operate at different levels of security. This has been addressed in the first path through the innovative creation of Root Electors that provide the ability to revoke a compromise Root and establish a new Root without having to re-initialize devices.[235]

VI. What is the agency's legal authority to regulate V2V devices, and how is this proposal consistent with that authority?

A. What can NHTSA regulate under the Vehicle Safety Act?

NHTSA has broad statutory authority to regulate motor vehicles and items of motor vehicle equipment under the National Traffic and Motor Vehicle Safety Act (the ''Safety Act'').[236] As applied in this context, the agency's authority includes all or nearly all aspects of a V2V system. Congress enacted the Safety Act in 1966 with the purpose of reducing motor vehicle crashes and deaths and injuries that occur as a result of motor vehicle crashes and non-operational safety hazards attributable to motor vehicles.[237] The Safety Act, as amended, is now codified at 49 U.S.C. 30101 *et seq.*

The vehicle technologies that enable vehicles to send messages to and receive messages from each other are vastly different from those that existed when the Safety Act was enacted. Then, the vehicle operating systems were largely mechanical and controlled by the driver via mechanical inputs and linkages. Components and systems were either designed into the vehicle at the time of original manufacture or were later

[234] *http://ec.europa.eu/newsroom/dae/document.cfm?action=display&doc_id=11398.*

[235] See Root Elector System Design at *http://www.mycreativeregistry.net/IPCOM/000245336* (last accessed Dec. 4, 2016).

[236] For more discussion and analysis of NHTSA's authority to regulate advanced crash avoidance technologies, including V2V technologies, under the Safety Act, see the Potential Regulatory Challenges of Increasingly Autonomous Vehicles, 52 Santa Clara L. Rev. 1423 (Wood *et al.,* 2012) at *http://digitalcommons.law.scu.edu/lawreview/vol52/iss4/9/* (last accessed Dec. 6, 2016).

For example, the agency's authority to address the privacy and security of vehicle data associated with the operation of those technologies is discussed at length. Id., at pp. 1448, 1465–72. Addressing data security is necessary to safeguard the effectiveness of these technologies and promote their acceptance by vehicle users. Addressing privacy is similarly necessary to promote public acceptance. The views expressed in that article fairly encompass the agency's views of its regulatory authority.

[237] H.R. Rep. No. 89–1776, at 10 (1966).

attached to or physically carried into the vehicle. Sensing of a vehicle's performance and the roadway environment was done solely by the driver.

Today, in contrast, an increasing number of vehicle functions are electronic. These functions can be activated and controlled automatically and do not necessarily require driver involvement, unlike the mechanical functions of previous generations of vehicles. V2V technologies require no driver involvement in order to send and receive information that can be used for vehicle safety functions. Other ways in which V2V technologies differ from the mechanical technologies prevalent when the Safety Act was first enacted include the fact that how they operate can be substantially altered by post-manufacture software updates, and that advances in communications technology make it possible for nomadic devices with vehicle-related applications to be brought into the vehicle.

The language of the Safety Act, however, is broad enough to comfortably accommodate this evolution in vehicle technologies. NHTSA's statutory authority over motor vehicles and motor vehicle equipment would allow the agency to establish safety standards applicable both to vehicles that are originally manufactured with V2V communications devices, and to those devices added after original manufacture.

In the Safety Act, ''motor vehicle'' is defined as a ''vehicle driven or drawn by mechanical power and manufactured primarily for use'' on public roads.[238] The definition of ''motor vehicle equipment,'' as cited below, is broader and thus effectively establishes the limit of the agency's authority under the Safety Act:

(A) Any system, part, or component of a motor vehicle as originally manufactured;

(B) any similar part or component manufactured or sold for replacement or improvement of a system, part, or component, or as an accessory or addition to a motor vehicle; or

(C) any device or an article or apparel, including a motorcycle helmet and excluding medicine or eyeglasses prescribed by a licensed practitioner, that—

(i) is not a system, part, or component of a motor vehicle; and

(ii) is manufactured, sold, delivered, or offered to be sold for use on public streets, roads, and highways with the apparent purpose of safeguarding users of motor vehicles against risk of accident, injury, or death.[239]

NHTSA's authority over these groups of items—(1) systems, parts, and components installed or included in a vehicle, (2) replacements and improvements to those systems, parts, and components, (3) accessories and additions to motor vehicles, and (4) devices or articles with an apparent safety-related purpose—is very broad. The status of these items as motor vehicle equipment does not depend on the type of technology or its mode of control (mechanical or electronic), or whether an item is tangible or intangible. The transition from mechanical to electromechanical systems has thus had no effect on the extent of NHTSA's authority over motor vehicle performance. NHTSA has regulatory authority under the Safety Act over all the systems, parts, and components installed on new motor vehicles, even as motor vehicle control systems become increasingly electronic, and perhaps increasingly automated, in the future.

Put in the context of V2V-related motor vehicle equipment, NHTSA considers the following items subject to the agency's regulatory authority:

(1) Any integrated original equipment (OE) used for V2V communications or safety applications reliant on V2V communications.

(2) Any integrated aftermarket equipment used for V2V communications or safety applications reliant on V2V communications, under 30102(a)(7)(B), if the equipment ''improves'' an already-existing function of the vehicle or is an ''addition'' to the vehicle.

(3) Some non-integrated aftermarket equipment, depending on its nature and apparent purpose, under 30102(a)(7)(B), if the equipment is a motor vehicle ''accessory'' (something to be used while the vehicle is in operation, that enhances that operation), or 30102(a)(7)(C), if the equipment is a device used for the apparent purpose of traffic safety (purpose would be clearly observable from the characteristics of the object and the context of its use, rather than necessarily defined by the manufacturer's intent for the equipment).

(4) Software that provides or aids V2V functions, and software updates to all of this equipment, because, under 30102(a)(7)(B), updates can be considered as replacements or improvements.

(5) Potentially some roadside infrastructure (V2I), under 30102(a)(7)(B) and (C), because if its apparent purpose is safety, it may be an ''accessory'' or a ''device . . . manufactured . . . with the apparent purpose of safeguarding users of motor vehicles against accident, injury, or death.'' We currently anticipate that only a small subset of roadside infrastructure may fall within this category.

A number of commenters to the ANPRM and Readiness Report raised issues with the agency's discussion of the bounds of its authority. While most commenters agreed that the agency has clear authority to require V2V communications devices in new vehicles and to regulate aftermarket V2V devices,[240] the Alliance argued that it appeared that the agency sought to regulate ''the relationship between the vehicle manufacturers and their customers,'' [241] given that NHTSA had discussed the potential need for additional security certificates during a V2V communications device's lifetime, as well as the possibility of software updates as needed. The Alliance argued that the Safety Act did not authorize a ''lifetime maintenance mandate'' to cover the potential need to provide additional certificates or software updates.[242] Moreover, the Alliance argued, NHTSA could not require consumers to renew security certificates or accept downloaded certificates pushed directly to the vehicle, or to ensure that DSRC remained operable over the lifetime of the vehicle, and therefore a FMVSS would not be publicly accepted, and therefore inconsistent with the agency's authority

[238] 49 U.S.C. 30102(a)(6).

[239] Section 30102(a)(7)(C); MAP–21, Public Law 112–141, sec. 31201, 126 Stat. 405. Congress added subparagraph (C) to the statutory definition of ''motor vehicle equipment'' in 1970 when it amended the definition in order to clarify the Department's authority over additional objects such as motorcycle helmets. *See* S. Rep. No. 91–559, at 5 (1970). However, Congress did not seek to limit the extension of the Department's authority only to motorcycle helmets and instead utilized the broad terms ''device, article, and apparel'' to describe the universe of objects that are within the agency's authority. *See id.* Acknowledging the concerns of those who authored the House version of the amendatory language that utilizing the terms ''device, article, and apparel'' might unduly extend the Department's authority to objects that have only a tangential relation to motor vehicle safety, the conference committee added a use restriction. *See id.* Congress relaxed this use restriction in the statutory definition of ''motor vehicle equipment'' as part of the amendments to the Safety Act in MAP–21. *See* MAP–21, Public Law 112–141, sec. 31201, 126 Stat. 405. Thus, the Department's regulatory authority under subparagraph (C) is limited to those devices, articles, or apparel that are used for ''*the apparent purpose* of safeguarding users of motor vehicles against risk of accident, injury, or death.'' *See id.* (Emphasis added.)

[240] Alliance, at 13, 15.

[241] Alliance, at 7.

[242] Alliance, at 15.

under the Safety Act, because consumers might not be confident that DSRC would continue to work properly over the vehicle's lifetime.[243] The Alliance even suggested that it could violate the Computer Fraud and Abuse Act (18 U.S.C. 1030) to push new certificates to consumers without their consent.[244]

In response, NHTSA agrees that we have authority under the Safety Act to require V2V communications devices in new vehicles and mandate specific aspects of their performance, and to require similar performance from aftermarket V2V devices designed to participate in the V2V system, as long as those standards are consistent with Safety Act requirements.

We disagree, however, with the points raised by the Alliance regarding certificate and software updates. At this time, NHTSA is not requiring that certificate and software updates be pushed to vehicles without consumers' consent—we are simply requiring that manufacturers alert consumers, via a telltale or message center indicator, to the fact that V2V will not work if they are out of certificates or in need of some other kind of update, and that devices be capable of receiving such updates.[245] Consumers will need to know what action the telltale or message center indicator is telling them to take in order to continue to obtain the safety benefits of V2V, so vehicle or device manufacturers will need to ensure either that the message center indicator is clear about the needed action and the consequences of not taking that action, or that the explanation for the message or telltale is contained somewhere (like the owner's information) where the consumer can easily find it and understand what to do. Alternatively, vehicle manufacturers could obtain consumer consent for automatic certificate and software updates at the time of first sale, although that consent would not cover subsequent vehicle owners. Even if manufacturers make it necessary for consumers to consent to each new download, NHTSA expects that the need to do so would be sufficiently infrequent and well-explained by vehicle manufacturers in order to ensure that consumers recognize the significant safety risk of failing to accept the download. We assume that, at this point in time, nearly all consumers are already well-accustomed to the need for software updates on their electronic devices, like computers and smartphones, and regularly accept and initiate such updates. We seek comment from manufacturers on how they plan to develop succinct and compelling explanations to accompany these consent requests that would encourage consumers to accept the updates in a timely manner. We also seek additional comment regarding all aspects of consumer consent.

Alternatively, if manufacturers are concerned that consumers would not accept new certificate downloads and would thereby lose the safety benefits of V2V communications, manufacturers could install V2V devices that are pre-loaded with all the certificates that the device would need over its lifetime. This approach would presumably necessitate more storage capacity on the V2V device (and thus more cost), and could also present a potentially bigger security risk if the device were somehow compromised. We seek comment on whether requiring devices to come pre-loaded with a lifetime's worth of certificates could be a better approach than requiring consumers to consent to (and obtain) new downloads, and if so, why.

Besides certificates, however, we expect that software associated with both the V2V communications device itself, and with any accompanying applications that rely on V2V communications for information, would likely need updating during the vehicle's lifetime. As explained above, as for certificate updates, we are proposing to require that manufacturers include a means to communicate to the driver if and when a software update is needed. If the driver then chooses not to accept the update, the system must continue to warn them that V2V functionality is not available. If manufacturers choose not to update software when issues with it are discovered, and safety problems result, NHTSA may choose to pursue those problems under its enforcement authority.

Some commenters disagreed with the agency's statements in the Readiness Report that our Safety Act authority extended to cover RSE.[246] The Alliance argued that RSE only indirectly served a safety purpose, because they would perform non-safety functions as well, and therefore could not be motor vehicle equipment. CTIA and others presented a similar argument regarding the agency's authority to regulate mobile devices and applications for mobile devices, as it has elsewhere.[247]

With regard to the agency's authority under the Safety Act over RSE, although we are not proposing in this NPRM to regulate any RSEs, we disagree that a device that performs non-safety functions in addition to safety functions is necessarily not motor vehicle equipment. Tires, for example, perform the non-safety function of helping a vehicle travel down the road by creating friction between the wheel and the road, but that friction also plays a safety role by helping the vehicle stop rapidly when the driver hits the brakes. Brakes and steering wheels, for that matter, help drivers execute turns which may be necessary to reach their intended destination, but they also help drivers avoid crashing their vehicles. Many items of motor vehicle equipment that NHTSA regulates perform safety functions in addition to being generally necessary for the driving task. NHTSA can regulate those items insofar as they affect vehicle safety. By providing a link between the SCMS and the vehicle, and potentially being the mechanism by which the vehicle's V2V communications device is able to obtain new security certificates and information about which other vehicles to trust and not to trust, the RSE may play a vital role in creating the environment needed for safety. A BSM cannot be sent without a certificate, and a V2V communications device must not trust an untrustworthy partner vehicle, or safety applications may not function properly.

That said, NHTSA does not currently anticipate the need to specify requirements for the RSE that may participate in the overall V2V system. We note that FHWA has already issued specifications for roadside units that are publicly available,[248] and at this point, we would expect the ones participating in the overall V2V system and interacting with V2V-equipped vehicles to conform to these specifications, or to updated specifications if and when they exist. We seek comment on whether additional regulation of RSE/RSU by NHTSA might be important to ensure that, among other things, they do not collect information that could be unnecessarily harmful to privacy; pose no cybersecurity threat to the overall V2V system; or perform (or risk failing to perform) any other task that could be harmful to vehicles or the V2V system

[243] *Id,* and at 15, 47–48.

[244] Alliance, at 15.

[245] See Section III.E.13, above.

[246] Alliance, at 7, 16.

[247] CTIA in general; TIA at 6; CEA at 2–9; Wi-Fi Alliance at 7.

[248] U.S. DOT Federal Highway Administration, ''DSRC Roadside Unit (RSU) Specifications Document, Version 4.0, April 15, 2014.'' *Available at http://docplayer.net/11087167-Dsrc-roadside-unit-rsu-specifications-document.html* (last accessed Dec. 6, 2016).

or in any way negatively impact safety benefits associated with V2V.

Thus, the agency believes that our existing Safety Act authority comfortably allows us to require V2V communications devices in new motor vehicles and aftermarket equipment. The following section examines what the Safety Act requires NHTSA to consider in developing an FMVSS, and how the proposal in this NPRM may meet those requirements.

B. What does the Vehicle Safety Act allow and require of NHTSA in issuing a new FMVSS, and how is the proposal consistent with those requirements?

Under the Safety Act, NHTSA's motor vehicle safety standards are generally performance-oriented.[249] Further, the standards are required to be practicable and objective, and to meet the need for safety.[250] The following paragraphs will discuss briefly the meaning of each of these requirements, and then explore how the agency believes that the proposal may meet those requirements.

1. ''Performance-Oriented''

In the Safety Act, the Secretary is directed to issue motor vehicle safety standards. ''Motor vehicle safety standards'' are defined as ''minimum standard[s] for motor vehicle or motor vehicle equipment *performance*.'' [251] One point to note at the outset is the party of whom performance is required: NHTSA's safety standards apply to manufacturers of new motor vehicles and motor vehicle equipment. It therefore falls to those ''manufacturers''—from vehicle OEMs to OE suppliers to aftermarket device manufacturers to creators of V2V safety applications—to certify compliance with any safety standards established by NHTSA, and to conduct recalls and remedy defects if NHTSA finds them.[252] Vehicle owners are not required to comply with NHTSA's safety standards, which means that for vehicles already on the roads, participation in the V2V system would be entirely voluntary: NHTSA can regulate how aftermarket devices function, but it cannot require manufacturers or drivers to add them to used vehicles. The one exception to this rule against retrofit is that NHTSA has authority to require retrofit of commercial heavy-duty vehicles,[253] but that is not part of this proposal on light-duty vehicles.

While NHTSA is directed to establish performance standards, the case law and the legislative history indicate that when necessary to promote safety, NHTSA can be quite specific in drafting its performance standards and may require or preclude the installation of certain equipment. The cases have reinforced this concept by determining that NHTSA is ''generally charged'' [254] with setting performance standards, instead of becoming directly involved in questions of design.[255] The legislative history further illustrates that NHTSA's standards are to ''[specify] the required minimum safe performance of vehicles but not the manner in which the manufacturer is to achieve the specified performance.'' [256] An example cited in the legislative history points to ''a building code which specifies the minimum load-carrying characteristics of the structural members of a building wall, but leaves the builder free to choose his own materials and design.'' [257] In that example, the agency could require the wall to be built (analogous to requiring certain equipment in vehicles) but would be expected to measure the wall's regulatory compliance by its performance rather than its design.

Although the Safety Act directs NHTSA to issue performance standards, however, Congress understood that the agency may preclude certain designs through these performance standards. ''Motor vehicle safety'' is defined in the Safety Act as the performance of a motor vehicle in a way that protects the public from unreasonable risks of accident due to (among other things) the design of a motor vehicle.[258] The legislative history indicates that this language is not intended to afford the agency the authority to promulgate design standards, ''but merely to clarify that the public is to be protected from inherently dangerous designs which conflict with the concept of motor vehicle safety.'' [259] This clarification is evidence that Congress recognized that performance standards inevitably have an impact on the design of a motor vehicle.[260]

The courts have further elaborated on the framework established by Congress and have recognized that, when necessary to achieve a safety purpose, NHTSA can be quite specific in establishing performance standards even if certain designs will be precluded. For example, the Sixth Circuit found that an agency provision permitting rectangular headlamps, but only if they were of certain specified dimensions, was not an invalid design restriction and ''serve[d] to ensure proper headlamp performance,'' reasoning that ''the overall safety and reliability of a headlamp system depends to a certain extent upon the wide availability of replacement lamps, which in turn depends upon standardization.'' [261] Thus, the court found it permissible for the agency to establish very specific requirements for headlamps even though it would restrict design flexibility.[262]

Further, the cases indicate that NHTSA can establish standards to require the installation of certain specific equipment on vehicles and establish performance standards for that equipment. For example, the Tenth Circuit found in *Washington* v. *DOT* that ''NHTSA's regulatory authority extends beyond the performance of motor vehicles *per se,* to particular items of equipment.'' [263] In that case, the validity of NHTSA's FMVSS No. 121 requiring ABS systems on air-braked vehicles was challenged as ''imposing design specifications rather than

[249] 49 U.S.C. 30102(a)(8) (defining ''motor vehicle safety'' as ''the performance of a motor vehicle . . . in a way that protects the public against unreasonable risk of accidents occurring because of the design, construction, or performance of a motor vehicle''); *and* sec. 30102(a)(9) (defining ''motor vehicle safety standard'' as ''a minimum standard for motor vehicle or motor vehicle equipment performance''). See also: S. Rep. No. 89–1301, at 2713–14 (1966) (stating that motor vehicle standards issued by NHTSA should specify a minimum level of safety performance).

[250] 49 U.S.C. 30111(a) (establishing requirements for NHTSA to follow when issuing motor vehicle safety standards).

[251] *Id.*; See also: Sec. 30102(a)(9) (emphasis added).

[252] 49 U.S.C. 30115(a), ''Certification of compliance; In general''; sec. 30116, ''Defects and noncompliance found before sale to purchaser''; sec. 30117(a), ''Providing information to, and maintaining records on, purchasers; Providing information and notice''; sec. 30118, ''Notification of defects and noncompliance''; sec. 30119, ''Notification procedures''; sec. 30120, ''Remedies for defects and noncompliance.''

[253] Per 49 CFR 1.95, which delegates to NHTSA the Secretary's authority under Sec. 101(f) of the Motor Carrier Safety Improvement Act of 1999 (Pub. L. 106–159; Dec. 9, 1999) to promulgate safety standards for ''commercial motor vehicles and equipment subsequent to initial manufacture.'' NHTSA's retrofit authority is coextensive with FMCSA's.

[254] *Washington* v. *Dept. of Transp.,* 84 F.3d 1222, 1224 (10th Cir. 1996) (citations omitted).

[255] *Id.* at 1224 (citations omitted).

[256] S. Rep. No. 89–1301, at 2713–14 (1966).

[257] *Id.*

[258] Sec. 30102(a)(9).

[259] H.R. Rep. No. 89–1919, at 2732 (1966).

[260] Courts have also recognized this fact. See *Chrysler Corp.* v. *Dept. of Transp.,* 515 F.2d 1053, 1058–59 (6th Cir. 1975); see also: *Washington,* 84 F.3d at 1224 (stating ''the performance-design distinction is much easier to state in the abstract than to apply definitively-so. . . . This is particularly true when, due to contingent relationships between performance requirements and design options, specification of the former effectively entails, or severely constrains, the latter.'').

[261] *Chrysler Corp.,* 515 F.2d at 1058–59.

[262] *Id.*

[263] *Washington,* 84 F.3d at 1222, 1225 (citations omitted).

performance criteria.'' [264] The court's conclusion was based not only on the fact that prior courts had upheld NHTSA's standards requiring particular equipment,[265] but also on the fact that Congress had recognized NHTSA's former rulemakings and left NHTSA's authority unchanged when it codified the Safety Act in 1994.

Thus, in summary, NHTSA is required to issue performance standards when regulating motor vehicles and motor vehicle equipment. However, NHTSA is able to be quite specific in establishing performance standards and may preclude certain designs that are contrary to the interests of safety. Further, NHTSA may require the installation of certain equipment and establish performance standards for that equipment.

As Section III.E discusses at length and as the regulatory text at the end of this preamble discusses at length, NHTSA has developed a set of proposed performance requirements for DSRC performance. These sections explain: (1) What information needs to be sent to the surrounding vehicles; (2) how the vehicle needs to send that information; (3) how a vehicle shows that it is a valid source of information; and (4) how a vehicle makes sure the prior three functions work in various operational conditions (*i.e.,* broadcast under congested conditions, detect/report misbehavior, and obtain new security materials). The proposal draws from existing voluntary standards while also explaining why a particular threshold or requirements from a voluntary standard is appropriate. The proposal contains a mandatory Privacy Statement, set forth in Appendix A. Finally, the proposal includes a test method for evaluating many of these aspects of performance. Having a clear test method helps inform the public as to how the agency would evaluate compliance with any final FMVSS. While research is ongoing in a few areas (namely message congestion mitigation, explicit details for misbehavior detection, SCMS policies and procedures), we have described for the public the potential requirements that we are considering for an NPRM and the potential test methods for evaluating compliance with those requirements. We believe that the public comments that we will receive in response (coupled with the agency's ongoing research) will produce a robust record upon which the agency can make a final decision.

The provisions allowing alternative technologies to satisfy the mandate are performance-oriented, but do not specify a particular way of communicating. The goal of this is to maximize industry's ability to innovate and potentially employ future communication technologies that may be able to meet the performance requirements (like, for example, latency) for V2V-based safety warning applications. While alternative technologies would be subject to several aspects of the test procedures set forth for DSRC-based devices, it leaves open for industry to develop a number of aspects of performance, including interoperability with all other V2V communications technologies that transmit BSMs. We believe that the inclusion of some performance tests makes these provisions consistent with the Safety Act requirement of standards being ''performance-oriented.'' We seek comment on this tentative conclusion.

2. Standards ''Meeting the Need for Motor Vehicle Safety''

As required by the Safety Act, standards issued by the agency must ''meet the need for motor vehicle safety.'' [266] As ''motor vehicle safety'' is defined in the statute as protecting the public against ''unreasonable risk'' of accidents, death, or injury,[267] the case law indicates that there must be a nexus between the safety problem and the standard.[268]

However, a standard need not address safety by direct means. In upholding NHTSA's authority to issue a safety standard requiring standardized vehicle identification numbers, the Fourth Circuit Court of Appeals found that an FMVSS requiring VINs met the need for motor vehicle safety by such indirect means as reducing errors in compiling statistical data on motor vehicle crashes (in order to aid research to understand current safety problems and support future standards, to increase the efficiency of vehicle recall campaigns, and to assist in tracing stolen vehicles).[269]

We believe that there is a clear nexus between the safety problem and the proposals in this document. In the case of DSRC-based devices, DSRC can enable all of the safety applications under consideration by the agency, such as Intersection Movement Assist, Left Turn Assist, and Electronic Emergency Brake Light, which means that DSRC can help to address the safety problems of, *e.g.,* intersection collisions, collisions with forward stopped or slowing vehicles, collisions that occur because a driver chose to pass a forward vehicle without enough room to do so safely, etc. For some of the other safety applications, which can also be enabled by other technologies besides DSRC, such as on-board sensors, radar, or cameras, DSRC can add robustness to an on-board system. DSRC will either be the sole enabler of some safety applications or present a possible enhancement to on-board systems with regard to other applications. In either case, DSRC will address safety needs.

Moreover, case law supports that DSRC need not directly create more safety itself, as long as it is enabling other safety applications. If VINs could be upheld as meeting the need for motor vehicle safety simply by virtue of the fact that they aid research in understanding safety problems and supporting future standards, as well as aiding recall campaigns and tracking of stolen vehicles, then DSRC, which would directly enable half a dozen safety applications at its inception and perhaps many more eventually, seems even more clearly to meet the need for safety in that respect.

Non-DSRC devices should have a similar nexus to the safety problem.

3. ''Objective'' Standards

A standard is objective if it specifies test procedures that are ''capable of producing identical results when test conditions are exactly duplicated'' and performance requirements whose satisfaction is ''based upon the readings obtained from measuring instruments as opposed to subjective opinions.'' [270] The requirement that standards be stated in

[264] *Id.* at 1223.

[265] *Id.* at 1225 (citing *Chrysler Corp.* v. *Rhodes,* 416 F.2d 319, 322, 322 n. 4) (1st Cir. 1969) (''motor vehicles are required to have specific items of equipment . . . These enumerated items of equipment are subject to specific performance standards,'' including lamps and reflective devices requiring ''specific items of equipment'')); *Wood* v. *Gen. Motors Corp.,* 865 F.2d 395, 417 (1st Cir. 1988) (''requiring seat belts or passive restraints . . . has elements of a design standard''); *Automotive Parts & Accessories Ass'n* v. *Boyd,* 407 F.2d 330, 332 (D.C. Cir. 1968) (''factor equipped . . . head restraints which meet specific Federal standards'').

[266] 49 U.S.C. 30111(a).

[267] 49 U.S.C. 30102(a)(8).

[268] *See, e.g., Nat'l Tire Dealers Ass'n* v. *Brinegar,* 491 F.2d 31, 35–37 (D.C. Cir. 1974) (stating that the administrative record did not support a significant nexus between motor vehicle safety and requiring retread tires to have permanent labels because there was no showing that a second-hand owner would be dependent on these labels and no showing as to how often such situations would arise); *see also H&H Tire Co.* v. *Dept. of Transp.,* 471 F.2d 350, 354–55 (7th Cir. 1972) (expressing doubt that the standard met the need for safety because there was little evidence that the required compliance tests would ensure that retreaded tires would be capable of performing safely under modern driving conditions).

[269] *Vehicle Equip. Safety Comm'n* v. *NHTSA,* 611 F.2d 53, 54 (4th Cir. 1979).

[270] *Chrysler Corp.* v. *Dept. of Transp.,* 472 F.2d 659, 676 (6th Cir. 1972); see also *Paccar, Inc.,* v. *Nat'l Highway Traffic Safety Admin.,* 573 F.2d 632, 644 (9th Cir. 1978).

objective terms matches the overall statutory scheme requiring that manufacturers self-certify that their motor vehicles or motor vehicle equipment comply with the relevant FMVSSs.[271] In order for this statutory scheme to work, the agency and the manufacturer must be able to obtain the same result from identical tests in order to objectively determine the validity of the manufacturer's certification.[272]

Using those two elements of objectivity (capable of producing identical results and compliance based on measurements rather than subjective opinion), the Sixth Circuit Court of Appeals found that the test procedure in question in an early version of FMVSS No. 208 was not objective because the test dummy specified in the standard for use in compliance testing did not give consistent and repeatable results.[273] The court in this case was unconvinced that the standard met the objectivity requirements even though NHTSA based its test procedure on a test dummy in a voluntary automotive industry standard (Society of Automotive Engineers Recommended Practice J963). The court rejected NHTSA's explanation that, although J963 ''may not provide totally reproducible results,'' ''dummies conforming to the SAE specifications are the most complete and satisfactory ones presently available.'' [274] Further, the court rejected NHTSA's reasoning that, in the event that the agency's test results were different from those of the manufacturers because of the difference in the test dummies, NHTSA's test results would not be used to find non-compliance, stating that ''there is no room for an [ ] agency investigation [ ] in this procedure'' that enable the agency to compare results of differing tests.[275]

Other courts have also reached similar conclusions. The Ninth Circuit Court of Appeals, relying on the same reasoning adopted by the Sixth Circuit, found that a compliance road test specifying the use of surfaces specifically rated with quantifiable numbers (defining the ''slickness'' of the surfaces) was objective despite ''[t]he fact that it is difficult to create and thereafter maintain a road surface with a particular coefficient of friction,'' which the court held ''does not render the specified coefficient any less objective.'' [276] In this case, both NHTSA and the manufacturer would perform road tests on surfaces with identically rated friction coefficients.[277] In a later case, the Sixth Circuit upheld NHTSA's decision not to incorporate a test suggested by a commenter for wheelchair crashworthiness performed with a ''test seat'' that ''shall be capable of resisting significant deformation'' during a test as not sufficiently objective.[278] In the absence of language quantifying how much deformation is significant, terms such as ''significant deformation'' do not provide enough specificity to remove the subjective element from the compliance determination process.

As discussed above, under the proposal, we have developed and are proposing performance requirements, including compliance test procedures, for DSRC. We will continue evaluating the compliance test procedures further and receiving public input during the comment period that can assist us in fine-tuning the procedures and ensuring that they meet our statutory requirements. For alternative technologies, given that the testing to this point that led to the development of the test procedures for interoperability did not evaluate the use of non-DSRC communication technologies, we seek comment on how the regulatory text alternative technologies can achieve interoperability in an objective manner.

4. ''Practicable'' Standards

In general, the practicability of a given standard involves a number of considerations. The majority of issues concerning the practicability of a standard arise out of whether the standard is technologically and economically feasible. An additional issue is whether the means used to comply with a standard will be accepted and correctly used by the public.

First, significant technical uncertainties in meeting a standard might lead a court to find that a standard is not practicable. For example, the Sixth Circuit Court of Appeals upheld NHTSA's decision to amend FMVSS No. 222 to include requirements for wheelchair securement and occupant restraint on school buses with a static [279] compliance test instead of a dynamic test,[280] noting that the administrative record showed that this particular dynamic test was underdeveloped and had many unresolved technical problems.[281] The court noted that it is not practicable ''[t]o attempt to fashion rules in an area in which many technical problems have been identified and no consensus exists for their resolution . . . .'' [282] In another example, the Ninth Circuit Court of Appeals found a compliance test procedure using a specified friction (slickness) coefficient to be impracticable due to technical difficulties in maintaining the specific slickness test condition. As mentioned

[271] 49 U.S.C. 30115(a).

[272] *Chrysler Corp.,* 472 F.2d at 675.

[273] As the court stated,

The record supports the conclusions that the test procedures and the test device specified . . . are not objective in at least the following respects: (1) The absence of an adequate flexibility criteria for the dummy's neck; the existing specifications permit the neck to be very stiff, or very flexible, or somewhere in between, significantly affecting the resultant forces measured on the dummy's head. (2) Permissible variations in the test procedure for determining thorax dynamic spring rate (force deflection characteristics on the dummy's chest) permit considerable latitude in chest construction which could produce wide variations in maximum chest deceleration between two different dummies, each of which meets the literal requirements of SAE J963. (3) The absence of specific, objective specifications for construction of the dummy's head permits significant variation in forces imparted to the accelerometer by which performance is to be measured.

Id. at 676–78.

[274] *Id.* at 677.

[275] *Id.* at 677–79.

[276] *Paccar, Inc.* v. *Nat'l Highway Traffic Safety Admin.,* 573 F.2d 632, 644 (9th Cir. 1978), *cert. denied,* 439 U.S. 862 (1978).

[277] *Id.* (stating that the ''skid number method of testing braking capacity meets the [objectivity] definition. Identical results will ensue when test conditions are exactly duplicated. The procedure is rational and decisively demonstrable. Compliance is based on objective measures of stopping distances rather than on the subjective opinions of human beings.'').

[278] *Simms* v. *Nat'l Highway Traffic Safety Admin.,* 45 F.3d 999, 1007–08 (6th Cir. 1995).

[279] Static testing tests the strength of individual components of the wheelchair separately, while dynamic testing subjects the entire wheelchair to simulated real-world crash conditions. See *Simms,* 45 F.3d at 1001.

[280] *Id.* at 1006–08. Petitioners argued that NHTSA had acted unlawfully in promulgating standards for the securement of wheelchairs on school buses based only on ''static'' instead of ''dynamic'' testing. *Id.* Static testing tests the strength of the individual components of a securement device. *Id.* Dynamic testing is a full systems approach that measures the forces experienced by a human surrogate (test dummy) in a simulated crash that replicates real-world conditions and assesses the combined performance of the vehicle and the securement device. *Id.*

[281] *Id.* at 1005–07. NHTSA agreed that dynamic testing is the preferred approach (because it more fully and accurately represents the real-world conditions in which the desired safety performance is to be provided), but explained that it was not practicable at that time to adopt dynamic testing because there was:

(1) [N]eed to develop an appropriate test dummy; (2) need to identify human tolerance levels for a handicapped child; (3) need to establish test conditions; (4) need to select a ''standard'' or surrogate wheelchair; (5) need to establish procedures for placing the wheelchair and test dummy in an effective test condition; and (6) need to develop an appropriate test buck to represent a portion of the school bus body for securement and anchorages.

Id. at 1005.

[282] *Id.* at 1010–11.

above, the Ninth Circuit found the specified coefficient test condition to be objective.[283] However, simply being objective did not also make the test condition practicable. Thus, the cases show that when significant technical uncertainties and difficulties exist in a standard promulgated by NHTSA, those portions of the standard can be considered impracticable under the Safety Act.

However, the requirement that a standard be technologically feasible does not include the additional requirement that the agency show that the technology to be used to comply with the standard is already fully developed and tested at the time that the standard is promulgated. The Sixth Circuit upheld a NHTSA standard requiring ''Complete Passive Protection,'' that required the installation of airbags as standard equipment by a future date, rejecting petitioner's contention that NHTSA may only establish performance requirements which can be met with devices which, at the time of the rulemaking, are developed to the point that they may be readily installed.[284] Relying on the legislative history of the Safety Act, the court found that the agency ''is empowered to issue safety standards which require improvements in existing technology or which require the development of new technology, and is not limited to issuing standards based fully on devices already developed.'' [285] Thus, the requirement that standards be technologically feasible is sufficiently broad that it can be satisfied by showing that new technology can be developed in time to comply with the effective date of the standard.[286]

Second, a standard can be considered impracticable by the courts due to economic infeasibility. This consideration primarily involves the costs imposed by a standard.[287] In the instances in which a court has been called upon to assess whether a standard is economically feasible, typically with respect to an industry composed largely of relatively small businesses, the courts have asked whether or not the cost would be so prohibitive that it could cause significant harm to a well-established industry. In essence, this consideration generally establishes a non-quantified outer limit of the costs that can be reasonably imposed on regulated entities. If compliance with the standard is so burdensome, *i.e.,* costly, so as to create a significant harm to a well-established industry, courts have generally found that the standard is impracticable in its application to that industry.

Finally, a standard might not be considered practicable if the public were not expected to accept and correctly use the technologies installed in compliance with the standard. When considering passive restraints such as automatic seatbelts, the D.C. Circuit stated that ''the agency cannot fulfill its statutory responsibility [in regard to practicability] unless it considers popular reaction.'' [288] While the agency argued in that case that public acceptance is not one of the statutory criteria that the agency must apply, the court disagreed. The court reasoned that ''without public cooperation there can be no assurance that a safety system can 'meet the need for motor vehicle safety.' '' [289] Thus, as a part of the agency's considerations, a standard issued by the agency will not be considered practicable if the technologies installed pursuant to the standard are so unpopular that there is no assurance of sufficient public cooperation to meet the safety need that the standard seeks to address.[290]

We believe that the proposal is consistent with these requirements. Technologically, DSRC has existed for over a decade, and is currently being used in Japan to support V2I applications and electronic toll collection. The performance requirements and test procedures being proposed to help ensure interoperability should also ensure the technological practicability of the proposal. In terms of economic practicability, NHTSA currently assumes that the cost of a DSRC standard would include costs for device hardware and software, as well as costs for the security and communications system that would be necessary in order for DSRC to function properly. As discussed in Section VII below, we estimate the likely total cost for a V2V system to the consumer (vehicle equipment costs, fuel economy impact, SCMS costs, and communication costs) at approximately $350 per new vehicle in 2020. Economic practicability requires that compliance with the standard should not be so burdensome as to create a significant harm to a well-established industry. It does not seem likely that a court would find the standards economically impracticable either for the auto industry, or for any small business interests potentially implicated, since those would more likely be in the context of aftermarket devices (phone apps and so forth), which are entirely voluntary and do not represent a mandate.

For the question of public acceptance, the main concerns with regard to the proposal likely relate to security and privacy. To address such concerns, the requirements in the proposal include tests to ensure tamper-resistance of the DSRC unit; security requirements for the messages themselves; express requirements that certain identifying information *not* be included in the BSMs, and so forth. We are also proposing that manufacturers alert drivers when software upgrades and patches and certificate updates are needed, and we are hopeful that such updates would be as seamless as possible.

[283] *Paccar, Inc.* v. *Nat'l Highway Traffic Safety Admin.,* 573 F.2d 632, 644 (9th Cir. 1978).

[284] See *Chrysler Corp.* v. *Dept. of Transp.,* 472 F.2d at 671–75. Stages one and two required vehicle manufacturers to provide ''Complete Passive Protection'' or one of two other options on vehicles manufactured between January 1, 1972 and August 14, 1973 (for stage one) and after August 15, 1973 (stage two). *See id.* at 666–67. Stage three, requiring solely ''Complete Passive Protection,'' was required by August 15, 1975. *Id.* at 667.

[285] *Id.* at 673. In making its decision, the court stated

[I]t is clear from the Act and its legislative history that the Agency may issue standards requiring future levels of motor vehicle performance which manufacturers could not meet unless they diverted more of the ir resources to producing additional safety technology than they might otherwise do. This distinction is one committed to the Agency's discretion, and any hardships which might result from the adoption of a standard requiring . . . a great degree of developmental research, can be ameliorated by the Agency under . . . The section [that] allows the Secretary to extend the effective date beyond the usual statutory maximum of one year from the date of issuance, as he has done [here].

Id. at 673.

[286] A corollary of the agency's authority to issue technology-driving standards is that the agency can rely on data other than real-world crash data in justifying those standards. Technology that is not yet either fully developed or being installed on production vehicles cannot generate real-world performance data. Thus, in justifying the issuance of technology-driving standards, it is permissible, even necessary, for the agency to rely on analyses using experimental test data or other types of non-real world performance information in determining whether such standards ''meet the need for vehicle safety.''

[287] *E.g., Nat'l Truck Equip. Ass'n* v. *Nat'l Highway Traffic Safety Admin.,* 919 F.2d 1148, 1153–54 (6th Cir. 1990); *Ctr. for Auto Safety* v. *Peck,* 751 F.2d 1336, 1343 (D.C. Cir. 1985) (panel opinion by Circuit Judge Scalia).

[288] *Pac. Legal Found.* v. *Dept. of Transp.,* 593 F.2d 1338, 1345–46 (D.C. Cir.), *cert. denied,* 444 U.S. 830 (1979).

[289] *Id.*

[290] Pursuant to concerns about public acceptance of various seat belt designs, NHTSA issued a final rule in 1981 adding seat belt comfort and convenience requirements to Standard No. 208, Occupant Crash Protection. Federal Motor Vehicle Safety Standards; Improvement of Seat Belt Assemblies, 46 FR 2064 (Jan. 8, 1981) (codified at 49 CFR part 571).

With respect to comments on the agency's authority received to the ANPRM and Readiness Report, commenters tended to support generally the agency's authority to establish an FMVSS for V2V communications, while some commenters offered their own interpretations of what would be necessary for a standard to be consistent with the Safety Act. The Alliance, for example, argued that a proposal to mandate DSRC in new vehicles and set standards for DSRC aftermarket devices would not meet the Safety Act criteria if (1) NHTSA could not prove that the standard would improve safety as compared with not adopting a new FMVSS; (2) NHTSA did not present how a security system would be ''established, funded, governed and operated'': and (3) FCC opened the 5.9 GHz spectrum to unlicensed wireless devices and the operation of those devices resulted in harmful interference to V2X communications.[291] Additionally, the Alliance underscored the importance of addressing public perception issues in order to ensure that consumers are willing to accept DSRC technology, because otherwise a mandate would not be practicable and the market failure would not be cured.[292] The Alliance suggested that the agency consider working with other federal agencies with more direct experience in addressing health and privacy concerns to address potential public acceptance issues.[293] Global Automakers agreed that it was important to a DSRC mandate that NHTSA work carefully with other Federal agencies (*i.e.,* FCC and NTIA) to ensure that DSRC communications can be effective and interoperable without harmful interference.[294] Toyota stated that a necessary pre-condition for a DSRC mandate was a limited deployment of a production-ready, DSRC-equipped fleet to confirm product design.[295] TIA commented that any FMVSS for V2V communications should be entirely technology agnostic and focus on performance requirements (data latency, size, interoperability) that could be met by any technology, not only DSRC, and allow technologies to evolve over time.[296]

As discussed above, NHTSA continues to believe that the proposal is consistent with the Safety Act. As Section III.E discusses at length and as the proposed regulatory text for the proposal at the end of this preamble discuss at length, NHTSA has developed proposed requirements for DSRC performance. These sections explain: (1) What information needs to be sent to the surrounding vehicles; (2) how the vehicle needs to send that information; (3) how a vehicle shows that it is a valid source of information; and (4) how a vehicle makes sure the prior three functions work in various operational conditions (*i.e.,* broadcast under congested conditions, detect/report misbehavior, and obtain new security materials). The proposal draws from existing voluntary standards while also explaining why a particular threshold or requirements from a voluntary standard is appropriate. Finally, the proposal includes a test method for evaluating many of these aspects of performance. Having a clear test method helps inform the public as to how the agency would evaluate compliance with any final FMVSS based on the proposal. While research is ongoing in a few areas (namely message congestion mitigation, explicit details for misbehavior detection, SCMS policies and procedures), we have described for the public the potential requirements in the proposal and the potential test methods for evaluating compliance with those requirements. We believe that the public comments that we will receive in response (coupled with the agency's ongoing research) will produce a robust record upon which the agency can make a final decision.

We do not agree with commenters that the proposed standard must be perfectly neutral regarding technology, nor that all possible issues associated with ensuring the long-term success of V2V must be resolved prior to issuing a proposal. As explained above, case law supports the principle that an FMVSS may restrict design flexibility if certain designs would be contrary to the interests of safety. Additionally, we do not believe that waiting to issue a proposal until, for example, DSRC is more thoroughly tested in the fleet, or an SCMS is fully funded and operational, or every potential consumer concern is resolved, would be in the best interest of safety. S9 of the regulatory text, however, is directly responsive to the TIA comment requesting that the agency consider a technology agnostic approach. As covered in the discussion concerning why we are proposing to require V2V communications, for a technology like V2V, where a critical mass of equipped vehicles is needed to create the environment for safety benefits to be possible, the agency does not believe that sufficient quantities of V2V-equipped vehicles will be introduced in the market absent a mandate. By proposing this FMVSS, we aim to create an information environment which, we believe, will then enable the market to bring forth the safety, mobility, and environmental benefits that we anticipate V2V can provide. We intend to continue working closely with other Federal agencies and industry stakeholders on spectrum issues, with industry stakeholders and consumer groups and others on consumer-related concerns, and with all relevant parties on developing an SCMS to support a V2V network. We will also continue our research to improve and refine potential performance requirements and test procedures, as discussed above. Again, public comment on the proposal will facilitate our careful consideration of these issues, and we look forward to hearing from commenters on how to resolve them to best serve the interests of safety.

C. How are the regulatory alternatives consistent with our Safety Act authority?

Besides the proposal, the agency is considering two regulatory alternatives—the first, a ''mandate V2V communications and safety applications'' alternative, under which the agency also requires new vehicles to have IMA and LTA capabilities; and the second, an ''if-equipped'' alternative, that would set baseline requirements for V2V communications, but not require new vehicles to have this technology on any specific schedule. Under both the ''mandate V2V communications'' proposal and the ''and safety applications'' alternative, the phase-in rate for V2V communications for new vehicles would be 50 percent in the first required year, 75 percent in the second year, and 100 percent in the third year and beyond. We have evaluated the ''and safety applications'' alternative in terms of two different phase-in scenarios—in the first scenario, safety applications would be required for new vehicles at a phase-in rate of 0 percent—50 percent—75 percent—100 percent over four years; while in the second scenario, safety applications would be required for all new vehicles in the first year that V2V communications are required. The ''if-equipped'' alternative, on the other hand, faces much greater uncertainty regarding the technology adoption. Based on the estimated costs of V2V radios and the SCMS, and the ''network'' nature of V2V communication, the agency believes that Alternative 2 is unlikely to lead to

[291] Alliance at 6–7, 13–14.
[292] Alliance at 9, 14.
[293] Alliance at 10.
[294] Global at 11.
[295] Toyota at 1.
[296] TIA at 4, 5.

meaningful deployment of V2V communications. Consequently, Alternative 2 would delay, potentially for a significant period of time, the anticipated benefits of V2V communications. Furthermore, there is a high probability that the designated spectrum for V2V safety applications would be lost if a mandate was not pursued. For these reasons, the ''if-equipped'' alternative is not a viable alternative. Due to this, as well as to the significant uncertainty surrounding the technology adoption, the PRIA does not examine the costs and benefits for this alternative.

The ''if-equipped'' alternative is consistent with the agency's Safety Act authority, which does not require NHTSA to require technology for new vehicles. It is therefore not discussed further in this section.

The agency evaluated our authority to mandate specific safety applications in the Readiness Report [297] and sought comment on that evaluation in the ANPRM.[298]

As discussed in the Readiness Report, an FMVSS for a safety application must include minimum requirements for its performance. This first requires a determination of what tasks the safety applications need to perform, which would vary based on the types of safety risks/crash scenarios that the application is intended to address. The agency explained in the Readiness Report that it is examining the currently-available (research-stage) performance and test metrics associated with each safety application, and analyzing these metrics against the available safety data to determine whether these metrics cover the relevant safety problem.

The Readiness Report explained that the agency envisioned that an FMVSS for one of the analyzed safety applications would set performance requirements that could be met by any technology, but that if V2V communications performance requirements made it reasonable to require more robust performance, we could require that performance if V2V communications were mandated. The agency recognized for some applications, like IMA and LTA, performance requirements can likely be met only with V2V communications-based technologies due to their ability to detect crossing-path vehicles, but for others, a variety of technologies could potentially be used.

With regard to other Safety Act requirements for an FMVSS, the Readiness Report concluded as follows:

- *Meet the need for safety:* FMVSSs for the V2V-based safety applications would be issued to address safety problems that continue to cause crashes in the absence of regulation or market forces driving their adoption, and would address those problems by warning drivers of dangerous conditions and triggering a response to avoid the danger. However, given that research continues at this point to develop driver-vehicle interfaces for each of the safety applications, and given that the agency was not yet able to demonstrate how effective the DVIs we may eventually mandate are at warning the drivers and inducing them to avoid the dangerous situation, our evidence could be stronger that the V2V safety applications will meet the need for safety.
- *Objective test procedures and performance requirements:* Test procedures and performance requirements for the V2V safety applications are still being developed, but NHTSA would ensure that any test procedures it may require would meet the criteria of being objective.
- *Technological practicability:* Because test procedures and requirements (including those for DVIs) are still being developed for the V2V safety applications, additional lead time could be helpful to meet eventual standards in order to ensure that manufacturers have the opportunity to work out how to comply.[299] More research will be helpful in informing future assessments of technological practicability.
- *Economic practicability:* NHTSA currently assumes using preliminary cost estimates that the cost of standards for the V2V-based safety applications would primarily include costs for software that would be used by the vehicle to interpret V2V signals and make decisions about whether to warn the driver, as well as costs for any hardware that would be necessary to make those warnings happen via the DVI. While it seems unlikely that economic practicability would be an issue for potential safety application FMVSSs, more research to determine costs more precisely would be beneficial to this assessment.
- *Public acceptance:* Based on the research we have so far from the Safety Pilot, driver enthusiasm for individual V2V safety applications varies. Given that DVI requirements remain under development, and given the need for continued research to avoid a high false positive rate, more work needs to be done before we can be confident that eventual FMVSSs for V2V safety applications will not have public acceptance risks.

Commenters generally agreed with the agency's authority to issue FMVSSs for V2V-based safety applications (both in terms of mandating their installation and regulating their performance), and also agreed that more work was likely needed before such FMVSSs would be consistent with Safety Act requirements. The Alliance, for example, agreed that NHTSA could specify levels of performance for safety applications that ''indirectly eliminate[d] some forms of delivering the safety application within the motor vehicle,'' but stated that much work was needed before it would be clear that an FMVSS for any safety application met Safety Act criteria.[300] Global commented that DSRC should be widespread in the fleet and manufacturers should already have experience with applications before the agency should mandate them; [301] Honda provided similar comments.[302] Ford commented that NHTSA should not mandate applications.[303] Toyota, in contrast, stated that NHTSA should require IMA and LTA at the same time as it mandates DSRC capability, in order to speed introduction of safety benefits,[304] although it also stated that any FMVSS for a safety application must meet Safety Act criteria.[305] Advocates for Highway and Auto Safety provided similar comments.[306] Hyundai, TIA, and Delphi commented that if the agency decided to mandate safety applications like IMA and LTA, it should ensure that standards were entirely performance-based and technology-neutral.[307] A number of commenters raised concerns about the need for additional research with regard to DVIs and false positive alerts.[308]

NHTSA agrees with some commenters that earlier introduction of safety applications would guarantee earlier achievement of safety benefits associated with V2V capability, and we also agree with other commenters that additional work would likely be necessary in order for the agency to ensure that potential FMVSSs for safety

[297] See Readiness Report at Section IV.B.3.

[298] 79 FR at 49271 (Aug. 20, 2014).

[299] See discussion above regarding the Sixth Circuit's finding in *Chrysler,* 472 F.2d at 659, 666, and 671–75 (6th Cir. 1972).

[300] Alliance at 17.

[301] Global at 3.

[302] Honda at 6.

[303] Ford at 3–4.

[304] Toyota at 1.

[305] Toyota at 4.

[306] Advocates at 1–2.

[307] Hyundai at 2; TIA at 4; Delphi at 1.

[308] Bendix at 10–11.

applications were objective and practicable. Developing minimum standards for safety application performance requires a determination of what tasks the safety applications need to perform, which varies based on the types of safety risks/crash scenarios that the application is intended to address. The agency is examining the currently-available (research-stage) performance and test metrics associated with a variety of safety applications, including IMA and LTA, and analyzing these metrics against the available safety data to determine whether these metrics cover the applicable safety problem(s). Although this research is currently underway, we request comment now on whether and, if so, how the agency could design requirements to mandate certain safety applications.

In response to comments that FMVSSs should be performance-oriented and technologically neutral, we envision that each FMVSS for one of these safety applications would set performance requirements that could be met by any technology. However, if V2V communication performance requirements made it reasonable to require more robust performance, we could require that performance when V2V communication is mandated.

We continue to believe that any FMVSSs for the V2V safety applications would meet the need for safety, insofar as we would issue them to address safety problems that continue to cause crashes in the absence of regulation or market forces driving the adoption of these technologies. The safety applications are clearly intended to relate to safety—they warn drivers of dangerous conditions and are intended to promote safety by triggering a response to avoid the danger.

There are several things that the agency could do to help solidify the nexus of safety application warning and driver response. For example, and as raised by commenters, research continues at this point to develop driver-vehicle interfaces for each of the safety applications. We will want to be able to demonstrate how effective the DVIs we may eventually mandate are at warning the drivers and inducing them to avoid the dangerous situation. We currently have reason to believe that the V2V safety applications will meet the need for safety, but additional information and analysis will make that case stronger and we request comment on this.

FMVSSs for V2V safety applications also need to be objective, meaning that they specify test procedures that are ''capable of producing identical results when test conditions are exactly duplicated'' (meaning that the agency and the manufacturer must be able to obtain the same result from identical tests) and performance requirements whose satisfaction is ''based upon the readings obtained from measuring instruments as opposed to subjective opinions.'' As discussed above, test procedures and performance requirements for the V2V safety applications are still being developed, but NHTSA would ensure that any test procedures it may require would meet the criteria of being objective, and also technologically practicable. NHTSA would provide appropriate lead time for any FMVSSs to ensure these criteria are met, as well.[309] More research and additional public comment will be helpful in informing future assessments of technological practicability.

In terms of economic practicability, NHTSA currently assumes using preliminary cost estimates that the cost of standards for the V2V-based safety applications would primarily include costs for software that would be used by the vehicle to interpret V2V communications signals and make decisions about whether to warn the driver, as well as costs for any hardware that would be necessary to make those warnings happen via the DVI. As discussed above, it seems unlikely that economic practicability would be an issue for potential safety application FMVSSs, but more research to determine costs more precisely would be beneficial to this assessment.

While the Safety Pilot Model Deployment provided participating manufacturers with useful real-world experience in tuning prototype applications to maximize effectiveness and minimize false positives, DVI requirements remain under development, and more work needs to be done before we can be confident that eventual FMVSSs for V2V safety applications will not have public acceptance risks.

D. What else needs to happen in order for a V2V system to be successful?

1. SCMS

Under both the Vehicle Safety Act and the Highway Safety Act, NHTSA has other ways of affecting the parts of the V2V system that cannot be regulated directly. For example, 49 U.S.C. 30182 provides NHTSA authority to enter into contracts, grants, and cooperative agreements with a wide range of outside entities to conduct motor vehicle safety research and development activities, including activities related to new and emerging technologies. Separately, the Highway Safety Act (23 U.S.C. 401 *et seq.*) authorizes NHTSA to enter into contracts, grants, cooperative agreements, and other transactions for research and development activities with a similarly wide range of outside entities in ''all aspects of highway and traffic safety systems . . . relating to [ ] vehicle, highway, [and] driver . . . characteristics'' (sec. 403(b)), as well as collaborative research and development, on a cost-shared basis, to ''encourage innovative solutions to highway safety problems'' and ''stimulate the marketing of new highway safety related technology by private industry'' (sec. 403(c)). Because issues related to V2V are cross-cutting, spanning both the Vehicle Safety Act and the Highway Safety Act, these separate authorities provide the agency with sufficient flexibility to enter into a variety of agreements related to the development of a V2V security system (although the agency currently lacks sufficient appropriations to incur any significant Federal expenditures for these purposes).

A principle of appropriations law known as the ''necessary expense doctrine'' allows NHTSA to take the next step of entering into contracts or agreements to ensure the existence of sufficient communications and security systems to support deployment of V2V technologies, if V2V communications are mandated or otherwise regulated by a Federal Motor Vehicle Safety Standard or other NHTSA regulation. According to that principle, when an appropriation is made for a particular purpose, it confers on the receiving agency the authority to incur expenses necessary to carry out the purpose of the appropriation.[310] Under the necessary expense doctrine, the spending agency has reasonable discretion to determine what actions are necessary to carry out the authorized agency function. Here, the agency assumes that the deployment and operation of the SCMS is necessary in order for V2V technology and on-

[309] See discussion above regarding the Sixth Circuit's finding in *Chrysler,* 472 F.2d at 659, 666, and 671–75.

[310] Under the necessary expense doctrine, an expenditure is justified if it meets a three-part test: (1) The expenditure must bear a logical relationship to the appropriation sought to be charged (*i.e.,* it must make a direct contribution to carrying out either a specific appropriation or an authorized agency function for which more general appropriations are available); (2) the expenditure must not be prohibited by law; and (3) the expenditure must not be otherwise provided for (*i.e.,* it must not be an item that falls within the scope of some other appropriation or statutory funding scheme. See U.S. Gen. Accounting Office, Principles of Federal Appropriations Law 4–22 (3d ed.2004) (the ''GAO Redbook''), *available at http://www.gao.gov/special.pubs/3rdeditionvol1.pdf* (last accessed Dec. 6, 2016).

board equipment to function in a safe, secure and privacy-protective manner.[311] As designed, V2V technology cannot operate without a sufficient security system, and absent such a security system, misbehavior by hackers or others could compromise V2V functionality and participant privacy. If the problem of ''misbehavior'' were sufficiently widespread, it might even cause widespread disregard of or delayed response to V2V warnings. Hence, a robust SCMS is imperative in the V2V regulatory environment.

For these reasons, in addition to NHTSA's research, development, and collaboration authority under the Vehicle Safety Act and the Highway Safety Act, the necessary expense doctrine provides sufficient authority under the Vehicle Safety Act to take the next step of entering into agreements or contracts, either for cost or no-cost, with the goal of ensuring the existence (*i.e.,* the development and operation) of sufficient communications and security systems to support the reliability and trustworthiness of V2V communications. As is the case under the agency's research and development authority, discussed above, the current limiting factor is the absence of sufficient appropriations to incur any significant expenses in this regard.

NHTSA received comments to the ANPRM and Readiness Report from some stakeholders suggesting that NHTSA itself must obtain funding for and develop at least parts of the SCMS as a Federal project.[312] While NHTSA agrees that we would have authority, as discussed directly above, to facilitate the development of an SCMS if we had the appropriations to do so, conditions have not changed since our issuance of the ANPRM and Readiness Report that would allow us to do so.

2. Liability

The Readiness Report discussed the issue of legal liability in the context of V2V,[313] and the ANPRM sought comment on that discussion.[314] For purposes of that discussion, the agency separated potential liability issues for V2V into two categories: (1) Liability associated with equipment on the vehicle, particularly warning systems that rely on V2V systems, and (2) liability associated with the SCMS.

For the first category, NHTSA stated that from a products liability standpoint, V2V safety warning technologies, analytically, are quite similar to on-board safety warnings systems found in today's motor vehicles, and that therefore, V2V warning technologies do not create new or unbounded liability exposure for industry, because the driver remains responsible for failing to avoid a crash when the technology only warns and does not intervene. Consequently, NHTSA stated that it is not necessary, nor would it be appropriate to advocate the liability limiting agenda sought by industry in connection with potential deployment of V2V safety warning technologies via government regulation—and that, in any event, only Congress has the authority to provide the V2V-based liability relief sought by industry.

For the second category, NHTSA indicated that it was premature to take a position on the need for liability limiting mechanisms applicable to operators and owners of the SCMS, and that the appropriateness of such liability limiting/risk sharing measures will turn on: (1) The constitution and governance of the SCMS; and (2) the extent to which the primary and secondary insurance markets make insurance coverage available to SCMS entities and other owners and operators of V2V infrastructure.

NHTSA received a number of comments in response. Generally, commenters felt that NHTSA should conduct additional research on liability before proceeding with a V2V mandate, including with respect to the liability of automobile manufactures, owners and operators of the SCMS and V2V communications and security infrastructure, and vehicle owners. While NHTSA will continue to research and analyze potential liability issues stemming from a mandated V2V System, the Agency does not believe that additional research or work with stakeholder and consultants on this issue should delay the rulemaking process or the deployment of this important new safety technology.

Bendix and Cohda agreed with the agency's assessment of liability issues,[315] while other commenters expressed less certainty on the topic and requested that the agency consider liability issues further.

Several commenters stated that additional mechanisms to limit liability are necessary before V2V can be deployed. The National Motorists Association stated that Congress needed to define liability for individual motorists and expressly distribute liability among OEMs, operators, drivers, and other public and private stakeholders.[316] Infineon and Harley-Davidson similarly commented that Federal and/or state liability limitations were necessary prior to V2V rollout.[317] Automotive Safety Council stated that liability should be based on ''well-defined performance standards, and should align with other global standards for vehicle safety systems,'' [318] while Texas DOT commented more specifically that laws will have to be enacted allowing OEMs to 'mandate' specific operational standards of the cars they sell.[319] Meritor WABCO argued that in order to reduce liability, all involved parties needed to understand that ''the V2V system is not a failsafe method to prevent crashes, the V2V system will never be in 100 percent of the motor vehicle population, and that there is a big difference between active safety systems and V2V safety applications.''

A number of commenters disagreed with the agency's assessment that V2V-based safety warnings created no additional liability than what already exists for current on-board safety warnings systems.[320] The Alliance argued that V2V-based warnings are different from existing on-board-sensor-based warnings, because their operation depends on input from another manufacturer's vehicle, because V2V is a cooperative technology, and that this changes the nature of ''failure to warn'' claims.[321] Mr. Dennis provided similar comments.[322] Mercedes-Benz stated more specifically that because V2V systems depend on the ''functionality, quality, and timing of signals from surrounding vehicles,'' failure to warn is no longer solely traceable to onboard sensors of the manufacturer, which will significantly increase the complexity of liability claims.[323] The National Motorists Association offered several specific research topics previously cited also by the VIIC, including (1) whether, and if so, how V2V warning applications increase the risk of liability for OEMs, operators, and drivers; (2) whether owners may be legally

[311] Potentially, under some alternatives of this proposal, the agency would not assume the future presence of an SCMS, and would leave security requirements more open. In this instance, presumably the agency would not need to ensure the existence of communications and security systems to support V2V, so the invocation of the necessary expense doctrine would not be necessary.

[312] GM, at 4; Alliance, at 19.

[313] See Section X of the Readiness Report.

[314] 79 FR at 49273 (Aug. 20, 2014).

[315] Bendix at 3, Cohda at 12.

[316] National Motorists Association at 1.

[317] Infineon at 5, Harley-Davidson at 2–3.

[318] ASC at 7.

[319] TX DOT at 2.

[320] Alliance at 13, 18–20; CEI at 5; Mr. Dennis at 16; Global at 23; Harley-Davidson at 2; Mercedes-Benz at 9–10.

[321] Alliance at 18

[322] Mr. Dennis at 16.

[323] Mercedes-Benz at 10.

accountable for shutting off or failing properly to maintain V2V warning systems; and (3) whether the DVI required for V2V warnings systems will increase driver distraction in a way that could affect liability.[324] The Alliance argued, in summary, that ''the traditional paradigm of automotive product liability, in which driver error is presumed to be at fault most of the time, will not apply after V2V and other autonomous technologies become more prevalent.'' [325] The Alliance also took the position that NHTSA's reliance on a Risk Assessment Report prepared by the Dykema law firm was misplaced because that report assumed that a public or quasi-public entity would run V2V infrastructure when NHTSA itself had assumed that the SCMS would be private.

With regard to the agency's assessment of liability mitigation through insurance, the Alliance argued that it did not believe insurance would necessarily be available to cover entities involved in the SCMS since no data existed yet on which to base underwriting estimates, citing cybersecurity insurance as an example of another area where the insurance industry is unwilling or hesitant to provide insurance.[326] The Alliance and FCA both commented that costs associated with defending against SCMS-related lawsuits could be significant.[327] On whether terms of use could limit liability for V2V, the Alliance further argued that the agency had overlooked ''the strong disapproval of liability-limiting clauses in contracts with consumers,'' and that while such clauses might help in ''allocating risk among businesses,'' the would not work for ''limiting liability for negligence that allegedly causes personal injury to a consumer.'' [328]

Other liability issues raised by commenters included concerns about liability associated with infrastructure. Michigan DOT requested more discussion of liability issues for owners/operators of public RSE infrastructure.[329] Additional potential liability sources cited by commenters included false or inaccurate sensing data,[330] in-vehicle network hacking,[331] and certificate revocation.[332]

It is clear that potential liability stemming from V2V communications is a policy issue of great concern to the automotive industry and certain other stakeholders. It also is true that V2V safety warnings rely on cooperative technology that is different than the technologies deployed in existing on-board safety warnings systems, which do not rely on data received from devices and infrastructure outside of a motor vehicle. The primary policy issues in the OEM context are whether liability related to the V2V System can be addressed by the existing product liability paradigm (*i.e.,* statutory or common law tort principles)—and, if not, whether Congress is willing to change the existing statutory scheme for V2V-related claims in order to support deployment of V2V technology.

The agency has researched, analyzed and continues to grapple with this difficult and potentially quite broad question. We do not, as suggested by some commenters, dismiss the critical importance of potential legal liability to V2V stakeholders. We recognize fully that liability is a potential impediment to deployment of V2V technology. Nevertheless, from a policy perspective, the agency continues to believe that V2V safety warnings should not create liability risks for automobile manufacturers that differ in any meaningful way from risks posed by existing vehicle-based safety warnings systems—and that it is premature to propose or advocate the liability-limiting agendas sought by some stakeholders.

We first address some primary V2V liability risks to automotive manufacturers raised by commenters. We then discuss potential liability risks to owners and operators of SCMS entities, and the extent to which it is appropriate for NHTSA to develop or advocate liability-limiting mechanisms applicable to such providers.

(a) Potential Liability Risks to Automobile Manufacturers

Product liability law, which varies from State-to-State, generally concerns the liability of designers, manufacturers and distributors for harm caused to consumers and bystanders by ''defective'' or ''unreasonably dangerous'' products.[333] The purpose of these laws is:

. . . to ensure that the costs of injuries resulting from defective products are borne by those who placed the defective products in the market, rather than the injured person. Thus, in an effort to encourage the development of safer products, the responsibility for the injuries caused by defective products is placed on those who are in the best position to guard against defects and warn of their potential dangers.[334]

There is a broad range of product liability theories and defenses that could be applicable to liability litigation involving the V2V System. For purposes of this discussion, we focus on the product liability theory of ''failure to warn,'' which the Alliance, Mr. Dennis, and Mercedes Benz raised in their respective comments. A ''failure to warn'' claim is based on the theory that even a properly designed and manufactured product may be defective as a result of its manufacturer's failure to warn consumers of any dangerous characteristics in its product about which it knows or should know and which the user of the product would not ordinarily discover.[335] There are four basic elements of a ''failure to warn'' claim:

1. The manufacturer knew or should have known of the risks inherent in the product;
2. There was no warning, or the warning provided was inadequate;
3. The absence of a warning made the product unreasonably dangerous; and
4. The failure to warn was the cause-in-fact or proximate cause of the plaintiff's injury.[336]

To avoid liability for failure to warn, a product's instructions or warnings must sufficiently alert the user to the possibility of danger.[337]

The Alliance, Mr. Dennis, and Mercedes-Benz all took the position that the cooperative nature of V2V safety warnings and the external data sources on which V2V warnings are based change the fundamental nature of ''failure to warn'' claims and make them more complex.[338] It is possible—perhaps even likely—that the factual inquiry underlying a failure to warn claim will be more complex in the context of a V2V System than it would be in the context of a vehicle-based warning system. Additionally, not just message quality and timing (as noted by Mercedes-Benz), but a vehicle's operating environment (roadway, topographic and environmental factors) may adversely affect the performance of a consumer's V2V System. For these reasons, manufacturers' consumer warnings and instructions will be particularly critical to the successful defense of V2V failure claims. As they have done in the context of new safety technologies such as lane-departure

[324] National Motorists Association at 1.
[325] Alliance at 21.
[326] Alliance at 20–21.
[327] Alliance at 31; FCA at 2.
[328] Alliance at 20.
[329] Alliance at 19; MI DOT at 3.
[330] Rene Struik at 2.
[331] Systems Research Associates at 9.
[332] Alliance at 56.
[333] Dykema at 9–10.
[334] Dykema at 9–10.
[335] Dykema at 13.
[336] Dykema at 13.
[337] Dykema at 13.
[338] Alliance at 18.

warning, backover-detection warnings and forward vehicle detection systems, manufacturers will need to carefully describe the operation and limitations of V2V and V2I Systems in the safety context and in the foreseeable operating environment.[339] NHTSA expects that, by appropriately warning consumers of the uses and limitations of their V2V System, automobile manufacturers can sufficiently limit their liability for failure to warn claims, despite operational differences between on-board and V2V safety warning technologies.

In the context of V2V OBE failure claims, it also may be quite difficult for consumers to prove that a vehicle's V2V equipment caused or contributed to an accident. However, to the extent that the V2V communications proposed in this rule are used as a warning system, not a control system, then, as with existing vehicle-based warning systems, the V2V System is an aid to help drivers safely operate their vehicles. As discussed in varying places in this NPRM and the accompanying PRIA, at this time, NHTSA does not assume that V2V communications will be used as the sole basis for any safety system that exercises actual control of the vehicle. Thus, we assume that any liability concerns related to safety systems that do take control of the vehicle will not be affected by the presence of V2V.

In its comment, the Alliance stated that ''conclusions about the applicability of the state of the law with respect to traditional failure to warn claims involving on-board warning technologies grossly oversimplifies the way such claims are likely to evolve in the V2X litigation.'' [340] We agree that it is difficult for NHTSA (or anyone) to know exactly how products liability litigation will evolve in the context of V2V, V2I and V2X communications. However, NHTSA's assessment of potential V2V liability to date has been based, in part, on risk analyses conducted by Dykema PLLC. Dykema is a Detroit-based law firm that specializes in automotive-related legal issues and provides legal services to many major automobile manufacturers. It is also the firm that the VIIC selected as its subcontractor to analyze and report on, among other legal policy topics, potential V2V-related liability risks to automobile manufacturers and public sector entities under a cooperative agreement with DOT. That said, the agency welcomes and will carefully consider the content of submissions of other legally substantive risk analyses in response to its proposal. NHTSA received no such analyses in response to the Readiness Report and ANPRM, including from the Alliance or any foreign or domestic automobile manufacturers.

On a related note, the Alliance commented that NHTSA's reliance on Dykema's OEM Risk Assessment Report is misplaced, as that report assumes that a public or quasi-public entity will run V2V infrastructure when NHTSA assumes that the SCMS will be private. NHTSA respectfully disagrees with the Alliance on this point. Dykema's OEM Report contains no assumptions, explicit or implied, that would limit the utility or applicability of its analysis of OEM risk for V2V-related product liability claims. Additionally, with respect to infrastructure-based liability claims, the report specifically notes, without limitation and without referencing public ownership of such infrastructure, that ''[a]lthough the structure of VII described herein focuses on a hypothetical DSRC-enabled system, the analysis and conclusions in this deliverable generally will apply to any VII network that communicates information V2V or V2I.'' [341]

Dykema's OEM Report also notes that a lawsuit might allege that a crash was caused, in whole or in part, by a failure in the communications infrastructure supporting V2V (*e.g.,* an RSE). However, as evidenced by the numerous lawsuits claiming that failure of a traffic light contributed to an accident, such cases typically are brought against public or quasi-public entities and not against vehicle manufacturers.[342] For this reason, Dykema concluded (and NHTSA agrees) that ''we would not expect alleged failures in V2V infrastructure to impact OEM liability in a significant way.'' [343]

(b) Potential Liability Risks to SCMS Owners and Operators

From NHTSA's perspective, the critical policy issues in the SCMS context are whether concerns about liability will be a stumbling block to creation and operation of a private SCMS—and, if so, whether a need exists for DOT to work with stakeholders to develop Federal liability-limiting options that would incentivize private participation in a National SCMS.

In the Readiness Report (as in Proposal A in this document), NHTSA focused on a private model of SCMS governance that did not involve Federal funds or liability protections —but instead functioned through industry self-governance by an SCMS Manager that would work with SCMS entities to determine the appropriate distribution of liability for harm and establish minimum insurance requirements. In response, commenters such as the Alliance took the position that private insurance would not necessarily be available to cover entities involved in the SCMS since no claims data existed yet on which to base underwriting estimates, citing cybersecurity insurance as an example of another area where the insurance industry has been unwilling or hesitant to provide insurance.

The agency acknowledges that SCMS entities may not be able to obtain adequate liability insurance without Federal intervention of some sort—but it is simply too early to tell. As we noted in the Readiness Report, the extent to which the primary and secondary insurance markets will make insurance coverage available to SCMS entities will be a factor in whether DOT supports development of liability-limiting mechanism to incentivize private SCMS participants. To this end, the agency expects that the issue of liability as a potential impediment to the establishment of a National SCMS will be among the issues that NHTSA and V2V stakeholders continue to grapple with going forward—and one that DOT's planned PKI and organizational policy research will explore fully (including through consultations with the insurance and reinsurance industries). However, due to the lack of substantive evidence that the private insurance market is unwilling to underwrite SCMS risks, NHTSA continues to believe that it is premature to take a position on the need to develop and advocate for Federal liability-limiting mechanisms for a National SCMS.

The agency also is of the view that potential liability based on failures in the SCMS may be limited substantially by lack of causation due to drivers' roles in failing to avoid crashes. However, NHTSA wishes to clarify a comment in the Readiness Report relating to limitations on consumer liability—specifically, the statement that:

> It also is not clear to the agency why an SCMS Manager could not require that individuals and entities participating in an SCMS to agree to terms of use that would limit the liability of the SCMS and its component entities, either explicitly or via the same type of instructions and explanations of system limitations that the OEMs would use to limit liability.[344]

In its comment, the Alliance noted that NHTSA appeared to be promoting

[339] Dykema at 35.

[340] Alliance at 8.

[341] Dykema at 4.

[342] Dykema at 33.

[343] Dykema at 33.

[344] Readiness Report at 214.

the use of liability limitations in terms of use agreements with consumers, which can be legally problematic and, generally, are disfavored by courts.[345] To clarify, NHTSA does not sanction the use coercive liability limitation provisions in agreements between SCMS entities and consumers. As the Alliance noted ''such clauses can be effective in allocating risk among businesses'' and the application of such clauses should be limited to entities doing business with SCMS components, not consumers.

VII. Estimated Costs and Benefits

A. General Approach to Costs and Benefits Estimates

In this NPRM, the agency proposes that all light vehicles be equipped with technology that allows for V2V communications. The agency believes that this technology will facilitate the ''free-market'' development of various applications; both safety and non-safety related that would not be possible without a network of devices ''talking'' to each other.

However, at this time, the agency has decided to mandate V2V technology, but not mandate any specific applications. The agency believes this is the appropriate course for several reasons. First and foremost being that the agency believes V2V communication's cooperative nature needs a government mandate as the ''spark'' to establish a shared ''open'' platform that can be utilized to move this technology into the mainstream while not stifling potential, unforeseen innovations. In addition, the agency does not currently possess sufficient information to mandate particular safety applications, although, throughout this NPRM, we request additional information that could inform a potential decision to mandate certain applications.

This free-market approach to app development and deployment, though, makes estimating the potential benefits of V2V quite difficult. In a traditional NHTSA analysis of a safety technology, the agency would determine benefits by looking to the target population for the type of crash it is trying to avoid or mitigate and the effectiveness of the mandated performance requirement or safety technology in addressing those crashes. However, here, the technology being mandated by the agency, V2V communication, would only indirectly create safety benefits. Widespread adoption of V2V would facilitate the development of new safety applications that would not be possible otherwise, as well as help improve the performance of safety applications that already exist based on cameras or sensors. Further, V2V technology is expected to speed-up the deployment of various V2I technologies, which could have significant safety and congestion-relief applications.

The agency is confident that these technologies will be developed and deployed once V2V communications are mandated. The difficulty, though, is that the agency does not currently have sufficient information to definitively predict how or when this will occur. Thus, the agency has projected an adoption period based upon research conducted on the deployment of other advanced technologies as well as other information obtained during the development of this proposed rule. In addition, the agency demonstrates the potential safety benefits by analyzing two safety applications, IMA and LTA, both of which the agency believes are likely to lead to significant safety benefits that are likely only possible using V2V technology. The agency has therefore not quantified any benefits attributable to the range of other potential uses of V2V, although we acknowledge that such uses are likely to exist. The agency believes that, by focusing on only two of the many potential uses of V2V technology and given our experience with other technologies, we have taken a reasonable approach in estimating the potential benefits of the proposed rule and have likely understated the. The agency, though, requests comments on these assumptions to better inform the analysis that would support a final rule. Is there more detailed information concerning manufacturer's plans to reduce safety impacts associated with widespread adoption of V2V technology applications? If so, what applications and on what timeline?

B. Quantified Costs

The agency was able to use information obtained from the V2V Readiness Report in developing the cost estimates in this proposal. Where appropriate, the V2V Readiness Report cost estimates were adjusted to align with any new information obtained by the agency such as: That provided through comments to the V2V ANPRM, experience from the SCMS RFI activity, and by developing the proposed performance requirements.

The costs and benefits are presented in two measures: Annual and by model year (MY) vehicles (MY costs). The annual costs represent the yearly financial commitment while the MY costs represent the total investment born by the indicated MY vehicle, plus the lifetime fuel economy impact from those vehicles. In either accounting measure, the vehicle equipment, communication, and SCMS costs are assumed to be paid by new vehicle owners when their vehicles were purchased. The only difference between the two cost measures is the calculation of any potential fuel economy impact. The annual fuel economy impact measures the collective fuel impact from all V2V-equipped vehicles for a specific calendar year. In contrast, the lifetime fuel economy impact measures the fuel impact specifically for a MY vehicle through its operational life. All cost estimates are adjusted for 2014 dollars.

For this analysis, the agency is considering two potential technology implementation approaches that could meet the safety, security, and privacy specifications of the proposed rule. These two approaches are (1) utilizing one DSRC radio dedicated to V2V safety communications paired with secondary cellular, Wi-Fi, or Satellite communications (''one-radio'' approach) and (2) utilizing two DSRC radios, one dedicated to V2V safety communications and one used for secondary communications such as SCMS or other ''back office'' type communications (two-radio approach). As a result, both the annual and MY costs are presented as a range which covers the costs from these two approaches.

The following sections describe the four parts of quantified costs, followed by the summary of the total quantified costs and non-quantified costs, and estimated cost per vehicle. This normalized per vehicle cost allows a straightforward comparison between various technology approaches and regulatory alternatives. All costs were estimated under the DSRC and app sales scenario specified in the Estimated Benefits portion of this chapter—Section VII.D.

1. Component Costs

(a) Unit Costs to OEMS

As shown in Table VII–1, the total direct component costs to OEMs were estimated to be $162.77 for one DSRC radio and $229.91 for two radios. The total weight of one DSRC radio is approximately 2.91 lbs. whereas the weight of two radios is slightly heavier, about 3.23 lbs. For the two-radio approach, as previously discussed, two DSRC antennas are necessary: The first DSRC radio sends and receives the BSM, and the second radio handles security aspects of receiving certificates,

[345] Alliance, Attachment B at 3.

the certificate revocation list, etc. We estimated that the second radio will be $10.33 [346] cheaper than the first radio since these two radios would most likely be packaged together, thereby resulting in lower labor costs in assembling the combined package at the supplier, as well as lower hardware costs in packaging them together rather than individually. Therefore, the cost for two radios would be $134.29 (= $72.31 * 2 − $10.33) instead of $144.64 (= $72.32 * 2), as shown in Table VII–1. No such assumption was made for the antenna, since the antennas have to remain physically separate in order to avoid interfering with each other.

TABLE VII–1—ESTIMATED COMPONENT UNIT WEIGHT AND COSTS TO OEMS

Component	Costs	One radio		Two radios	
	(2012 $)	Weight (lbs)	Costs (2014 $)	Weight (lbs)	Costs (2014 $)
DSRC Transmitter/Receiver	70	0.55	72.31	0.65	134.29
DSRC Antenna	5	0.22	5.17	0.44	10.33
Electronic Control Unit	45	0.55	46.49	0.55	46.49
GPS	14	.....	14.46	.....	14.46
GPS Antenna	4	0.22	4.13	0.22	4.13
Wiring	9	1.20	9.30	1.20	9.30
Displays	4.79	0.17	4.95	0.17	4.95
HSM	.....	0.00	4.65	0.00	4.65
For 2 Apps	.....	0.00	1.32	0.00	1.32
Total	151.79	2.91	162.77	3.23	229.91

Overall, for this analysis the vehicle equipment costs are based on an OEM integrated device built into vehicles during their manufacture. This example device includes the costs of DSRC radios, DSRC antenna, GPS, HSM, and installation of relevant equipment (DSRC radios in short) and loaded with two safety applications. With specific regard to the safety applications, the app costs include software engineering and development costs since the agency is not assuming any additional interface beyond the DVI or equipment costs for the apps. The software engineering and development costs will be shared by millions vehicles, and thus is expected to be minimal across the fleet. The OEM integrated device is used as a basis for cost estimation as this device type provides a more accurate cost expectation associated with finalizing this proposal.

The agency also estimated potential costs for aftermarket devices that could enter the marketplace as a result of finalizing this proposal and enabling more consumers to benefit from V2V technology. As described elsewhere, aftermarket devices could be available in three distinct varieties: Retrofit, standalone, and a simple awareness device. The agency estimates that the three aftermarket device types would cost $400.28 for a retrofit device; $278.33 for a standalone device, and $101.74 for a simple awareness device.

(b) Consumer Costs

The costs in Table VII–2 reflect the costs that OEMs pay to a component (Tier 1) supplier to purchase these components for the vehicles they manufacture, not the projected cost of these systems to consumers. To obtain the consumer costs, each variable cost is multiplied by 1.51 (*i.e.,* 51 percent makeup) to estimate a retail price equivalent (RPE; *i.e.,* consumer cost). The 51 percent markup represents fixed costs (research and development, selling and administrative costs, etc.), as well as OEM profits, transportation costs, and dealer costs and profits. Table VII–2 presents the component consumer costs. As shown, the total component costs to consumers were estimated to be $245.79 for one radio and $347.18 for two radios.

TABLE VII–2—ESTIMATED COMPONENT CONSUMER UNIT COSTS

[2014 $]

Component	One radio	Two radios
DSRC Transmitter/Receiver	$109.19	$202.78
DSRC Antenna	7.80	15.60
Electronic Control Unit	70.19	70.19
GPS	21.84	21.84
GPS Antenna	6.24	6.24
Wiring	14.04	14.04
Displays	7.47	7.47
HSM	7.02	7.02
Two Safety Applications	2.00	2.00
Total	245.79	347.18

(c) Installation Costs

Component installation costs are primarily attributable to the labor needed to perform the installation, but the agency also accounts for potential, additional costs associated with materials used in the installation such as minor attachments brackets, or plastic tie downs to secure wires, etc. In Table VII–3, the installation costs are separated into ''Material Costs'' (for the minor attachments), ''Labor Costs,'' and ''Variable Burden'' (*i.e.,* other costs that are not direct labor or direct material used in the part, but are costs that vary with the level of production, such as set-up costs, in-bound freight, perishable production tools, and electricity). Overall, the agency estimates the variable cost to OEMs to install the V2V equipment is $11.79 per vehicle and the cost to consumers will be $17.80 using a 1.51 retail price equivalent factor (*e.g.* markup).

[346] Adjusted from the $10 in 2011 dollars that was estimated in the ANPRM.

TABLE VII–3—CONSUMER INSTALLATION COST ESTIMATES

[2014 dollars]

Part	Material	Labor	Variable	Total	Total consumer
DSRC Transmitter/Receiver	0.04	1.61	1.04	2.69	4.06
DSRC Antenna	0.04	0.10	0.07	0.21	0.31
Electronic Control Unit	0.02	1.84	1.19	3.05	4.60
GPS	0.04	0.10	0.07	0.21	0.31
GPS Antenna	0.04	0.10	0.07	0.21	0.31
Wiring	0.19	0.93	0.60	1.72	2.59
LEDs (5) Displays + Malfunction Disp.	0.00	0.63	0.40	1.03	1.56
Light Bar	0.04	1.61	1.04	2.69	4.06
HSM	0.00	0.00	0.00	0.00	0.00
Total	0.38	6.92	4.48	11.79	17.80

(d) Adjustment for GPS Installation

When researching installation costs, the agency identified the need to make adjustments for GPS installation. Today, many vehicles are already equipped with GPS receivers and the percentage equipped as standard installation is likely to increase going forward. The agency estimates approximately 43 percent of MY 2013 light vehicles were equipped with GPS receivers.[347] This percentage increases to approximately 50 percent when combined with the number of vehicles equipped with automatic collision notification (ACN). Current information available to the agency indicates that navigation-grade GPS units are sufficient for the V2V safety applications. In these cases, the GPS component is not a cost that is directly attributable to V2V. Overall, 50 percent of applicable vehicles would not incur costs to add GPS for V2V technology. Thus, the total cost associated with vehicles equipped with GPS (*i.e.,* 50%) was subtracted from the total costs of equipping all applicable vehicles with V2V safety applications.

(e) Summary of Component Costs

Table VII–4 summarizes consumer costs for original equipment manufacturers (OEMs) for the first year of equipping a vehicle with V2V components. The consumer unit cost is estimated to be $249.19 for one radio and $350.57 for two radios in 2014 dollars.

TABLE VII–4—SUMMARY OF V2V COMPONENT CONSUMER COSTS PER AFFECTED VEHICLE

Cost	One radio		Two-radios	
Items	Weight (lb.)	Consumer costs	Weight (lb.)	Consumer costs
Parts *	2.91	$245.79	3.23	$347.18
Installation	0.26	17.74	0.26	17.74
Subtotal	3.17	263.53	3.49	364.92
Minus Current GPS Installation**	0.11	14.35	0.11	14.35
Total	3.06	249.18	3.38	350.57

* including app software costs.
** taking into account the 50 percent GPS installation rate.

(f) Learning Curve Effect

As manufacturers gain experience through production of the same product, they refine production techniques, better manage raw material and component sources, and assembly methods to maximize efficiency and thus reduce production unit costs. Learning curves reflect the impact of experience and volume on the cost of production and are especially evident when a completely new product is introduced to the marketplace. V2V systems are expected to be installed on a growing portion of the vehicle fleet as manufacturers ramp up to the meet the proposed rule which would require 100% new vehicle installation by 2023, which is projected to be over 16 million units annually. This large scale production provides manufacturers with opportunities to reduce system costs through the learning process. Additional information on the agency's learning curve development and the derivation for learning curves related to V2V are detailed in Chapter 7 of the PRIA that accompanies this proposed rule.

NHTSA routinely performs evaluations of the costs and benefits of safety standards that were previously issued in an effort to estimate learning curve impacts, among other economic impacts, and provide the most accurate possible information at the time a rule is proposed and finalized. To estimate costs, the agency conducts a teardown study of the technologies used to meet the standards. In some cases, the agency has performed multiple evaluations over a span of years. For example, a teardown study may be performed to support the agency's initial estimates of costs that will result from the regulation, and again five years later to evaluate the impacts of the regulation after it has been in effect. These data, together with actual production data,

[347] Ward's Automotive Yearbook 2014, based on vehicles with factory-installed navigation systems or concierge systems.

supply the necessary information required to develop a learning curve for the technology.

For V2V, the agency estimates that learning would reduce the unit cost for two radio implementations, including two safety applications, from approximately $350.57 in 2021 to $218.85 in 2060, which is about 62.5 percent. Applying the same learning pattern, the unit cost for a one radio system would decrease it from $249.18 in 2021 to $155.47 in 2060. Details of how learning would affect unit costs for both one to two radio implementations can be found in Table VII–5.

TABLE VII–5—ANNUAL PROGRESS RATES AND COMPONENT UNIT COSTS AFTER LEARNING

Year	Calendar year	Progress rates		Unit costs			Total unit costs	
		Radio	Apps	1 Radio	2 Radio	Apps	1 Radio	2 Radios
1	2021	1.000	1.000	$247.18	$348.57	$2.00	$249.18	$350.57
2	2022	0.908	1.000	224.44	316.50	2.00	226.44	318.50
3	2023	0.853	0.872	210.95	297.47	1.74	212.69	299.22
4	2024	0.821	0.782	202.91	286.14	1.56	204.47	287.70
5	2025	0.798	0.726	197.21	278.10	1.45	198.66	279.56
6	2026	0.780	0.681	192.83	271.93	1.36	194.19	273.29
7	2027	0.766	0.647	189.27	266.91	1.29	190.57	268.21
8	2028	0.754	0.623	186.28	262.69	1.25	187.53	263.94
9	2029	0.743	0.606	183.71	259.07	1.21	184.92	260.28
10	2030	0.734	0.593	181.45	255.88	1.19	182.63	257.06
11	2031	0.726	0.582	179.44	253.04	1.16	180.60	254.20
12	2032	0.719	0.573	177.62	250.48	1.15	178.77	251.63
13	2033	0.712	0.565	175.98	248.16	1.13	177.11	249.29
14	2034	0.706	0.558	174.47	246.03	1.12	175.58	247.15
15	2035	0.700	0.552	173.07	244.06	1.10	174.17	245.17
16	2036	0.695	0.546	171.77	242.23	1.09	172.87	243.32
17	2037	0.690	0.541	170.56	240.52	1.08	171.64	241.60
18	2038	0.685	0.537	169.42	238.92	1.07	170.49	239.99
19	2039	0.681	0.532	168.35	237.40	1.06	169.41	238.47
20	2040	0.677	0.528	167.33	235.97	1.06	168.39	237.03
21	2041	0.673	0.525	166.37	234.61	1.05	167.42	235.66
22	2042	0.669	0.521	165.48	233.36	1.04	166.52	234.40
23	2043	0.666	0.518	164.64	232.17	1.04	165.68	233.21
24	2044	0.663	0.515	163.84	231.04	1.03	164.87	232.07
25	2045	0.660	0.512	163.07	229.96	1.02	164.09	230.98
26	2046	0.657	0.509	162.33	228.92	1.02	163.35	229.94
27	2047	0.654	0.507	161.63	227.93	1.01	162.64	228.94
28	2048	0.651	0.504	160.95	226.97	1.01	161.96	227.98
29	2049	0.649	0.502	160.30	226.05	1.00	161.30	227.05
30	2050	0.646	0.500	159.67	225.16	1.00	160.67	226.16
31	2051	0.644	0.498	159.07	224.31	1.00	160.06	225.31
32	2052	0.641	0.496	158.48	223.49	0.99	159.48	224.48
33	2053	0.639	0.494	157.93	222.70	0.99	158.91	223.69
34	2054	0.637	0.492	157.39	221.94	0.98	158.37	222.93
35	2055	0.635	0.490	156.87	221.21	0.98	157.85	222.19
36	2056	0.633	0.488	156.36	220.50	0.98	157.34	221.48
37	2057	0.631	0.486	155.88	219.82	0.97	156.85	220.79
38	2058	0.629	0.485	155.41	219.15	0.97	156.38	220.12
39	2059	0.627	0.483	154.95	218.51	0.97	155.92	219.48
40	2060	0.625	0.482	154.51	217.89	0.96	155.47	218.85

Table VII–6 summarizes the total annual vehicle component costs. As shown, total annual vehicle component costs would range from $2.0 billion to $4.9 billion. The cost per vehicle would range from $123.59 to $297.65. The lower bound is for one radio at year 2021 and the higher bound is the cost for two radios in 2023. In 2023, 100 percent of vehicles would be required to be equipped with the DSRC radios and more vehicles would be expected to have apps. Although the projected number of new vehicles that would have DSRC radios and safety applications continues to increase after 2023, the additional costs are offset by the falling component costs.

(g) Annual Component Costs

Table VII–6 presented below the cost per vehicle is the average cost spread across all new vehicles, not just affected vehicles. Due to the proposed phase-in schedule, the cost per vehicle in 2021 and 2022 is significantly lower than the unit cost shown in Table VII–5. Furthermore, the agency predicts complete safety application deployment would not be achieved until 2028, resulting in a slightly lower cost per vehicle for 2023 to 2027 than that shown in Table VII–2.

TABLE VII–6—TOTAL ANNUAL VEHICLE COMPONENT COSTS

[2014 $ and vehicles in millions]

Year	Calendar year	Vehicles with		Total costs (Radios + Apps)		Cost per vehicle	
		Radios	Apps	1 Radio	2 Radios	1 Radio	2 Radios
1	2021	8.10	0.00	$2,000.92	$2,821.67	$123.59	$174.29
2	2022	12.26	0.61	2,751.72	3,879.94	168.40	237.45
3	2023	16.44	1.64	3,470.84	4,893.35	211.12	297.65
4	2024	16.53	4.13	3,360.54	4,736.34	203.30	286.53
5	2025	16.67	6.67	3,297.19	4,645.68	197.79	278.68
6	2026	16.75	10.89	3,244.74	4,569.60	193.72	272.81
7	2027	16.88	15.19	3,214.60	4,525.12	190.44	268.08
8	2028	17.03	17.03	3,193.60	4,494.87	187.53	263.94
9	2029	17.13	17.13	3,167.72	4,458.56	184.92	260.28
10	2030	17.30	17.30	3,159.58	4,447.19	182.63	257.06
11	2031	17.44	17.44	3,149.66	4,433.29	180.60	254.20
12	2032	17.56	17.56	3,139.20	4,418.61	178.77	251.63
13	2033	17.67	17.67	3,129.51	4,405.01	177.11	249.29
14	2034	17.84	17.84	3,132.41	4,409.12	175.58	247.15
15	2035	18.00	18.00	3,135.14	4,412.99	174.17	245.17
16	2036	18.16	18.16	3,139.24	4,418.78	172.87	243.32
17	2037	18.34	18.34	3,147.91	4,431.00	171.64	241.60
18	2038	18.49	18.49	3,152.45	4,437.40	170.49	239.99
19	2039	18.66	18.66	3,161.27	4,449.84	169.41	238.47
20	2040	18.87	18.87	3,177.54	4,472.75	168.39	237.03
21	2041	19.14	19.14	3,204.34	4,510.49	167.42	235.66
22	2042	18.56	18.56	3,090.70	4,350.52	166.52	234.40
23	2043	18.66	18.66	3,091.52	4,351.69	165.68	233.21
24	2044	18.76	18.76	3,092.91	4,353.66	164.87	232.07
25	2045	18.87	18.87	3,096.45	4,358.65	164.09	230.98
26	2046	18.97	18.97	3,098.81	4,361.98	163.35	229.94
27	2047	19.08	19.08	3,103.22	4,368.19	162.64	228.94
28	2048	19.18	19.18	3,106.39	4,372.65	161.96	227.98
29	2049	19.28	19.28	3,109.91	4,377.61	161.30	227.05
30	2050	19.39	19.39	3,115.37	4,385.30	160.67	226.16
31	2051	19.39	19.39	3,103.57	4,368.70	160.06	225.31
32	2052	19.39	19.39	3,092.23	4,352.74	159.48	224.48
33	2053	19.39	19.39	3,081.32	4,337.38	158.91	223.69
34	2054	19.39	19.39	3,070.79	4,322.57	158.37	222.93
35	2055	19.39	19.39	3,060.63	4,308.27	157.85	222.19
36	2056	19.39	19.39	3,050.82	4,294.46	157.34	221.48
37	2057	19.39	19.39	3,041.33	4,281.11	156.85	220.79
38	2058	19.39	19.39	3,032.14	4,268.17	156.38	220.12
39	2059	19.39	19.39	3,023.24	4,255.64	155.92	219.48
40	2060	19.39	19.39	3,014.60	4,243.49	155.47	218.85

2. Communication Costs

(a) Methodology

The communication cost estimates are based on the same model created by Booz Allen Hamilton under the contract with the DOT's Intelligent Transportation Systems Joint Program and used for the V2V Readiness Report. The model, Cost Model for Communications Data Delivery System (CDDS), is a Microsoft Excel-based model.[348]

The communication cost estimates include the cost of in-vehicle communication components and any service fee that would be required with a specific communication network. For system design, four communication network technologies were evaluated for the CDDS: cellular, Wi-Fi, Satellite, and DSRC. The four technologies can be combined in various ways to form the communication system to support the vehicle to SCMS communication activities. The CDDS report and various cost estimates were published in the V2V Readiness Report and referenced specifically in the ANPRM in an effort to gather feedback on the estimated costs.

In response to the V2V ANPRM, and the Request for Interest (RFI) regarding the SCMS, the agency received information and feedback on cellular and satellite and how these technologies can support national V2V deployment.[349] These new findings led the agency to conclude that two systems can meet the proposed security requirements:

- Hybrid—This system would use cellular, Wi-Fi, and satellite for vehicles to SCMS communication.
- DSRC—This protocol would use DSRC exclusively for V2V communications and for vehicles to SCMS communications through Roadside Equipment (RSE).

The hybrid system allows for the potential use of the three communication mediums cellular, Wi-Fi, and satellite. Each serves as a complement system to the other. In an effort to address potential security concerns, the agency added the cost of an in-vehicle hardware security module (HSM). The HSM, based on agency conversations with security experts, can potentially address the over-the -air communication security issues. Furthermore, the agency also recognized that satellite communication will not be

[348] Docket No. NHTSA–2014–0022.

[349] Docket No. NHTSA–2014–0023.

as expensive as detailed in the BAH estimates since 70 percent of light vehicles are currently equipped satellite radio receivers. Since only 30 percent of vehicles will need satellite radio receivers reduces the overall component cost for satellite communication in reduced increasing its viability.

A DSRC-exclusive system would communicate with SCMS through RSUs, small ''base stations'' that allow vehicles to ''phone home'' using DSRC. A separate DSRC antenna will be used exclusively for communicating updates ensuring continual ''listening'' for safety component update related communications,. This dedicated DSRC communication channel would exist in addition to the dedicated V2V safety communications channel used for V2V safety communications, and, therefore, two DSRC radios would be required for this DSRC-exclusive communication system.

BAH estimated the potential number of RSUs needed to support a national deployment. First, RSU deployment was considered on three different road types: secondary roads, interstate highways, and National Highway System roads (NHS). Each type is defined by BAH as the following: [350]

- Secondary roads refer to collector roads, State highways, and county highways that connect smaller towns, subdivisions, and neighborhoods.
- Interstate highways are the network of freeways that make up Dwight D. Eisenhower National System of Interstate and Defense Highways.
- The NHS roads are the collection of interstate highways, principal arteries, strategic highways, major network connectors, and intermodal connectors.

BAH then used spatial optimization and information from the 2009 National Household Transportation Survey (NHTS) to estimate the required number of RSE to achieve the desired amount of coverage. The usage of NHS roads (with 19,749 sites) was deemed the most logical because it achieves greater coverage than the interstate option (with 8,880 sites) while also requiring fewer RSE than secondary roads (with 149,434 sites) to achieve the same coverage, as shown below in Figure VII–1. As shown, NHS roads are the most realistic scenario, though secondary roads could achieve more coverage given more resources. Ultimately, the NHS road deployment method was deemed to be the most realistic.

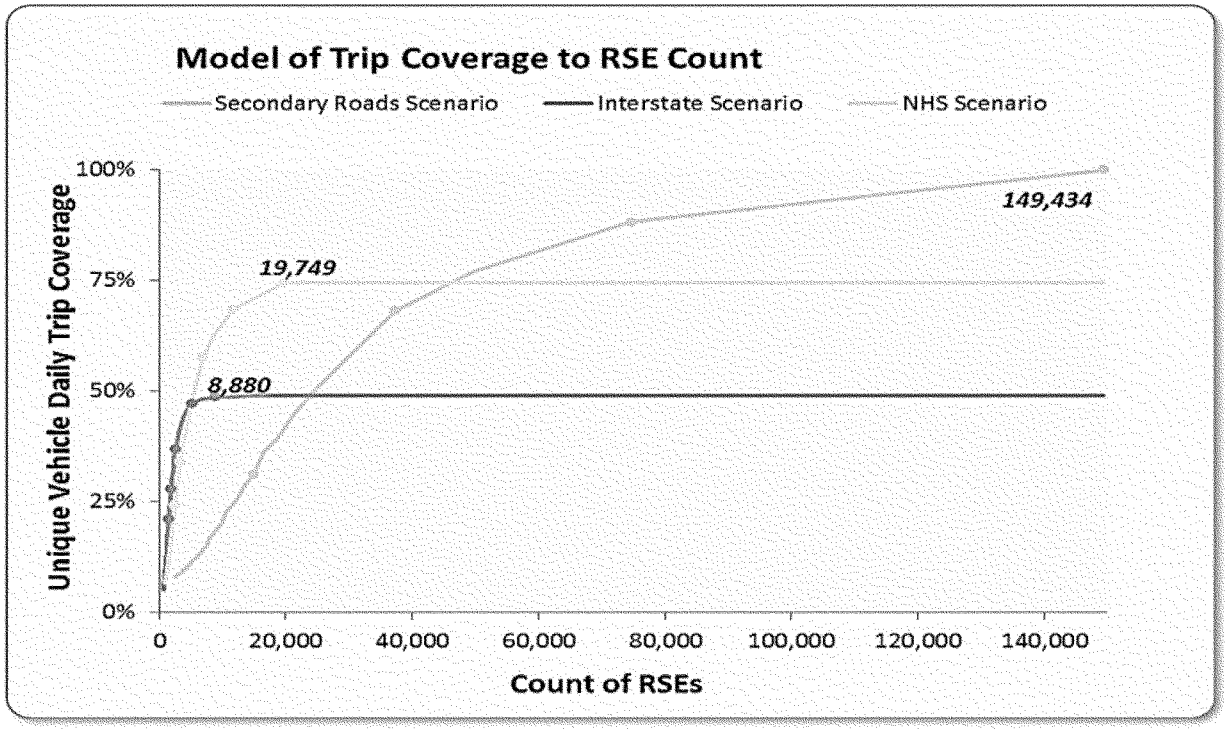


Figure VII-1 Coverage of RSE by Road Type

(b) Assumptions

The agency applied the assumptions used in the CDDS model to estimate communication costs. These comprehensive assumptions included the length of initial new certificate deployment period, the certificate download size and frequency at the full system deployment, the potential device misbehavior rate, and the potential size of a certificate revocation list. The cost model also considered the costs that relate to the three communication technologies used in the Hybrid approach: Cellular data rate, cellular component cost in the vehicles, Wi-Fi component costs, satellite data rate, and satellite radio cost. It is also necessary to consider the cost of road side units for the DSRC-exclusive approach system. The agency notes that while not included in these estimates, there is potential for road side unit costs to not be borne solely by a V2V system. Road side units may also be deployed in accordance with guidance from the Federal Highway Administration (FHWA) as signaling and related traffic control equipment undergoes normal upgrades. Overall, unless otherwise

[350] BAH CDDS Final Report, at 27. See Docket No. NHTSA–2014–0022.

stated, all cost calculations have been made with the assumptions found in Table VII–7 and are estimated for over a 40-year timeframe. Additional details on the communication cost assumptions can be found the Chapter VII of the PRIA. The agency requests comment on these assumptions.

TABLE VII–7—COST ASSUMPTIONS BY COMMUNICATION OPTIONS

Cost factors	Component	Hybrid	DSRC
Certificate			
	Certificate Option	3,000 per bundle	3,000 per bundle.
	Certificate Phase-In Period	3 years	3 years.
	Certificate Download Frequency at Full Deployment	Every 3 years	Every 3 years.
Misbehavior			
	Misbehavior Rate	0.10%	0.10%.
	CRL Type	Satellite/Incremental	Incremental.
Communication Technology			
Cellular	Cellular Data Price	$4.00/GB	NA.
	Cellular Component Cost Per Vehicle	$10.00	NA.
	Fraction of Data Shifted from Cellular	67%	NA.
Wi-Fi	Wi-Fi Component Cost per Vehicle	$2.00	NA.
Satellite	Satellite Data Price	$1.60/GB	NA.
	Satellite Component Cost per Vehicle	$6.00	NA.
Three Above Combined	Annual Technology Component Replacement Rate	2%	NA.
RSE	RSE Component per Vehicle	NA	Included in the DSRC radios.
	# Nationwide RSEs	NA	19,750.
	RSE Structure Supporting Cost	NA	$8,839.
	RSE Replacement Cost	NA	$22,719.
	RSE Installation Phase-in	16 years	NA.
	RSE Life	NA	15 years.

(c) Hybrid Option Costs

The agency estimates the annual overall costs for the Hybrid communication option would range from approximately $148 million in Year 1 to approximately $490 million at Year 40. On a per vehicle basis, this equates to $9.18 in Year 1 to $25.47 after 40 years. The detailed estimated annual communication costs are shown in Table VII–8. The cost increase over time represents the increases in certificate distributions and SCMS communications as fleet penetration increases.

It is important to note the table reflects zero satellite and cellular data costs for the first three years. This zero cost results from the assumption that vehicles will be pre-loaded with three years of security certificates, reflecting that communication between vehicles and SCMS will be very limited during this time period. In addition, the acknowledged certificate revocations lists would be transmitted to vehicles during this time but, overall, the estimated misbehavior rate of 0.1 percent, combined with an anticipated, small revocation list size, would not have a substantive impact on communication costs.

TABLE VII–8—ESTIMATED ANNUAL COMMUNICATION COSTS AND PER VEHICLE COSTS—HYBRID

Year	Calendar year	RSE	OBE	Data cost		Total	Cost per vehicle
				Satellite	Cellular		
1	2021	$0	$148,624,200	$0	$0	$148,624,200	$9.18
2	2022	0	213,159,926	0	0	213,159,926	13.05
3	2023	0	309,000,919	0	0	309,000,919	18.80
4	2024	0	316,361,705	14,502	5,964,604	322,340,811	19.50
5	2025	0	324,585,446	20,225	7,771,778	332,377,450	19.94
6	2026	0	331,663,749	26,516	9,558,220	341,248,485	20.37
7	2027	0	339,583,781	33,316	11,326,199	350,943,297	20.79
8	2028	0	347,798,557	41,044	13,073,502	360,913,103	21.19
9	2029	0	355,008,739	49,204	14,787,665	369,845,609	21.59
10	2030	0	363,357,905	57,691	16,463,486	379,879,082	21.96
11	2031	0	370,982,194	66,319	18,080,731	389,129,243	22.31
12	2032	0	378,019,671	74,932	19,626,112	397,720,714	22.65
13	2033	0	384,620,645	83,389	21,090,223	405,794,257	22.97
14	2034	0	392,045,404	91,615	22,473,154	414,610,174	23.24
15	2035	0	399,021,900	99,529	23,771,089	422,892,517	23.49
16	2036	0	405,714,525	107,044	24,979,082	430,800,651	23.72
17	2037	0	412,479,551	114,107	26,095,952	438,689,610	23.92
18	2038	0	418,390,535	120,627	27,113,321	445,624,483	24.10
19	2039	0	424,344,445	126,553	28,030,229	452,501,226	24.25
20	2040	0	430,726,546	131,916	28,854,679	459,713,141	24.36

TABLE VII–8—ESTIMATED ANNUAL COMMUNICATION COSTS AND PER VEHICLE COSTS—HYBRID—Continued

Year	Calendar year	RSE	OBE	Data cost		Total	Cost per vehicle
				Satellite	Cellular		
21	2041	0	437,935,982	136,760	29,599,075	467,671,817	24.43
22	2042	0	429,324,211	140,688	30,178,332	459,643,231	24.77
23	2043	0	432,732,888	144,189	30,688,025	463,565,102	24.84
24	2044	0	435,960,956	147,346	31,140,495	467,248,797	24.91
25	2045	0	439,237,664	150,263	31,551,344	470,939,271	24.96
26	2046	0	442,230,479	153,002	31,929,276	474,312,757	25.00
27	2047	0	445,334,157	155,668	32,285,302	477,775,127	25.04
28	2048	0	448,190,015	158,253	32,619,841	480,968,109	25.08
29	2049	0	450,983,531	160,763	32,934,626	484,078,920	25.11
30	2050	0	453,904,155	163,206	33,232,654	487,300,015	25.13
31	2051	0	454,730,556	165,503	33,494,491	488,390,550	25.19
32	2052	0	455,469,747	167,722	33,728,697	489,366,166	25.24
33	2053	0	456,124,543	169,851	33,936,162	490,230,556	25.28
34	2054	0	456,712,926	171,880	34,122,586	491,007,391	25.32
35	2055	0	457,234,600	173,792	34,287,873	491,696,266	25.36
36	2056	0	457,690,833	175,587	34,432,426	492,298,846	25.39
37	2057	0	458,084,204	177,260	34,557,062	492,818,527	25.42
38	2058	0	458,395,516	178,752	34,655,698	493,229,966	25.44
39	2059	0	458,655,327	180,143	34,738,017	493,573,487	25.46
40	2060	0	458,874,218	181,461	34,807,370	493,863,049	25.47

(d) DSRC Option Costs

Table VII–9 summarizes the estimated annual communication costs for the DSRC exclusive approach. Estimates for this option show a range of $0 at Year 1 increasing to an approximate $177 million annual average by Year 40. When viewed from a per vehicle basis, the costs range from $0 in the first year to approximately $9 annual average in the out years. An important note with this communication option is the need to include road side unit replacement based on the assumed 15-year life of span of this equipment, Years 19 and 34 reflect the annual cost of replacing this equipment.

TABLE VII–9—ESTIMATED ANNUAL COMMUNICATION COSTS AND PER VEHICLE COSTS—DSRC

Year	Calendar year	RSE	OBE	Data cost		Total	Cost per vehicle
				Satellite	Cellular		
1	2021	$0	$0	$0	$0	$0	$0.00
2	2022	0	0	0	0	0	0.00
3	2023	0	0	0	0	0	0.00
4	2024	186,090,367	0	0	0	186,090,367	11.26
5	2025	85,882,056	0	0	0	85,882,056	5.15
6	2026	95,733,225	0	0	0	95,733,225	5.72
7	2027	105,584,395	0	0	0	105,584,395	6.25
8	2028	115,435,565	0	0	0	115,435,565	6.78
9	2029	125,286,734	0	0	0	125,286,734	7.31
10	2030	135,137,904	0	0	0	135,137,904	7.81
11	2031	144,989,074	0	0	0	144,989,074	8.31
12	2032	154,840,243	0	0	0	154,840,243	8.82
13	2033	164,691,413	0	0	0	164,691,413	9.32
14	2034	174,542,583	0	0	0	174,542,583	9.78
15	2035	184,393,752	0	0	0	184,393,752	10.24
16	2036	168,543,441	0	0	0	168,543,441	9.28
17	2037	147,767,545	0	0	0	147,767,545	8.06
18	2038	147,767,545	0	0	0	147,767,545	7.99
19	2039	252,465,284	0	0	0	252,465,284	13.53
20	2040	177,681,184	0	0	0	177,681,184	9.42
21	2041	177,681,184	0	0	0	177,681,184	9.28
22	2042	177,681,184	0	0	0	177,681,184	9.57
23	2043	177,681,184	0	0	0	177,681,184	9.52
24	2044	177,681,184	0	0	0	177,681,184	9.47
25	2045	177,681,184	0	0	0	177,681,184	9.42
26	2046	177,681,184	0	0	0	177,681,184	9.37
27	2047	177,681,184	0	0	0	177,681,184	9.31
28	2048	177,681,184	0	0	0	177,681,184	9.26
29	2049	177,681,184	0	0	0	177,681,184	9.22
30	2050	177,681,184	0	0	0	177,681,184	9.16
31	2051	162,724,365	0	0	0	162,724,365	8.39
32	2052	147,767,545	0	0	0	147,767,545	7.62
33	2053	147,767,545	0	0	0	147,767,545	7.62
34	2054	252,465,284	0	0	0	252,465,284	13.02

TABLE VII–9—ESTIMATED ANNUAL COMMUNICATION COSTS AND PER VEHICLE COSTS—DSRC—Continued

Year	Calendar year	RSE	OBE	Data cost		Total	Cost per vehicle
				Satellite	Cellular		
35	2055	177,681,184	0	0	0	177,681,184	9.16
36	2056	177,681,184	0	0	0	177,681,184	9.16
37	2057	177,681,184	0	0	0	177,681,184	9.16
38	2058	177,681,184	0	0	0	177,681,184	9.16
39	2059	177,681,184	0	0	0	177,681,184	9.16
40	2060	177,681,184	0	0	0	177,681,184	9.16

(e) Communication Cost Summary

Comparing the two communication options evaluated in this proposal yields a sharp cost difference between the Hybrid and DSRC option, a difference of approximately $325 million annually at full deployment. Exploiting the ''free'' usage of the allocated DSRC spectrum appears to provide clear advantages to consumers and the overall system sustainability. Challenges deploying the approach, however, are in the physical placement of the road side units across the nation in a timely manner. Leveraging the existing cellular and satellite network poses a clear advantage to accelerating deployment in the fleet.

(f) Included SCMS Costs

The agency developed cost estimates for a potential SCMS based on additional research and modeling conducted by BAH, like the CDDS model used for communication cost estimation. The agency determined that it was appropriate to make some minor adjustments to the cost model based on updated information obtained between development of the original model and in preparation for this proposal. More specifically, the agency updated the model with changes to project salaries, compensation costs, and by including costs needed for establishing the SCMS (Year 0).

Salaries were revised using the most current data from Occupational Employment Statistics (OES) [351] published by the Bureau of Labor Statistics (BLS) May 2014. In addition, the agency mapped new/revised BLS job categories to those originally used by BAH. Compensation costs in the BAH model were revised to align with newer information indicating that the average hourly wages for all workers in private industry is $21.94 and the average total benefit is $9.71, where the total benefits are 44.3 percent of the wages.[352] The 44.3 percentage is significantly higher than the 25 percent used in the SCMS cost model and the agency believed it was appropriate to revised these values to accurate reflect compensation values. Finally, including Year 0 costs for the SCMS added $20.8 million as a one-time cost. The Year 0 costs include the design of the SCMS facilities, land preparation, power source redundancy, power line installation, and other facility characteristics that are necessary, and in some cases unique, for a successful SCMS operation. This new, added cost was amortized over 20 years which the agency believes is reasonable considering the long term commitment associated with SCMS development and operation.

To estimate the annual total costs for the entire SCMS, the agency first examined the costs for each of the 10 component functions of the SCMS. For each function, the costs comprised five expenditure categories: Hardware Purchase, Software Purchase, Software Operation and Maintenance (Q&M), Initial Facility Costs, Annual Facility Costs, and Full Time Equivalent (FTE) Costs. The SCMS model identified several locations that could be used to establish an SCMS as a way to develop facility cost averages. The averages are based on six geographically and demographically varying areas: Metro DC, Richland, WA, Denver, CO, Chicago, IL, San Antonio, TX, and Gastonia, NC. The key cost components evaluated are labor costs, energy costs, land cost, and monthly rent.

Table VII–10 and Table VII–11 show the estimated SCMS costs by specific SCMS function, the total costs, and the per vehicle cost. Any equipment related costs are adjusted for learning. As shown, the total estimated SCMS costs range from $39.1 million in the first year to $160.1 million in year 40 with per vehicle cost ranging from $2.42 to $8.29. The agency requests comment on its assumptions concerning potential SCMS costs. In particular, how would different approaches to the design of the SCMS affect the costs of operating the system? In addition, how would the costs of the SCMS be passed along to consumers?

TABLE VII–10—SCMS COSTS BY FUNCTION

Year	Calendar year	PCA	RA	LA	MA	LOP	ECA
1	2021	$4,708,025	$10,358,634	$987,277	$3,679,694	$2,332,410	$4,381,260
2	2022	4,672,050	10,270,907	988,020	3,658,706	2,311,587	4,343,622
3	2023	4,677,281	10,274,580	990,346	3,658,847	2,312,044	4,343,622
4	2024	4,687,633	10,281,935	995,076	3,659,125	2,312,536	4,343,622
5	2025	6,728,645	13,103,893	1,740,502	3,889,204	2,771,798	4,781,464
6	2026	4,724,254	10,308,046	1,011,781	3,660,108	2,313,639	4,343,622
7	2027	4,744,931	10,322,789	1,021,213	3,660,663	2,314,203	4,343,622
8	2028	4,765,448	10,337,418	1,030,571	3,661,213	2,314,761	4,343,622
9	2029	4,785,584	10,351,775	1,039,756	3,661,753	2,315,308	4,343,622
10	2030	10,510,180	16,401,748	4,799,128	4,179,494	3,682,299	4,781,464
11	2031	9,308,218	14,856,461	9,073,569	5,441,652	4,543,859	4,343,622

[351] MSA_M2014 File as May 2014, *www.bls.gov/oes.*

[352] Based on the News Release on, EMPLOYER COSTS FOR EMPLOYEE COMPENSATION, March 2015 (2015 USDL–15–1132) Table 5 (page 10), released June 10, 2015, *http://www.bls.gov/news.release/pdf/ecec.pdf.*

TABLE VII–10—SCMS COSTS BY FUNCTION—Continued

Year	Calendar year	PCA	RA	LA	MA	LOP	ECA
12	2032	9,327,079	14,869,909	9,082,173	5,442,159	4,544,359	4,343,622
13	2033	9,345,391	14,882,966	9,090,526	5,442,650	4,544,835	4,343,622
14	2034	9,363,032	14,895,544	9,098,573	5,443,123	4,545,288	4,343,622
15	2035	14,419,003	20,996,845	12,930,027	5,772,704	5,912,422	4,781,464
16	2036	9,395,586	14,918,755	9,113,422	5,443,997	4,546,114	4,343,622
17	2037	9,410,421	14,929,333	9,120,189	5,444,395	4,546,484	4,343,622
18	2038	9,424,185	14,939,146	9,126,467	5,444,764	4,546,824	4,343,622
19	2039	9,436,904	14,948,215	9,132,269	5,445,106	4,547,132	4,343,622
20	2040	18,633,720	24,737,954	15,746,265	6,126,542	7,214,409	4,781,464
21	2041	13,918,676	19,420,803	13,587,376	7,223,691	6,773,241	4,343,622
22	2042	13,927,310	19,426,959	13,591,314	7,223,922	6,773,441	4,343,622
23	2043	13,935,979	19,433,140	13,595,268	7,224,155	6,773,625	4,343,622
24	2044	13,943,871	19,438,767	13,598,868	7,224,367	6,773,790	4,343,622
25	2045	22,174,444	29,152,824	20,355,009	7,633,697	9,489,116	4,781,464
26	2046	13,955,521	19,447,074	13,604,182	7,224,679	6,774,061	4,343,622
27	2047	13,960,466	19,450,599	13,606,438	7,224,812	6,774,181	4,343,622
28	2048	13,964,937	19,453,788	13,608,477	7,224,932	6,774,292	4,343,622
29	2049	13,969,051	19,456,721	13,610,354	7,225,042	6,774,396	4,343,622
30	2050	26,815,885	33,350,158	23,655,970	8,045,813	11,171,981	4,781,464
31	2051	18,425,034	23,909,622	18,057,646	9,002,835	8,999,434	4,343,622
32	2052	18,428,332	23,911,973	18,059,151	9,002,923	8,999,513	4,343,622
33	2053	18,431,447	23,914,194	18,060,572	9,003,007	8,999,585	4,343,622
34	2054	18,434,213	23,916,166	18,061,833	9,003,081	8,999,649	4,343,622
35	2055	28,781,702	35,756,214	26,844,673	9,423,600	12,687,495	4,781,464
36	2056	18,438,804	23,919,440	18,063,928	9,003,204	8,999,755	4,343,622
37	2057	18,440,716	23,920,803	18,064,800	9,003,256	8,999,799	4,343,622
38	2058	18,442,316	23,921,944	18,065,529	9,003,299	8,999,834	4,343,622
39	2059	18,443,789	23,922,994	18,066,201	9,003,338	8,999,864	4,343,622
40	2060	31,518,164	38,029,601	28,307,710	9,825,764	13,480,752	4,781,464

TABLE VII–11 CONTINUED SCMS COSTS BY FUNCTION

Year	Calendar year	Intermediate CA	Root CA	DCM	Manager	Total costs	Total per vehicle
1	2021	$4,317,570	$1,723,817	$4,378,553	$2,233,628	$39,100,867	$2.42
2	2022	4,279,932	1,717,795	4,340,915	2,231,119	38,814,652	2.38
3	2023	4,279,932	1,717,795	4,340,915	2,231,119	38,826,479	2.36
4	2024	4,279,932	1,717,795	4,340,915	2,231,119	38,849,687	2.35
5	2025	4,718,684	1,808,090	4,760,710	2,292,279	46,595,268	2.80
6	2026	4,279,932	1,717,795	4,340,915	2,231,119	38,931,210	2.32
7	2027	4,279,932	1,717,795	4,340,915	2,231,119	38,977,180	2.31
8	2028	4,279,932	1,717,795	4,340,915	2,231,119	39,022,793	2.29
9	2029	4,279,932	1,717,795	4,340,915	2,231,119	39,067,558	2.28
10	2030	5,968,049	1,808,090	4,760,710	2,557,780	59,448,941	3.44
11	2031	8,455,524	1,717,795	4,340,915	3,382,829	65,464,444	3.75
12	2032	8,455,524	1,717,795	4,340,915	3,382,829	65,506,362	3.73
13	2033	8,455,524	1,717,795	4,340,915	3,382,829	65,547,052	3.71
14	2034	8,455,524	1,717,795	4,340,915	3,382,829	65,586,244	3.68
15	2035	10,890,222	1,808,090	4,760,710	3,511,964	85,783,450	4.77
16	2036	8,455,524	1,717,795	4,340,915	3,382,829	65,658,556	3.62
17	2037	8,455,524	1,717,795	4,340,915	3,382,829	65,691,506	3.58
18	2038	8,455,524	1,717,795	4,340,915	3,382,829	65,722,070	3.55
19	2039	8,455,524	1,717,795	4,340,915	3,382,829	65,750,310	3.52
20	2040	12,177,224	1,808,090	4,760,710	3,774,067	99,760,445	5.29
21	2041	12,631,117	1,717,795	4,340,915	4,517,339	88,474,574	4.62
22	2042	12,631,117	1,717,795	4,340,915	4,517,339	88,493,733	4.77
23	2043	12,631,117	1,717,795	4,340,915	4,517,339	88,512,955	4.74
24	2044	12,631,117	1,717,795	4,340,915	4,517,339	88,530,450	4.72
25	2045	17,513,413	1,808,090	4,760,710	4,691,868	122,360,635	6.48
26	2046	12,631,117	1,717,795	4,340,915	4,517,339	88,556,305	4.67
27	2047	12,631,117	1,717,795	4,340,915	4,517,339	88,567,283	4.64
28	2048	12,631,117	1,717,795	4,340,915	4,517,339	88,577,214	4.62
29	2049	12,631,117	1,717,795	4,340,915	4,517,339	88,586,351	4.59
30	2050	19,214,431	1,808,090	4,760,710	4,691,868	138,296,371	7.13
31	2051	16,806,710	1,717,795	4,340,915	4,517,339	110,120,950	5.68
32	2052	16,806,710	1,717,795	4,340,915	4,517,339	110,128,271	5.68
33	2053	16,806,710	1,717,795	4,340,915	4,517,339	110,135,185	5.68
34	2054	16,806,710	1,717,795	4,340,915	4,517,339	110,141,322	5.68
35	2055	23,459,123	1,808,090	4,760,710	4,692,002	152,995,074	7.89

TABLE VII–11 CONTINUED SCMS COSTS BY FUNCTION—Continued

Year	Calendar year	Intermediate CA	Root CA	DCM	Manager	Total costs	Total per vehicle
36	2056	16,806,710	1,717,795	4,340,915	4,517,339	110,151,511	5.68
37	2057	16,806,710	1,717,795	4,340,915	4,517,339	110,155,754	5.68
38	2058	16,806,710	1,717,795	4,340,915	4,517,339	110,159,302	5.68
39	2059	16,806,710	1,717,795	4,340,915	4,517,339	110,162,566	5.68
40	2060	23,459,123	1,808,090	4,760,710	4,692,026	160,663,404	8.29

3. Fuel Economy Impact

In addition to the cost of V2V equipment itself, other potential costs include the potential for new equipment on vehicles to increase vehicle weight. The agency expects increased weight of V2V equipment will have a small impact on the fuel economy of the individual vehicles. Over the lifetime of these vehicles, this impact on fuel economy will create a cost for society.

Potential fuel economy impacts can be evaluated in terms of annual impacts and the lifetime fuel economy impacts for a specified MY vehicle (MY fuel impact). The annual fuel impact represents the additional fuel costs from all V2V-equipped vehicles for that year. The MY fuel impact represents the additional fuel costs for a life of a MY vehicle and should be discounted.

As described in previous sections, V2V components include DSRC radios and relevant parts/materials (*e.g.,* antenna, installation material, HSM etc.) and OBE for cellular, Wi-Fi and satellite. A variance depending on the potential implementation is related to the one or two DSRC radio communication approach. Therefore, for the Hybrid option, the total additional total weight would be 3.21 pounds which came from one-radio and relevant parts/materials (3.06 pounds) and satellite radios (0.15 pounds). Weight from cellular and Wi-Fi are negligible. For the DSRC option, the total additional weight would be 3.38 pounds based the used of two DSRC radios and relevant parts/materials.

The impact of added weight on both annual and MY fuel economic is a function of vehicle volumes, vehicle miles traveled, survival probability (*i.e.,* the percentage of the vehicle fleet that will not be scrapped due to an accident), the price of gasoline, and the change in vehicle fuel economy (*i.e.,* change in miles per gallon) due to the added weight. Details on the estimating vehicle volumes, miles traveled, and survivability can be found in Chapter VII of the PRIA.

(a) Annual Fuel Economy Impact

Table VII–12 shows the annual fuel economy impact for both one-radio with the Hybrid option and two radios with the DSRC option. Note that the weight difference between the two-radio system and the one-radio system is 0.17 pound. This small weight difference resulted in no discernable difference between these two technology approaches. To be consistent with the measure used for other cost items, the ''per vehicle'' cost was estimated to be the cost per a new vehicle. As shown, the proposed rule would increase the current total annual fuel consumption by 1.10 million gallons in 2021 to 30.51 million gallons in 2060. The corresponding annual cost for these additional fuels was estimated to be $3.08 to $135.16 million, annually. These amounts were translated into $0.19 to $6.97 per new vehicle sold.

TABLE VII–12—ANNUAL FUEL ECONOMY IMPACT *

Year	Calendar year	Fuel price	Additional gallons (million)	Total fuel economy (million $)	Per vehicle cost ($)
1	2021	$2.80	1.10	$3.08	$0.19
2	2022	2.86	2.69	7.69	0.47
3	2023	2.91	4.70	13.68	0.83
4	2024	2.95	6.58	19.41	1.17
5	2025	2.99	8.34	24.94	1.50
6	2026	3.02	10.02	30.26	1.81
7	2027	3.06	11.66	35.68	2.11
8	2028	3.08	13.19	40.63	2.39
9	2029	3.11	14.62	45.47	2.65
10	2030	3.14	16.01	50.27	2.91
11	2031	3.18	17.32	55.08	3.16
12	2032	3.22	18.52	59.63	3.40
13	2033	3.26	19.69	64.19	3.63
14	2034	3.35	20.73	69.45	3.89
15	2035	3.38	21.76	73.55	4.09
16	2036	3.43	22.68	77.79	4.28
17	2037	3.47	23.50	81.55	4.45
18	2038	3.51	24.28	85.22	4.61
19	2039	3.58	24.99	89.46	4.79
20	2040	3.66	25.64	93.84	4.97
21	2041	3.64	26.27	95.62	5.00
22	2042	3.68	26.70	98.26	5.29
23	2043	3.72	27.11	100.85	5.40
24	2044	3.76	27.46	103.25	5.50
25	2045	3.80	27.83	105.75	5.60
26	2046	3.84	28.11	107.94	5.69
27	2047	3.88	28.44	110.35	5.78
28	2048	3.93	28.71	112.83	5.88

TABLE VII–12—ANNUAL FUEL ECONOMY IMPACT *—Continued

Year	Calendar year	Fuel price	Additional gallons (million)	Total fuel economy (million $)	Per vehicle cost ($)
29	2049	3.97	28.91	114.77	5.95
30	2050	4.01	29.21	117.13	6.04
31	2051	4.06	29.43	119.49	6.16
32	2052	4.10	29.65	121.57	6.27
33	2053	4.14	29.82	123.45	6.37
34	2054	4.18	29.97	125.27	6.46
35	2055	4.22	30.10	127.02	6.55
36	2056	4.27	30.20	128.95	6.65
37	2057	4.31	30.33	130.72	6.74
38	2058	4.35	30.41	132.28	6.82
39	2059	4.39	30.47	133.76	6.90
40	2060	4.43	30.51	135.16	6.97

* For both one-radio and two-radios approaches.

(b) MY Fuel Economy Impact

MY fuel cost (*i.e.,* lifetime fuel economy cost) is the cost of additional gasoline used over the vehicle's life and is estimated on a per vehicle basis. The fuel economy cost for a specific MY vehicle is derived by applying the specific MY fuel economy cost per vehicle to every vehicle. The cost is accrued throughout the vehicle's life and is discounted to reflect its present value (in 2014 dollars) using 3% and 7% discount rates. The MY fuel economy impact also is a function of mileage, survival probability (*i.e.,* the percentage of the vehicle fleet that will not be scrapped due to an accident), the price of gasoline, the change in vehicle fuel economy due to the added weight, and the discount rate chosen to express lifetime impacts in their present value. Additional details on the deriving the MY fuel economy impact can be found in Chapter 7 of the PRIA.

Table VII–13 shows the MY fuel economy impacts at both 3 and 7 percent discount rates. As shown, at a 3 percent discount rate, the MY fuel economy impact of V2V related equipment is estimated to be $32.75 million at MY 2021 and gradually increasing to $104.73 million for MY 2050 vehicles. The cost per vehicle is estimated to be $2.02 for MY 2021 and $5.40 for MY 2050 vehicles. The increase in fuel cost in the future, especially after the third year when the full adoption of DSRC radios starts, is primarily due to projected higher fuel prices and vehicle sales, both of which can vary. The cost per vehicle for a particular MY vehicle is calculated by dividing the total fuel cost for that MY by the total vehicle sales of that MY vehicle. For the first two years, due to the proposed phased in implementation, the cost per vehicle is smaller than the cost per affected vehicle since cost per vehicle as defined is the average cost over all new vehicles.

At a 7 percent discount rate, the MY fuel economy impact is estimated to be $25.03 for million MY 2021 and $80.52 million for MY 2050 vehicles. The cost per vehicle for these two MY vehicles would be $1.55 and $4.15 for MY 202 and MY 2050 vehicles, respectively.

TABLE VII–13—MY FUEL ECONOMY IMPACT * BY DISCOUNT RATE

Year	Model year	Gallons per vehicle	Total gallons (million)	MY fuel economy impact (million $)		Per vehicle cost	
				@3%	@7%	@3%	@7%
1	2021	0.83	13.38	$32.75	$25.03	$2.02	$1.55
2	2022	1.22	19.88	49.33	37.71	3.02	2.31
3	2023	1.58	26.01	65.34	49.96	3.97	3.04
4	2024	1.54	25.52	64.90	49.62	3.93	3.00
5	2025	1.49	24.80	63.85	48.81	3.83	2.93
6	2026	1.50	25.07	65.31	49.92	3.90	2.98
7	2027	1.50	25.39	66.95	51.17	3.97	3.03
8	2028	1.51	25.74	68.69	52.50	4.03	3.08
9	2029	1.52	26.03	70.32	53.74	4.11	3.14
10	2030	1.53	26.42	72.30	55.27	4.18	3.19
11	2031	1.53	26.77	74.21	56.74	4.26	3.25
12	2032	1.54	27.06	76.00	58.14	4.33	3.31
13	2033	1.55	27.34	77.77	59.52	4.40	3.37
14	2034	1.55	27.71	79.86	61.15	4.48	3.43
15	2035	1.56	28.07	81.82	62.67	4.55	3.48
16	2036	1.56	28.40	83.76	64.18	4.61	3.53
17	2037	1.57	28.77	85.80	65.76	4.68	3.59
18	2038	1.57	29.09	87.73	67.25	4.74	3.64
19	2039	1.58	29.45	89.80	68.86	4.81	3.69
20	2040	1.58	29.87	92.00	70.56	4.88	3.74
21	2041	1.58	30.30	94.14	72.18	4.92	3.77
22	2042	1.59	29.53	92.69	71.07	4.99	3.83
23	2043	1.59	29.69	94.15	72.20	5.05	3.87
24	2044	1.59	29.85	95.63	73.36	5.10	3.91
25	2045	1.59	30.03	97.17	74.56	5.15	3.95

TABLE VII–13—MY FUEL ECONOMY IMPACT * BY DISCOUNT RATE—Continued

Year	Model year	Gallons per vehicle	Total gallons (million)	MY fuel economy impact (million $)		Per vehicle cost	
				@3%	@7%	@3%	@7%
26	2046	1.59	30.19	98.66	75.72	5.20	3.99
27	2047	1.59	30.37	100.21	76.94	5.25	4.03
28	2048	1.59	30.53	101.73	78.14	5.30	4.07
29	2049	1.59	30.69	103.20	79.30	5.35	4.11
30	2050	1.59	30.87	104.73	80.52	5.40	4.15

4. Overall Annual Costs

(a) Total Annual Costs

The annual costs represent the total annual capital investment and fuel economy impact from all V2V-equipped vehicles per year. The costs comprise four major categories: (1) Vehicle technology (*i.e.,* DSRC radios and app), (2) SCMS, (3) equipment and communication network in support of vehicles-to-SCMS communication (*i.e.,* Communication), and (4) fuel economy impact due to the increased weight from the in-vehicle equipment in (1) and (3).

Table VII–14 presents the total annual costs and cost per vehicle. The total annual costs would range from $2.2 (the lower bound for 2021) to $5.0 billion (not shown, upper bound for 2024). The cost per new vehicle would range from $135 to $301 (lower bound for 2021 and upper bound for 2024). The lower and upper bounds represent the two technology implementation approaches (one-radio and two-radios) that the agency believes can meet the proposed rule and the security and privacy specifications.

TABLE VII–14—TOTAL ANNUAL COSTS AND COST PER VEHICLE

[2014 $]

Year	Calendar year	Annual cost (million $)		Annual cost per vehicle	
		Low	High	Low	High
1	2021	$2,192	$2,864	$135.38	$176.89
5	2025	3,701	4,803	222.02	288.13
10	2030	3,649	4,692	210.94	271.22
15	2035	3,717	4,757	206.52	264.26
20	2040	3,831	4,844	203.01	256.71
25	2045	3,796	4,764	201.14	252.49
30	2050	3,858	4,818	198.97	248.50
35	2055	3,832	4,766	197.65	245.80
40	2060	3,804	4,717	196.20	243.27

(b) Total Annual Costs by Cost Category

Table VII–15 to Table VII–18 lists the total annual costs separately for the four cost categories. As shown, the majority of costs came from vehicle technology costs. The annual vehicle technology costs ranged from $2.0 to $4.9 billion (in 2023, not shown) and the per vehicle cost ranged from $124 to $298.

The SCMS costs included the costs for the establishment, operation, and maintenance of the system that covered the expenditure on human resources, equipment, facilities, energy, etc. The total annual SCMS costs would range from $39 to $161 million. This is equivalent to $2 to $8 per vehicle.

The communication costs included the costs for equipment and communication network that are needed in support of the vehicle-to-SCMS communication. The annual communication costs would range up to $494 million. The communication cost per vehicle would be up to $26 per vehicle.

The fuel economy impact was based on the added weight of 3.38 pounds for the two-radio technology approach and 3.21 pounds for the one-radio approach. Due to the insignificant weight difference between these two approaches, the estimated fuel economy impacts are identical for these approaches when factoring rounding errors. Therefore, the fuel economy impact as shown applies to both approaches. The annual fuel economy impact would range from $3 to 135 million. This equates to up to $7 per vehicle.

TABLE VII–15—TOTAL ANNUAL VEHICLE TECHNOLOGY COSTS

[2014 $ and vehicles in millions]

Year	Calendar year	Total costs (million $)		Cost per vehicle	
		Low	High	Low	High
1	2021	$2,001	$2,822	$123.59	$174.29
5	2025	3,297	4,646	197.79	278.68
10	2030	3,160	4,447	182.63	257.06
15	2035	3,135	4,413	174.17	245.17
20	2040	3,178	4,473	168.39	237.03

TABLE VII–15—TOTAL ANNUAL VEHICLE TECHNOLOGY COSTS—Continued

[2014 $ and vehicles in millions]

Year	Calendar year	Total costs (million $)		Cost per vehicle	
		Low	High	Low	High
25	2045	3,096	4,359	164.09	230.98
30	2050	3,115	4,385	160.67	226.16
35	2055	3,061	4,308	157.85	222.19
40	2060	3,015	4,243	155.47	218.85

TABLE VII–16—TOTAL ANNUAL SCMS COSTS *

[2014 $ and vehicles in millions]

Year	Calendar year	Total costs (million $)	Cost per vehicle
1	2021	$39	$2.42
5	2025	47	2.80
10	2030	59	3.44
15	2035	86	4.77
20	2040	100	5.29
25	2045	122	6.48
30	2050	138	7.13
35	2055	153	7.89
40	2060	161	8.29

* Not impacted by technology approach.

TABLE VII–17—TOTAL ANNUAL COMMUNICATION COSTS

[2014 $ and vehicles in millions]

Year	Calendar year	Total costs (million $)		Cost per vehicle	
		Low	High	Low	High
1	2021	$0	$1,486	$0.00	$9.18
5	2025	85	3,324	5.15	19.94
10	2030	135	3,799	7.81	21.96
15	2035	185	4,229	10.24	23.49
20	2040	178	4,597	9.42	24.36
25	2045	178	4,709	9.42	24.96
30	2050	178	4,873	9.16	25.13
35	2055	178	4,917	9.16	25.36
40	2060	178	4,939	9.16	25.47

TABLE VII–18—TOTAL ANNUAL FUEL ECONOMY IMPACT * COSTS

[2014 $ and vehicles in millions]

Year	Calendar year	Fuel consumption (million gallons)	Fuel costs (million $)	Cost per vehicle
1	2021	1.10	$3.08	$0.19
5	2025	8.34	24.94	1.50
10	2030	16.01	50.27	2.91
15	2035	21.76	73.55	4.09
20	2040	25.64	93.84	4.97
25	2045	27.83	105.75	5.60
30	2050	29.21	117.13	6.04
35	2055	30.10	127.02	6.55
40	2060	30.51	135.16	6.97

* Cost equal for both two technology implementation approaches due to insignificant weight difference.

5. Overall Model Year (MY) Costs

The primary difference between the annual and MY costs is the fuel economy impact. The PRIA assumes that vehicle technology, SCMS, and communication costs would be paid by vehicle owners when their vehicles were purchased. Thus, these three costs are identical between the annual and

MY costs. In annual costs, the fuel economy impact measures the additional fuel costs for all V2V-equipped MY vehicles in a specific calendar year. For estimating the MY costs, the fuel economy impact measures the incremental lifetime fuel impact for a specific MY vehicles and were discounted at a 3 and 7 percent rate to reflect their present value.

Table VII–19 and Table VII–20 shows the MY costs at a 3 percent and 7 percent discount rate, respectively. At a 3 percent discount rate, the MY costs would range from $2.22 (lower bound at Year 1) to $5.03 billion (upper bound at Year 4, not shown). The cost per vehicle would range from $137.21 to $304.06. The lower bound of the costs represents the MY costs for the one-radio approach and the higher bound represents the cost for the two-radio approach.

At a 7 percent discount rate, the MY costs would range from $2.21 (lower bound at Year 1) to $5.01 billion (upper bound at Year 4, not shown). The MY cost per vehicle would range from $136.73 to $303.14.

TABLE VII–19—TOTAL MY COSTS AND COST PER VEHICLE AT 3 PERCENT

Year	Model year	Total MY costs (million $)		MY cost per vehicle	
		Low	High	Low	High
1	2021	$2,221	$2,894	$137.21	$178.72
5	2025	3,740	4,842	224.36	290.46
10	2030	3,671	4,714	212.21	272.49
15	2035	3,726	4,765	206.98	264.72
20	2040	3,829	4,842	202.92	256.61
25	2045	3,787	4,756	200.68	252.03
30	2050	3,846	4,806	198.33	247.86

TABLE VII–20—TOTAL MY COSTS AND COST PER VEHICLE AT 7 PERCENT

Year	Calendar year	Total MY costs (million $)		MY cost per vehicle	
		Low	High	Low	High
1	2021	$2,214	$2,886	$136.73	$178.25
5	2025	3,725	4,827	223.45	289.56
10	2030	3,654	4,697	211.22	271.51
15	2035	3,706	4,746	205.92	263.66
20	2040	3,808	4,821	201.78	255.47
25	2045	3,764	4,733	199.49	250.83
30	2050	3,821	4,782	197.09	246.61

The agency seeks comment on all aspects of the cost estimates developed for this proposal. This includes all cost assumptions, estimated component costs, communication costs including other potential options the agency did not evaluate, and views on potential SCMS costs. Please provide any supporting data for the comments. If necessary, the agency has processes and procedures for submitting confidential business information.

C. Non-Quantified Costs

The agency identified four major non-quantified costs that could be related to the deployment of V2V devices. These include the potential health costs due to a potential increase in electromagnetic hypersensitivity (EHS, *i.e.,* human radiation exposure to wireless communications discussed in Section IV.E) potential loss of perceived privacy, the opportunity costs of alternative uses for the spectrum, and possibly increased litigation costs. The agency requests comment on these costs, particularly whether there exist ways to quantify any of these costs.

1. Health Insurance Costs Relating to EHS

Many commenters (mostly individual citizens) commented on the potential relationship of DSRC radio technology and electromagnetic field exposure hypersensitivity, raising concerns regarding the potential for a V2V mandate to increase electromagnetic beyond today's levels. The agency takes these concerns very seriously. The agency since has conducted a literature review and other research (on-going) to better understand electromagnetic radiation and its relationship to the symptoms of EHS. As we understand that the expertise of our sister agencies such as the Federal Communications Commission (FCC) and the Food and Drug Administration (FDA), among others, have been involved with electromagnetic fields, in parallel with the pervasiveness of cellular phone deployment in the United States and globally.

The FDA found that most studies conducted to date show no connection between certain health problems and exposure to radiofrequency fields via cell phone use and that attempts to replicate and confirm the few studies that did show a connection have failed.[353] Furthermore, V2V devices would operate at distances significantly further than the distance between a portable cellular phone to its operator, where the device is generally carried on a person or pressed directly to the ear. Therefore, the EHS effects are expected to be lower for V2V than cell phones; the agency does not quantify the health costs relating to EHS. Nevertheless, the agency acknowledges that research is still ongoing and, as technology evolves; wireless communications will most likely continue to increase. We will continue to monitor the progress of this issue and closely follow the efforts of the Radiofrequency Interagency Work Group (RFIAWG) which may yield any

[353] Radiation-Emitting Products, ''Current Research Results,'' *http://www.fda.gov/RadiationEmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116335.htm*, last accessed: June 3, 2015.

potential future guidance for wireless device deployment and usage.

2. Perceived Privacy Loss

One intangible outcome of the proposed rule is a perceived potential for loss of privacy. Individuals may perceive the V2V system as eroding their personal privacy and view this as a considerable negative consequence. Also, several surveys showed that individual attitudes towards information security seems inconsistent with their behavior on protection of their information.[354] [355] Acquisti, et al. stated that identifying the consequence of a privacy incident is difficult enough, and quantifying these consequences is remarkably complex.[356] Furthermore, there are few studies on the economic costs for privacy and even less for quantifying the economic costs for perceived privacy loss. Given the great uncertainties for valuing the perceived loss of privacy, this analysis does not quantify this cost.

To ease the privacy concerns and mitigate possible privacy loss, the agency is committed to regulating V2V communications in a manner that both protects individuals and promotes this important safety technology. NHTSA has worked closely with experts and our industry research partners (CAMP and the VIIC) to build privacy protections into the design and deployment of V2V communications that help guard against risks to individual privacy.

The agency has conducted a thorough privacy impact assessment as required by the Consolidated Appropriations Act, 2005, Public Law 108–447. This Act requires that Federal agencies conduct privacy impact assessments (PIAs) of proposed regulatory activities involving collections or systems of information in electronic form with the potential to impact individual privacy. A PIA documents the flow of information and information requirements within a system by detailing how and why information is transmitted, collected, stored and shared to: (1) Ensure compliance with applicable legal, regulatory, and policy requirements regarding privacy; (ii) determine the risks and effects of the proposed data transactions; and (iii) examine and evaluate protections and alternative processes for handling data to mitigate potential privacy risks.

3. Opportunity Costs of Spectrum for Other Uses

(a) Overview

Our analysis shows that this rule will generate significant net benefits due to improved safety, decreased loss of life, reduced property damage, and other impacts. While requiring this technology has costs, the analysis here shows that the benefits of this rule well justify those costs.

As discussed in greater detail elsewhere in this notice, the FCC designated the 5.9 GHz band (*i.e.,* 5850–5925 MHz) for ITS radio services and adopted open license to both public safety and non-public safety use of this band with the priority for public safety communications in 2003. Within the 5.9 GHz band, the FCC has designated Channel 172 (*i.e.,* 5.855–5.865 GHz, a 10 MHz band) exclusively for ''vehicle-to-vehicle communication for crash avoidance and mitigation, and safety of life and property applications.''

Given the FCC's decision about how to allocate Channel 172, this rule results in the use of that particular radio spectrum for vehicle-to-vehicle communication even though that resource could potentially have alternative uses for society, including alternative safety applications. The FCC, not NHTSA or DOT, has the authority to determine the commercial use of spectrum. However, NHTSA understands the scarcity of spectrum and in the interests of providing a complete analysis of the costs and benefits of this rule seeks comment on the potential costs associated with the lost opportunity to exploit the spectrum at issue for other uses.

The FCC, as part of its own ongoing rulemaking proceeding, is considering whether to allow ''Unlicensed National Information Infrastructure'' (UNII) devices (that provide short-range, high-speed, unlicensed wireless connections for, among other applications, Wi-Fi-enabled radio local area networks, cordless telephones, and fixed outdoor broadband transceivers used by wireless Internet service providers) to operate in the same frequencies of the spectrum as V2V.

Opening any spectrum band to sharing could result in many more devices transmitting and receiving information on the same or similar frequencies. Depending on the technology, band, and uses at issue, such sharing can work well or can lead to harmful interference among those devices. Recognizing the scarcity of spectrum, in December 2015 and January 2016, the DOT, FCC, and the Department of Commerce sent joint letters to members of the U.S. Senate Committee on Commerce, Science, and Transportation, stating a shared ''commitment to finding the best method to develop, successfully test, and deploy advanced automotive safety systems while working to meet existing and future spectrum demands,'' and announcing an interagency, multi-phased testing regime that will be used to ''provide reliable, real-world data on the performance of unlicensed devices that are designed to avoid interfering with DSRC operation in the 5.9 GHz band.'' [357] The results of this test will inform FCC on potential sharing solutions, if any, between proposed Unlicensed National Information Infrastructure (U–NII) devices and DSRC operations in the 5.850–5.925 GHz (U–NII–4) band.

The results of the interagency tests will also be utilized to inform NHTSA's proceeding as it progresses towards aproceeding prior to any final rulemaking on V2V. As noted in the joint DOT-FCC-Commerce letter that responds to a Congressional letter dated September 9, 2015, it is ''imperative—to ensure the future automotive safety and efficiency of the traveling public—that all three phases of the FCC test plan be completed before reaching any conclusions as to whether [non-DSRC] unlicensed devices can safely operate in the 5.9 GHz band.'' without interfering with DSRC operation.

DOT believes that any estimate of the opportunity cost of this NPRM should be made in the context of the FCC's existing policies and authorities. Put another way, in identifying and valuing other opportunities that might be precluded or degraded by this NPRM, DOT is considering those opportunities consistent with the FCC's designation of spectrum. However, in assessing the benefits in the context of the current FCC designation on which this rule focuses, we invite and will consider comments on opportunity costs associated with broader uses of spectrum beyond the current FCC designation.

In addition, we provide a further discussion of other potential benefits of DSRC beyond the two safety applications quantified in the economic analysis for this NPRM. Those

[354] Acquisti, Alessandro (2004), Privacy Attitudes and Privacy Behavior, Losses, Gains, and Hyperbolic Discounting (Preliminary draft).

[355] Acquisti, Alessandro (2002). Protecting privacy with economics: Economic incentives for preventing technologies in ubiquitous computing environments. In workshop on Socially-informed Design of Privacy-enhancing Solutions, 4th International Conference on Ubiquitous Computing—UBICOMP'02.

[356] Acquisti, A., Friedman, A., Telang, R., ''Is there a Cost to Privacy Breaches? An Event Study'', Twenty Seventh International Conference on Information System, Milwaukee 2006 (pre-proceeding draft version).

[357] See letter in NHTSA Docket No. NHTSA–2016–0126.

additional benefits include potential safety, congestion, environmental, UAS and Smart City benefits.

(b) Benefits of DSRC

We first provide a further explanation of the potential additional safety benefits of DSRC beyond the two intersection safety applications quantified in the economic analysis for this NPRM.

The primary benefit of the proposed rule is improved automobile safety. Section VII.D discusses this benefit at length. DOT also wishes to present a broader discussion of the benefits not measured in the Primary Regulatory Impact Analysis and seek comment on the resulting estimate. To arrive at this estimate, we have taken existing research that quantified motor vehicle crashes as costing society over $242 billion in economic impacts in 2010 and caused societal harm of over $836 billion through fatalities, injuries and property damage. Adjusting the societal harm estimate to reflect the increase in traffic fatalities and CPI in 2015, we arrive at a value of $966 billion. Recognizing previous research has indicated that V2V could potentially avoid or mitigate 80% of unimpaired crashes, we have conservatively calculated scenarios where V2V is phased in linearly, reaching maximum crash reduction benefits of 5, 10, and 15% by 2035.

TABLE VII–21—SUMMARY OF ESTIMATED PRESENT VALUE OF BENEFITS OF V2V COMMUNICATION FOR THIS NPRM

Societal Harm ($M)	Percentage of crashes prevented	2018 PV at 3% discount rate ($M)	2018 PV at 7% discount rate ($M)
$966,000	5.0	$603,620	$288,480
$966,000	10.0	1,207,230	576,950
$966,000	15.0	1,810,850	865,430

A more conservative approach to calculating total benefit of the rule could be considering a function of the number of lives that would be saved by V2V communication, multiplied by the economic value of a life. A number of values have been used for the economic value of a life; we compute our sensitivity analysis using values of $5–$13.4M. Table VII–22 below presents different estimates for the 2018 value of the benefit of the rule through 2050.

TABLE VII—22 SUMMARY OF ESTIMATED PRESENT VALUE OF BENEFITS OF V2V COMMUNICATION FOR THIS NPRM

Value of a life ($M)	Percentage of fatalities prevented	Fatalities prevented	2018 PV at 3% discount rate ($M)	2018 PV at 7% discount rate ($M)
$5.4	1.0	350.92	$38,636	$23,965
$13.4	1.0	350.92	95,874	59,468
$5.4	5.0	1754.6	193,181	119,824
$13.4	5.0	1754.6	479,373	297,341
$5.4	10.0	3509.2	386,360	239,648
$13.4	10.0	3509.2	958,747	594,683

(c) Other Benefits of DSRC Communication

The benefits shown above offset the costs, including opportunity costs, of this proposed rule. Moreover, the beneficial uses of spectrum for vehicle-to-vehicle communications could well increase in the future. Over the last five years, the USDOT has sponsored the Connected Vehicle Program under Intelligent Transportation Systems Research. This program has identified more than fifty potential connected vehicle applications concepts, many of which have already been prototyped and demonstrated. As a part of this process, the component application development programs have also conducted assessments to measure safety, mobility, and environmental impacts. Field demonstrations have been supplemented by estimation of difficult-to-observe impacts and potential future impacts from broader application deployment using a range of analytical methods. The USDOT has published documentation from the more advanced application development efforts, including concepts of operations, system requirements, design documents, algorithms, functional descriptions, characterization test results, field test evaluation results and estimation of benefits associated with these prototypes. In total, the USDOT has identified fifty-three connected vehicle applications that will depend on effective vehicle communication. These fifty-three applications include thirteen safety applications that address vehicle occupant and pedestrian safety through communication with other vehicles as well as roadside infrastructure. They also include fifteen applications that address environmental quality and resource consumption, and many more that address congestion, mobility, and data gathering.

(d) Opportunity Costs of Precluding Alternative Uses

Decisions regarding whether to allow additional uses of spectrum than those currently authorized by the FCC for the ITS band are not within the scope of DOT's or NHTSA's authority. Comments on the value of these uses will, however, be accepted. Such comments should consider that the interagency spectrum sharing tests are not yet complete, and it will be impossible to fully measure such benefits until the feasibility of sharing is determined. If such sharing is possible, those benefits will likely decrease opportunity costs associated with mandating V2V communications. Nothing in this rulemaking would preclude the FCC, in conjunction with DOT and NTIA, from authorizing appropriate sharing at some future date.

The chart below is a generic calculation of the spectrum opportunity cost, based on preclusion of alternative uses for the spectrum. This estimate might overstate the value of opportunity cost if sharing is determined to be possible. We use estimated Wi-Fi values from 2013 and earlier reports to estimate the economic value of one MHz of

spectrum. To do this, we begin by extracting data from the largest and most recent study of spectrum values from TAS, making several adjustments based on our analysis.[358] To calculate a net present value as of 2016, we treat the annual economic value of the spectrum beginning in 2018 and until 2050, meaning that it will generate the same value for each year in the future. There are two assumptions implicit in this approach: (1) The spectrum continues to generate value into the future and (2) the value of the spectrum does not change from year to year (*i.e.,* the growth rate is zero).[359]

The estimated present value of each additional MHz up to 2050 ranges between $1.9B and $3.4B based on whether a 7 or a 3 percent discount rate is used, respectively.[360]

We seek comment on whether these per-MHz figures are reasonable, including comment on the detailed analysis in footnote 3, as well as any alternative methodologies.

TABLE VII–23—SUMMARY OF ESTIMATED PRESENT VALUE OF SPECTRUM

Approach	Value (billions of $)	MHz	Billions of $/MHz	PV to 2050, 2018 implementation, 3% discount rate (billions of $/MHz)	PV to 2050, 2018 implementation, 7% discount rate (billions of $/MHz)
Estimated Value of Wi-Fi	110	638	0.2	3.4	1.9

Other ways to estimate the opportunity cost of spectrum may be feasible, including using auction values for spectrum licenses. A method like this would require estimates of the ratio between auction value and annual consumer surplus. A method like that would generate far higher values than the table above because it uses licensed rather than unlicensed spectrum as a benchmark—making it yield an estimate that cannot be directly used to assess the value of unlicensed spectrum. Other considerations when using the estimates above to value the spectrum in question include:

The value of spectrum is highly situational and the historic spectrum value might not be a valid indication of the spectrum of the future. Spectrum value differs with respect to variables including, but not limited to, frequencies, size of the block or segment, international harmonization, geographic location, the timing of the release of new batches of spectrum, and the extent to which use is shared or exclusive. Frequencies might be the most significant factor to determine the value since different frequencies have different characteristics that make useful for different applications. The most useful bands of frequencies may be auctioned out and developed early. The spectrum values for these frequencies may have very different characteristics from the 5.9 GHz band and their value may exceed the value of the 5.9 GHz.

The cost of delivering information over spectrum varies and is a function of the range in which it operates. Higher frequency spectrums like 5.9 GHz broadcast over much shorter distances than lower frequency spectrums and thus require the interaction of interoperable devices over these short distances to transmit and receive messages in order for applications to activate.

Existing market values do not reflect the progressive increase of the economic value of spectrum over time (*i.e.,* time-dependent value).

The above estimates yield per-MHz figures for the gross opportunity cost that would result if spectrum in these bands were monopolized. However, the actual opportunity cost associated with spectrum that would result from mandating V2V in the way prescribed in this NPRM is represented by foregone alternative uses of that spectrum, which would be more limited.

It is possible that all spectrum within the relevant 75 MHz will ultimately be used for vehicle-to-vehicle communications given the substantial safety benefits of that technology. It is, however, likely that not all spectrum within the relevant 75 MHz will be de facto or de jure used exclusively for the specific safety applications envisioned by this rule, *i.e.,* those based on transmission of the Basic Safety Message. In particular, we propose to require BSM transmissions on a single 10 MHz channel. Multiplying this 10 MHz by the per-MHz values derived above yields an opportunity cost of $19–$34 billion. We seek comment on the best framework to appropriately consider the opportunity costs of this proposed rule across the band, taking into account varying assumptions about spectrum usage. DOT expects to include an estimate of the opportunity cost of spectrum as part of its RIA in a final rule.

4. Increased Litigation Costs

The agency recognizes the possibility of higher litigation costs due to the cooperative nature of the V2V environment. However, the agency reiterates that driving tasks are drivers' responsibilities. The at-fault driver in a crash will bear the economic burden and this will not be altered in the V2V environment. Furthermore, V2V technology is expected to help avoid crashes and thus reduce the overall burden imposed on legal systems and traffic courts.

[358] Assessment of the Economic Value of Unlicensed Spectrum in the United States, Final Report, February 2014, Telecom Advisory Services, LLC *http://www.wififorward.org/wp-content/uploads/2014/01/Value-of-Unlicensed-Spectrum-to-the-US-Economy-Full-Report.pdf* (last accessed Dec 8, 2016). We first remove RFID retail because it is a very different technology from Wi-Fi and it operates at very low frequency bands (13.56, 4.33, and 902–928 MHz (*i.e.,* all operate at less than 1 GHz). Second, Table C includes $34.885B of producer surplus associated with Wi-Fi only tablets estimated as the difference between the retail price and manufacturing costs for a weighted average of tablet suppliers. In practice, consumers pay above manufacturing costs for marketing, brand, and other amenities, making this an overestimate. As a rough adjustment, we cut this number in half to $17.44B. Adding all spectrum values from Table C of the TAS report except for RFID retail yields a total value for unlicensed Wi-Fi spectrum of $110 billion. Based on the CEA report, there are a total of 638 MHz of spectrum available for unlicensed Wi-Fi use. This includes 83 MHz in the 2.4 GHz band and 555 MHz in the 5.1–5.8 GHz band. Dividing the TAS estimate of Wi-Fi value by the total bandwidth gives an estimate of $172.4 million per each MHz of spectrum.

[359] Other researchers including Bazelon and McHenry (2015) use a similar approach. Bazelon and McHentry (2015) paper is available here: *http://www.brattle.com/system/publications/pdfs/000/005/168/original/Mobile_Broadband_Spectrum_-_A_Valuable_Resource_for_the_American_Economy_Bazelon_McHenry_051115.pdf* (last accessed Dec 8, 2016).

[360] We use 3 and 7 percent discount rates to be consistent with OMB guidelines, available here (Step 7, p. 11): *https://www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf* (last accessed Dec 8, 2016).

D. Estimated Benefits

1. Assumptions and Overview

In order to estimate the benefits of this rule, the agency made several key assumptions. The agency applied the same assumptions for adoption and vehicle fleet penetration rates as for estimating both the costs and benefits of this proposed rule, as shown in Table VII–24 and Table VII–25.

TABLE VII–24—V2V TECHNOLOGY ADOPTION RATES IN PERCENT

	Model year							
	2021	2022	2023	2024	2025	2026	2027	2028
DSRC %	50	75	100	100	100	100	100	100
Applications % *	0	5	10	25	40	65	90	100

* As percent of DSRC-equipped vehicles.

TABLE VII–25—V2V TECHNOLOGY FLEET PENETRATION

Year	Calendar year	With DSRC radios		With apps	
		Number of vehicles (million)	Percent	Number of vehicles (million)	Percent
1	2021	8.1	3.3	0.0	0.0
5	2025	68.13	27.4	6.3	5.2
10	2030	144.3	55.8	87.2	33.7
15	2035	208.4	77.6	163.7	61.0
20	2040	253.0	90.8	226.1	81.2
25	2045	276.6	96.2	265.3	92.3
30	2050	291.3	98.6	286.9	96.8
35	2055	300.6	99.7	298.1	98.9
40	2060	305.2	100.0	304.6	99.8

The agency estimated the potential benefits of the proposed rule based upon a scenario where two safety applications, IMA and LTA, are voluntarily adopted by industry following a DSRC-mandate. The agency focused on these potential safety applications because we have sufficient data and because they can be effectively enabled only by V2V. IMA warns drivers of vehicles approaching from a lateral direction at an intersection, while LTA warns drivers of vehicles approaching from the opposite direction when attempting a left turn at an intersection. The agency notes that this may not be the scenario that actually occurs following a DSRC-mandate; manufacturers may choose to offer other safety applications that use V2V technology beyond these two and may offer those technologies or IMA and LTA in a time frame different from what is considered for purposes of analysis. In addition, manufacturers may also offer various other technologies that use DSRC, such as V2I or V2P technologies. These other technologies may offer benefits of a different amount than those calculated for IMA and LTA and they may accrue over a different timeframe. The agency requests comment on these assumptions.

Overall, three major factors influence the potential benefits of a V2V implementation: The size of the crash population, the safety application effectiveness, and vehicle communication rates. The undiscounted annual benefits thus are the product of these three factors and can be expressed mathematically by the following generic formula:

$B_i = P * E * C_i$

Where,

B_i = Annual benefits (or MY benefits) of the proposed rule at year i,

P = Target population (crashes, fatalities, injuries, or PDOVs),

E = Effectiveness of apps (*i.e.,* IMA or LTA), and

C_i = communication rate at year i.

(a) Target Population (P)

The target population (P) includes crashes, fatalities, injuries, and PDOVs. As described in Section II.A, the Safety Need, this proposed rule is estimated to affect potentially 3.4 million light-vehicle-to-light-vehicle crashes. This potential population excludes other crashes scenarios. More specifically, single-vehicle crashes were excluded based on the V2V's inherent cooperative operation, with two vehicles communicating with each to potentially issue a warning before a crash. Crashes with four or more vehicles were not included because the agency does not have data to estimate how effective the safety warning applications would be as these crashes might involve complex interactions among vehicles. Crashes involving pedestrians and pedal-cyclists were also excluded since these crashes might need the communication between vehicles and persons. Crashes involving motorcycles were excluded because the agency has not conducted any V2V research on motorcycles. Finally, crashes involving at least one heavy vehicle [361] are excluded since the agency is only evaluating light vehicle crashes at this time.

Figure VII–2 depicts how the agency determined the potential target population for both the IMA and LTA safety warning applications. In addition, the figure also includes the corresponding monetized values at each ''stage'' of filtering for the potential target population. As indicated, the end result is an estimated 1.06 million crashes that could be addressed by the IMA and LTA safety warning applications, making up approximately 19 percent of the total police-reported crashes. These crashes resulted in 2,372 fatalities and 0.69 million MAIS 1–5 injuries and damaged 1.29 million vehicles. Together, these crashes cost society $121 billion, annually. Separately, IMA crashes resulted in 1,824 fatalities and 0.47 million MAIS

[361] Heavy vehicles include trucks and buses with a GVWR greater than 10,000 pounds.

1–5 injuries and damaged 0.97 million vehicles. The IMA crashes cost society $84 billion, annually. When compared to IMA, LTA has a smaller number of target crashes. LTA crashes resulted in 548 fatalities and 0.22 million injuries (MAIS 1–5) and damaged 0.32 million vehicles. The IMA crashes cost society $36 billion, annually.

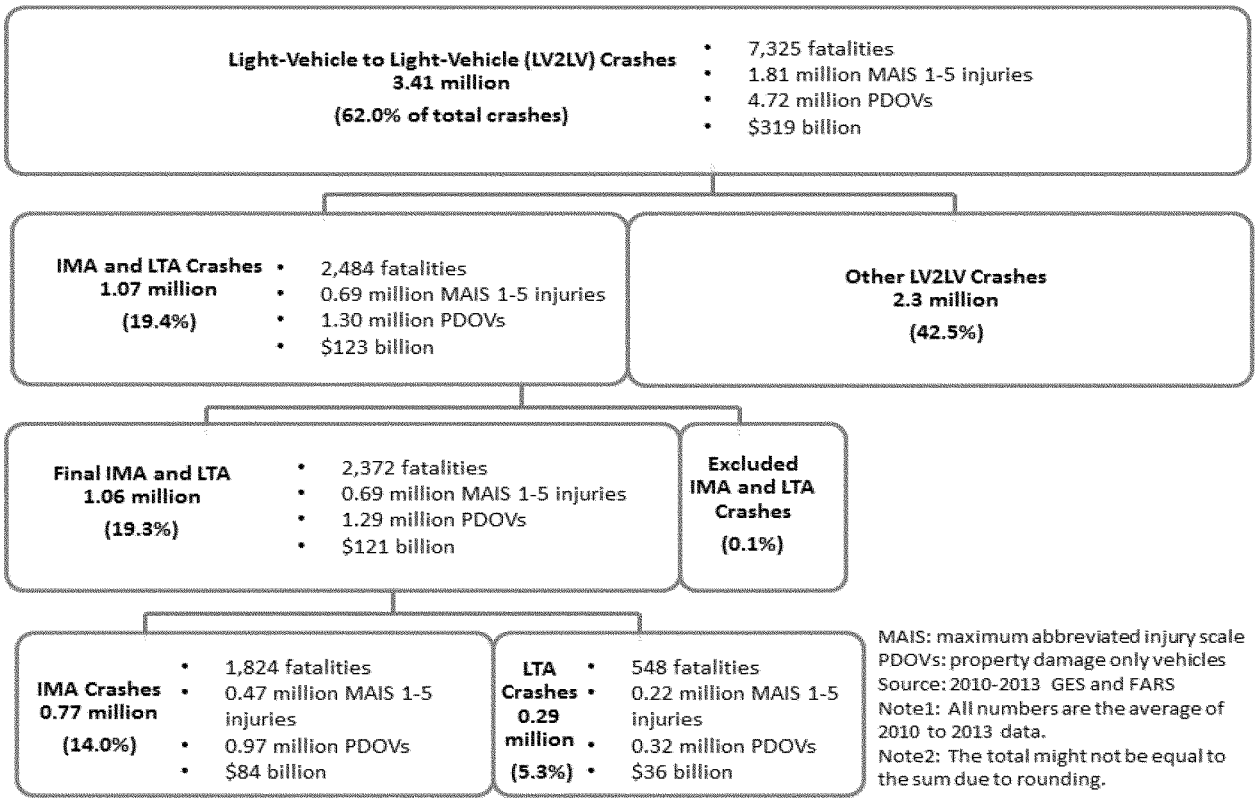


Figure VII-2 Annual LV2LV Crash Population Breakdown

The target populations used for this analysis were retrieved from the 2010–2013 FARS and GES. FARS is a census of fatalities that occurred in fatal crashes on public roadways. FARS was used to derive the incidence of fatal target crashes and associated fatalities. GES is a sampling system of all police-reported crashes. GES was used to derive the MAIS 1+ injuries in non-fatal target crashes and PDOVs. The agency utilized multiple years of crash data to limit variations of crashes and provide the best possible estimate for projecting potential benefits.

The variables used to define the target crashes include vehicle forms submitted, vehicle body type, crash type, the first harmful event, relation to roadway, roadway alignment, roadway condition, rollover type, jackknife status, driver contributing factor, and vehicle contributing factor. Of these variables, the driver contributing and vehicle contributing factors were used to refine the target population. The driver contribution factor specifies whether driver's alertness contributed to the crashes. The vehicle contributing factor identifies whether vehicle's component failure or defect contributed to the crashes. Crashes where incapacitated or drowsy drivers were involved and where vehicle mechanical failures such as brake systems, tires, steering, and transmissions were cited as contributing factors were excluded.

(b) Effectiveness (E)

The agency applied effectiveness rates for IMA and LTA. The effectiveness rate estimates are derived using the Safety Impact Methodology (SIM) tool developed by the Department of Transportation's Volpe Center, specifically for estimating the effectiveness of V2V technology. In order to obtain a crash warning using V2V technology, two V2V-equipped vehicles need to interact during a potential crash situation—if a V2V-equipped vehicle interacts with a non-V2V-equipped vehicle in a potential crash situation, no warning is to be expected, because the non-equipped vehicle would produce no BSM for the equipped vehicle to recognize and respond to. To be able to estimate the effectiveness of advanced crash avoidance technology such as V2V, NHTSA developed a methodology that uses available data and computer simulation,[362] extending current estimation capabilities and enabling V2V technology to be ''exposed'' to more conflict situations to make up for and potential lack of crashes in the real-world crash databases. The methodology and simulation tool allows the agency to better comprehend the crash avoidance potential and the performance criteria of the V2V technology prior to the technology's actual deployment. Extensive details on how the agency estimates effectiveness of potential V2V safety applications can be found in Chapter 4 of the PRIA and Chapter XII.B.1 of the V2V Readiness Report.

Table VII–26 shows the effectiveness of IMA and LTA used for the benefit

[362] For an overview of this methodology, see ''Implementation of the Safety Impact Methodology Tool'' DRAFT located in Docket NHTSA–2016–0126.

estimates in this proposal. As shown, IMA is estimated to prevent 43–56 percent of intersection related crashes and LTA would prevent 37–63 percent of crashes where a left turn is being attempted across oncoming traffic.

TABLE VII–26—EFFECTIVENESS OF IMA AND LTA SAFETY APPLICATIONS

Apps	Low (%)	High (%)
IMA	43	56
LTA	37	63

These estimates are adjusted slightly from the effectiveness estimates used in the V2V Readiness Report to reflect the latest crash data available to the agency. There are no changes in methodology for developing the effectiveness estimate from that used in the V2V Readiness Report. In the Readiness Report, the agency estimated values of 41–55 percent for IMA and 36–62 percent for LTA, differences of only one to two percent at either end of the ranges. The differences originate in the minor adjustment in the injury probability curves for IMA and overall the newer crash data yielded a different crash scenario distribution. In order to account for potential uncertainty in these effectiveness rates, the agency included lower effectiveness rates in the uncertainty analysis for this rule. The agency requests additional information concerning the potential effectiveness of these two applications.

(c) Communication Rate (C_i)

The communication rate (C_i) used the generic benefit formula above, represents the potential probability of a crash in which the vehicles involved are both DSRC-equipped light vehicles utilizing the safety applications IMA and LTA. To derive this probability, the agency first developed a projection of the number of vehicles that would be equipped by leveraging the technology adoption rates used for estimating the proposed rule costs. As discussed in the estimated cost section, the proposed rule would require that all applicable vehicles are equipped allowing for a market-driven adoption for safety applications. The proposed requirement for DSRC radio adoption schedule is a three year phase-in: 50 percent of the first MY vehicles, 75 percent of the second MY vehicles and 100 percent of the third MY vehicles. For benefits estimation, the agency applied these proposed, required adoption rates to estimated, future vehicle sales yielding the potential vehicles that could be equipped with DSRC devices in the overall vehicle fleet.

The agency believes a similar, market-driven approach could take hold for V2V technology once the equipment becomes widely available and consumers recognize the potential benefits.

The agency believes that IMA and LTA could be adopted as standard equipment on a schedule similar to the ''combined'' schedules for the FCW and LDW displayed in the NCAP data. Based on broad collection of implementation information such as, the ITS study, NCAP data, agency meetings with manufacturers, announcements on V2V implementation from vehicle industry, and the cost consideration; the agency established the a safety application adoption trend of 0% for the first MY vehicles that have DSRC radios, 5%, 10%, 25%, 40%, 65%, 90%, and 100% for each following MY vehicles, respectively.

The agency believes that this adoption rate is reasonable. We note that the pattern is similar to those shown in the NCAP data; with slow initial rate spanning approximately two years and then increasing year over year at a rate that would reach full adoption in the eighth year of the implementation of the DSRC technology. Under this adoption scenario, the benefits estimates assume IMA and LTA would not be deployed in the first year. In the second year, with the required 75 percent DSRC installation rate and the five percent safety application adoption among the DSRC-equipped vehicles, five percent of the total new vehicles (= 0.05 * 0.75) are expected to have the two safety applications. In the third year, 10 percent of the new vehicles (= 0.1 * 1.00) would have the apps, and so on so forth. Overall, the benefits (and costs) of the proposed rule were estimated based on this specific technology adoption scenario, as shown in Table VII–27.

TABLE VII–27—V2V TECHNOLOGY ADOPTION SCENARIO FOR COST AND BENEFIT ESTIMATES

Year (MY)	1 (2021) (%)	2 (2022) (%)	3 (2023) (%)	4 (2024) (%)	5 (2025) (%)	6 (2026) (%)	7 (2027) (%)	8 (2028) (%)
DSRC	50	75	100	100	100	100	100	100
Apps*	0	5	10	25	40	65	90	100
Apps Actual**	0	4	10	25	40	65	90	100

* IMA and LTA of DSRC-equipped new vehicles.
** of all new vehicles.

Table VII–28 shows the communication rates from 2021 to 2060 by vehicle type (*i.e.,* PCs, LTVs, and PCs and LTVs combined) separately for IMA and LTA. As expected, the communication rates would be relatively small in the first few years and accelerate faster when time progresses.

The overall communication with vehicles that had the apps would be rare in the first three years as measured by those rates for IMA. The rate would reach over 50 percent (51.41%) in 2034, the 14th year of the implementation of the proposed rule. In 2039, 5 years later, the rate would reach 75 percent. In 2044, the communication rate would reach over 90 percent.

For LTA, the communication rates would be smaller than the general communication rates. In 2022, for example, the contributable rate for LTA with vehicles equipped with the apps is about 0.02 percent, 50 percent of the overall communication rate. However, the ratio would increase over time and narrow the difference between these two rates. In 2034, the rate for LTA would be 41.36 percent, 80.5 percent of the overall communicating rate.

TABLE VII–28—LIGHT VEHICLE FLEET COMMUNICATION RATES

Year	Calendar year	IMA			LTA		
		PCs (%)	LTVs (%)	Combined (%)	PCs (%)	LTVs (%)	Combined (%)
1	2021	0.00	0.00	0.00	0.00	0.00	0.00
2	2022	0.02	0.02	0.04	0.01	0.01	0.02
3	2023	0.13	0.13	0.26	0.07	0.07	0.14
4	2024	0.52	0.50	1.02	0.28	0.27	0.55
5	2025	1.32	1.26	2.58	0.73	0.70	1.43
6	2026	2.77	2.64	5.41	1.61	1.54	3.15
7	2027	4.94	4.71	9.65	3.06	2.92	5.98
8	2028	7.55	7.19	14.74	4.96	4.72	9.68
9	2029	10.40	9.88	20.28	7.17	6.81	13.98
10	2030	13.45	12.76	26.21	9.63	9.14	18.77
11	2031	16.63	15.77	32.40	12.33	11.69	24.02
12	2032	19.90	18.84	38.74	15.20	14.39	29.59
13	2033	23.19	21.92	45.11	18.20	17.20	35.40
14	2034	26.46	24.95	51.41	21.29	20.07	41.36
15	2035	29.65	27.87	57.52	24.41	22.95	47.36
16	2036	32.69	30.62	63.31	27.50	25.75	53.25
17	2037	35.53	33.16	68.69	30.48	28.45	58.93
18	2038	38.12	35.46	73.58	33.31	30.98	64.29
19	2039	40.40	37.47	77.87	35.92	33.32	69.24
20	2040	42.36	39.21	81.57	38.29	35.45	73.74
21	2041	43.99	40.69	84.68	40.38	37.36	77.74
22	2042	45.18	42.03	87.21	42.06	39.12	81.18
23	2043	46.11	43.17	89.28	43.46	40.69	84.15
24	2044	46.81	44.17	90.98	44.59	42.07	86.66
25	2045	47.33	45.04	92.37	45.47	43.27	88.74
26	2046	47.72	45.83	93.55	46.16	44.33	90.49
27	2047	48.04	46.56	94.60	46.71	45.28	91.99
28	2048	48.29	47.25	95.54	47.14	46.13	93.27
29	2049	48.49	47.90	96.39	47.49	46.91	94.40
30	2050	48.65	48.50	97.15	47.77	47.61	95.38
31	2051	48.75	49.02	97.77	47.97	48.24	96.21
32	2052	48.81	49.50	98.31	48.14	48.82	96.96
33	2053	48.82	49.93	98.75	48.25	49.34	97.59
34	2054	48.81	50.31	99.12	48.33	49.81	98.14
35	2055	48.78	50.65	99.43	48.37	50.23	98.60
36	2056	48.73	50.96	99.69	48.39	50.60	98.99
37	2057	48.65	51.22	99.87	48.37	50.93	99.30
38	2058	48.54	51.41	99.95	48.33	51.19	99.52
39	2059	48.43	51.56	99.99	48.29	51.41	99.70
40	2060	48.33	51.67	100.00	48.25	51.57	99.82

(d) Adoption Rate of IMA and LTA

Since the agency is not mandating any applications, we next made an assumption concerning at what rate IMA and LTA could be adopted voluntarily by industry. We contracted with the Intelligent Transportation Society of America (ITS America, or ITS) to conduct a study to better understand the utilization of DSRC among stakeholders and to investigate potential safety application deployment and product development.[363] As part of the effort, ITS identified an array of V2V and vehicle-to-infrastructure (V2I) apps and interviewed 42 stakeholders specifically about these apps' development and deployment. The stakeholders interviewed included chipset manufacturers, mobile device manufacturers, infrastructure industrial equipment makers, vehicle original equipment manufacturers (OEMs), and academia. Based on the interview results, ITS America concluded that about 91 apps (including both V2V and V2I) would likely to be deployed within 5 years of a DSRC mandate. IMA and LTA were rated among the highest priority apps among all the interviewees.

The ITS study confirmed many aspects of the agency's proposed requirements and assumptions regarding potential V2V deployment including the proposed implementation timing. However, the study was not able to predict clearly a safety application adoption trend after an initial deployment. To fill this gap and establish a potential trend, the agency examined the adoption patterns of the three crash avoiding warning systems reported as part of regular data submissions associated with the agency's New Car Assessment Program (NCAP). The crash avoiding warning systems are blind spot detection (BSD), forward collision warning (FCW), and Lane Departure Warning (LDW). We note that only FCW and LDW are currently reported on NHTSA's Safer Car technologies as being ''Recommended Technologies,'' while BSD is reported to NHTSA for research purposes but not, at this time, presented to the public.

Table VII–29 lists the adoption rates for these systems that were offered as standard equipment and the combined adoption rates for the technologies offered as standard or optional. As

[363] Impact of Light Vehicle Rule on Consumer/Aftermarket Adoption—Dedicated Short Range Communications Market Study, Intelligent Transportation Society of America, FHWA–JPO–17–487, available at *http://ntl.bts.gov/lib/60000/60500/60535/FHWA-JPO-17-487_Final_.pdf* (last accessed Dec 12, 2016).

shown, the rate of the standard equipment is relatively low, although it increases gradually. In contrast, the rate for the optional equipment (based on the combined rates) was much higher and the pace of the offering these features increased faster. These warning technologies are projected to reach the full combined deployment around 2021 based on a curve linear regression model resulting in an estimated full deployment spanning ten years. This projected rate is absent any sort of formal regulation beyond the inclusion in the agency's NCAP ratings program.

TABLE VII–29—REPORTED ADOPTION RATES BY VEHICLE MANUFACTURERS

[Percent]

Year	BSD		FCW		LDW	
	Standard	Combined *	Standard	Combined *	Standard	Combined *
2011	0.3	11.9	0.0	11.4	0.0	2.5
2012	1.0	30.0	0.0	11.4	0.0	5.9
2013	1.3	30.4	0.8	21.0	0.0	17.4
2014	0.1	27.0	2.6	22.1	0.2	15.8
2015	0.6	45.7	5.6	57.3	2.5	52.7

* standard equipment and optional equipment combined.

The agency believes a similar, market-driven approach could take hold for V2V technology once the equipment becomes widely available and consumers recognize the potential benefits. The agency believes that IMA and LTA could be adopted as standard equipment on a schedule similar to the ''combined'' schedules for the FCW and LDW displayed in the NCAP data.

Based on broad collection of implementation information such as, the ITS study, NCAP data, agency meetings with manufacturers, announcements on V2V implementation from vehicle industry, and the cost consideration; the agency established the a safety application adoption trend of 0% for the first MY vehicles that have DSRC radios, 5%, 10%, 25%, 40%, 65%, 90%, and 100% for each following MY vehicles, respectively. The agency notes that the pattern is similar to those shown in the NCAP data; with slow initial rate spanning approximately two years and then increasing year over year at a rate that would reach full adoption in the eighth year of the implementation of the DSRC technology. Under this adoption scenario, IMA and LTA would not be deployed in the first year. In the second year, with the required 75 percent DSRC installation rate and the five percent safety application adoption among the DSRC-equipped vehicles, five percent of the total new vehicles (= 0.05 * 0.75) are expected to have the two safety applications. In the third year, 10 percent of the new vehicles (= 0.1 * 1.00) would have the apps, and so on so forth. Overall, the benefits (and costs) of the proposed rule were estimated based on this specific technology adoption scenario, as shown in Table VII–27. However, in order to test the significant uncertainty in this assumption, we included adoption rate as one of the variables in our uncertainty analysis.

The agency, though, requests comment on these assumption. Do commenters have more concrete data concerning the potential or likely adoption rate of these applications? Are there any other technologies that have been voluntarily introduced into the fleet that the agency should consider when projecting the potential adoption rate of IMA and LTA?

2. Injury and Property Damage Benefits

(a) Annual Injury and Property Damage Benefits

(1) Maximum Annual Benefits

The maximum annual benefits represent the crashes, fatalities, injuries, and property damage vehicles (PDOVs) that can be reduced annually after the *full adoption* of DSRC and safety related applications.[364] Once fully deployed, the agency estimates the proposed rule would:

- Prevent 439,000 to 615,000 crashes annually
- equivalent to 13 to 18 percent of multiple light-vehicle crashes
- Save 987 to 1,366 lives
- Reduce 305,000 to 418,000 MAIS 1–5 injuries,[365] and
- Eliminate 537,000 to 746,000 property damage only vehicles (PDOVs)

(2) Annual Benefits

The annual benefits are summarized every five years from 2021 to 2060 in Table VII–30. As shown, the proposed rule would not yield benefits in Year 1 due to the zero percent safety application adoption rates for new vehicles in that year. However, the agency estimates that five years after a final rule is issued, Year 5 (2025), 10,094 to 13,763 annual vehicle crashes would potentially be prevented, saving 23 to 31 lives and preventing 6,946 to 9,197 MAIS 1–5 injuries. Moreover, the agency estimates this proposed rule has the potential to prevent 12,496 to 16,949 damaged vehicles.

As the fleet penetration increases, the proposed rule could prevent 107,120 to 147,615 crashes, save 244 to 332 lives, and reduce 73,983 to 99,254 MAIS 1–5 injuries by Year 10, a more than ten-fold increase from Year 5.

After 20 years, the agency estimates about 80 percent of the maximum benefits will be achievable. The yields an estimated to 349,914 to 487,561 crashes prevented, 789 to 1,089 lives save, and the reduction of 242,589 to 329,909 MAIS 1–5 injuries.

[364] Would occur 43 years after the first implementation.

[365] MAIS (Maximum Abbreviated Injury Scale) represents the maximum injury severity of an occupant at an Abbreviated Injury Scale (AIS) level. AIS ranks individual injuries by body region on a scale of 1 to 6: 1=minor, 2=moderate, 3=serious, 4=severe, 5=critical, and 6=maximum (untreatable).

TABLE VII–30—SUMMARY OF ANNUAL BENEFITS OF THE PROPOSED RULE

[Undiscounted]

Year	Calendar year	Crashes		Fatalities		MAIS 1–5 injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
1	2021	0	0	0	0	0	0	0	0
5	2025	10,094	13,763	23	31	6,946	9,197	12,496	16,949
10	2030	107,120	147,615	244	332	73,983	99,254	131,946	180,693
15	2035	241,740	335,287	547	751	167,329	226,278	296,835	408,920
20	2040	349,914	487,561	789	1,087	242,589	329,909	428,697	593,093
25	2045	401,894	561,737	904	1,249	278,926	380,771	491,628	682,127
30	2050	424,901	594,569	955	1,321	295,009	403,284	519,483	721,535
35	2055	435,932	610,326	980	1,355	302,723	414,094	532,831	740,437
40	2060	439,138	615,028	987	1,365	304,986	417,366	536,657	745,996

(b) Lifetime Injury and Property Damage Benefits by Vehicle Model Year

The lifetime benefits for a MY vehicle (also MY Benefits), as described earlier, represent the total benefits that would be accrued through the life of a vehicle. The MY benefits represent the total benefits that would be accrued though the life of a vehicle. The lifetime benefits can occur at any time during the in-use life of a vehicle and are required to be discounted to reflect their present values (2014 dollars). The discounting procedures for future benefits and costs in regulatory analyses are based on the guidelines published in OMB Circular A–4 and OMB Circular A–94 Revised.

The agency's analysis for determining lifetime benefits uses two approaches. One approach is a so-called ''free rider'' approach and the other is the ''no free-rider'' approach, where the primary difference is the treatment on the distribution of benefits from crashes involving different MY vehicles.

The ''free-rider approach'' is based on the notion that the lifetime benefits of a specific MY vehicle should correspond to the investment up to that specific MY of vehicles and that benefits should be credited to the later MY vehicles. For example, if benefits are from a crash that involved a MY 2021 vehicle and a MY 2030 vehicle, under this approach, all benefits would be credited to the MY 2030 vehicle. The MY 2021 vehicle would not receive any benefits because the benefits would not be realized until the investment on the MY 2030 vehicles is made. In contrast, the ''no free-rider'' approach is based on the notion that benefits should be shared among all vehicles since the future investment will continue because of the proposed rule. With the same case above, the no free-rider approach allows both MY 2021 and MY 2030 vehicles to share a portion of the benefits. Additional details on the methodology and derivation of benefits of these two approaches can be found in Chapter V of the PRIA prepared in support of this proposal.

(1) Injury and Property Damage Benefits by Model Year and Approach

Table VII–31 and Table VII–32 show the MY specific injury and property damage benefits (*i.e.,* the lifetime benefits for a specific MY vehicle) for the ''free rider approach'' for the 3 and 7 percent discount, respectively. In parallel, Table VII–33 and Table VII–34 show the benefits for the ''no free-rider'' approach also at a 3 and 7 percent discount rate, respectively.

The analysis estimates the lifetime benefits only for MYs 2021 to 2050 vehicles. For 2050 MY vehicles, its lifetime benefits would be realized from year 2040 to year 2086. As described in the annual benefit section, the annual benefits would be stabilized at the maximum level around year 2062. Furthermore, after MY 2050, vehicle sales were assumed to at the MY 2050 level. Therefore, the lifetime benefits for vehicles newer than MY 2050 would be stabilized at the MY 2050 level.

TABLE VII–31—MY BENEFITS FOR LIGHT VEHICLES FREE-RIDER APPROACH AT 3 PERCENT DISCOUNT

Year	Model year	Crash prevented		Fatalities eliminated		MAIS 1–5 injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
1	2021	0	0	0	0	0	0	0	0
2	2022	271	369	1	1	187	246	336	455
3	2023	1,821	2,484	4	6	1,254	1,660	2,255	3,059
4	2024	8,138	11,116	19	25	5,604	7,436	10,066	13,675
5	2025	20,094	27,510	46	62	13,847	18,427	24,828	33,799
6	2026	45,766	62,828	104	142	31,567	42,151	56,477	77,072
7	2027	86,774	119,428	198	269	59,905	80,243	106,948	146,292
8	2028	125,283	172,790	285	389	86,552	116,237	154,257	211,408
9	2029	151,801	209,713	345	471	104,932	141,211	186,755	256,340
10	2030	175,685	243,053	398	545	121,501	163,794	215,991	296,855
11	2031	196,823	272,641	446	611	136,178	183,866	241,830	332,755
12	2032	215,458	298,792	488	669	149,129	201,633	264,580	364,439
13	2033	231,828	321,830	524	720	160,518	217,309	284,539	392,308
14	2034	247,041	343,282	558	767	171,108	231,922	303,068	418,229
15	2035	260,349	362,101	588	809	180,382	244,762	319,252	440,931
16	2036	271,907	378,496	614	845	188,445	255,966	333,289	460,676
17	2037	282,112	393,009	636	877	195,570	265,900	345,664	478,129
18	2038	290,458	404,930	655	903	201,406	274,078	355,763	492,430
19	2039	297,903	415,591	671	926	206,617	281,402	364,761	505,202

TABLE VII–31—MY BENEFITS FOR LIGHT VEHICLES FREE-RIDER APPROACH AT 3 PERCENT DISCOUNT—Continued

Year	Model year	Crash prevented		Fatalities eliminated		MAIS 1–5 injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
20	2040	305,087	425,875	687	948	211,645	288,466	373,446	517,525
21	2041	312,804	436,885	704	972	217,039	296,015	382,788	530,741
22	2042	305,604	427,030	688	950	212,077	289,414	373,891	518,632
23	2043	308,426	431,146	694	959	214,065	292,270	377,270	523,513
24	2044	310,949	434,815	699	967	215,841	294,812	380,294	527,871
25	2045	313,325	438,253	705	974	217,510	297,187	383,150	531,965
26	2046	315,443	441,309	709	981	218,996	299,295	385,700	535,611
27	2047	317,611	444,417	714	987	220,514	301,432	388,318	539,332
28	2048	319,665	447,353	719	994	221,951	303,447	390,802	542,853
29	2049	321,616	450,138	723	1,000	223,315	305,356	393,165	546,196
30	2050	323,726	453,138	728	1,006	224,788	307,409	395,724	549,803

TABLE VII–32—MY BENEFITS FOR LIGHT VEHICLES FREE-RIDER APPROACH AT 7 PERCENT DISCOUNT

Year	Model year	Crash prevented		Fatalities eliminated		MAIS 1–5 injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
1	2021	0	0	0	0	0	0	0	0
2	2022	256	348	1	1	176	232	317	429
3	2023	1,703	2,322	4	5	1,172	1,552	2,109	2,860
4	2024	7,517	10,264	17	23	5,175	6,865	9,300	12,630
5	2025	18,321	25,071	42	57	12,623	16,789	22,643	30,811
6	2026	41,157	56,470	94	128	28,383	37,874	50,801	69,294
7	2027	77,149	106,128	176	239	53,251	71,286	95,110	130,038
8	2028	110,525	152,362	251	343	76,343	102,466	136,116	186,464
9	2029	133,399	184,211	303	414	92,198	124,008	164,150	225,223
10	2030	154,035	213,015	349	478	106,513	143,518	189,411	260,228
11	2031	172,397	238,716	391	535	119,263	160,954	211,857	291,412
12	2032	188,544	261,378	427	585	130,486	176,350	231,570	318,868
13	2033	202,920	281,609	459	630	140,486	190,116	249,097	343,341
14	2034	216,257	300,416	489	672	149,771	202,927	265,341	366,065
15	2035	227,911	316,898	515	708	157,892	214,173	279,513	385,947
16	2036	238,068	331,308	537	740	164,978	224,022	291,846	403,300
17	2037	247,120	344,183	558	768	171,299	232,835	302,824	418,783
18	2038	254,424	354,622	574	791	176,407	239,999	311,659	431,301
19	2039	260,956	363,981	588	811	180,980	246,431	319,551	442,510
20	2040	267,247	372,995	602	831	185,384	252,625	327,152	453,305
21	2041	273,843	382,418	617	851	189,997	259,091	335,132	464,608
22	2042	267,553	373,820	602	832	185,665	253,336	327,356	454,035
23	2043	270,054	377,472	608	839	187,427	255,872	330,347	458,363
24	2044	272,178	380,572	612	846	188,924	258,023	332,888	462,038
25	2045	274,288	383,630	617	853	190,407	260,137	335,424	465,677
26	2046	276,078	386,219	621	858	191,664	261,926	337,576	468,762
27	2047	278,074	389,079	625	864	193,061	263,891	339,986	472,186
28	2048	279,772	391,511	629	870	194,250	265,562	342,038	475,099
29	2049	281,380	393,809	633	875	195,374	267,140	343,983	477,855
30	2050	283,192	396,388	637	880	196,640	268,906	346,180	480,956

TABLE VII–33—MY BENEFITS FOR LIGHT VEHICLES NO FREE-RIDER APPROACH AT 3 PERCENT DISCOUNT

Year	Model year	Crash prevented		Fatalities eliminated		MAIS 1–5 injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
1	2021	0	0	0	0	0	0	0	0
2	2022	4,006	5,506	9	12	2,764	3,697	4,941	6,750
3	2023	12,297	16,917	28	38	8,488	11,363	15,159	20,727
4	2024	34,161	47,041	78	106	23,588	31,616	42,093	57,606
5	2025	59,813	82,461	136	186	41,316	55,459	73,659	100,913
6	2026	104,216	143,863	237	323	72,020	96,827	128,262	175,926
7	2027	153,676	212,415	349	477	106,247	143,074	189,014	259,566
8	2028	180,917	250,375	410	562	125,133	168,761	222,387	305,740
9	2029	190,032	263,281	430	590	131,488	177,573	233,465	321,299
10	2030	199,389	276,526	451	619	138,010	186,614	244,840	337,269
11	2031	207,808	288,476	470	645	143,885	194,784	255,061	351,656
12	2032	215,391	299,268	487	669	149,181	202,173	264,254	364,628
13	2033	222,098	308,843	502	690	153,870	208,741	272,371	376,118
14	2034	228,851	318,485	517	711	158,591	215,353	280,546	387,688

TABLE VII–33—MY BENEFITS FOR LIGHT VEHICLES NO FREE-RIDER APPROACH AT 3 PERCENT DISCOUNT—Continued

Year	Model year	Crash prevented		Fatalities eliminated		MAIS 1–5 injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
15	2035	234,712	326,883	530	729	162,695	221,125	287,627	397,746
16	2036	239,796	334,194	541	745	166,258	226,159	293,758	406,483
17	2037	244,444	340,890	551	760	169,518	230,774	299,356	414,478
18	2038	248,150	346,265	559	771	172,124	234,492	303,807	420,872
19	2039	251,493	351,122	566	782	174,475	237,855	307,817	426,644
20	2040	254,958	356,134	574	792	176,909	241,317	311,982	432,615
21	2041	258,973	361,900	583	805	179,722	245,284	316,828	439,511
22	2042	251,474	351,552	566	782	174,540	238,321	307,596	426,854
23	2043	252,797	353,515	569	786	175,478	239,695	309,167	429,160
24	2044	254,138	355,482	572	790	176,425	241,064	310,767	431,486
25	2045	255,409	357,336	574	794	177,320	242,350	312,289	433,684
26	2046	256,606	359,072	577	798	178,162	243,551	313,725	435,749
27	2047	257,844	360,856	580	802	179,030	244,781	315,217	437,879
28	2048	258,876	362,342	582	805	179,754	245,805	316,460	439,653
29	2049	259,929	363,853	584	808	180,492	246,844	317,732	441,462
30	2050	261,241	365,723	587	812	181,408	248,125	319,322	443,708

TABLE VII–34—MY BENEFITS FOR LIGHT VEHICLES NO FREE-RIDER APPROACH AT 7 PERCENT DISCOUNT

Year	Model year	Crash prevented		Fatalities eliminated		MAIS 1–5 injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
1	2021	0	0	0	0	0	0	0	0
2	2022	3,026	4,154	7	9	2,087	2,787	3,735	5,096
3	2023	9,423	12,946	21	29	6,501	8,689	11,624	15,874
4	2024	26,555	36,520	60	82	18,328	24,527	32,742	44,755
5	2025	46,855	64,517	107	145	32,352	43,361	57,736	79,010
6	2026	82,119	113,231	187	255	56,727	76,161	101,122	138,557
7	2027	121,940	168,381	277	378	84,277	113,350	150,052	205,873
8	2028	144,104	199,249	327	447	99,640	134,231	177,213	243,433
9	2029	152,069	210,514	345	472	105,191	141,918	186,899	257,022
10	2030	160,196	222,006	363	497	110,854	149,758	196,784	270,886
11	2031	167,621	232,533	379	521	116,033	156,950	205,804	283,568
12	2032	174,185	241,865	394	541	120,615	163,337	213,764	294,792
13	2033	180,128	250,340	407	559	124,769	169,145	220,962	304,969
14	2034	186,049	258,785	420	578	128,907	174,934	228,133	315,108
15	2035	191,219	266,186	432	594	132,525	180,018	234,382	323,976
16	2036	195,680	272,596	441	608	135,651	184,430	239,763	331,640
17	2037	199,807	278,538	450	621	138,545	188,523	244,737	338,737
18	2038	202,975	283,135	457	631	140,773	191,705	248,540	344,204
19	2039	205,888	287,369	464	640	142,823	194,636	252,034	349,234
20	2040	208,845	291,652	470	649	144,901	197,597	255,587	354,333
21	2041	212,188	296,460	478	660	147,244	200,908	259,617	360,079
22	2042	205,999	287,930	464	640	142,969	195,173	251,993	349,638
23	2043	207,175	289,675	466	644	143,803	196,394	253,389	351,688
24	2044	208,251	291,263	468	647	144,564	197,502	254,669	353,558
25	2045	209,421	292,967	471	651	145,388	198,684	256,071	355,582
26	2046	210,280	294,224	473	654	145,994	199,557	257,098	357,069
27	2047	211,429	295,876	475	657	146,799	200,694	258,483	359,043
28	2048	212,258	297,073	477	660	147,381	201,521	259,481	360,471
29	2049	213,224	298,458	479	663	148,057	202,472	260,648	362,129
30	2050	214,216	299,875	481	666	148,751	203,445	261,848	363,829

(2) Summary of Injury and Property Damage Benefits by Model Year

Under both approaches, the MY benefits were derived by dividing the annual benefits among all involved MY vehicles according to their survived volume and vehicle miles traveled. Afterwards, the annual benefits for that specific MY vehicles were discounted by multiplying them with an appropriate discounting factor. Finally, we summed the annual discounted benefits of that MY vehicles over their operational lifespan to derive the MY benefits. These benefits were discounted at a 3 percent and 7 percent discount rate to represent their present value. Table VII–35 and Table VII–36 presents the discounted MY benefits from MY 2021 to MY 2050 vehicles for every five MYs. As shown, the first MY vehicles (*i.e.,* MY 2021) would not accrue benefits due to the adoption scenario used in the PRIA. At a three percent discount rate, the 5th applicable MY vehicles (MY 2025) would prevent 20,094 to 82,481 crashes, save 46 to 186 lives, and reduce 13,847 to 55459 MAIS 1–5 injuries. At this discount, the MY 2025 would also eliminate 24,828 to 100,913 PDOVs. The 30th MY vehicles (MY 2050) would prevent 261,241 to 453,138 crashes, save 587 to 1,006 lives, reduce 181,408 to 307,409 injuries, and eliminate up to 549,803 PDOVs.

At a seven percent discount rate, MY 2025 vehicles would prevent 18,321 to 65,517 crashes, save 42 to 145 lives, reduce 12,623 to 43,361 MAIS 1–5 injuries and eliminate 22,643 to 79,010 PDOVs. The MY 2050 vehicles would prevent 214,216 to 396,388 crashes, save 481 to 880 lives, reduce 148,741 to 268,906 MAIS 1–5 injuries, and eliminate up to 480,956 PDOVs.

TABLE VII–35—SUMMARY OF MY INJURY AND PROPERTY DAMAGE BENEFITS (AT 3% DISCOUNT)

Year	Model year	Crashes		Fatalities		MAIS 1–5 Injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
1	2021	0	0	0	0	0	0	0	0
5	2025	20,094	82,461	46	186	13,847	55,459	24,828	100,913
10	2030	175,685	276,526	398	619	121,501	186,614	215,991	337,269
15	2035	234,712	362,101	530	809	162,695	244,762	287,627	440,931
20	2040	254,958	425,875	574	948	176,909	288,466	311,982	517,525
25	2045	255,409	438,253	574	974	177,320	297,187	312,289	531,965
30	2050	261,241	453,138	587	1,006	181,408	307,409	319,322	549,803

TABLE VII–36—SUMMARY OF MY INJURY AND PROPERTY DAMAGE BENEFITS (AT 7% DISCOUNT)

Year	Model year	Crashes		Fatalities		MAIS 1–5 Injuries		PDOVs	
		Low	High	Low	High	Low	High	Low	High
1	2021	0	0	0	0	0	0	0	0
5	2025	18,321	64,517	42	145	12,623	43,361	22,643	79,010
10	2030	154,035	222,006	349	497	106,513	149,758	189,411	270,886
15	2035	191,219	316,898	432	708	132,525	214,173	234,382	385,947
20	2040	208,845	372,995	470	831	144,901	252,625	255,587	453,305
25	2045	209,421	383,630	471	853	145,388	260,137	256,071	465,677
30	2050	214,216	396,388	481	880	148,751	268,906	261,848	480,956

Note that the range of benefits is due to the use of a range of effectiveness rates and the two MY benefit estimating approaches. The two benefit approaches, labeled as ''free-rider'' and ''no free-rider'' approaches, deployed a different treatment on the distribution of benefits from crashes involving different MY vehicles.

3. Monetized Benefits

The agency developed the monetized benefits by applying the comprehensive cost for a fatality to the total equivalent lives saved (*i.e.,* fatal equivalents) in accordance with Department of Transportation 2015 guidance.[366]. The guidance requires the identified nonfatal MAIS injuries and PDOVs to be expressed in terms of fatalities. This is done by comparing the comprehensive cost of preventing nonfatal injuries to that of preventing a fatality. Comprehensive costs include economic costs and the value of quality life (QALYs). Economic costs reflect the tangible costs of reducing fatalities and injuries which includes savings from medical care, emergency services, insurance administration, workplace costs, legal costs, congestion and property damage, as well as lost productivity. The QALY captures the intangible value of lost quality-of-life that results from potential fatalities and injuries.

Table VII–37 shows the comprehensive values and the relative fatality ratios for MAIS injuries and PDOVs that were used to derived the fatal equivalents.[367] As shown, the comprehensive cost of preventing a fatality is currently valued at $9.7 million. A MAIS 5 injury, for example, is 0.6136 fatal equivalents. Thus, monetized benefits can be derived by multiplying $9.7 million by the derived fatal equivalents.

Table VII–37 also shows the unit costs for congestion and property damage. These two costs are considered to be part of the comprehensive costs. The congestion and property damage costs are provided now for later use when calculating the net costs of the proposed rule. The net costs are defined as the total vehicle costs minus the savings from reducing property damage and crash related congestion.

TABLE VII–37—UNIT CONGESTION, PROPERTY DAMAGE, AND COMPREHENSIVE COST

[2014 $]

Injury category	Congestion	Property damage	Comprehensive cost	Relative fatality ratio
PDOVs	$2,280	$3,908	$6,591	$0.0007
MAIS 0	1,535	2,923	4,753	0.0005
MAIS 1	1,545	8,641	47,144	0.0049
MAIS 2	1,572	9,239	449,239	0.0463
MAIS 3	1,615	17,400	1,065,032	0.1097

[366] ''*Guidance on the Treatment of the Economic Value of a Statistical Life (VSL) in U.S. Department of Transportation Analyses*'' *February 28, 2013, https://www.transportation.gov/sites/dot.dev/files/docs/DOT%202013%20Signed%20VSL%20Memo.pdf* (last accessed Dec 8, 2016).

[367] Revise to 2014 $ from the unit costs published in this report, Blincoe, L. J., Miller, T. R., Zaloshnja, E., & Lawrence, B. A. (2015, May). The economic and societal impact of motor vehicle crashes, 2010. (Revised) (Report No. DOT HS 812 013). Washington, DC: National Highway Traffic Safety Administration.

TABLE VII–37—UNIT CONGESTION, PROPERTY DAMAGE, AND COMPREHENSIVE COST—Continued

[2014 $]

Injury category	Congestion	Property damage	Comprehensive cost	Relative fatality ratio
MAIS 4	1,638	17,727	2,612,382	0.2690
MAIS 5	1,657	16,385	5,958,375	0.6136
Fatality	6,200	12,172	9,710,659	1.0000

(a) Monetized Annual Benefits

Table VII–38 provides the undiscounted annual fatal equivalents, monetized benefits, and property damage and congestion savings of the proposed rule from the year 2021 to 2060. As shown, by Year 5 the proposed rule is estimated to save 129 to 169 fatal equivalents totaling approximately $1.3 to $1.6 billion annually. Approximately 12 percent of the monetized savings, $176 to $237 million, are from the estimated reduction of property damage and congestion. By the year 2060, with V2V fully deployed, the proposed rule is estimated to save approximately 5,631 to 7,613 fatal equivalents annually. Finally, the total associated monetized annual savings would range from $54.7 to $73.9 billion. Of these savings, $7.7 to $10.6 billion is estimated to be property damage and congestion savings.

(b) Maximum Monetized Annual Benefit

The proposed rule would save a maximum of $54.7 to $74.0 billion annually after the full adoption of DSRC radios and the two safety apps. Of these amounts, $7.7 to $10.6 billion are the potential savings from reducing crash related congestion and vehicle property damage.

TABLE VII–38—ANNUAL MONETIZED BENEFITS

[Undiscounted, 2014 $ in millions]

Year	Calendar year	Fatal equivalents		Total monetized benefits		Property damage and congestion	
		Low	High	Low	High	Low	High
1	2021	0.00	0.00	$0.00	$0.00	$0.00	$0.00
2	2022	1.98	2.57	19.18	24.99	2.69	3.60
3	2023	12.98	16.97	126.05	164.75	17.67	23.75
4	2024	50.94	66.58	494.62	646.51	69.35	93.20
5	2025	129.38	169.32	1,256.34	1,644.21	176.14	237.00
6	2026	273.40	358.63	2,654.86	3,482.52	372.24	501.88
7	2027	492.69	648.24	4,784.30	6,294.87	670.88	906.96
8	2028	760.14	1,003.08	7,381.47	9,740.54	1,035.15	1,403.08
9	2029	1,055.03	1,395.74	10,245.07	13,553.52	1,436.84	1,951.93
10	2030	1,373.29	1,820.47	13,335.53	17,677.94	1,870.39	2,545.51
11	2031	1,708.97	2,269.74	16,595.21	22,040.63	2,327.71	3,173.24
12	2032	2,055.46	2,734.45	19,959.89	26,553.31	2,799.80	3,822.44
13	2033	2,406.57	3,206.42	23,369.32	31,136.42	3,278.19	4,481.66
14	2034	2,756.78	3,678.26	26,770.14	35,718.29	3,755.42	5,140.59
15	2035	3,099.49	4,141.07	30,098.04	40,212.46	4,222.44	5,786.78
16	2036	3,427.08	4,584.47	33,279.20	44,518.16	4,668.90	6,405.77
17	2037	3,734.36	5,001.37	36,263.04	48,566.54	5,087.70	6,987.66
18	2038	4,016.39	5,384.96	39,001.73	52,291.53	5,472.13	7,522.96
19	2039	4,267.25	5,727.35	41,437.81	55,616.35	5,814.11	8,000.63
20	2040	4,486.82	6,028.11	43,569.99	58,536.92	6,113.46	8,420.10
21	2041	4,674.40	6,286.06	45,391.52	61,041.76	6,369.24	8,779.76
22	2042	4,829.59	6,500.30	46,898.45	63,122.18	6,580.86	9,078.39
23	2043	4,958.71	6,679.27	48,152.35	64,860.05	6,756.97	9,327.77
24	2044	5,065.75	6,827.92	49,191.70	66,303.56	6,902.96	9,534.88
25	2045	5,153.64	6,950.12	50,045.25	67,490.21	7,022.85	9,705.13
26	2046	5,228.04	7,053.49	50,767.72	68,493.96	7,124.33	9,849.14
27	2047	5,293.45	7,144.11	51,402.88	69,373.99	7,213.54	9,975.43
28	2048	5,351.13	7,223.76	51,963.02	70,147.39	7,292.20	10,086.44
29	2049	5,402.91	7,295.12	52,465.83	70,840.43	7,362.81	10,185.94
30	2050	5,448.79	7,358.22	52,911.30	71,453.12	7,425.36	10,273.91
31	2051	5,486.64	7,410.41	53,278.83	71,959.96	7,476.97	10,346.67
32	2052	5,519.98	7,456.51	53,602.60	72,407.63	7,522.44	10,410.92
33	2053	5,547.41	7,494.52	53,868.95	72,776.73	7,559.85	10,463.88
34	2054	5,570.75	7,526.96	54,095.66	73,091.76	7,591.69	10,509.08
35	2055	5,590.30	7,554.13	54,285.50	73,355.51	7,618.36	10,546.93
36	2056	5,606.76	7,577.01	54,445.28	73,577.69	7,640.80	10,578.80
37	2057	5,618.70	7,593.79	54,561.30	73,740.69	7,657.10	10,602.17
38	2058	5,625.16	7,603.20	54,623.95	73,832.03	7,665.92	10,615.22
39	2059	5,629.36	7,609.56	54,664.73	73,893.77	7,671.66	10,624.03
40	2060	5,631.45	7,612.92	54,685.04	73,926.44	7,674.53	10,628.67

(c) Monetized Benefits by Vehicle Model Year

The range of the monetized benefits by vehicle model year (i.e., the lifetime benefits of a MY vehicles) represents the estimates from both the ''free-rider'' and ''no free-rider'' approaches. The lower bound of the range represents the low estimate from the ''free-rider'' approach and upper bound represents the high estimate of ''no free-rider'' approach. For each approach, the low and high estimates correspond to the low and high app effectiveness, respectively. Table VII–39 and Table VII–40 show the monetized MY benefits at a 3 percent and 7 percent discount rate, respectively.

As shown, at a three percent discount rate, MY 2022 vehicles would save 3 to 68 fatal equivalent and $33.8 to $659.0 million over their lifespan. MY 2050 vehicles would save a total 3,350 to 5,608 fatal equivalents and $32.5 to $54.5 billion. The property damage and congestion savings would range from $4.7 to $94.9 million for MY 2022 vehicles and $4.6 to $7.8 billion for 2050 MY vehicles.

At a seven percent discount rate, the MY 2022 vehicles would save 3 to 51 fatal equivalents and $31.8 to $497.0 million over their lifespan. MY 2050 vehicles would save a total 2,747 to 4,906 fatal equivalents and $26.7 to $47.6 billion. Of these monetized savings, the property damage and congestion savings are estimated to be $4.5 to $71.6 million for MY 2022 vehicles and $3.7 to $6.8 billion for 2050 MY vehicles.

TABLE VII–39—MONETIZED MY BENEFITS AT 3 PERCENT DISCOUNT

[2014 $ in millions]

Year	Model year	Fatal equivalents		Total monetized benefits		Property damage and congestion	
		Low	High	Low	High	Low	High
1	2021	0.00	0.00	$0.00	$0.00	$0.00	$0.00
2	2022	3.48	67.86	33.79	658.99	4.74	94.91
3	2023	23.35	208.55	226.72	2,025.12	31.79	291.65
4	2024	104.31	580.04	1,012.92	5,632.53	142.02	811.11
5	2025	257.57	1,017.05	2,501.20	9,876.22	350.72	1,422.05
6	2026	586.69	1,774.90	5,697.12	17,235.41	798.94	2,481.38
7	2027	1,112.42	2,621.45	10,802.30	25,455.98	1,515.02	3,664.44
8	2028	1,606.16	3,090.78	15,596.91	30,013.55	2,187.63	4,320.00
9	2029	1,946.18	3,250.93	18,898.69	31,568.66	2,650.90	4,543.36
10	2030	2,252.45	3,415.26	21,872.79	33,164.45	3,068.24	4,772.57
11	2031	2,523.52	3,563.63	24,505.02	34,605.22	3,437.64	4,979.46
12	2032	2,761.74	3,697.69	26,818.31	35,906.98	3,762.58	5,166.34
13	2033	2,847.78	3,975.69	27,653.77	38,606.57	3,879.91	5,555.21
14	2034	2,934.41	4,241.63	28,495.06	41,189.00	3,998.06	5,926.26
15	2035	3,009.61	4,475.08	29,225.26	43,456.01	4,100.63	6,251.90
16	2036	3,074.84	4,678.59	29,858.67	45,432.21	4,189.61	6,535.69
17	2037	3,134.46	4,858.86	30,437.71	47,182.69	4,270.96	6,787.01
18	2038	3,182.03	5,007.07	30,899.56	48,621.96	4,335.86	6,993.56
19	2039	3,224.93	5,139.68	31,316.16	49,909.68	4,394.41	7,178.33
20	2040	3,269.38	5,267.60	31,747.87	51,151.88	4,455.07	7,356.56
21	2041	3,320.90	5,404.46	32,248.10	52,480.81	4,525.34	7,547.30
22	2042	3,224.76	5,283.11	31,314.49	51,302.48	4,394.39	7,377.52
23	2043	3,241.75	5,334.51	31,479.52	51,801.61	4,417.60	7,449.02
24	2044	3,258.96	5,380.31	31,646.62	52,246.36	4,441.10	7,512.74
25	2045	3,275.27	5,423.17	31,805.05	52,662.57	4,463.36	7,572.40
26	2046	3,290.63	5,461.25	31,954.16	53,032.36	4,484.32	7,625.42
27	2047	3,306.52	5,499.93	32,108.44	53,407.94	4,505.99	7,679.31
28	2048	3,319.75	5,536.44	32,236.99	53,762.45	4,524.05	7,730.18
29	2049	3,333.27	5,571.05	32,368.22	54,098.58	4,542.49	7,778.42
30	2050	3,350.10	5,608.31	32,531.65	54,460.39	4,565.44	7,830.37

TABLE VII–40—MONETIZED MY BENEFITS AT 7 PERCENT DISCOUNT

[2014 $ in millions]

Year	Model year	Fatal equivalents		Total monetized benefits		Property damage and congestion	
		Low	High	Low	High	Low	High
1	2021	0.00	0.00	$0.00	$0.00	$0.00	$0.00
2	2022	3.28	51.18	31.80	497.03	4.46	71.59
3	2023	21.83	159.55	212.00	1,549.29	29.72	223.15
4	2024	96.35	450.18	935.65	4,371.50	131.19	629.59
5	2025	234.85	795.52	2,280.53	7,725.00	319.78	1,112.43
6	2026	527.59	1,396.62	5,123.26	13,562.13	718.45	1,952.75
7	2027	989.03	2,077.54	9,604.09	20,174.30	1,346.94	2,904.40
8	2028	1,416.94	2,459.15	13,759.41	23,879.93	1,929.87	3,437.45
9	2029	1,710.25	2,598.90	16,607.61	25,236.98	2,329.50	3,632.38
10	2030	1,974.86	2,741.45	19,177.23	26,621.24	2,690.07	3,831.23
11	2031	2,149.18	2,947.24	20,869.91	28,619.59	2,927.85	4,119.15
12	2032	2,233.37	3,227.88	21,687.48	31,344.84	3,042.66	4,510.89

TABLE VII–40—MONETIZED MY BENEFITS AT 7 PERCENT DISCOUNT—Continued

[2014 $ in millions]

Year	Model year	Fatal equivalents		Total monetized benefits		Property damage and congestion	
		Low	High	Low	High	Low	High
13	2033	2,309.61	3,478.57	22,427.83	33,779.21	3,146.63	4,860.73
14	2034	2,385.57	3,711.72	23,165.40	36,043.23	3,250.21	5,186.03
15	2035	2,451.89	3,916.19	23,809.50	38,028.75	3,340.68	5,471.24
16	2036	2,509.12	4,095.07	24,365.23	39,765.77	3,418.75	5,720.68
17	2037	2,562.08	4,254.99	24,879.46	41,318.79	3,490.99	5,943.64
18	2038	2,602.73	4,384.79	25,274.25	42,579.22	3,546.47	6,124.52
19	2039	2,640.12	4,501.23	25,637.28	43,709.92	3,597.49	6,286.75
20	2040	2,678.06	4,613.37	26,005.75	44,798.85	3,649.27	6,442.98
21	2041	2,720.95	4,730.53	26,422.20	45,936.55	3,707.77	6,606.25
22	2042	2,641.60	4,624.69	25,651.68	44,908.74	3,599.70	6,458.14
23	2043	2,656.70	4,670.32	25,798.30	45,351.86	3,620.32	6,521.61
24	2044	2,670.51	4,709.04	25,932.43	45,727.85	3,639.18	6,575.46
25	2045	2,685.53	4,747.17	26,078.29	46,098.16	3,659.68	6,628.54
26	2046	2,696.56	4,779.45	26,185.33	46,411.61	3,674.73	6,673.47
27	2047	2,711.29	4,815.03	26,328.44	46,757.14	3,694.84	6,723.04
28	2048	2,721.94	4,845.29	26,431.78	47,050.95	3,709.36	6,765.20
29	2049	2,734.33	4,873.87	26,552.13	47,328.48	3,726.26	6,805.02
30	2050	2,747.06	4,905.91	26,675.71	47,639.58	3,743.62	6,849.69

The agency seeks comment on all aspects of the monetized benefits developed for this proposal. More specifically, the assumptions used for the benefits calculations which are the basis the estimates. Please provide any supporting data for the comments. If necessary, the agency has processes and procedures for submitting confidential business information.

4. Non-Quantified Benefits

As discussed above, the agency has only quantified potential benefits of this rule derived from the assumed adoption of IMA and LTA. Although this assumption allows the agency to provide a reasonable quantification of the potential benefits of this rulemaking, it does not account for many other potential benefits of V2V. The non-quantified benefits of the proposed rule can come from several sources: (1) The effects of enhancing vehicle-resident safety systems, (2) the incremental benefits over the current vehicle-resident safety systems, (3) the potential impact of the next generation V2V apps that would actively assist drivers to avoid crashes rather than simply issuing warnings, (4) the impact of enabling wide range deployment of V2P and V2I apps, and (5) the effects of adding V2V sensor input to other sensors utilized for automation. The agency does not quantify the potential impacts of these sources primarily due to lack of data (*e.g.,* effectiveness of the apps, incremental effective rate of the V2V apps over the vehicle-resident systems, etc.) that can be used to discern these benefits.

(a) The Effect for Enhancing Vehicle-Resident Safety Systems

For vehicles equipped with current on-board sensors, V2V can offer a fundamentally different, but complementary, source of information that can significantly enhance the reliability and accuracy of the information available. Instead of relying on each vehicle to sense its surroundings on its own, V2V enables surrounding vehicles to help each other by reporting safety information to each other. V2V communication can also detect threat vehicles that are not in the sensors' field of view, and can use a V2V signal to validate a return from a vehicle-based sensor. This added capability can potentially lead to improved warning timing and a reduction in the number of false warnings, thereby adding confidence to the overall safety system, and increasing consumer satisfaction and acceptance. The vehicle-resident FCW, LCM/BSW systems can be improved by BSMs. However, the agency could not quantify the benefit due to lack of the measurement of how BSM can improve the vehicle-resident systems.

(b) Incremental Benefits of the V2V Apps

Due to the sensing advantage of the V2V apps, the agency believes that these apps also have some incremental benefits over the vehicle-resident version of the systems. For example, V2V-based FCW and LCM might perform better than the vehicle-resident systems. However, benefits from these apps could accrue if they add a marginal effectiveness to the existing in-vehicle systems, or if they enable the installation of these apps in vehicles that do not voluntarily have these systems. This later effect would occur due to the significant marginal cost reduction for these apps that would result from V2V. However, we do not have sufficient data to determine the marginal effectiveness of V2V for these apps and the added installation rates. Therefore, we did not quantify this type of benefits.

(c) Potential Impact of Next Generation V2V Apps

The agency believes that the V2V apps will be evolved as did the vehicle-resident systems. The next generation V2V apps, we envision, can also actively assist drivers to avoid crashes as did the vehicle-resident crash avoidance systems (such as advance brake assist). Furthermore, the new apps might be applicable to motorcycle crashes. V2V could increase the adoption of these apps to lower incremental cost.

(d) The Impact of Enabling V2P and V2I Apps

The V2V also is the foundation for the deployment V2P and V2I apps. For V2P, pedestrians can carry devices (such as mobile phones) with a V2V chip that can send out a safety signal to V2V devices in the vehicles and vice versa. Both the driver and the pedestrian could be warned if a possible conflict arises. Specifically, V2P can protect pedestrians in crosswalk and improve mobility. However, there are many issues to be resolved concerning V2P

apps. The agency is developing a research plan that will investigate issues relating to V2P communication, safety applications, and human factors, and among other things.

The same communications technology that supports V2V apps could also enable a broader set of safety and mobility applications when combined with compatible roadway infrastructure. The potential V2I apps have been identified included: Red Light Violation Warning, Curve Speed Warning, Stop Sign Gap Assist, Reduced Speed Zone Warning, Spot Weather Information Warning, Stop Sign Violation Warning, Railroad Crossing Violation Warning, and Oversize Vehicle Warning.[368] These V2I apps can mitigate congestion and facilitate green transportation choices, thus reducing the energy consumptions and environmental impacts.

(e) The Effects of Paving the Way for Automation

We believe that V2X technology may be necessary to realize the full potential of vehicle automation (*e.g.,* self-driving vehicles), as such communication would provide a vehicle with the highest level of awareness of its surroundings, which is likely necessary in situations where the driver cedes all control of safety-critical functions and relies on the vehicle to monitor roadway and driving conditions.

E. Breakeven Analysis

The agency conducted a breakeven analysis of the proposed rule's estimated costs and benefits. The analysis is used to determine when the cumulative estimated benefits will recoup the investment made up to that year. In essence, this analysis determines the year that the total investment of the proposed rule will be paid back through the total realized benefits of the proposed rule. The total investment of the proposed rule for a year is the cumulative annual costs from the first year of implementation up to that year. Similarly, the total realized benefits would be the cumulative monetized annual benefits from the first year of implementation up to that year. All annual costs and monetized benefits used in this analysis are discounted back to 2021, the projected first year of implementation of the proposed rule. In determining the potential breakeven point, the agency needed to develop the undiscounted annual net benefits yielding the values shown in Table VII–41. As shown, undiscounted, the proposed rule would accrue a positive annual benefit around 2026 and 2027.

TABLE VII–41—ANNUAL NET BENEFITS

[Undiscounted, 2014$ in millions]

Year	Calendar year	Total monetized benefits		Annual costs		Annual net benefits	
		Low	High	Low	High	Low	High
1	2021	$0	$0	$2,192	$2,864	−$2,864	−$2,192
2	2022	19	25	3,011	3,926	−3,907	−2,986
3	2023	126	165	3,832	4,946	−4,820	−3,668
4	2024	495	647	3,741	4,981	−4,486	−3,095
5	2025	1,256	1,644	3,701	4,803	−3,547	−2,057
6	2026	2,655	3,483	3,655	4,735	−2,080	−173
7	2027	4,784	6,295	3,640	4,705	79	2,655
8	2028	7,381	9,741	3,634	4,690	2,692	6,106
9	2029	10,245	13,554	3,622	4,668	5,577	9,931
10	2030	13,336	17,678	3,649	4,692	8,643	14,029
11	2031	16,595	22,041	3,659	4,699	11,896	18,381
12	2032	19,960	26,553	3,662	4,699	15,261	22,891
13	2033	23,369	31,136	3,665	4,699	18,670	27,471
14	2034	26,770	35,718	3,682	4,719	22,051	32,036
15	2035	30,098	40,212	3,717	4,757	25,341	36,495
16	2036	33,279	44,518	3,713	4,731	28,548	40,805
17	2037	36,263	48,567	3,734	4,726	31,537	44,833
18	2038	39,002	52,292	3,749	4,736	34,266	48,543
19	2039	41,438	55,616	3,769	4,858	36,580	51,847
20	2040	43,570	58,537	3,831	4,844	38,726	54,706
21	2041	45,392	61,042	3,856	4,872	40,519	57,186
22	2042	46,898	63,122	3,737	4,715	42,183	59,385
23	2043	48,152	64,860	3,744	4,719	43,434	61,116
24	2044	49,192	66,304	3,752	4,723	44,469	62,552
25	2045	50,045	67,490	3,796	4,764	45,281	63,695
26	2046	50,768	68,494	3,770	4,736	46,032	64,724
27	2047	51,403	69,374	3,780	4,745	46,658	65,594
28	2048	51,963	70,147	3,789	4,752	47,211	66,359
29	2049	52,466	70,840	3,797	4,759	47,707	67,043
30	2050	52,911	71,453	3,858	4,818	48,093	67,595
31	2051	53,279	71,960	3,822	4,761	48,518	68,138
32	2052	53,603	72,408	3,813	4,732	48,870	68,594
33	2053	53,869	72,777	3,805	4,719	49,150	68,972
34	2054	54,096	73,092	3,797	4,810	49,285	69,295
35	2055	54,285	73,356	3,832	4,766	49,520	69,523
36	2056	54,445	73,578	3,782	4,711	49,734	69,795
37	2057	54,561	73,741	3,775	4,700	49,862	69,966
38	2058	54,624	73,832	3,768	4,688	49,936	70,064
39	2059	54,665	73,894	3,761	4,677	49,987	70,133
40	2060	54,685	73,926	3,804	4,717	49,968	70,122

[368] The Connected Vehicle Core System Architecture, See *www.its.dot.gov/research/systems_engineering.htm* (last accessed Jan. 9, 2014).

Table VII–42 and Table VII–43 show the discounted cumulative annual benefits, cumulative annual costs, cumulative annual net benefits, and breakeven year at a 3 and 7 percent rate, respectively. As shown, the proposed rule would be expected to break even between 2029 and 2031 for a 3 percent discount rate and 2030 to 2032 for a 7 percent discount rate.

TABLE VII–42—BREAKEVEN ANALYSIS

[at 3 Percent, 2014 $ in millions]

Year	Calendar year	Cumulative monetized benefits		Total cumulative annual costs		Cumulative net benefits		Breakeven year	
		Low	High	Low	High	Low	High	Low	High
1	2021	$0	$0	$2,160	$2,822	−$2,822	−$2,160	(*)	(*)
2	2022	18	24	5,040	6,578	−6,559	−5,016	(*)	(*)
3	2023	135	177	8,600	11,172	−11,036	−8,423	(*)	(*)
4	2024	581	760	11,973	15,663	−15,081	−11,213	(*)	(*)
5	2025	1,681	2,199	15,213	19,868	−18,186	−13,014	(*)	(*)
6	2026	3,938	5,160	18,320	23,892	−19,954	−13,161	(*)	(*)
7	2027	7,886	10,354	21,324	27,775	−19,889	−10,970	(*)	(*)
8	2028	13,800	18,158	24,236	31,533	−17,732	−6,078	(*)	(*)
9	2029	21,769	28,700	27,053	35,164	−13,395	1,647	(*)	2029
10	2030	31,840	42,050	29,809	38,707	−6,867	12,241	(*)	2030
11	2031	44,007	58,211	32,492	42,152	1,855	25,719	2031	2031
12	2032	58,215	77,111	35,099	45,497	12,718	42,013	2032	2032
13	2033	74,365	98,630	37,632	48,744	25,621	60,998	2033	2033
14	2034	92,328	122,597	40,102	51,911	40,417	82,494	2034	2034
15	2035	111,934	148,791	42,524	55,009	56,925	106,267	2035	2035
16	2036	132,980	176,944	44,872	58,001	74,979	132,072	2036	2036
17	2037	155,245	206,764	47,165	60,903	94,342	159,599	2037	2037
18	2038	178,494	237,935	49,400	63,726	114,768	188,536	2038	2038
19	2039	202,478	270,126	51,581	66,537	135,941	218,545	2039	2039
20	2040	226,960	303,018	53,734	69,259	157,701	249,284	2040	2040
21	2041	251,726	336,322	55,837	71,918	179,808	280,485	2041	2041
22	2042	276,568	369,758	57,817	74,415	202,153	311,941	2042	2042
23	2043	301,328	403,109	59,742	76,841	224,486	343,367	2043	2043
24	2044	325,889	436,214	61,616	79,200	246,690	374,599	2044	2044
25	2045	350,146	468,927	63,455	81,509	268,637	405,472	2045	2045
26	2046	374,038	501,160	65,229	83,738	290,300	435,931	2046	2046
27	2047	397,524	532,857	66,956	85,906	311,618	465,901	2047	2047
28	2048	420,574	563,975	68,637	88,014	332,561	495,337	2048	2048
29	2049	443,171	594,486	70,273	90,063	353,108	524,213	2049	2049
30	2050	465,294	624,360	71,886	92,078	373,216	552,474	2050	2050
31	2051	486,919	653,569	73,437	94,010	392,909	580,132	2051	2051
32	2052	508,044	682,104	74,940	95,875	412,169	607,165	2052	2052
33	2053	528,654	709,949	76,396	97,681	430,974	633,553	2053	2053
34	2054	548,751	737,102	77,806	99,468	449,283	659,296	2054	2054
35	2055	568,332	763,562	79,189	101,187	467,145	684,373	2055	2055
36	2056	587,399	789,329	80,513	102,837	484,562	708,816	2056	2056
37	2057	605,949	814,401	81,797	104,435	501,515	732,604	2057	2057
38	2058	623,981	838,772	83,040	105,982	517,999	755,732	2058	2058
39	2059	641,501	862,455	84,246	107,481	534,020	778,210	2059	2059
40	2060	658,513	885,454	85,429	108,949	549,565	800,025	2060	2060

* Not breakeven.

TABLE VII–43—BREAKEVEN ANALYSIS

[at 7 Percent, 2014 $ in Millions]

Year	Calendar year	Cumulative monetized benefits		Total cumulative annual costs		Cumulative net benefits		Breakeven year	
		Low	High	Low	High	Low	High	Low	High
1	2021	$0	$0	$2,119	$2,768	−$2,768	−$2,119	(*)	(*)
2	2022	17	23	4,840	6,316	−6,299	−4,817	(*)	(*)
3	2023	124	162	8,076	10,492	−10,369	−7,914	(*)	(*)
4	2024	514	672	11,028	14,423	−13,909	−10,356	(*)	(*)
5	2025	1,441	1,884	13,757	17,965	−16,524	−11,873	(*)	(*)
6	2026	3,271	4,285	16,277	21,228	−17,958	−11,992	(*)	(*)
7	2027	6,353	8,340	18,622	24,260	−17,907	−10,282	(*)	(*)
8	2028	10,796	14,204	20,810	27,083	−16,287	−6,606	(*)	(*)
9	2029	16,560	21,829	22,847	29,709	−13,149	−1,018	(*)	(*)
10	2030	23,572	31,124	24,766	32,176	−8,604	6,358	(*)	2030
11	2031	31,727	41,955	26,564	34,485	−2,759	15,391	(*)	2031
12	2032	40,894	54,151	28,246	36,643	4,251	25,905	2032	2032

TABLE VII–43—BREAKEVEN ANALYSIS—Continued

[at 7 Percent, 2014 $ in Millions]

Year	Calendar year	Cumulative monetized benefits		Total cumulative annual costs		Cumulative net benefits		Breakeven year	
		Low	High	Low	High	Low	High	Low	High
13	2033	50,925	67,515	29,819	38,660	12,264	37,695	2033	2033
14	2034	61,665	81,845	31,297	40,554	21,111	50,548	2034	2034
15	2035	72,949	96,920	32,690	42,337	30,612	64,230	2035	2035
16	2036	84,610	112,520	33,991	43,995	40,615	78,528	2036	2036
17	2037	96,486	128,425	35,214	45,542	50,943	93,211	2037	2037
18	2038	108,420	144,426	36,361	46,992	61,429	108,065	2038	2038
19	2039	120,271	160,333	37,439	48,381	71,891	122,893	2039	2039
20	2040	131,918	175,980	38,463	49,676	82,242	137,516	2040	2040
21	2041	143,257	191,228	39,427	50,893	92,364	151,801	2041	2041
22	2042	154,207	205,967	40,299	51,994	102,214	165,668	2042	2042
23	2043	164,714	220,119	41,116	53,023	111,691	179,003	2043	2043
24	2044	174,744	233,639	41,881	53,986	120,758	191,757	2044	2044
25	2045	184,283	246,502	42,605	54,894	129,388	203,898	2045	2045
26	2046	193,325	258,701	43,276	55,738	137,587	215,425	2046	2046
27	2047	201,883	270,252	43,905	56,528	145,355	226,346	2047	2047
28	2048	209,969	281,167	44,495	57,267	152,701	236,672	2048	2048
29	2049	217,597	291,467	45,047	57,959	159,638	246,420	2049	2049
30	2050	224,788	301,177	45,571	58,614	166,174	255,606	2050	2050
31	2051	231,554	310,316	46,057	59,219	172,336	264,260	2051	2051
32	2052	237,917	318,911	46,509	59,780	178,136	272,402	2052	2052
33	2053	243,891	326,982	46,931	60,304	183,587	280,051	2053	2053
34	2054	249,501	334,562	47,325	60,803	188,698	287,236	2054	2054
35	2055	254,761	341,670	47,697	61,264	193,497	293,973	2055	2055
36	2056	259,688	348,329	48,039	61,691	197,997	300,290	2056	2056
37	2057	264,304	354,567	48,358	62,088	202,216	306,209	2057	2057
38	2058	268,625	360,407	48,656	62,459	206,166	311,751	2058	2058
39	2059	272,665	365,868	48,934	62,805	209,860	316,934	2059	2059
40	2060	276,443	370,976	49,197	63,131	213,313	321,779	2060	2060

* Not breakeven.

Table VII–44 summarizes the breakeven year for the proposed rule based on the estimated costs and monetized benefits.

TABLE VII–44—SUMMARY OF THE BREAKEVEN YEAR OF THE PROPOSED RULE

Discount rate	Year
At 3 Percent	2029 to 2031.
At 7 Percent	2030 to 2032.

F. Cost Effectiveness and Positive Net Benefits Analysis

1. Cost Effectiveness

The cost-effectiveness analysis identifies the model year the agency estimates the net cost per fatal equivalent is no greater than the $9.7 million comprehensive cost of a fatality, indicating the point at which cost of the propose rule is lower than a fatal equivalent. For this analysis, the agency defines the net cost as the difference between a given MY cost and the congestion benefits and PDO savings (*i.e.,* the lifetime savings of these two categories for a given vehicle MY).

For each discount rate, the range of fatal equivalents covers those from the two benefits estimating approaches discussed previously Section VII.D: Free-rider and no free-rider. The low fatal equivalent numbers represent the low benefit estimates from the free-rider approach and the high estimates represent the higher benefit estimates from the no free-rider approach. Additionally, the cost-related low and high values represent the two potential cost estimates that result from utilizing a one-radio or two-radio approach to DSRC implementation approach.[369]

The agency utilizes the net cost per equivalent life saved to determine the cost-effectiveness for a given vehicle MY. The net cost defined in this analysis is the difference between the MY costs and the savings from reducing property damage and congestion. As described in Section VII.D.3, fatal equivalents are derived by translating the MAIS 1–5 injuries saved and the PDOVs prevented into fatalities using the calculated relative fatality ratios found in Table VII–37.

Table VII–45 and Table VII–46 present the factors used when determine cost-effectiveness, the net cost per fatal equivalent discounted at 3 percent and 7 percent, respectively, and when the agency estimates the proposed rule would become cost-effective. As shown in the tables, the agency estimates the proposed rule would become cost effective in MY 2024 to MY 2026 regardless of the discount rate. Note that the negative MY net cost shown in the tables means that the MY benefits outweigh its costs.

[369] The one-DSRC radio consists of one DSRC radio in vehicle paring with a hybrid (WiFi/Cellular/Satellite) vehicle-to-SCMS communication. The two DSRC radios in vehicle are paring with DSRC vehicle-to-SCMS communication.

TABLE VII–45—COST-EFFECTIVENESS ANALYSIS

[at 3 Percent, 2014 $ in millions]

Year	Model	Fatal equivalents		MY net costs		Net cost per fatal equivalent		Cost-effective	
		Low	High	Low	High	Low	High	Low	High
1	2021	0.00	0.00	$2,221.39	$2,893.52	$2,221.39	$2,893.52	*	*
2	2022	3.48	67.86	2,958.11	3,963.34	43.59	1,138.99	*	*
3	2023	23.35	208.55	3,592.36	4,965.74	17.23	212.68	*	*
4	2024	104.31	580.04	2,975.53	4,884.16	5.13	46.82	2024	*
5	2025	257.57	1,017.05	2,317.96	4,491.28	2.28	17.44	2025	*
6	2026	586.69	1,774.90	1,208.85	3,970.64	0.68	6.77	2026	2026
7	2027	1,112.42	2,621.45	7.03	3,221.61	0.00	2.90	2027	2027
8	2028	1,606.16	3,090.78	−657.77	2,530.40	−0.21	1.58	2028	2028
9	2029	1,946.18	3,250.93	−896.40	2,042.34	−0.28	1.05	2029	2029
10	2030	2,252.45	3,415.26	−1,101.36	1,645.84	−0.32	0.73	2030	2030
11	2031	2,523.52	3,563.63	−1,301.00	1,280.31	−0.37	0.51	2031	2031
12	2032	2,761.74	3,697.69	−1,487.91	952.38	−0.40	0.34	2032	2032
13	2033	2,847.78	3,975.69	−1,876.58	833.11	−0.47	0.29	2033	2033
14	2034	2,934.41	4,241.63	−2,233.79	731.05	−0.53	0.25	2034	2034
15	2035	3,009.61	4,475.08	−2,526.26	664.36	−0.56	0.22	2035	2035
16	2036	3,074.84	4,678.59	−2,816.23	547.13	−0.60	0.18	2036	2036
17	2037	3,134.46	4,858.86	−3,048.91	459.30	−0.63	0.15	2037	2037
18	2038	3,182.03	5,007.07	−3,242.04	402.76	−0.65	0.13	2038	2038
19	2039	3,224.93	5,139.68	−3,409.01	463.44	−0.66	0.14	2039	2039
20	2040	3,269.38	5,267.60	−3,527.55	387.12	−0.67	0.12	2040	2040
21	2041	3,320.90	5,404.46	−3,692.67	345.44	−0.68	0.10	2041	2041
22	2042	3,224.76	5,283.11	−3,646.00	315.00	−0.69	0.10	2042	2042
23	2043	3,241.75	5,334.51	−3,711.27	294.44	−0.70	0.09	2043	2043
24	2044	3,258.96	5,380.31	−3,768.41	274.41	−0.70	0.08	2044	2044
25	2045	3,275.27	5,423.17	−3,785.48	292.50	−0.70	0.09	2045	2045
26	2046	3,290.63	5,461.25	−3,865.08	242.56	−0.71	0.07	2046	2046
27	2047	3,306.52	5,499.93	−3,909.53	228.66	−0.71	0.07	2047	2047
28	2048	3,319.75	5,536.44	−3,952.52	216.58	−0.71	0.07	2048	2048
29	2049	3,333.27	5,571.05	−3,992.64	204.60	−0.72	0.06	2049	2049
30	2050	3,350.10	5,608.31	−3,984.67	240.58	−0.71	0.07	2050	2050

*The proposed rule would not be cost effective for the MY vehicles since the net cost per fatal equivalent is greater than $9.7M in 2014 dollars.

TABLE VII–46—COST-EFFECTIVENESS ANALYSIS

[at 7 Percent, 2014 $ in millions]

Year	Model year	Fatal equivalents		MY net costs		Net cost per fatal equivalent		Cost-effective	
		Low	High	Low	High	Low	High	Low	High
1	2021	0.00	0.00	$2,213.68	$2,885.80	$2,213.68	$2,885.80	*	*
2	2022	3.28	51.18	2,969.81	3,952.00	58.02	1,206.56	*	*
3	2023	21.83	159.55	3,645.47	4,952.42	22.85	226.83	*	*
4	2024	96.35	450.18	3,141.76	4,879.71	6.98	50.64	2024	*
5	2025	234.85	795.52	2,612.54	4,507.19	3.28	19.19	2025	*
6	2026	527.59	1,396.62	1,722.09	4,035.73	1.23	7.65	2026	2026
7	2027	989.03	2,077.54	751.28	3,373.91	0.36	3.41	2027	2027
8	2028	1,416.94	2,459.15	208.58	2,771.96	0.08	1.96	2028	2028
9	2029	1,710.25	2,598.90	−2.00	2,347.17	0.00	1.37	2029	2029
10	2030	1,974.86	2,741.45	−177.05	2,006.97	−0.06	1.02	2030	2030
11	2031	2,149.18	2,947.24	−458.15	1,772.63	−0.16	0.82	2031	2031
12	2032	2,233.37	3,227.88	−850.33	1,654.44	−0.26	0.74	2032	2032
13	2033	2,309.61	3,478.57	−1,200.35	1,548.14	−0.35	0.67	2033	2033
14	2034	2,385.57	3,711.72	−1,512.27	1,460.19	−0.41	0.61	2034	2034
15	2035	2,451.89	3,916.19	−1,764.75	1,405.16	−0.45	0.57	2035	2035
16	2036	2,509.12	4,095.07	−2,020.80	1,298.41	−0.49	0.52	2036	2036
17	2037	2,562.08	4,254.99	−2,225.59	1,219.23	−0.52	0.48	2037	2037
18	2038	2,602.73	4,384.79	−2,393.47	1,171.68	−0.55	0.45	2038	2038
19	2039	2,640.12	4,501.23	−2,538.36	1,239.43	−0.56	0.47	2039	2039
20	2040	2,678.06	4,613.37	−2,635.41	1,171.48	−0.57	0.44	2040	2040
21	2041	2,720.95	4,730.53	−2,773.58	1,141.05	−0.59	0.42	2041	2041
22	2042	2,641.60	4,624.69	−2,748.24	1,088.07	−0.59	0.41	2042	2042
23	2043	2,656.70	4,670.32	−2,805.80	1,069.77	−0.60	0.40	2043	2043
24	2044	2,670.51	4,709.04	−2,853.41	1,054.05	−0.61	0.39	2044	2044
25	2045	2,685.53	4,747.17	−2,864.22	1,073.57	−0.60	0.40	2045	2045
26	2046	2,696.56	4,779.45	−2,936.06	1,029.21	−0.61	0.38	2046	2046

TABLE VII–46—COST-EFFECTIVENESS ANALYSIS—Continued

[at 7 Percent, 2014 $ in millions]

Year	Model year	Fatal equivalents		MY net costs		Net cost per fatal equivalent		Cost-effective	
		Low	High	Low	High	Low	High	Low	High
27	2047	2,711.29	4,815.03	−2,976.53	1,016.55	−0.62	0.37	2047	2047
28	2048	2,721.94	4,845.29	−3,011.12	1,007.69	−0.62	0.37	2048	2048
29	2049	2,734.33	4,873.87	−3,043.14	996.93	−0.62	0.36	2049	2049
30	2050	2,747.06	4,905.91	−3,028.20	1,038.18	−0.62	0.38	2050	2050

*The proposed rule would not be cost effective for the MY vehicles since the net cost per fatal equivalent is greater than $9.7M in 2014 dollars.

2. Lifetime Net Benefits for a Specified Model Year

The lifetime net benefits for a specified MY vehicle (*i.e.,* MY net benefits) is the difference between the monetized MY benefits and the corresponding MY costs. Table VII–47 and Table VII–48 show the MY net benefits at a 3 and 7 percent discount rate, respectively. As shown, for both discount rates, MY 2024 to MY 2026 vehicles would accrue positive lifetime net benefits. (Due to rounding errors, discrepancy existed between the monetized MY benefits that were deriving directly by multiplying $9.7 million by fatal equivalents and those reported in the tables below.)

TABLE VII–47—MY NET BENEFITS

[at 3 Percent, 2014 $ in millions]

Year	Model year	Monetized MY benefits		MY costs		MY net benefits	
		Low	High	Low	High	Low	High
1	2021	$0.00	$0.00	$2,221.39	$2,893.52	−$2,893.52	−$2,221.39
2	2022	33.79	658.99	3,053.02	3,968.08	−3,934.29	−2,394.03
3	2023	226.72	2,025.12	3,884.01	4,997.52	−4,770.80	−1,858.89
4	2024	1,012.92	5,632.53	3,786.63	5,026.18	−4,013.26	1,845.90
5	2025	2,501.20	9,876.22	3,740.01	4,842.01	−2,340.81	6,136.21
6	2026	5,697.12	17,235.41	3,690.23	4,769.58	927.54	13,545.18
7	2027	10,802.30	25,455.98	3,671.47	4,736.63	6,065.67	21,784.52
8	2028	15,596.91	30,013.55	3,662.23	4,718.02	10,878.89	26,351.32
9	2029	18,898.69	31,568.66	3,646.96	4,693.24	14,205.45	27,921.70
10	2030	21,872.79	33,164.45	3,671.21	4,714.08	17,158.71	29,493.24
11	2031	24,505.02	34,605.22	3,678.46	4,717.95	19,787.07	30,926.76
12	2032	26,818.31	35,906.98	3,678.43	4,714.96	22,103.36	32,228.55
13	2033	27,653.77	38,606.57	3,678.63	4,713.02	22,940.75	34,927.94
14	2034	28,495.06	41,189.00	3,692.47	4,729.11	23,765.95	37,496.53
15	2035	29,225.26	43,456.01	3,725.64	4,764.99	24,460.27	39,730.37
16	2036	29,858.67	45,432.21	3,719.46	4,736.74	25,121.92	41,712.75
17	2037	30,437.71	47,182.69	3,738.10	4,730.26	25,707.44	43,444.60
18	2038	30,899.56	48,621.96	3,751.52	4,738.62	26,160.94	44,870.43
19	2039	31,316.16	49,909.68	3,769.32	4,857.85	26,458.31	46,140.36
20	2040	31,747.87	51,151.88	3,829.01	4,842.19	26,905.68	47,322.87
21	2041	32,248.10	52,480.81	3,854.63	4,870.78	27,377.32	48,626.18
22	2042	31,314.49	51,302.48	3,731.52	4,709.39	26,605.10	47,570.96
23	2043	31,479.52	51,801.61	3,737.75	4,712.04	26,767.49	48,063.86
24	2044	31,646.62	52,246.36	3,744.33	4,715.51	26,931.12	48,502.03
25	2045	31,805.05	52,662.57	3,786.93	4,755.86	27,049.18	48,875.65
26	2046	31,954.16	53,032.36	3,760.35	4,726.88	27,227.28	49,272.01
27	2047	32,108.44	53,407.94	3,769.78	4,734.65	27,373.79	49,638.16
28	2048	32,236.99	53,762.45	3,777.66	4,740.64	27,496.35	49,984.79
29	2049	32,368.22	54,098.58	3,785.78	4,747.09	27,621.14	50,312.80
30	2050	32,531.65	54,460.39	3,845.70	4,806.01	27,725.64	50,614.69

TABLE VII–48 MY NET BENEFITS

[at 7 Percent, 2014 $ in millions]

Year	Model year	Monetized MY benefits		Vehicle costs		MY net benefits	
		Low	High	Low	High	Low	High
1	2021	$0.00	$0.00	$2,213.68	$2,885.80	−$2,885.80	−$2,213.68
2	2022	31.80	497.03	3,041.41	3,956.46	−3,924.66	−2,544.37
3	2023	212.00	1,549.29	3,868.62	4,982.14	−4,770.14	−2,319.34
4	2024	935.65	4,371.50	3,771.35	5,010.90	−4,075.25	600.15
5	2025	2,280.53	7,725.00	3,724.97	4,826.97	−2,546.44	4,000.03

TABLE VII–48 MY NET BENEFITS—Continued

[at 7 Percent, 2014 $ in millions]

Year	Model year	Monetized MY benefits		Vehicle costs		MY net benefits	
		Low	High	Low	High	Low	High
6	2026	5,123.26	13,562.13	3,674.84	4,754.19	369.08	9,887.29
7	2027	9,604.09	20,174.30	3,655.69	4,720.85	4,883.24	16,518.61
8	2028	13,759.41	23,879.93	3,646.03	4,701.83	9,057.59	20,233.89
9	2029	16,607.61	25,236.98	3,630.38	4,676.66	11,930.95	21,606.59
10	2030	19,177.23	26,621.24	3,654.18	4,697.04	14,480.18	22,967.06
11	2031	20,869.91	28,619.59	3,661.00	4,700.48	16,169.42	24,958.59
12	2032	21,687.48	31,344.84	3,660.57	4,697.09	16,990.38	27,684.27
13	2033	22,427.83	33,779.21	3,660.38	4,694.77	17,733.06	30,118.83
14	2034	23,165.40	36,043.23	3,673.77	4,710.41	18,455.00	32,369.46
15	2035	23,809.50	38,028.75	3,706.49	4,745.84	19,063.67	34,322.26
16	2036	24,365.23	39,765.77	3,699.88	4,717.16	19,648.07	36,065.89
17	2037	24,879.46	41,318.79	3,718.05	4,710.22	20,169.24	37,600.74
18	2038	25,274.25	42,579.22	3,731.05	4,718.15	20,556.11	38,848.18
19	2039	25,637.28	43,709.92	3,748.39	4,836.91	20,800.36	39,961.54
20	2040	26,005.75	44,798.85	3,807.57	4,820.75	21,185.00	40,991.28
21	2041	26,422.20	45,936.55	3,832.67	4,848.82	21,573.37	42,103.88
22	2042	25,651.68	44,908.74	3,709.90	4,687.77	20,963.91	41,198.84
23	2043	25,798.30	45,351.86	3,715.80	4,690.09	21,108.20	41,636.06
24	2044	25,932.43	45,727.85	3,722.05	4,693.23	21,239.19	42,005.80
25	2045	26,078.29	46,098.16	3,764.31	4,733.25	21,345.04	42,333.85
26	2046	26,185.33	46,411.61	3,737.41	4,703.94	21,481.39	42,674.20
27	2047	26,328.44	46,757.14	3,746.51	4,711.38	21,617.06	43,010.63
28	2048	26,431.78	47,050.95	3,754.07	4,717.05	21,714.73	43,296.87
29	2049	26,552.13	47,328.48	3,761.88	4,723.19	21,828.94	43,566.60
30	2050	26,675.71	47,639.58	3,821.49	4,781.80	21,893.91	43,818.10

3. Summary

Table VII–49 summarizes the MY vehicles that would be cost-effective.

TABLE VII–49—SUMMARY OF THE MY WOULD BE COST-EFFECTIVE AND HAVE POSITIVE NET BENEFITS

Discount rate	Cost-effective	Net benefits
At 3 Percent	2024 to 2026	2024 to 2026.
At 7 Percent	2024 to 2026	2024 to 2026.

G. Uncertainty Analysis

In order to account for the inherent uncertainty in the assumptions underlying this cost-benefit analysis, the agency also conducted extensive uncertainty analysis to illustrate the variation in the rule's benefits and costs associated with different assumptions about the future number of accidents that could be prevented, the assumed adoption rates and estimated effectiveness of the two safety applications, and our assumptions about the costs of providing V2V communications capability. This analysis showed that the proposed rule would reach its breakeven year between 2030 and 2032 with 90 percent certainty, with even the most conservative scenario showing that the breakeven year would be five to six years later than the previously estimated years (2029–2032). Considering these same sources of uncertainty in the cost-effectiveness and net benefits analyses showed that the proposed rule would become cost-effective and would accrue positive net benefits between MY 2024 and MY 2027 with 90 percent certainty. This indicates that it is very likely to become cost-effectiveness at most one MY later than estimated in the primary analysis, and that even under the most conservative scenario, this would occur two to three model years later than the initial estimate of 2024–2026.

H. Estimated Costs and Benefits of V2V Alternatives

In the interest of ensuring the agency's proposed approach to regulating V2V technology is both fully informed and backed by a comprehensive regulatory analysis, the agency considered two potential alternative approaches for V2V deployment. The first alternative (Alternative 1) explores the concept going beyond this proposal's mandate for only the V2V communications equipment (radio), by also including a mandate for two safety warning applications: Intersection movement assist (IMA) and left turn across path (LTA). Alternative 2 is an ''if-equipped'' approach that would provide requirements for V2V communication as specified in this proposed rule but only applicable if the equipment is used in the vehicle fleet. These two alternatives represent a significant range of potential agency actions beyond the baseline and the proposal.

Alternative 1 shares the same three-year phase-in schedule (50%–75%–100%) for V2V equipment as the proposed rule but delays the same phase in rate by one year delay for safety application implementation (0%–50%–75%–100%). Alternative 2 [370] assumes that a V2V implementation would be both slower and most likely stay flat thereafter versus the mandatory implementation of the proposed rule, never reaching all or even a significant percentage of the fleet. The agency believes this results from the cost of installing V2V on any particular vehicle is not dependent on adoption by others, while the benefits are. With these considerations, the agency assumes that a 5 percent DSRC adoption for MY 2021 vehicles and a 5 percent increase for the subsequent years until plateauing at 25 percent in MY 2025 and indefinitely This assumption is broadly based upon adoption rates of other advanced technologies in the absence of a mandate. Alternative 2 has the same safety application implementation schedule as the proposed rule as implementation would be voluntary for both regulatory options. Table VII–50

[370] The agency believes that V2V would not occur in the absence of any government action and has, therefore, not estimated a ''no action'' alternative. We request comment on this assumption.

and Table VII–51 summarize the DSRC and safety application adoptions rates for the proposed rule and these two alternatives.

TABLE VII–50—DSRC ADOPTION RATES IN PERCENT

Regulation alternatives	Model year							
	2021	2022	2023	2024	2025	2026	2027	2028+
The Proposed Rule Mandating DSRC	50	75	100	100	100	100	100	100
Alternative 1 Mandating DSRC and Apps	50	75	100	100	100	100	100	100
Alternative 2 If-Equipped	5	10	15	20	25	25	25	25

TABLE VII–51—APP ADOPTION RATES * IN PERCENT

[of DSRC-equipped vehicles]

Regulation alternatives	Model year							
	2021	2022	2023	2024	2025	2026	2027	2028+
The Proposed Rule Mandating DSRC	0	5	10	25	40	65	90	100
Alternative 1 Mandating DSRC and Apps	50	75	100	100	100	100	100	100
Alternative 2 If-Equipped	0	5	10	15	20	25	25	25

Because of the aggressive app adoption, Alternative 1 would be expected to accrue more annual benefits than the proposed rule before the entire on-road fleet has been equipped with V2V (*i.e.,* reaching the maximum benefits). Alternative 1 would also reach the same maximum annual benefits as the proposed rule, but would do so four years earlier. This alternative would achieve these benefits without significant cost increase, since the incremental cost of adding two apps over the DSRC radios is very small (less than 0.1 percent of the vehicle technology cost). The annual costs of this alternative would range from $2.2 to $5.0 billion.

Alternative 2 would accrue up to 6 percent of the maximum annual benefits of the proposed rule due to lower DSRC and app adoption rates. This alternative also has relatively lower annual costs than that of the proposed rule, since far fewer vehicles would be installed with DSRC. The annual cost of this alternative would range from $254 million to $1.3 billion, with an average annual cost about 26 percent of the cost of the proposed rule.

Alternative 1 would breakeven between 2027 and 2030 (combining 3 and 7 percent discount rates), two years ahead of the proposed rule. The first MY vehicles that would be cost-effective and that would accrue positive net benefits is expected to be between MY 2024 and MY 2026, also two years earlier than the proposed rule. In contrast, Alternative 2 would breakeven between 2037 and 2055, eight to twenty-three years behind the proposed rule. The first MY vehicles that would be cost-effective under Alternative 2 is expected to be between MY 2026 and MY 2031, two to five years later than the proposed rule. The first MY vehicles that would accrue positive net benefits is between MY 2026 and MY 2033, two to seven years later than the proposed rule. Table VII–52 and Table VII–53 compares these visually at three and seven percent discount rates.

TABLE VII–52—COMPARISON OF BREAKEVEN AND COST-EFFECTIVE MEASURES—3 PERCENT DISCOUNT

Cost-benefit measures (3 percent discount)	Alternative 1 mandating DSRC radios and apps	The proposed rule mandating DSRC only	Alternative 2 if-equipped
Breakeven (CY)	2027 to 2029	2029 to 2031	2037 to 2045.
Cost-Effectiveness (MY)	2022 to 2024	2024 to 2026	2026 to 2030.
Positive Net Benefits (MY)	2022 to 2024	2024 to 2026	2026 to 2031.

TABLE VII–53—COMPARISON OF BREAKEVEN AND COST-EFFECTIVE MEASURES—7 PERCENT DISCOUNT

Cost-benefit measures (7 percent discount)	Alternative 1 mandating DSRC radios and apps	The proposed rule mandating DSRC only	Alternative 2 if-equipped
Breakeven (CY)	2027 to 2030	2030 to 2032	2039 to 2055.
Cost-Effectiveness (MY)	2022 to 2024	2024 to 2026	2027 to 2031.
Positive Net Benefits (MY)	2022 to 2024	2024 to 2026	2027 to 2033.

Although mandating safety applications like IMA and LTA along with the V2V communication capability (*i.e.,* DSRC) would result in significant safety benefits sooner, the agency is not proposing to mandate these applications as part of this proposal, because the agency currently does not have sufficient data to proceed with a mandate at this time. As explained above, further research for establishing practicable and objective test procedures and performance requirements for the applications will likely need to be conducted prior to mandate to avoid potential unintended consequences which could have broader negative effects, such as false warnings causing consumers to dismiss the technology, on the development and deployment of V2V-based applications.

Additional details on the analysis of Alternative 1 and Alternative 2 can be found in the PRIA accompanying this proposal rule.

We request comment on the alternative cost and benefits analysis including the approach for the alternative? Do commenters agree with the costs assumptions used for developing and implementing safety applications? Why or why not? Please provide supporting data. Do commenters agree with our assessment that mandating applications would result in accruing benefits sooner? Do commenters have estimates for the potential costs that an earlier mandate (like, consumer rejection of tech, opportunity cost, etc.) that are not quantified or are not quantifiable but hold great importance? Do commenters have any information that could assist the agency in learning more about these and any other applications that may be useful in a potential agency decision to mandate V2V-enabled safety applications.

VIII. Proposed Implementation Timing

This section of the NPRM describes the proposed timing for implementing the requirements for new vehicles and aftermarket devices, and also describes our expectations of the availability of the national SCMS.

A. New Vehicles

The agency proposes the following lead time and phase-in period for all new light vehicles sold in the U.S. to comply with this proposed rule.

1. Lead Time

We are proposing two years of lead time, with the two years starting on Sept. 1 following issuance of a final rule to this proposal. This approach would allow a minimum of two full calendars of lead time. New light vehicles manufactured for sale in the U.S. would not be required to comply until that time. NHTSA believes that a lead time period is necessary to allow for the development and production of automotive-grade V2V communications devices by the automotive supplier industry. While a quantity of DSRC devices were developed for the Safety Pilot Model Deployment in Ann Arbor, MI, these were mostly prototype aftermarket devices that were not designed to directly integrate into the vehicle's controller area network. Furthermore, the expected lifespan of these devices is only 3 to 5 years instead of the lifespan of a typical vehicle. Those devices, or ones based on their design, would therefore not be appropriate for meeting this proposed standard. At the time of issuance of this NPRM, we have limited information regarding the capability of automotive suppliers to produce the quantities of DSRC devices to equip all new light vehicles sold in the U.S. annually (approximately 15 million [371]). However, the agency was able to confirm, confidentially, with at least one supplier while gathering information for this proposal that request for quotations were being issued by original equipment manufacturers for V2V capable devices. In addition, the ITSA market study commissioned by the agency indicated the industry would need approximately 18 months to two years to ''ramp-up' V2V devices for mass production, considering the device itself and the perceived integration as original equipment are less complex than other technologies such as ESC or powertrain components.

Depending on when the final rule establishing DSRC FMVSS is issued, the agency concurs with the ITSA market study and its own regulatory experience that automotive suppliers with need some lead time to generate production-level devices in the quantities that would be required annually by automotive OEMs.

Lead time also allows the automotive OEMs time to integrate V2V communications devices into their product lines, as these devices are not currently part of any production vehicles sold in the U.S. This will minimize costs by allowing OEMs to incorporate the new technology into product cycle planning. Many OEMs conduct ''refreshes'' (*i.e.* minor cosmetic changes, new features, quality fixes, etc.) on their product lines in a staggered fashion approximately three to four years after a major redesign.

For these reasons, the agency is proposing a two year lead time after issuance of the final rule before manufacturers are required to begin complying with the requirements. Two years was chosen because it is approximately half the amount of time between average vehicle refreshes, allowing OEMs to integrate V2V technology into their existing product cycles. This will minimize the cost burden on the OEMs by not requiring concurrent redesigns of all production lines at the same time. We seek comment on whether this amount of lead time is necessary and appropriate. If commenters believe that additional lead time is needed, or that less lead time is needed, we ask that they support their comments as best as possible with specific information as to why.

2. Phase-In Period

While the agency understands that design changes may be required in order to integrate V2V communications devices into all light vehicles, since V2V technology is a cooperative system, the potential benefits associated with V2V devices depend on a high penetration rate of equipped vehicles. As such, the agency proposes an aggressive phase-in schedule after the conclusion of the lead time period. In addition to the proposed two years of lead time, NHTSA proposes a three year phase-in period. The three year phase-in schedule, which starts immediately after the conclusion of the lead time, would be as follows:

- End of Year 1—50% of all new light vehicles must comply with the rule
- End of Year 2—75% of all new light vehicles must comply with the rule
- End of Year 3—100% of all new light vehicles must comply with the rule

This proposed schedule allows a total of five years until all new vehicles would be required to comply with the final rule. This is consistent with a DOT-sponsored market study [372] conducted by ITS America, in which interviews were conducted with a wide range of V2V stakeholders including:

- Automotive OEMs
- Tier 1 Suppliers
- Tier 2 Suppliers
- Automotive Insurance Companies
- Component Manufacturers
- System Integrators and Service Providers

[371] See the 2015 EIA Annual Energy Outlook, available at *http://www.eia.gov/forecasts/aeo/tables_ref.cfm.*

[372] Impact of Light Vehicle Rule on Consumer/Aftermarket Adoption- Dedicated Short Range Communications Market Study, Intelligent Transportation Society of America, FHWA–JPO–17–487, available at *http://ntl.bts.gov/lib/60000/60500/60535/FHWA-JPO-17-487_Final_.pdf.* (last accessed Dec 12, 2016).

- Roadside Infrastructure Operators and Manufacturers

The consensus from that research was that OEMs and suppliers will need approximately three to five years after the final rule in order for all new vehicles to comply with the regulation.[373] Therefore, the agency believes that this comprehensive input from the industry provides a sufficient justification for the lead time and phase-in period. See Table VIII–1 for the full schedule.

Finally, depending on the number of product lines and the timing of their redesigns, it may be economically advantageous for some OEMs to comply with the regulation prior to the proposed schedule. These OEMs will be able to capitalize on arriving to market earlier than their competitors, and the customers of these OEMs will realize safety, mobility, and environmental benefits earlier than others. As such, the agency does not envision granting credits for early compliance with this schedule as there are sufficient incentives already in place for OEMs to consider early compliance.

TABLE VIII–1—PROPOSED LEAD TIME AND PHASE-IN SCHEDULE

Time period	Percentage of vehicles
1 year after final rule	0
2 years after final rule	0
3 years after final rule	50
4 years after final rule	75
5 years after final rule	100

B. Aftermarket

Based on market study research,[374] the agency believes that the aftermarket device industry will move quickly (within one year) after the issuance of the final rule to develop and market V2V communications devices that support safety applications as well as mobility, environmental, and other applications. While these aftermarket devices will support V2V, they will also enable more fee-based services such as mobility applications and data and communications suites to be marketed to device owners. While safety is important to consumers, the other applications offered by these devices may be potentially more attractive to the consumer. The agency believes that there will be a market for these aftermarket devices; however, it will be driven by the totality of features offered by these devices that directly impact the consumers' time spent in their vehicles, as well as by device cost.

The agency believes aftermarket device suppliers would need to react to a newly issued FMVSS to capitalize on the large volume of light vehicles that will not be equipped with V2V communications devices. The prevailing view is the market for such aftermarket devices will exist only during the transition period between the issuance of the final rule and the turnover of the entire fleet. NHTSA typically assumes that the maximum life span of a light vehicle is 39 years. We would anticipate that the vast majority of the light vehicle fleet in the U.S. will be completely replaced in less than 20 years, and they will be capable of V2V communications. This gives the aftermarket device industry a relatively small window of time to sell aftermarket devices to light vehicles without V2V communications capabilities installed by the OEMs.

Additionally, based on research from the Safety Pilot Model Deployment and additional market research, we believe the aftermarket industry is capable of producing V2V communications devices that can meet the proposed performance requirements and could be installed by a qualified installer, if needed. These aftermarket devices do not need to be connected to the vehicle controller area network vehicle bus; however, an external GPS and V2V antenna will need to be installed as well as a connection to the in-vehicle power. Therefore, the agency expects that specially-trained installers should be able to install these devices in a similar manner to other devices such OnStar FMV, which is installed at major electronics retailers as well as at car dealerships. Therefore, these devices could deploy faster than OEM integrated as they do not require an OEM to integrate them into their vehicle build and testing processes. For these reasons, the agency believes it is technically possible that these devices could be available on the market within one to two years after this proposed FMVSS is finalized.

Based on this, the agency anticipates that aftermarket devices will be available for purchase and installation during the lead time period and prior to the start of the first year of the phase-in period (*i.e.* less than two years after the final rule is issued).

The agency seeks comment on these lead time projections for both OEM and aftermarket devices. Specifically, do commenters believe the proposed lead times are reasonable? If so, why? If not, why? What type of adjustments, if any, should agency make? Do commenters agree with the agency's perspective on a ''window of opportunity'' for aftermarket devices? If so, why? If not, why? Please provide any supporting data for your response.

IX. Public Participation

A. How do I prepare and submit comments?

Your comments must be written and in English. To ensure that your comments are correctly filed in the Docket, please include the Docket Number NHTSA–2016–0126 in your comments. Your comments must not be more than 15 pages long.[375] NHTSA established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments, and there is no limit on the length of the attachments. If you are submitting comments electronically as a PDF (Adobe) file, we ask that you scan the documents submitted using the Optical Character Recognition (OCR) process,[376] thus allowing the agency to search and copy certain portions of your submissions in order to better evaluate them. Please note that pursuant to the Data Quality Act, in order for the substantive data to be relied upon and used by the agency, it must meet the information quality standards set forth in the OMB and Department of Transportation (DOT) Information Dissemination Quality guidelines. Accordingly, we encourage you to consult the guidelines in preparing your comments. OMB's guidelines may be accessed at *https://www.whitehouse.gov/omb/fedreg_reproducible* (last accessed Dec. 7, 2016). DOT's guidelines may be accessed at *http://www.dot.gov/regulations/dot-information-dissemination-quality-guidelines* (last accessed Dec. 7, 2016).

B. Tips for Preparing Your Comments

When submitting comments, please remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).
- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.

[373] Vehicle to Vehicle Crash Avoidance Safety Technology Public Acceptance Final Report—FHWA–JPO–17–491 See Docket No. NHTSA–2016–0126.

[374] ''Impact of Light Vehicle Rule on Consumer/Aftermarket Adoption—Dedicated Short Range Communications Market Study'', ITS America Research, 2015, pp 21.

[375] See 49 CFR 553.21.

[376] Optical character recognition (OCR) is the process of converting an image of text, such as a scanned paper document or electronic fax file, into computer-editable text.

• Describe any assumptions and provide any technical information and/or data that you used.

• If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

• Provide specific examples to illustrate your concerns, and suggest alternatives.

• Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

• Make sure to submit your comments by the comment period deadline identified in the **DATES** section above.

C. How can I be sure that my comments were received?

If you submit your comments by mail and wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

If you submit your comments through *www.regulations.gov*, you can find very useful information about how to confirm that your comments were successfully received and uploaded under the ''Help'' link on the top right of the home page, under ''FAQs.''

D. How do I submit confidential business information?

If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given above under **FOR FURTHER INFORMATION CONTACT**. When you send a comment containing confidential business information, you should include a cover letter setting forth the information specified in our confidential business information regulation.[377]

In addition, you should submit a copy from which you have deleted the claimed confidential business information to the Docket by one of the methods set forth above.

E. Will NHTSA consider late comments?

NHTSA will consider all comments received before midnight E.S.T. on the comment closing date indicated above under **DATES**. To the extent practicable, we will also consider comments received after that date. Additionally, if interested persons believe that any information that NHTSA may place in the docket after the issuance of the NPRM affects their comments, they may submit comments after the closing date concerning how NHTSA should consider that information for the final rule. If a comment is received too late for us to practicably consider in developing a final rule, we will consider that comment as an informal suggestion for future rulemaking action.

F. How can I read the comments submitted by other people?

You may read the materials placed in the docket for this document (*e.g.,* the comments submitted in response to this document by other interested persons) at any time by going to *http://www.regulations.gov*. Follow the online instructions for accessing the docket.

You may also read the materials at the DOT Docket Management Facility by going to the street address given above under **ADDRESSES**.

X. Regulatory Notices and Analyses

A. Executive Order 12866, Executive Order 13563, and DOT Regulatory Policies and Procedures

Executive Order 12866, ''Regulatory Planning and Review'' (58 FR 51735, Oct. 4, 1993), as amended by Executive Order 13563, ''Improving Regulation and Regulatory Review'' (76 FR 3821, Jan. 21, 2011), provides for making determinations whether a regulatory action is ''significant'' and therefore subject to OMB review and to the requirements of the Executive Order. The Order defines a ''significant regulatory action'' as one that is likely to result in a rule that may:

• Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

• Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

• Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

• Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The rulemaking proposed in this NPRM will be economically significant if adopted. Accordingly, OMB reviewed it under Executive Order 12866. The rule, if adopted, would also be significant within the meaning of the Department of Transportation's Regulatory Policies and Procedures.[378]

The benefits and costs of this proposal are described above in Section VII of this preamble. Because the proposed rule would, if adopted, be economically significant under both the Department of Transportation's procedures and OMB guidelines, the agency has prepared a Preliminary Regulatory Impact Analysis (PRIA) and placed it in the docket and on the agency's Web site. Further, pursuant to Circular A–4, we have prepared a formal probabilistic uncertainty analysis for this proposal.[379] The circular requires such an analysis for complex rules where there are large, multiple uncertainties whose analysis raises technical challenges or where effects cascade and where the impacts of the rule exceed $1 billion. This proposal meets these criteria on all counts.

B. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996, whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (*i.e.,* small businesses, small organizations, and small governmental jurisdictions). The Small Business Administration's regulations at 13 CFR part 121 define a small business, in part, as a business entity ''which operates primarily within the United States.'' (13 CFR 121.105(a)). No regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

NHTSA has considered the effects of this proposed rule under the Regulatory Flexibility Act. I certify that this proposed rule will not have a significant economic impact on a substantial number of small entities. The following is NHTSA's statement providing the

[377] See 49 CFR part 512.

[378] DOT Order 2100.5, ''Regulatory Policies and Procedures,'' *available at http://www.dot.gov/regulations/rulemaking-requirements* (last accessed Mar. 16, 2015).

[379] See Chapter 12 of the PRIA accompanying this NPRM.

factual basis for the certification (5 U.S.C. 605(b)).[380]

If adopted, the proposal would directly affect twenty large single stage motor vehicle manufacturers.[381] None of these would qualify as a small business, however. Based on our preliminary assessment, the proposal would also affect 3 entities that fit the Small Business Administration's criteria for a small business (Panoz, Saleen, and Shelby). According to the Small Business Administration's small business size standards (see 13 CFR 121.201), a single stage automobile or light truck manufacturer (NAICS code 336111, Automobile Manufacturing; 336112, Light Truck and Utility Vehicle Manufacturing) must have 1,000 or fewer employees to qualify as a small business. We believe that the rulemaking would not have a significant economic impact on these small vehicle manufacturers because we believe that the market for the products of these several small manufacturers is highly inelastic, and purchasers of these products are enticed by the desire to have an unusual vehicle. Additionally, all vehicle models would incur a similar cost to meet the proposed standard, so raising the price to include the value of V2V technology should not have much, if any, effect on sales of these vehicles, and costs should be able to be passed on to consumers. Based on this analysis, we do not believe that the proposed rule would have a significant economic impact on these three small domestic vehicle manufacturers. Therefore, a regulatory flexibility analysis was not prepared, but we welcome comments on this issue for the final rule.

C. Executive Order 13132 (Federalism)

NHTSA has examined today's proposal pursuant to Executive Order 13132 (64 FR 43255, August 10, 1999) and concluded that no additional consultation with States, local governments or their representatives is mandated beyond the rulemaking process. The agency has concluded that the rulemaking will not have sufficient federalism implications to warrant consultation with State and local officials or the preparation of a federalism summary impact statement. The proposal will not have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

NHTSA rules can preempt in two ways. First, the National Traffic and Motor Vehicle Safety Act contains an express preemption provision: When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter. 49 U.S.C. 30103(b)(1). It is this statutory command by Congress that preempts any non-identical State legislative and administrative law addressing the same aspect of performance.

The express preemption provision described above is subject to a savings clause under which ''[c]ompliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.'' 49 U.S.C. 30103(e). Pursuant to this provision, State common law tort causes of action against motor vehicle manufacturers that might otherwise be preempted by the express preemption provision are generally preserved. However, the Supreme Court has recognized the possibility, in some instances, of implied preemption of such State common law tort causes of action by virtue of NHTSA's rules, even if not expressly preempted. This second way that NHTSA rules can preempt is dependent upon there being an actual conflict between an FMVSS and the higher standard that would effectively be imposed on motor vehicle manufacturers if someone obtained a State common law tort judgment against the manufacturer, notwithstanding the manufacturer's compliance with the NHTSA standard. Because most NHTSA standards established by an FMVSS are minimum standards, a State common law tort cause of action that seeks to impose a higher standard on motor vehicle manufacturers will generally not be preempted. However, if and when such a conflict does exist—for example, when the standard at issue is both a minimum and a maximum standard—the State common law tort cause of action is impliedly preempted. See *Geier* v. *American Honda Motor Co.,* 529 U.S. 861 (2000).

Pursuant to Executive Order 13132 and 12988, NHTSA has considered whether this proposal could or should preempt State common law causes of action. The agency's ability to announce its conclusion regarding the preemptive effect of one of its rules reduces the likelihood that preemption will be an issue in any subsequent tort litigation.

To this end, the agency has examined the nature (*e.g.,* the language and structure of the regulatory text) and objectives of today's proposal and finds that this proposal, like many NHTSA rules, would prescribe only a minimum safety standard. As such, NHTSA does not intend that this proposal preempt state tort law that would effectively impose a higher standard on motor vehicle manufacturers than that to be established by today's proposal. Establishment of a higher standard by means of State tort law would not conflict with the minimum standard announced here. Without any conflict, there could not be any implied preemption of a State common law tort cause of action.

D. Executive Order 12988 (Civil Justice Reform)

With respect to the review of the promulgation of a new regulation, section 3(b) of Executive Order 12988, ''Civil Justice Reform'' (61 FR 4729; Feb. 7, 1996), requires that Executive agencies make every reasonable effort to ensure that the regulation: (1) Clearly specifies the preemptive effect; (2) clearly specifies the effect on existing Federal law or regulation; (3) provides a clear legal standard for affected conduct, while promoting simplification and burden reduction; (4) clearly specifies the retroactive effect, if any; (5) specifies whether administrative proceedings are to be required before parties file suit in court; (6) adequately defines key terms; and (7) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. This document is consistent with that requirement.

Pursuant to this Order, NHTSA notes as follows. The issue of preemption is discussed above. NHTSA notes further that there is no requirement that individuals submit a petition for reconsideration or pursue other administrative proceedings before they may file suit in court.

E. Protection of Children From Environmental Health and Safety Risks

Executive Order 13045, ''Protection of Children from Environmental Health and Safety Risks'' (62 FR 19855, April 23, 1997), applies to any rule that: (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental, health, or safety risk that

[380] See also Chapter 13 of the PRIA accompanying this NPRM.

[381] BMW, Daimler (Mercedes), Fiat/Chrysler (which also includes Ferrari and Maserati), Ford, Geely (Volvo), General Motors, Honda (which includes Acura), Hyundai, Kia, Lotus, Mazda, Mitsubishi, Nissan (which includes Infiniti), Porsche, Subaru, Suzuki, Tata (Jaguar Land Rover), Toyota, and Volkswagen/Audi.

the agency has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the agency.

This notice is part of a rulemaking that is not expected to have a disproportionate health or safety impact on children. Consequently, no further analysis is required under Executive Order 13045.

F. Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA), a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid OMB control number. There is no information collection requirement associated with this proposal. The proposal would require new vehicles to be capable of V2V communications, which would require a new aspect of performance where the vehicle broadcasts Basic Safety Messages (BSMs) during operation, which other vehicles could then receive and interpret as appropriate. BSMs include information about a vehicle's current location, heading, and speed, among other things—information that safety applications on other vehicles could interpret to determine whether a warning to the driver is needed for the driver to avoid a potential crash. The agency does not foresee any reporting requirements or PRA related impacts directly attributable to the proposed performance requirements in this proposal.

G. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) requires NHTSA to evaluate and use existing voluntary consensus standards in its regulatory activities unless doing so would be inconsistent with applicable law (*e.g.,* the statutory provisions regarding NHTSA's vehicle safety authority) or otherwise impractical. Voluntary consensus standards are technical standards developed or adopted by voluntary consensus standards bodies. Technical standards are defined by the NTTAA as ''performance-based or design-specific technical specification and related management systems practices.'' They pertain to ''products and processes, such as size, strength, or technical performance of a product, process or material.''

Examples of organizations generally regarded as voluntary consensus standards bodies include ASTM International, SAE International (SAE), and the American National Standards Institute (ANSI). If NHTSA does not use available and potentially applicable voluntary consensus standards, we are required by the Act to provide Congress, through OMB, an explanation of the reasons for not using such standards.

This proposal would require new light vehicles to be capable of V2V communications. Section III.D.10 above discusses how voluntary consensus standards by SAE, IEEE, and ISO interact with the agency's proposed requirements for V2V communication. In summary, the voluntary consensus standards provide information that support both performance requirements and design specifications, and are the bridge for connecting the requirements to the specifications. In relation to this proposal, NHTSA's job is to identify and define performance requirements and verification tests that will indicate that V2V devices have been designed and implemented such that they will operate to provide V2V communications and security that will support crash avoidance applications. The voluntary consensus standards are building blocks for those requirements, but as they are not at the vehicle-level, they cannot be incorporated wholesale into the FMVSS. We seek comment on NHTSA's approach to inclusion of relevant voluntary consensus standards in the development of our proposed requirements.

H. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA) requires federal agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of more than $100 million annually (adjusted for inflation with base year of 1995). Before promulgating a rule for which a written statement is needed, section 205 of the UMRA generally requires the agency to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows the agency to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the agency publishes with the final rule an explanation of why that alternative was not adopted.

As noted above, NHTSA has prepared a detailed economic assessment of this proposal in the PRIA. In that assessment, the agency analyzes the benefits and costs of requiring new light vehicles to be capable of V2V communications. NHTSA's preliminary analysis indicates that this proposal could result in private expenditures of between $2 and $5 billion annually.

The PRIA also analyzes the benefits and costs of a range of regulatory alternatives. While the ''No Action'' alternative would result in no costs, it would also result in no benefits. For the alternative that would include mandates for safety applications, NHTSA's preliminary analysis indicates that the costs would not be significantly different from the proposal, but that benefits would accrue faster, such that the alternative would be cost-effective and achieve positive net benefits two model years before the proposal would. The agency is proposing *not* to require applications at this time, however, due to the need for significant additional research to establish performance requirements and test procedures for them, and without which unintended consequences such as high false positive rates could occur.

Since the agency has estimated that this proposal could result in expenditures of over $1 billion annually, NHTSA has performed a probabilistic uncertainty analysis to examine the degree of uncertainty in its cost and benefit estimates and included that analysis in Chapter 12 of the PRIA.

I. National Environmental Policy Act

NHTSA has analyzed this rulemaking action for the purposes of the National Environmental Policy Act. The agency has determined that implementation of this proposed action will not have any significant impact on the quality of the human environment.

J. Plain Language

Executive Order 12866 requires each agency to write all rules in plain language. Application of the principles of plain language includes consideration of the following questions:

- Have we organized the material to suit the public's needs?
- Are the requirements in the rule clearly stated?
- Does the rule contain technical language or jargon that isn't clear?
- Would a different format (grouping and order of sections, use of headings,

paragraphing) make the rule easier to understand?

- Would more (but shorter) sections be better?
- Could we improve clarity by adding tables, lists, or diagrams?
- What else could we do to make the rule easier to understand?

If you have any responses to these questions, please include them in your comments on this proposal.

K. Regulatory Identifier Number (RIN)

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

L. Privacy Act

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78).

List of Subjects in 49 CFR Part 571

Motor vehicles, Motor vehicle safety.

Proposed Regulatory Text

In consideration of the foregoing, NHTSA proposes to amend 49 CFR part 571 as follows:

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

■ 1. The authority citation for part 571 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.95.

■ 2. Add § 571.150 to subpart B to read as follows:

§ 571.150 Standard No. 150; V2V communications.

S1 *Scope.* This standard specifies performance requirements for vehicle-to-vehicle communications capability.

S2 *Purpose.* The purpose of this standard is to ensure that new motor vehicles are able to transmit and receive standardized, authenticated Basic Safety Messages (BSMs), in order to create an information environment upon which a variety of safety applications can rely, which in turn can reduce deaths and injuries on the roads.

S3 *Application.* This standard applies to new passenger cars, multipurpose passenger vehicles, trucks, and buses with a gross vehicle weight rating of 10,000 pounds (4,536 kilograms) or less.

S4 *Definitions.*

Basic Safety Message (BSM) contains safety data according to specific requirements and is used in a variety of applications to exchange safety data regarding vehicle status. BSM transmission of 10 times per second is typical when congestion control is not active. BSM content, initialization time, transmission requirements, and other characteristics must comply with the requirements of S5, below.

Channel busy ratio is a measure of the amount of time a channel is designated as busy over the total observed time channel is available.

Coordinated Universal Time (UTC) is the international standard of time that is kept by atomic clocks around the world

Denial of Service (DoS) attack is an attempt to make a machine or network resource unavailable to its intended users, such as to temporarily or indefinitely interrupt or suspend such as disrupting DSRC communications

DSRC device means a device uses Dedicated Short Range Communications to transmit and receive a variety of message traffic to and from other DSRC devices that include On-Board Units (integrated into a vehicle), Aftermarket Safety Devices, and Road-Side Units.

Event Flag is part of the Basic Safety Message. An Event Flag conveys the sender's status with respect to safety-related events such as Antilock Brake System activation, Stability Control Activation, hard braking, and airbag deployment.

GNSS (Global Navigation Satellite System) means a satellite system that is used to pinpoint the geographic location of a user's receiver anywhere in the world.

Packet Error Rate refers to the unit of data for radio transmission subject to Forward Error Correction (FEC). The number of error packets after FEC divided by the total number of received packets is the Packet Error Rate.

Reasonably Linkable refers to data elements in the BSM or other aspects of V2V transmissions capable of being used to identify a specific individual on a persistent basis without unreasonable cost or effort, in real time or retrospectively, given available data sources. This is intended to have the same meaning as ''linkable as a practical matter'' as used in this standard.

Roadside Equipment (RSE) means any roadside equipment that prepares and transmits messages to V2V devices and receives messages from V2V devices for the purpose of supporting V2I applications or, potentially, security. This is intended to include the DSRC radio, traffic signal controller where appropriate, interface to the backhaul communications network necessary to support the applications, and support such functions as data security, encryption, buffering, and message processing.

Timestamp means the current time of an event that is recorded by a computer.

Vehicle reference point means the theoretical point projected on the surface of the roadway that is in the center of a rectangle oriented about the vehicle's axis of symmetry front-to-back, encompassing the farthest forward and rearward points and side-to-side points on the vehicle, including original equipment such as outside side view mirrors.

S5 *Requirements.* Each vehicle to which this standard applies must transmit and receive messages consistent with the requirements below. To obtain interoperable V2V communications for crash avoidance safety, DSRC devices must be capable of: First, transmitting and receiving an established message (*i.e.* the BSM that has specified content of information, but also the measuring unit for each information element and the level of precision needed); Second, conforming to DSRC transmission protocols that will support crash avoidance safety (*i.e.,* how far, how often, on what frequency, etc.); Third, implementing a method for a device to add validation context to message transmissions such that a receiver of that message can authenticate certain information about the sender of the message; Fourth, incorporating a uniform method for dealing with possible occurrences of high volumes of DRSC messages (*i.e.,* potentially reducing the frequency or range of messages in high congestion situations) and; Fifth, robustness to incorrect or malicious incoming messages.

S5.1 *Content.* Each BSM must contain the following elements, except as provided in S5.1.7.:

S5.1.1 *Message packaging.* As part of each BSM, a DSRC device must transmit a Message ID, a Message Count, and a Temporary ID, as follows:

S5.1.1.1 The Message ID must be the digit ''2.''

S5.1.1.2 The Message Count must contain an integer between 0 and 127 that is 1 integer greater than the integer used in the last BSM transmitted by the

same DSRC device. If the last BSM Message Count was 127, then the Message Count for the following BSM is 0.

S5.1.1.3 The Temporary ID must be a randomly generated 4-digit number. The DSRC device must randomly generate a new 4-digit number every five minutes. However, if other temporary identifiers, such as pseudonym certificates, are used, the Temporary ID should be changed every time another identifier (such as a pseudonym certificate) is changed.

S5.1.2 *Time.* As part of each BSM, a DSRC device must transmit a data element indicating the time, expressed in UTC, and within +/− 1 milliseconds of the actual UTC time.

S5.1.3 *Location.* As part of each BSM, a DSRC device must transmit:

S5.1.3.1 Longitudinal and lateral location within 1.5 meters of the actual position at a Horizontal Dilution of Precision (HDOP) smaller than 5 within the 1 sigma absolute error; and

S5.1.3.2 Elevation location within 3 meters of the actual position at a Horizontal Dilution of Precision (HDOP) smaller than 5 within the 1 sigma absolute error.

S5.1.4 *Movement.* As part of each BSM, a DSRC device must transmit speed, heading, acceleration, and yaw rate, as follows:

S5.1.4.1 Speed must be reported in increments of 0.02 m/s, within 1 km/h (0.28 m/s) of the vehicle's actual speed.

S5.1.4.2 Heading must be reported accurately to within 2 degrees when the vehicle speed is greater than 12.5 m/s (~28 mph); and to within 3 degrees when the vehicle speed is less than or equal to 12.5 m/s. Additionally, when the vehicle speed is below 1.11 m/s (~2.5 mph), the DSRC device must latch the current heading and transmit the last heading information prior to the speed dropping below 1.11 m/s. The device is to unlatch the latched heading when the vehicle speed exceeds 1.39 m/s (~3.1 mph) and transmit a heading within 3 degrees of its actual heading until the vehicle reaches a speed of 12.5 m/s where the heading must be transmitted at 2 degrees accuracy of its actual heading.

S5.1.4.3 *Acceleration.* Horizontal (longitudinal and lateral) acceleration must be reported accurately to 0.3 m/s^2, and vertical acceleration must be reported accurately to 1 m/s^2.

S5.1.4.4 *Yaw rate.* Yaw rate must be reported accurately to 0.5 degrees/second.

S5.1.5 *Other event based information.*

S5.1.5.1 *Path History.* The Path History data frame will be transmitted as a required BSM element at the operational frequency of the BSM transmission

S5.1.5.1.1 Path History data frame requires a history of a vehicles past GNSS locations as dictated by GNSS data elements including UTC time, latitude, longitude, heading, elevation sampled at a periodic time interval of 100 ms and interpolated in-between by circular arcs, to represent the vehicle's recent movement over a limited period of time or distance.

S5.1.5.1.2 Path History points should be incorporated into the Path History data frame such that the perpendicular distance between any point on the vehicle path and the line connecting two consecutive PH points shall be less than 1 m.

S5.1.5.1.3 Minimum number of Path History points vehicles should report the minimum number of points so that the represented Path History distance (*i.e.,* the distance between the first and last Path History point) is at least 300 m and no more than 310 m, unless initially there is less than 300 m of Path History. If the number of Path History points needed to meet both the error and distance requirements stated above exceeds the maximum allowable number of points (23), the Path History data frame shall be populated with only the 23 most recent points from the computed set of points.

S5.1.5.1.3 Path History data frame shall be populated with time-ordered Path History points, with the first Path History point being the closest in time to the current UTC time, and older points following in the order in which they were determined.

S5.1.5.2 *Path Prediction.* Trajectories in the Path Prediction data frame are represented, at a first order of curvature approximation, as a circle with a radius, R, and an origin located at (0,R), where the x-axis is aligned with the transmitting vehicle's perspective and normal to the vehicle's vertical axis. The radius, R, will be positive for curvatures to the right when observed from the transmitting vehicle's perspective, and radii exceeding a maximum value of 32,767 are to be interpreted as a ''straight path'' prediction by receiving vehicles.

S5.1.5.2.1 When a device is in steady state conditions over a range from 100 m to 2,500 m in magnitude, the subsystem will populate the Path Prediction data frame with a calculated radius that has less than 2% error from the actual radius. For the purposes of this performance requirement, steady state conditions are defined as those which occur when the vehicle is driving on a curve with a constant radius and where the average of the absolute value of the change of yaw rate over time is smaller than 0.5 deg/s^2.

S5.1.5.2.2 After a transition from the original constant radius (R1) to the target constant radius (R2), the subsystem shall repopulate the Path Prediction data frame within four seconds under the maximum allowable error bound defined above.

S5.1.5.2.3 Path Prediction trajectories will be transmitted as a required BSM element at the operational frequency of the BSM transmission.

S5.1.5.3 *Exterior lights.* The subsystem shall set the individual light indications in the data element to be consistent with the vehicle status data that is available. If meaningful values are unavailable, or no light indications will be set to indicate the light is on, the data element should not be transmitted.

S5.1.5.3.1 The Exterior Lights data element, if available, provides the status of all exterior lights on the vehicle, including parking lights, headlights (including low and high beam, and automatic light control), fog lights, daytime running lights, turn signal (right and left), and hazard signals.

S5.1.5.4 *Event flags.* If a stated criterion is met as indicated for each Event Flag listed, the sender shall set the Event Flag to 1. If, and only if, one or more of the defined Event Flags are set to 1, the subsystem shall transmit a BSM with the corresponding Event Flags within 250 ms of the initial detection of the event at the sender. The Event Flags data element shall be included in the BSM for as long as an event is active.

- ABS Activation: The system is activated for a period of time exceeding 100 ms in length and is currently active.
- Stability Control Activation: The system is activated for a period of time exceeding 100 ms in length and is currently active.
- Hard Braking: The vehicle has decelerated or is decelerating at a rate of greater than 0.4 g.
- Air Bag Deployment: At least one air bag has been deployed.
- Hazard Lights: The hazard lights are currently active.
- Stop Line Violation: The vehicle anticipates that it will pass the line without coming to a full stop before reaching it.
- Traction Control System Activation: The system is activated for a period of time exceeding 100 ms in length and is currently active.
- Flat Tire: The vehicle has determined that at least one tire has run flat.
- Disabled Vehicle: The vehicle considers itself to be disabled.

• Lights Changed: The status of the external lights on the vehicle has changed recently.

• Wipers Changed: The status of the front or rear wipers on the vehicle has changed recently.

• Emergency Response: The vehicle is a properly authorized public safety vehicle, is engaged in a service call, and is currently moving. Lights and/or sirens may not be evident.

• Hazardous Materials: The vehicle is known to be carrying hazardous materials and is labeled as such.

S5.1.6 *Vehicle-based motion indicators.* As part of each BSM, a DSRC device must transmit transmission state and steering wheel angle.

S5.1.6.1 Transmission state must be reported as either ''neutral,'' ''reverse,'' or ''forward'' for any forward gear.

S5.1.6.2 Steering wheel angle must be reported accurately to 5 degrees.

S5.1.7 *Vehicle size.* Vehicle size must be reported accurately to 0.2 meters of the vehicle's length and width.

S5.1.9 *Prohibited elements of the BSM.* No BSM may contain data linked or reasonably linkable to a specific private vehicle or its driver or owner, including but not limited to VIN, VIN string, vehicle license plate, vehicle registration information, or owner code.

S5.2 *Initialization time.* A DSRC device must begin transmitting the BSM within 2 seconds after the V2V device power is initiated.

S5.3 *Transmitting the BSM.* A DSRC device must transmit the BSM with the following power/range, on the following channel, and at the following data rate(s) and times:

S5.3.1 *Transmission range.* A DSRC device must transmit the BSM in all directions on the same plane as the device (*i.e.,* 360 degrees) and at least 10 degrees above the vehicle and 6 degrees below the vehicle (*i.e.,* along the vertical axis) such that it can be received at any point within at least 300 meters from the transmission antenna, with a Packet Error Rate (PER) of less than 10 percent.

S5.3.2 *Transmission channel.* A DSRC device must transmit the BSM on Channel 172, as allocated for ''public safety applications involving safety of life and property'' in 47 CFR part 90, subpart M. All non safety-critical communications will occur on the remaining channels allocated for DSRC in subpart M.

S5.3.3 *Transmission data rate.* A DSRC device must transmit the BSM at a bit rate of 6 Mbps.

S5.3.4 *Transmission staggering timing.* A DSRC device must transmit the BSM every 100 ms +/1 a random value between 0 and 5 ms.

S5.4 Signing the BSM. [Reserved for message signature requirement if needed]

S5.4.1 Rotating certificates. [Reserved for rotating certificate requirement if needed]

S5.5 Congestion Mitigation.

A DSRC device must transmit the BSM as follows under the following circumstances:

S5.5.1 Calculate Tracking Error.

This section specifies the set of steps that calculate the tracking error in the congestion control algorithm for the system. Note that the tracking error is communications-induced and independent of the positioning system tracking error. The system performs the following operations every 100 ms.

• The system estimates the position of the HV at the current time, defined as HV local estimator, per defined below.

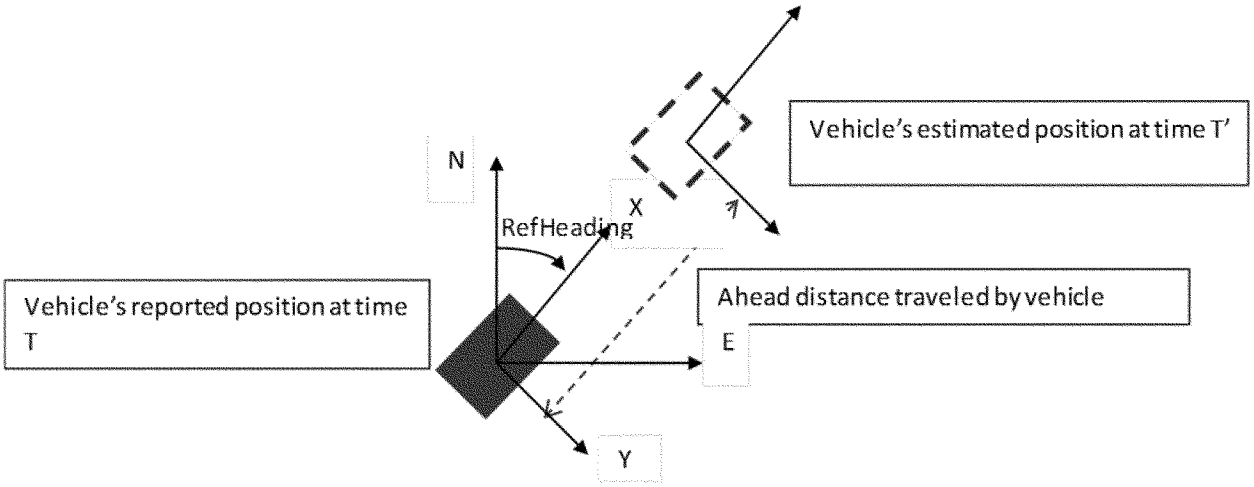


Figure XI-1 GNSS Position Extrapolation

1. First find Delta_time, the time since vehicle's last known position.

(1) Delta_time_ms = T − T

2. Do not perform position extrapolation in the following cases:

• If Delta_time_ms < 0, then there is a time-related error.

• If Delta_time_ms > 150 ms, then the vehicle has not received a position update for a very long time and its position is outdated.

3. If 50 ms <= Delta_time_ms <= 150 ms, then perform position extrapolation:

• Calculate the estimated distance traveled by the vehicle in Delta_time_ms.

• Ahead_distance_m = Speed_mps * Delta_time_ms/1000

• Across_distance_m = 0

4. Use ConvertXYtoLatLon function to find the vehicle's new position at time T′. ConvertXYtoLatLon(. . .)

INPUT

RefLat = *e.g.,* REF_LATITUDE (rad)
RefLon = *e.g.,* REF_LONGITUDE (rad)
RefHeading = *e.g.,* REF_HEADING (rad)
Y = ACROSS_DISTANCE (m w.r.t. REF LATLON)
X = AHEAD_DISTANCE (m w.r.t. REF LATLON)
a = 6378137; # semi-major axis of earth
f = 0.003353; # flattening
f1 = (f*(2-f))∧0.5; # eccentricity

```
  f2 = a*(1-f1∧2)/(1-
     f1∧2*(sin(RefLat))∧2)∧(3/2); #
     radius of earth in meridian
  f3 = a/(1-f1∧2*(sin(RefLat))∧2)∧(1/2);
     # radius of earth in prime vertical
  E = (cos(RefHeading)*Y +
     sin(RefHeading)*X;
  N = (cos(RefHeading)*X −
     sin(RefHeading)*Y;
OUTPUT
  NEW_LATITUDE (rad) = (1/f2)*N +
     RefLat;
  NEW_LONGITUDE (rad) =
     (1/(f3*cos(RefLat)))*E + RefLon;
```

5. For all future calculations, use the calculated New_Latitude and New_Longitude as vehicle's position, and current time.

• The system makes an assumption of the latest HV state information received by the RVs based on a Bernoulli trial corresponding to the quality of channel indicator as defined below:

Assumption of latest HV State Information at RVs

After each transmission, use a Bernoulli trial with the channel quality indicator $\Pi(k)$ to infer whether this previous transmission is successfully received by RVs.

• Channel Quality Indicator (Π): The system calculates Π as an average of the PERs observed by the HV from all of the RVs within 100 m of the HV over an interval 5000 ms, and updated at the end of each 1000 ms sub-interval.

Let AVGPER be calculated as:

$$AVGPER(k) = \frac{1}{N(k)} \sum_{i=1}^{N(k)} PER_i(k) \qquad (4)$$

where

PER_i is for RV 'i' and N(k) is the Vehicle Density within 100 m.

Next, Π is calculated by smoothening AVGPER to filter out temporal noise or disturbance in the measurement as follows:

$$\Pi(k) = \lambda_1 \times AVGPER(k) + (1 - \lambda_1) \times \Pi(k-1)$$
$$\text{If } \left(\Pi(k) > vPERMax\right)$$
$$\Pi(k) = vPERMax \qquad (5)$$

where

$_i$ is the weight factor 0.9, $\Pi^{(k)}$ is the channel quality indicator for the current interval window. Note that, if $\Pi^{(k)}$ exceeds 0.3, then it is set to 0.3.

1. If the outcome of this Bernoulli trial is positive, assume that the previous transmission by HV is successfully received by RVs. Update the latest information the RVs have about the HV as the state information contained in previous transmission.

2. If, however, the outcome of this Bernoulli trial is negative, treat the previous transmission by HV as a failure and do not update the latest HV state information as that received by RVs.

3. Count the number of Bernoulli trials with successive negative outcomes. If this count is greater than 3, set the previous transmission as successful and update the latest information the RVs have about the HV as the state information contained in the previous transmission.

The state information is defined:

Let θ^{latest} be the HV's assumed latest state information received by RVs and $\theta^{Pre\text{-}tx}$ be the HV's state information contained in the message of its previous transmission (where ^{t} is the time in msec when the longitudinal position ^{x}(in degrees), lateral position^y (in degrees), speed ^{v}(in m/s), and heading $\theta^{(t)}$(in degrees) are measured. The HV's assumed latest state information received by RVs is updated after each transmission as follows:

Let $\begin{bmatrix} t \\ x \\ y \\ v \\ \theta \end{bmatrix}_{\text{Latest}}$ be the HV's assumed latest state information received by RVs and $\begin{bmatrix} t \\ x \\ y \\ v \\ \theta \end{bmatrix}_{\text{Pre-Tx}}$ be the HV's state information contained in the message of its previous transmission (where t is the time in msec when the longitudinal position x (in degrees), lateral position y (in degrees), speed v (in m/s), and heading $\theta(t)$ (in degrees) are measured. The HV's assumed latest state information received by RVs is updated after each transmission as follows:

$$\begin{aligned} &\text{If } rand() < \Pi(k) \\ &TxFailed = TxFailed + 1 \\ &Else \\ &TxFailed = 0 \end{aligned}$$

$$\begin{bmatrix} t \\ x \\ y \\ v \\ \theta \end{bmatrix}_{\text{Latest}} = \begin{cases} \begin{bmatrix} t \\ x \\ y \\ v \\ \theta \end{bmatrix}_{\text{Pre-Tx}} & \text{TxFailed} > 0 \text{ and TxFailed} <= \text{vMaxSuccessiveFail} \\ \begin{bmatrix} t \\ x \\ y \\ v \\ \theta \end{bmatrix}_{\text{Latest}} & \text{otherwise set TxFailed} = 0 \end{cases}$$

where

$rand()$ is a uniform random number generator and $\Pi^{(k)}$ is the estimated channel quality indicator.

- Using the latest HV state information assumption at RVs, the system estimates the position of the HV at the current time, defined as HV remote estimator, using the estimator described above. This indicates where the HV believes the RVs ''thinks'' that the HV is located at the current time.
- The system then calculates the tracking error e(k), between where the HV believes its current position is and where the HV believes RVs think the HV is located at the current time. It is also known as the suspected, expected or estimated tracking error between the HV local estimator and the HV remote estimator.

Where:

the tracking error is defined as the distance between HV local estimator position ($\hat{x}(k)$, ($\hat{y}(k)$) and output of the HV remote estimator position, (($\tilde{x}(k)$, ($\tilde{y}(k)$) using the great circle formula, *i.e.*

$$e(k) = R(\hat{x}(k)) \times (\cos^{-1}(\sin(\hat{x}(k)) \times \sin(\tilde{x}(k)) + \cos(\hat{x}(k)) \times \cos(\tilde{x}(k)) \times \cos(\hat{y}(k) - \tilde{y}(k))))$$

where

$R(\hat{x}(k)) = a \times (1 - f_1^2)/(1 - f_1^2 \times \sin^2(\hat{x}(k)))^{1.5}$

is the Meridian Radius of the Earth in meters $\hat{x}(k)$), at latitude, a = 6378137 is the mean radius of earth in meters, $f_i = (f \times (2 - f))^{0.5}$ is the Eccentricity, and f = 0.003353 is earth's flattening.

Here ($\hat{x}(k)$, $\hat{y}(k)$) are the latitude and longitude from the HV Local Estimator, converted to radians, and ($\tilde{x}(k)$, $\tilde{y}(k)$) the latitude and longitude from the HV Remote Estimator, converted to radians.

S5.5.2 Transmission power must vary depending on the following:

S5.5.2.1 If there is an Event Flag or a transmission decision is based on p(k), the BSM must be transmitted at maximum power despite the presence of any other conditions;

S5.5.2.2 If the channel busy ratio is below 50% (Umin) and the transmission is based on Max_Trans_Time, then the BSM must be transmitted at maximum power (20 dBm, P_{max});

S5.5.2.3 If the channel busy ratio is above 80% (Umax) and the transmission is based on Max_Trans_Time, then the BSM must be transmitted at minimum power (10 dBm, Pmin);

S5.5.2.4 If the channel busy ratio is between (c) and (b), then the BSM must be transmitted at a power based on a linear function that proportionally reduces the transmission power based on the channel busy ratio value during the previous transmission (U(k-1)) and the previous transmission power (P(k-1). Where the transmitted power (P(k)) is defined by:

$$P_K = P_{k-1} + 0.5\left(\left[P_{\max} - \left(\frac{P_{max} - P_{\min}}{U_{max} - U_{min}}\right) \times (U_{k-1} - U_{min})\right] - P_{k-1}\right)$$

S5.6 *Detecting misbehavior.* A DSRC device must detect misbehavior in the following ways:

S5.6.1 *Internal self-diagnostics.* A DSRC device must be able to perform the following self-diagnostic checks:

S5.6.1.1 If a DSRC device detects a malfunctioning sensor which may cause misbehavior, the device must:

(a) Either transmit the BSM with the affected elements set to ''Unavailable'' if relevant standards allow the element to be set to ''Unavailable''; or

(b) Cease BSM transmission if relevant standards do not allow the element to be set to ''Unavailable.''

If either (a) or (b) is detected, [Reserved for requirement to report malfunctions if needed]

S5.6.1.2 [Reserved for requirement to report physical tampering]

S5.6.2 *Checking and reporting on the plausibility of incoming BSMs.* A DSRC device must perform a preliminary plausibility check on all incoming BSMs and respond accordingly, as follows:

S5.6.2.1 The preliminary plausibility check must identify as an implausible message any BSM for which the components of the vehicle dynamic state (position, speed, acceleration, and yaw rate) are outside the following values:

(a) Speed greater than 70 m/s (252 km/h or 156 mph);

(b) Longitudinal acceleration of 0–100 km/h in fewer than 2.3 seconds (greater than 12 m/s^2);

(c) Longitudinal deceleration of 100–0 km/h in fewer than 95 feet (greater than 12 m/s^2);

(d) Lateral acceleration of greater than 11 m/s^2 (1.12 G);

(e) Yaw rate of greater than 1.5 radian/s

Additionally, a BSM must be identified as implausible if values within the BSM are not internally consistent given the formula $V^2 = a_c/(Y')^2$.

S5.6.2.2 A DSRC device must be able to perform the plausibility checks described in S5.6.2.1 on at least 5,500 BSMs per second.

S5.6.2.3 [Reserved for requirement to report any failed plausibility check]

S5.6.2.4 A DSRC device must support the detection of other devices which are suspected of misbehaving, and at a minimum detect the following types of misbehavior:

(a) Proximity Plausibility: Instances are detected of two or more vehicles, either partially or wholly, occupying the same physical space based on the reported GPS positions.

(b) Motion Validation: Attempts to validate the reported position of a transmitting vehicle based on the previously-reported velocity and heading values of the vehicle.

(c) Content and Message Verification: Attempts to categorize BSMs as suspicious by checking the data validity of the BSM.

(d) Denial of Service Detection: Attempts to disrupt, limit, or alter the functionality of V2V device to meet the requirements through exhaustions of storage, computation, or other limited resources of the V2V device.

S5.6.3 [Reserved for requirements for sending misbehavior reports]

S5.7 *Indicating a malfunction.* The DSRC device must be able to indicate to its user the occurrence of one or more malfunctions that affect the performance of the device, its supporting equipment, or the inputs used to form, transmit, or receive a BSM, as follows:

S5.7.1 Malfunctions could include, but are not limited to, the following:

(a) Device components not operating properly;

(b) Input sensor data falling outside tolerance levels;

(c) On-board memory failures;

(d) GPS receiver failures;

(e) An inability to transmit or receive BSMs; or

(f) Any other failure that could prevent normal operation.

S5.7.2 The malfunction indication must be clearly presented to device users in the form of a telltale lamp or message.

S5.7.3 Owners' information for the device (or vehicle, if the DSRC device is installed as original equipment) must clearly describe the malfunction indication, potential causes, and when the device must be taken in for service (as needed).

S5.7.4 The malfunction indication must remain present and/or illuminated until the malfunction no longer exists and the DSRC device is returned to proper operation.

S5.8 [Reserved for requirement to communicate with the SCMS if needed].

S5.9 *Communicating about and obtaining software and security updates.* A DSRC device must be able to indicate clearly to users that either device software or security updates are available and that the user must consent to the update before it can occur. If the DSRC device is included in a vehicle as original equipment, the indicator must be present in the vehicle. If the DSRC device is not included in the vehicle as original equipment, the indicator must be present in the device itself.

S5.10 [Reserved for hardware protection requirement].

S5.11 *Consumer Privacy Statement.*

S5.11.1 Owners information for the device must include the statement set forth in Appendix A below.

S5.11.2 Manufacturers also must make the statement set forth in Appendix A easily accessible to the public, as by publishing it on an easily located Web site indexed by make, model, and year.

S6 *Test Conditions.*

S6.1 *Ambient conditions.*

S6.1.1 The ambient temperature is between 0 °C (32 °F) and 40 °C (104 °F).

S6.1.2 The maximum wind speed is no greater than 10 m/s (22 mph) for passenger cars and 5 m/s (11 mph) for multipurpose passenger vehicles, trucks, and buses.

S6.2 *Road test surface.*

S6.2.1 The tests are conducted on a dry, uniform, solid-paved surface. Surfaces with irregularities and undulations, such as dips and large cracks, are unsuitable.

S6.2.3 The test surface has a consistent slope between level and 1 percent.

S6.3 *Vehicle conditions.*

S6.3.2 *Test weight.* The vehicle may be tested at any weight consisting of the test driver and instrumentation only that fall between its lightly loaded vehicle weight (LLVW) and its gross vehicle weight rating (GVWR) without exceeding any of its gross axle weight ratings.

S6.3.3 *Tires.* The vehicle is tested with the tires installed on the vehicle at the time of initial vehicle sale. The tires are inflated to the vehicle manufacturer's recommended cold tire inflation pressure(s) specified on the vehicle's placard or the tire inflation pressure label.

S7 *Test Procedures.*

S7.1 *Pre-test/Inspection.*

S7.1.1 Inflate the vehicles' tires to the cold tire inflation pressure(s) provided on the vehicle's placard or the tire inflation pressure label.

S7.1.2 *Vehicle dimensions.*

S7.1.2.1 Measure vehicle length including any equipment installed on the vehicle when first sold.

S7.1.2.2 Measure vehicle width including any equipment installed on the vehicle when first sold.

S7.1.2.3 Measure vehicle height including any equipment installed on vehicle when first sold.

S7.1.2.4 Measure the V2V System GNSS Receiver Antenna.

S7.1.2.5 Measure the independent instrumented vehicle sensor coordinates.

S7.2 *Static Performance Test Procedure:*

S7.2.1 Place the test vehicle on car wheel rollers and position the vehicle on the test track.

S7.2.2 *Two dimensional Range:* Position a DSRC packet capture device directly in front of the test vehicle with the following characteristics:

S7.2.2.1 The device is 1.5 m above the test surface;

S7.2.2.2 The device is at a nominal distance of 300 m in front of the test vehicle.

S7.2.3 *Upward elevation range:* Position a DSRC packet capture device at any point along the following line.

S7.2.3.1 The line originates at a point that is directly 1.5 m above the vehicle reference point.

S7.2.3.2 The line rises at a +10 degree angle from the test surface proceeding in the direction directly in front of the test vehicle.

S7.2.3.3 The line terminates at a point that is directly above the point used in S7.2.2.

S7.2.4 *Downward elevation range:* Position a DSRC packet capture device at any point along the following line.

S7.2.4.1 The line originates at a point that is directly 1.5 m above the vehicle reference point.

S7.2.4.2 The line falls at a −6 degree angle from the test surface proceeding in the direction directly in front of the test vehicle.

S7.2.4.3 The line terminates at any point where it intersects the test surface.

S7.2.5 Configure the DSRC packet capture devices to log BSMs over-the-air (OTA); devices must have a receive sensitivity of −92 dBm.

S7.2.6 Activate the DSRC packet capture devices to log BSMs OTA.

S7.2.7 Activate the test vehicle starting system to initiate BSM transmission.

S7.2.7.1 Run the vehicle for 110 mins.

S7.2.7.2 Rotate the vehicle 90 degrees in the clockwise direction every 15 minutes until the time in S7.2.7.1 expires.

S7.2.8 Deactivate the test vehicle and DSRC packet capture devices.

S7.2.9 Retrieve and process the log files to determine compliance with S.5.

S7.2.10 *Positional Accuracy Test.*

S7.2.10.1 Using the transmission blocking water filled plastic blanket that will hold one gallon of water with a water width of 1 inch, cover the test vehicle GPS antenna to prevent it from receiving a valid GNSS signal.

S7.2.10.2 Connect GPS signal generator to the test vehicle OBE.

S7.2.10.3 Activate the test vehicle starting system to initiate BSM transmission.

S7.2.10.4 Activate the DSRC packet capture devices to log BSMs OTA.

S7.2.10.5 Using the GPS signal generator, inject a known fake GPS signal into the OBE.

S7.2.10.6 After 5 minutes, deactivate the test vehicle starting system and DSRC capture packet device.

S7.2.10.7 Retrieve and process the log files to determine compliance with the positional accuracy requirements.

S7.3 *Simulated Performance Tests.*

S7.3.1 Place the test vehicle on the test track.

S7.3.2 Position a DSRC packet capture device directly in front of the test vehicle with the following characteristics:

S7.3.2.1 The device is 1.5 m above the test surface;

S7.3.2.2 The device is at a nominal distance of 300 m in front of the test vehicle.

S7.3.3 Configure the DSRC packet capture device to log BSMs over-the-air (OTA); devices must have a receive sensitivity of −92 dBm.

S7.3.4 *Congestion Mitigation.*

S7.3.4.1 Position a reference OBE device (*i.e.* rack of OBE modules) on the test track within a 300 m range of the test vehicle.

S7.3.4.2 Activate the DSRC packet capture device to log BSMs OTA.

S7.3.4.3 Activate the test vehicle starting system to initiate BSM transmission.

S7.3.4.3.1 Run the vehicle for 15 minutes.

S7.3.4.3.2 After 5 minutes, activate the reference OBE device in S7.3.4.1 to simulate a congested DSRC environment.

S7.3.4.3.3 After another 5 minute period, deactivate the reference OBE device in S7.3.4.1.

S7.3.4.3.4 After another 5 minute period, deactivate the test vehicle starting system.

S7.3.4.4 Retrieve and process the log files to determine compliance with the correct congestion mitigation strategy in S5.5.

S7.3.5 *Misbehavior Detection.*

S7.3.5.1 Position a reference OBE device on the test track within a 300 m range of the test vehicle.

S7.3.5.2 Activate the DSRC packet capture device to log BSMs OTA.

S7.3.5.3 Activate the test vehicle starting system to initiate BSM transmission.

S7.3.5.4 Using the reference OBE device, transmit simulated misbehaving BSMs.

S7.3.5.4.1 After 10 mins, deactivate the reference OBE device.

S7.3.5.7 Retrieve and process the log files to determine compliance with the misbehavior detection requirement in S5.6.

S7.4 *Dynamic Performance Test Procedure.*

S7.4.1 Configure the test vehicle to send BSMs representing the best estimate of the BSM data parameters.

S7.4.2 Configure the test vehicle to send ground truth data (position, speed, heading, acceleration, yaw rate, and time) from independent sensors mounted on the test vehicle via non-DSRC wireless link.

S7.4.3 Configure the DSRC packet capture device to log BSMs over-the-air (OTA); devices must have a receive sensitivity of −92 dBm.

S7.4.4 Configure an RSE on the test track to receive the test vehicles' ground truth data.

S7.4.5 *Dynamic test maneuver.*

S7.4.5.1 Activate the test vehicle starting system to initiate BSM transmission.

S7.4.5.2 Activate the DSRC packet capture device to log BSMs OTA.

S7.4.5.3 Put the test vehicle transmission in ''Drive'' and accelerate the vehicle to 30 mph +/−1 mph.

S7.4.5.4 Apply the service brake to decelerate the vehicle 0.3 g, bring the vehicle to a stop.

S7.4.5.6 Shift the transmission to ''Park'' and cycle the ignition.

S7.4.5.7 Shift the transmission to ''Drive'' and accelerate the vehicle to 15 mph +/−mph.

S7.4.5.8 Proceed up an incline with a minimum rise of ? ft.

S7.4.5.9 Drive the test vehicle in a figure eight at 18 mph.

S7.4.5.10 Bring the test vehicle to a stop and shift the transmission to ''Reverse''.

S7.4.5.11 Accelerate the test vehicle in the reverse direction.

S7.4.5.12 Decelerate the vehicle to a stop and shift the transmission to ''Park''.

S7.4.5.13 Cycle the ignition.

S7.4.5.14 Deactivate the test vehicle starting system.

S7.4.5.15 Retrieve and process the log files to determine compliance with S5.

S7.4.6 *Misbehavior Detection:* Plausibility.

S7.4.6.1 Configure a remote test vehicle (RV1) to offset its positional BSM data laterally into the left adjacent lane.

S7.4.6.2 Place RV1 on a two lane test track and position it in the right most lane.

S7.4.6.3 Activate the test vehicle starting system to initiate BSM transmission.

S7.4.6.4 Activate the DSRC packet capture device to log BSMs OTA.

S7.4.6.5 Drive the test vehicle [30 mph +/−1 mph] along the test track in the left lane and proceed past RV1.

S7.4.6.6 Repeat S7.4.6.5 three (3) times.

S7.4.6.7 Retrieve and process the log files to determine compliance with S5.6.

S7.4.6.8 Drive the test vehicle past the RSE at a constant [30 mph +/−1 mph].

S7.4.6.9 Bring the test vehicle to a stop.

S7.4.6.10 [Reserved for requirement to retrieve and process the log files to determine if a Misbehavior Report was sent to the SCMS].

S7.4.7 [Reserved for Misbehavior Detection Signature Failure testing requirement].

S7.5 *V2V Malfunction Detection.*

S7.5.1 Start-up Self test:

S7.5.2 Position the test vehicle on the test platform.

S7.5.3 Position a DSRC packet capture device at a nominal distance of 300 m from the test device.

S7.5.4 Create a malfunction on the test vehicle.

S7.5.5 Activate the DSRC packet capture device to log BSMs over-the-air (OTA).

S7.5.6 Activate the test vehicle starting system to initiate BSM transmission.

S7.5.7 Retrieve and process the log files to determine compliance with S5.

S7.5.8 Cycle the test vehicle starting system.

S7.5.9 Deactivate the vehicle starting system.

S7.5.10 Correct the system malfunction.

S7.5.11 Reactivate the test vehicle starting system.

S7.5.12 Deactivate the test vehicle starting system.

S8 *Phase-in schedule.*

S8.1 *Vehicles manufactured on or after September 1, [2 years after issuance of a final rule], and before September 1, [3 years after issuance of a final rule].* For vehicles manufactured on or after September 1, [2 years after issuance of a final rule], and

before September 1, [3 years after issuance of a final rule], the number of vehicles complying with this standard must not be less than 50 percent of the manufacturer's production on or after September 1, [2 years after issuance of a final rule], and before September 1, [3 years after issuance of a final rule].

S8.2 *Vehicles manufactured on or after September 1, [3 years after issuance of a final rule], and before September 1, [4 years after issuance of a final rule].* For vehicles manufactured on or after September 1, [3 years after issuance of a final rule], and before September 1, [4 years after issuance of a final rule], the number of vehicles complying with this standard must not be less than 75 percent of the manufacturer's production on or after September 1, [3 years after issuance of a final rule], and before September 1, [4 years after issuance of a final rule].

S8.3 *Vehicles manufactured on or after September 1, [4 years after issuance of a final rule].* All vehicles manufactured on or after September 1, [4 years after issuance of a final rule] must comply with this standard.

S8.4 *Calculation of number of complying vehicles.*

(a) For purposes of complying with S8.1, a manufacturer may count a vehicle if it is certified as complying with this standard and is manufactured on or after June 5, [1 year after issuance of a final rule], but before September 1, [3 years after issuance of a final rule].

(b) For purposes of complying with S8.2, a manufacturer may count a vehicle if it.

(1) Is certified as complying with this standard and is manufactured on or after June 5, [1 year after issuance of a final rule], but before September 1, [4 years after issuance of a final rule], *and* is not counted toward compliance with S8.1; *or*

(2) Is certified as complying with this standard and is manufactured on or after September 1, [3 years after issuance of a final rule], but before September 1, [4 years after issuance of a final rule].

S8.5 *Vehicles produced by more than one manufacturer.*

S8.5.1 For the purpose of calculating average annual production of vehicles for each manufacturer and the number of vehicles manufactured by each manufacturer under S8.1 through S8.3, a vehicle produced by more than one manufacturer must be attributed to a single manufacturer as follows, subject to S8.5.2:

(a) A vehicle that is imported must be attributed to the importer.

(b) A vehicle manufactured in the United States by more than one manufacturer, one of which also markets the vehicle, must be attributed to the manufacturer that markets the vehicle.

S8.5.2 A vehicle produced by more than one manufacturer must be attributed to any one of the vehicle's manufacturers specified by an express written contract, reported to the National Highway Traffic Safety Administration under 49 CFR part 585, between the manufacturer so specified and the manufacturer to which the vehicle would otherwise be attributed under S8.5.1.

S8.6 *Small volume manufacturers.* Vehicles manufactured during any of the two years of the September 1, [2 years after issuance of a final rule] through August 31, [4 years after issuance of a final rule] phase-in by a manufacturer that produces fewer than 5,000 vehicles for sale in the United States during that year are not subject to the phase-in requirements of S8.1 through S8.4. Instead, all vehicles produced by these manufacturers on or after September 1, [4 years after issuance of a final rule] must comply with this standard.

S8.7 *Final-stage manufacturers and alterers.* Vehicles that are manufactured in two or more stages or that are altered (within the meaning of 49 CFR 567.7) after having previously been certified in accordance with part 567 of this chapter are not subject to the phase-in requirements of S8.1 through S8.4. Instead, all vehicles produced by these manufacturers on or after September 1, [5 years after issuance of a final rule] must comply with this standard.

S9 *Interoperable technology.*

S9.1 The agency is also recognizing that communications mediums other than DSRC may be capable of providing equal or better performance than DSRC. These alternative technologies would be permissible if and only if it satisfies all of the criteria set forth in this section:

S9.1.1 *Interoperable technology testing requirements:*

S9.1.1.1 Transmitting and receiving an established message with all other V2V devices, including DSRC devices, including BSM content data as specified in S5.1.2, S5.1.3, S5.1.4, S5.1.5, S5.1.6, and S5.1.7;

S9.1.1.2 Utilizing transmissions protocols that achieve at least the same level of performance as DSRC including S5.2, S5.3.1, S5.3.4, and S5.3.5; and

S9.1.1.3 Ensuring, at the minimum, the same robustness to incorrect or malicious incoming messages as DSRC as specified in the plausibility checks specified in S5.6.2.

S9.1.2 *Interoperable technology performance requirements:*

S9.1.2.1 A device that enables V2V communication, but does not use DSRC technology must perform at the same level as the requirements found in S5.2, S5.3, S5.4, S5.7–S5.10 for DSRC devices, except that it is not required to meet:

S9.1.2.2 Specific references to DSRC, where the technology meets all other requirements;

S9.1.2.3 The message packaging or protocol suite requirements found in S5.1.1.

S9.1.2.4 The required channel or data rate in S5.3.2 and S5.3.3; and

S9.1.2.5 The requirements associated with message congestion mitigation and misbehavior detection found in S5.5 and S5.6 except as specified in S5.6.2;

S9.1.3 *Interoperability technology testing procedures:*

S9.1.3.1 The test conditions for testing non-DSRC V2V devices shall be the same as those for DSRC devices in S6.

S9.1.3.2 The test procedures for testing non-DSRC V2V devices to determine whether they can send BSMs that are interoperable with DSRC devices shall be the same as those for DSRC devices in S7, minus any specific references to DSRC in the vehicle being tested, including but not limited to S7.3.4, S7.3.5, and S7.4.6.

S9.1.3.3 [Reserved for test procedures on receiving BSMs from a DSRC test device]

S9.1.3.4 [Reserved for test procedures on ensuring interoperability with other approved non-DSRC V2V devices]

Appendix A to § 571.150: V2V Privacy Statement

(a) V2V Messages

(1) The National Highway Traffic Safety Administration (NHTSA) requires that your vehicle be equipped with a Vehicle-to-Vehicle (V2V) safety system. The V2V system is designed to give your vehicle a 360 degree awareness of the driving environment and warn you in the event of a pending crash, allowing you to take actions to avoid or mitigate the crash, if the manufacturer of your vehicle has installed V2V safety applications.

(2) Your V2V system periodically broadcasts and receives from all nearby vehicles a V2V message that contains important safety information, including vehicle position, speed, and direction. V2V messages are broadcast ten times per second in only the limited geographical range (approximately 300 meters) necessary to enable V2V safety application to warn drivers of pending crash events.

(3) To help protect driver privacy, V2V messages do not directly identify you or your vehicle (as through vehicle identification number or State motor vehicle registration), or contain data that is reasonably or, as a practical matter, linkable to you. For purposes of this statement, V2V data is ''reasonably'' or ''as a practical matter'' linkable to you if it can be used to trace V2V messages back to you personally for more than a temporary period of time (in other words, on a persistent basis) without unreasonable expense or effort, in real time or after the fact, given available data sources. Excluding reasonably linkable data from V2V messages helps protect consumer privacy, while still providing your V2V system with sufficient information to enable crash-avoidance safety applications.

(b) Collection, Storage and Use of V2V Information

(1) Your V2V system does not collect or store V2V messages except for a limited time needed to maintain awareness of nearby vehicles for safety purposes or in case of equipment malfunction. In the event of malfunction, the V2V system collects only those messages required, and keeps that information only for long enough to assess a V2V device's misbehavior and, if a product defect seems likely, to provide defect information to your vehicle's manufacturer.

(2) NHTSA does not regulate the collection or use of V2V communications or data beyond the specific use by motor vehicles and motor vehicle equipment for safety-related applications. That means that other individuals and entities may use specialized equipment to collect and aggregate (group together) V2V transmissions and use them for any purpose including applications such as motor vehicle and highway safety, mobility, environmental, governmental and commercial purposes. For example, States and localities may deploy roadside

equipment that enables connectivity between your vehicle, roadways and non-vehicle roadway users (such as cyclists or pedestrians). These technologies may provide direct benefits such as use of V2V data to further increase your vehicle's awareness of its surroundings, work zones, first responders, accidents, cyclists and pedestrians. State and local entities (such as traffic control centers or transportation authorities) may use aggregate V2V safety messages for traffic monitoring, road maintenance, transportation research, transportation planning, truck inspection, emergency and first responder, ride-sharing, and transit maintenance purposes. Commercial entities also may use aggregate V2V messages to provide valuable services to customers, such as traffic flow management and location-based analytics, and for other purposes (some of which might impact consumer privacy in unanticipated ways). NHTSA does not regulate the collection or use of V2V data by commercial entities or other third parties.

(3) While V2V messages do not directly identify vehicles or their drivers, or contain data reasonably linkable to you on a persistent basis, the collection, storage and use of V2V data may have residual privacy impacts on private motor vehicle owners or drivers. Consumers who want additional information about privacy in the V2V system may review NHTSA's V2V Privacy Impact Assessment, published by The U.S. Department of Transportation at *http://www.transportation.gov/privacy*.

(4) If you have concerns or questions about the privacy practices of vehicle manufacturers or third party service providers or applications, please contact the Federal Trade Commission. *https://www.ftc.gov*.

Dated: December 12, 2016.

Anthony R. Foxx,

Secretary, Department of Transportation.

[FR Doc. 2016–31059 Filed 1–3–17; 4:15 pm]

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Part III

Department of Commerce

National Oceanic and Atmospheric Administration

Endangered and Threatened Wildlife and Plants: Notice of 12-Month Finding on a Petition To List Alabama Shad as Threatened or Endangered Under the Endangered Species Act; Notice

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No. 130626570–6999–02]

RIN 0648–XC742

Endangered and Threatened Wildlife and Plants: Notice of 12-Month Finding on a Petition To List Alabama Shad as Threatened or Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of 12-month finding.

SUMMARY: We, NMFS, announce a 12-month finding and listing determination on a petition to list Alabama shad (*Alosa alabamae*) as threatened or endangered under the Endangered Species Act (ESA). We have completed a comprehensive review of the status of Alabama shad in response to the petition submitted by the Center for Biological Diversity (CBD), Alabama Rivers Alliance, Clinch Coalition, Dogwood Alliance, Gulf Restoration Network, Tennessee Forests Council, and the West Virginia Highlands Conservancy (petitioners). Based on the best scientific and commercial information available on the status of Alabama shad, we have determined that the species does not warrant listing at this time. We conclude that the Alabama shad is not currently in danger of extinction throughout all or a significant portion of its range and is not likely to become so within the foreseeable future.

DATES: This finding was made on January 12, 2017.

ADDRESSES: The reference list associated with this determination is available by submitting a request to the Species Conservation Branch Chief, Protected Resources Division, NMFS Southeast Regional Office, 263 13th Avenue South, St. Petersburg, FL 33701–5505, Attn: Alabama shad 12-month finding. The reference list is also available electronically at:*http://sero.nmfs.noaa.gov/protected_resources/listing_petitions/species_esa_consideration/index.html*

FOR FURTHER INFORMATION CONTACT: Kelly Shotts, NMFS, Southeast Regional Office (727) 824–5312; or Marta Nammack, NMFS, Office of Protected Resources (301) 427–8469.

SUPPLEMENTARY INFORMATION:

Background

In 1997, we added Alabama shad to our Candidate Species List (62 FR 37562; July 14, 1997). At that time, a candidate species was defined as any species being considered by the Secretary of Commerce (Secretary) for listing as an endangered or a threatened species, but not yet the subject of a proposed rule (49 FR 38900; October 1, 1984). In 2004, we created the Species of Concern list (69 FR 19975; April 15, 2004) to encompass species for which we have some concerns regarding their status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). Twenty-five candidate species, including the Alabama shad, were transferred to the Species of Concern list at that time because they were not being considered for ESA listing and were better suited for Species of Concern status due to some concerns and uncertainty regarding their biological status and threats. The Species of Concern status does not carry any procedural or substantive protections under the ESA.

On April 20, 2010, the Center for Biological Diversity (CBD), Alabama Rivers Alliance, Clinch Coalition, Dogwood Alliance, Gulf Restoration Network, Tennessee Forests Council, and the West Virginia Highlands Conservancy (petitioners) submitted a petition to the Secretaries of Interior and Commerce, as well as to the Regional Director of the Southeast Region of the U.S. Fish and Wildlife Service (USFWS), to list 404 aquatic, riparian, and wetland species from the southeastern United States as threatened or endangered under the ESA. The petitioners also requested that critical habitat be designated for all petitioned species. We notified the USFWS' Southeast Region by letter dated May 3, 2010, that the Alabama shad, one of the 404 petitioned species, would fall under NMFS' jurisdiction based on the August 1974 Memorandum of Understanding regarding jurisdictional responsibilities and listing procedures between the two agencies. We proposed to USFWS that we would evaluate the petition, for Alabama shad only, for the purpose of the 90-day finding and any required subsequent listing action. On May 14, 2010, we sent the petitioners confirmation we would be evaluating the petition for Alabama shad. On February 17, 2011, we published a negative 90-day finding in the **Federal Register** (76 FR 9320) stating that the petition did not present substantial scientific or commercial information indicating that the requested listing of Alabama shad may be warranted.

On April 28, 2011, in response to the negative 90-day finding, CBD filed a notice of intent to sue the Department of Commerce (DOC) and NMFS for alleged violations of the ESA in making its finding. CBD filed the lawsuit in the U.S. District Court for the District of Columbia on January 18, 2012. On June 21, 2013, CBD and DOC/NMFS settled the lawsuit. We agreed to reevaluate the original listing petition, as well as information in our files, including some additional information we acquired after the original 90-day finding published on February 17, 2011, and publish a new 90-day finding. On September 19, 2013, we published a 90-day finding with our determination that the petition presented substantial scientific and commercial information indicating that the petitioned action may be warranted (78 FR 57611).

Our 90-day finding requested scientific and commercial information from the public to inform a review of the status of the species. We requested information on the status of Alabama shad, including: (1) Historical and current distribution and abundance of this species throughout its range, including data addressing presence or absence at a riverine scale; (2) historical and current population sizes and trends; (3) biological information (life history, genetics, population connectivity, etc.); (4) landings and trade data; (5) management, regulatory, and enforcement information; (6) any current or planned activities that may adversely impact the species; and (7) ongoing or planned efforts to protect and restore the species and its habitat. We received information from the public in response to the 90-day finding, and we incorporated all relevant information into our review of the status of Alabama shad.

Listing Species Under the ESA

We are responsible for determining whether Alabama shad warrants listing as threatened or endangered under the ESA (16 U.S.C. 1531 *et seq.*) To be considered for listing under the ESA, a group of organisms must constitute a ''species,'' which is defined in section 3 of the ESA to include taxonomic species and ''any subspecies of fish, or wildlife, or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.'' Section 3 of the ESA defines an endangered species as ''any species which is in danger of extinction throughout all or a significant portion of its range'' and a threatened species as one ''which is likely to become an

endangered species within the foreseeable future throughout all or a significant portion of its range.'' Thus, we interpret an ''endangered species'' to be one that is presently in danger of extinction. A ''threatened species,'' on the other hand, is not presently in danger of extinction, but is likely to become so in the foreseeable future (that is, at a later time). In other words, the primary statutory difference between a threatened and endangered species is the timing of when a species may be in danger of extinction, either presently (endangered) or in the foreseeable future (threatened).

Section 4(b)(1)(A) of the ESA requires us to make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and after taking into account efforts being made by any state or foreign nation to protect the species. Under section 4(a) of the ESA, we must determine whether any species is endangered or threatened due to any one or a combination of the following five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence (Sections 4(a)(1)(A) through (E)).

We followed a stepwise approach in making this listing determination for Alabama shad. First we conducted a biological review of the species' taxonomy, distribution, abundance, life history, and biology. Next, using the best available information, we completed an extinction risk assessment using the general procedure of Wainwright and Kope (1999). Then, we assessed the threats affecting the status of each species using the five factors identified in section 4(a)(1) of the ESA.

In the next step, we evaluated the available information to determine whether there is a portion of the species' range that is ''significant'' in light of the use of the term in the definitions of threatened and endangered. We followed the final policy interpreting the phrase ''significant portion of its range'' (79 FR 37578; July 1, 2014). A portion of the range of a species is ''significant'' if the species is not currently endangered or threatened throughout all of its range, but the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range.

We describe each of the steps listed above in detail in the following sections of this finding.

Review of the Status of Alabama Shad

We have identified the best available scientific and commercial information in order to conduct a comprehensive review of the status of Alabama shad. Unlike many of our other 12-month findings, we have not developed a separate status review report. Instead we present all available relevant information for Alabama shad in this **Federal Register** notice.

Taxonomy

Alabama shad (*Alosa alabamae*) was first described by David Starr Jordan and Barton Warren Evermann in 1896 in the Black Warrior River near Tuscaloosa, Alabama (Jordan and Evermann 1896). Alabama shad was depicted earlier as ''white shad'' in documents from the U.S. Commission on Fish and Fisheries circa 1860 and was often confused with other shad even after it had been described (Daniels 1860, Barkuloo *et al.* 1993). Alabama shad belong to the family Clupeidae and are closely related to, as well as similar in appearance and life history to, the American shad (*A. sapidissima*). They also resemble the skipjack herring (*A. chrysochloris*), which occurs in the same areas as Alabama shad. Defining characteristics of the Alabama shad are an upper jaw with a distinct median notch, and the number of gill rakers (41 to 48) on the lower limb of the anterior gill arch. Alabama shad differ morphologically from other *Alosa* species that occur in the same area by a lower jaw that does not protrude beyond the upper jaw, black spots along the length of the lower jaw, and a dorsal fin that lacks an elongated filament.

Alabama shad are considered a separate species from the closely related American shad based on mitochondrial DNA molecular data (Bowen 2005, 2008, Kreiser and Schaefer 2009), in addition to the physical differences. There is limited genetic difference and it is theorized that the two species have only recently diverged from a common ancestor. Alabama shad is its own monophyletic group (a group of organisms descended from a single ancestor) due to limited genetic differences among the Clupeidae family and allopatric speciation (speciation by geographic isolation, Bowen 2008). There has been no significant genetic differentiation among different stocks of Alabama shad geographically and there is no evidence of hybridization between any of the other *Alosa* species and Alabama shad (Kreiser and Schaefer 2009).

Diet

Alabama shad are likely generalist insect feeders. Mickle *et al.* (2013) conducted stomach content analyses on individuals collected from the Pascagoula and Apalachicola Rivers. The stomach contents of the smallest juvenile Alabama shad (those less than 50 millimeters), collected exclusively from the Pascagoula River, were made up primarily of semi-decomposed algae and other unidentifiable organics, suggesting filter feeding or particulate feeding of smaller prey. As the size of Alabama shad taken from the Pascagoula River increased, the percentage of terrestrial and aquatic insects in the stomach contents increased. Mickle *et al.* (2013) found that terrestrial insects dominated the stomach contents of all size classes of Alabama shad taken from the Apalachicola River. Diet of Alabama shad from both the Apalachicola and Pascagoula Rivers changed as the size of the fish increased, with insects replacing unidentifiable organic matter. Ephemeroptera nymphs, an order of aquatic insects, dominated the diets of larger Alabama shad from both rivers. These nymphs produce aquatic juvenile larvae that emerge in open water in the same habitats where Mickle *et al.* (2013) collected the Alabama shad for their study. Mickle *et al.* (2013) noted that these observed ontogenetic dietary shifts seemed to coincide with habitat shifts and are consistent with a generalist strategy.

Age and Growth

Like many clupeids (the family of fish that include shad, herring, sardines, and menhaden), egg hatching period and growth of subsequent larvae varies by location and environmental factors. Mickle *et al.* (2010) found those Alabama shad that hatched in the Apalachicola River had a longer successful hatch window (mean of 58 days) compared to those in the Pascagoula River (mean of 33.8 days).

Juvenile Alabama shad exhibit rapid growth, although the size of juveniles varies across the range of the species. Typical juvenile Alabama shad increase in size from about 4.7 centimeters total length (cm TL, the length of the fish measured from the tip of the snout to tip of the tail fin) to about 10.1 cm TL over the summer but variation can occur depending on the river drainage. For example, juvenile Alabama shad from the Apalachicola River grew faster than those in the Pascagoula River despite

similar environmental conditions (Laurence and Yerger 1967, Mickle 2010). In the Chipola River, Florida, juveniles move downstream at an average size of 6.5 cm TL, while those moving down the nearby Apalachicola River averaged 11.5 cm TL (Laurence and Yerger 1967).

In both the Apalachicola and Choctawhatchee Rivers, Florida, adult female shad were typically longer and heavier than the adult males (Laurence and Yerger 1967, Mills 1972, Mettee and O'Neil 2003). Age 1–3 males on average weigh 250 grams and age 1–4 females weigh around 650 grams before spawning (Mettee and O'Neil 2003, Ingram 2007).

Two studies have aged otoliths of Alabama shad but only one study has fit growth models to observed age data. In the Pascagoula River, maximum observed age was 6 years based on otoliths (Mettee and O'Neil 2003), while Ingram (2007) aged shad from the Apalachicola River to 4 years.

Reproductive Biology

Alabama shad is a euryhaline (adapted to a wide range of salinities), anadromous fish species that migrates between the ocean and medium to large flowing rivers to spawn (reproduce) from the Mississippi River basin to the Suwannee River, Florida. Alabama shad spawn in February to April at lower latitudes in the south and May to June in more northern latitudes, usually over sandy bottoms, gravel shoals, or limestone outcrops (Laurence and Yerger 1967, Mills 1972, Barkuloo 1993, Kreiser and Schaefer 2009, Mickle *et al.* 2010). Water temperatures between 18 and 22 °C and moderate current velocities (0.5–1.0 meters (m) per second) promote successful spawning (Laurence and Yerger 1967, Mills 1972). If environmental circumstances are unfavorable, mature Alabama shad will sometimes abandon their upstream spawning movement (Young 2010).

Spawning males range in age from 1 to 5 years and females from 2 to 6 years (Mickle *et al.* 2010). Some age-1 male Alabama shad move into fresh water for their first spawning, but the primary spawning age classes tend to be 2–3 years for males and 2–4 years for females; any age-4 Alabama shad present in rivers are almost always female (Laurence and Yerger 1967, Mettee and O'Neil 2003, Ingram 2007). Males arrive at spawning sites first and increase in abundance as the spawning season continues, while females appear in large groups slightly later in the spawning season (Mills 1972, Mettee and O'Neil 2003). It is unknown whether females arrive with ripened eggs, as suggested by Mills (1972), or if their gonads ripen as river temperatures increase (Laurence and Yerger 1967). Females tend to release their eggs in late April and early May when the water temperatures are 20–21 °C (Mettee and O'Neil 2003, Ingram 2007). Fecundity (reproductive capacity) is related to size, with larger females producing more eggs (Ingram 2007, Young 2010). Alabama shad produced 26,000–250,000 eggs per female in the Apalachicola River and between 36,000–357,000 eggs per female in the Choctawhatchee River (Mettee and O'Neil 2003, Ingram 2007). After spawning, the younger (age 2 and 3) Alabama shad migrate back to marine waters. The older spawners (age-4 and older) either die or are preyed upon by other piscivorous fish (Laurence and Yerger 1967).

Because of the age range among the spawning fish, it is believed that individuals may spawn more than once in a lifetime (Laurence and Yerger 1967, Mettee and O'Neil 2003, Ingram 2007, Mickle *et al.* 2010). Laurence and Yerger (1967) indicated that 35 percent of Alabama shad were likely repeat spawners and noted that 2–4 year old males from the Apalachicola River had spawning marks on their scales. Mills (1972) also observed 35–38 percent repeat spawners (mostly age-3) as well as discernable spawning marks on scales from the Apalachicola River population. In addition, Mettee and O'Neil (2003) noted that many Alabama shad collected from the Choctawhatchee River were repeat spawners, with age-3 and age-4 females comprising the majority of repeat spawners in 1994–1995, and age-2 and age-3 females the majority in 1999–2000. In contrast, Ingram (2007) has not observed spawning marks on the scales of Apalachicola River shad and most fish in the Apalachicola may die after spawning (Smith *et al.* 2011). Alabama shad appear to be philopatric and return to the same rivers to spawn, resulting in slight genetic differences among river drainages (Meadows 2008, Mickle 2010). These genetic differences may result in characteristics (*e.g.,* faster growth rates, higher temperature tolerance, etc.) that lead to variable spawning strategies among river drainages. Kreiser and Schaefer (2009) found slight genetic distinctions between populations from the Mississippi River basin and coastal Gulf of Mexico drainages due to Alabama shad straying from their natal rivers, at an estimated rate of about 10 migrants per generation.

Life History Strategy

On the spectrum of life history strategies, Alabama shad tend to be ''r strategists'', species that are typically short-lived, have small body size, reach sexual maturity at an early age, and have high natural mortality that is balanced by a high growth rate (Adams 1980). Species that are r strategists adapt to unstable, unpredictable environments by producing higher numbers of offspring as compared to k strategist species living in stable, predictable environments. Elliott and Quintino (2007) found that species living in unpredictable, variable, and even stressed environments are well-adapted to cope with these conditions without or with reduced adverse effects. Adapting to highly variable environments also produces high natural variability in r strategist populations. Adams (1980) noted that fisheries for r strategists can have very large catches some years, but are characterized by erratic, highly variable production levels overall. Most clupeoids (an order of soft-finned fishes that includes Alabama shad, other clupeids, and anchovies in the family engraulidae) have a short life span and show striking inter-annual or decadal variation in productivity and abundance (Mace *et al.* 2002). Fisheries for clupeoids can vanish for 50–100 years then undergo a remarkable recovery with the population growing as fast as 40 percent per year (Mace *et al.* 2002).

Sammons and Young (2012) noted that the population sizes of species in the *Alosa* genus commonly fluctuate widely. An Alabama shad researcher with the Georgia Department of Natural Resources (DNR) noted that as an r strategist, Alabama shad are prone to ''boom and bust'' years, but they are also highly fecund (capable of producing an abundance of offspring) and can recover quickly from even a small number of fish (based on the results of stocking efforts; T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). In fact, the speciation (evolutionary process by which reproductively isolated biological populations evolve to become distinct species) of Alabama shad likely occurred from a very small number of fish that dispersed around the Florida peninsula and became separated from other *Alosa* species during the Pleistocene (Bowen *et al.* 2008). Modeling conducted by Moyer (2012) indicated that the Pleistocene bottleneck for Alabama shad was intense. The effective population size for Alabama shad during the bottleneck was estimated to be between 76 and 398, meaning 76–398 individuals is the

population size during the Pleistocene estimated to have been necessary to result in the relatively low genetic diversity observed in members of the species today. Moyer (2012) also noted that the bottleneck event was prolonged (145–987 shad generations), indicating that the species persisted at very low numbers for an extended period of time.

Habitat Use and Migration

Alabama shad are found in the Gulf of Mexico, although there is very little information about their marine habitat use. Only six records of Alabama shad collected in marine waters exist. The Florida Museum of Natural History reports one specimen was captured in July 1957 approximately 80 miles (mi) or 129 kilometers (km) south of Choctawhatchee Bay, Florida, in about 100 meters of water (Fishnet2 2015, Catalogue #28671). The National Museum of Natural History, Smithsonian Institution, reports another Alabama shad was captured just off Dauphin Island, Alabama, in December 1960 in 15 meters of water (Fishnet2 2015, Catalogue #293755.5174309). Two Alabama shad were collected approximately 115 km southwest of Cape San Blas, Florida in November 2007 (Fishnet2 2015, Catalogue #20627). An Alabama shad was collected by the Texas A&M University Biodiversity Research and Teaching Collections in a trawl about 25 mi (40 km) offshore of Florida, between Tampa Bay and the Charlotte Harbor Estuary (Fishnet2 2016, Catalogue #14540.07). In March 2013, an adult female Alabama shad was collected during a fishery independent monitoring survey approximately 15 km south of the Pascagoula River just north of Petit Bois Island in Mississippi Sound and approximately 5 km east of Horn Island Pass, which leads to the open Gulf of Mexico (Mickle *et al.* 2015). Microsatellite DNA analysis indicated that the fish was most genetically similar to Alabama shad originating from the Pascagoula River. She was observed to have well-developed ovaries, and Mickle *et al.* (2015) suggested she may have been preparing to make a spawning run. Stomach content analyses showed that the fish was full of small invertebrates. Previous studies (*e.g.,* Mills 1972) report few or no stomach contents in Alabama shad collected in riverine environments. The marine specimen with a full stomach collected by Mickle *et al.* (2015) supports that Alabama shad likely feed primarily in marine habitats, similar to other anadromous species.

As part of their anadromous life cycle, adult Alabama shad leave the Gulf of Mexico and move into rivers in the spring to spawn. First year (age-0) juveniles stay upriver in freshwater environments until late summer or fall and eventually migrate downstream to the Gulf of Mexico. Juveniles coming from natal rivers located at more northern latitudes (*e.g.,* Ouachita River in Arkansas) begin downstream movement throughout the summer, reaching the Gulf of Mexico by autumn. Juveniles located at more southern latitudes (*e.g.,* Pascagoula River in Florida) will remain in natal rivers as late as December before beginning their downstream movement to the Gulf of Mexico. Alabama shad do not overwinter in freshwater river systems (Mickle *et al.* 2010).

Alabama shad prefer cooler river waters with high dissolved oxygen (DO) and pH levels (Mickle *et al.* 2010). Although there have been no studies on the thermal tolerances of Alabama shad, other *Alosa* species cannot tolerate water temperatures greater than 32°C; it is likely that Alabama shad also cannot tolerate high water temperatures (Beitinger *et al.* 1999). Mickle *et al.* (2010) found spawning adults in waters as cold as 10 °C, but juveniles have been collected in waters as warm as 32 °C (Mickle *et al.* 2010, Young 2010).

Water velocity is also believed to be an important habitat feature, as this species is rarely found in the still or backwater portions of rivers. It is hypothesized that spring floods (increased river flows) are a vital environmental cue for spawning adults as well as an important aspect for successful hatching. Juveniles tend to occupy moderate to fast moving water (approximately 0.5–1.2 m per second) that is less than 1 m deep (Mickle 2010). Clear water with minimal benthic algal growth also appears to be preferred by this species (Buchanan *et al.* 1999).

Smaller, younger shad tend to prefer the slightly shallower, more protected areas over sandbars, while the older, larger shad can be found in channel and bank habitats. Sandbars within the bends of rivers that are less than 2 m deep often support juveniles in the early summer (Mickle 2010). As the fish grow, they move to bank (greater than 2.5 m deep) and channel (1.5–2.5 m deep) habitats, although the shift is not always consistent (Mickle 2010). Presumably, this allows the juveniles to avoid predators, fulfill foraging needs, or access cooler temperatures that might be present in deeper waters (Bystrom 2003, Mickle *et al.* 2010, Mickle 2010).

Distribution and Abundance

NMFS documented the current known distribution and abundance of Alabama shad in a technical memorandum published in August 2011 (Smith *et al.* 2011). In addition to conducting an extensive search of all publications, technical reports, and theses available, NMFS staff surveyed scientists at universities, state and Federal facilities, and non-profit organizations throughout the historical range of Alabama shad for any recent recorded captures. Surveys were sent by email, and information was requested on capture dates, location, and number of Alabama shad captured, if available. Additionally, capture information and observations were provided by state and Federal agencies during the public comment period on our 90-day finding.

Information on the historical and current distribution and abundance of Alabama shad is largely lacking. Alabama shad was never an economically important species, therefore information from fisheries statistics, such as landings data, is rare. Hildebrand (1963) noted that Alabama shad were considered unfit for human consumption, and the lack of demand produced no incentive to capture the species or record its presence and abundance. Very few directed research studies on Alabama shad have occurred, with the exception of recent studies in the Apalachicola Chattahoochee Flint (ACF) and Pascagoula River systems. The recent studies in the ACF River system have produced the only abundance estimates, either historical or current, for Alabama shad in any river system. The historical and current distribution of Alabama shad in other systems is based on capture data from general multi-species surveys, project monitoring, captures incidental to other research studies, and anecdotal information. Information received from state resource agencies (*e.g.,* during the public comment period on the 90-day finding and during development of this determination, presented in the sections below) corroborates that long-term, strategic studies of the species in their states are lacking. For instance, the Arkansas Fish and Game Commission stated in their comments on the Alabama shad positive 90-day finding they could not assess the status of Alabama shad in their state because of the scarcity of information on the species, the lack of targeted surveys, and the unknown detectability of the species (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013).

Mettee and O'Neil (2003) note that low numbers of recorded Alabama shad individuals may be due, at least in part, to insufficient sampling effort during

appropriate times (*i.e.,* spawning migrations) and with the appropriate gear to target the species. Hildebrand (1963) noted the importance of proper gear, citing greatly increased catches of Alabama shad that occurred in Kentucky when surface-fishing seines were substituted for bottom-fishing seines. Short-term studies may also fail to accurately demonstrate the status of a given river population of Alabama shad since this r strategist species is prone to high natural variability and long-term studies would be necessary to reveal any population trajectory.

In reviewing data provided by the Florida Fish and Wildlife Conservation Commission (FFWCC) during the public comment period on the positive 90-day finding (J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013), less than 50 Alabama shad were reported since 1999. The shad were collected during multispecies surveys not specifically targeting Alabama shad. The research with positive reports of Alabama shad was conducted using otter trawls, seines, and electrofishing during winter (December, January, February), spring (May), summer (June, July, August), and fall (September, October, November) months between 2002 and 2011. It is notable that none of the FFWCC surveys were conducted in March or April, when the largest catches of Alabama shad have occurred during targeted research in the ACF River system (Kern 2016, Sammons 2013, 2014). Further, although FFWCC caught less than 50 Alabama shad from 2002–2011, researchers targeting Alabama shad in the ACF River system captured 128–1,497 Alabama shad per year during an overlapping time period (2005–2011; Young 2010, 2011). This demonstrates the importance of the sampling gear and time of year in interpreting available data and why short-term and/or non-targeted research is not always a good indicator of distribution and abundance.

Even studies designed to target Alabama shad have yielded difficulties in detecting the species. Researchers studying Alabama shad in the ACF River system noted they had great difficulty finding Alabama shad in portions of the Flint River and expressed their surprise at the difficulty, given the small size of the river (Kern 2016; S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, Jim Woodruff Lock and Dam (JWLD) Fish Passage Year-End Summary Meeting, January 2014; S. Sammons, Auburn University, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2015). Large gaps in detections of Alabama shad were observed in the Flint River (Kern 2016; S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014; S. Sammons, Auburn University, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2015). Alabama shad were detected at upstream and downstream locations on acoustic receivers, but were not detected by receivers in between. Multiple methods were used with limited success to improve the detectability of Alabama shad, including passive (anchored receivers), boat, and airplane tracking of acoustically and radio-tagged shad (S. Sammons, Auburn University, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2015). Kern (2016) believed a combination of behavioral and environmental factors reduced the detectability of Alabama shad. Kern (2016) notes there are many ''blue hole'' springs along the river's length that are substantially deeper than the surrounding river and it is possible that Alabama Shad may use these features as refugia during the spawning migration. High water conditions were also experienced during portions of the sampling period. Kern (2016) stated that increased water depth during periods of high river discharge, swimming depth of Alabama Shad, and the presence of significantly deeper habitats than what is available in the rest of the river could lead to decreased detection probability by exceeding the detection range of passive and manual receivers. Kern (2016) also noted that Alabama shad are capable of long, rapid migration runs and if those migration runs occur at night, Alabama shad will not be detected by manual tracking (from boats and airplanes) that occurs exclusively during the day. The same detection problems (gaps in Alabama shad detection at receivers between two positive detection points) were experienced during Alabama shad conservation locking studies in the Alabama River system (Kern 2016; S. Sammons, Auburn University, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2015).

It is unknown to what degree the lack or low numbers of Alabama shad reported for many river systems accurately reflects the abundance in those systems or whether it is indicative of the lack of targeted studies or the detectability of this species.

Distribution and abundance information is summarized below by rivers, starting with the Apalachicola River where we have the most information regarding Alabama shad, then information is presented by rivers from west to east.

Apalachicola River Drainage

The Apalachicola River drainage is made up of the Apalachicola, Chattahoochee, and Flint Rivers and drains water from parts of Florida, Alabama, and Georgia. Alabama shad were known to have migrated from the Apalachicola River up the Chattahoochee River to Walter F. George Reservoir in the early 1970s (Smith *et al.* 2011), even with the construction downstream of the Jim Woodruff Lock and Dam (JWLD) in the early 1950s and George W. Andrews Lock and Dam in the early 1960s. Alabama shad were able to pass upstream and downstream when the navigation locks were open. Located at the confluence of the Chattahoochee and Flint Rivers, JWLD is the first major obstacle on the Apalachicola River to the upstream migration of Alabama shad to their historical spawning grounds. River traffic on the Apalachicola River resulted in the lock being operated frequently, allowing passage and sustaining reproduction of the resident Alabama shad population. Historically, JWLD was operated continuously 24 hours per day for commercial barge traffic (Sammons 2013). With the elimination of commercial traffic in the late 1960s, lock operation was reduced to 8 hours per day for on-demand passage of recreational boats, reducing the number of lockages to less than 100 per year from a high of 1200. Barge traffic decreased and lock operation became less frequent when navigational dredging ceased in 2001 (J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013). Researchers believe Alabama shad spawn in shoal habitat downstream of JWLD based on observations of the species congregating over the shoals during spawning season, as well as usage by other spawning anadromous species, such as Gulf sturgeon (*Acipenser oxyrinchus desotoi;* T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016).

During the public comment period, the FFWCC reported collecting fewer than 50 Alabama shad in the lower Apalachicola River since 1999 (J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013). In reviewing the data provided by FFWCC during the public comment period on the positive 90-day finding, the fewer than 50 Alabama shad reported since 1999 were collected during multispecies surveys (*i.e.,* Alabama shad were not specifically targeted). The research with positive reports of Alabama shad was

conducted using otter trawls, seines, and electrofishing during winter (December, January, February), spring (May), summer (June, July, August), and fall (September, October, November) months between 2002 and 2011. It is notable that none of the surveys were conducted in March or April, when the largest catches of Alabama shad have occurred during research targeting Alabama shad in the ACF River system, which occurs annually between March and May to coincide with the spring spawning migration (Kern 2016, Sammons 2013, 2014). Further, although FFWCC caught less than 50 Alabama shad from 2002–2011, researchers targeting Alabama shad in the ACF River system captured 128–1,497 Alabama shad per year during an overlapping time period (2005–2011; Young 2010, 2011). This demonstrates the importance of the sampling gear and time of year in interpreting available data and why short-term and/or non-targeted research is not always a good indicator of distribution and abundance.

The ACF River system likely contains the largest spawning population of Alabama shad within its range, although the population may be several orders of magnitude smaller than historical levels (Schaffler *et al.* 2015). Because this population has remained self-sustaining even with apparent declines, a project to restore passage to upstream spawning habitats was initiated (Schaffler *et al.* 2015). Beginning in 2005, a cooperative study supported by multiple local, academic, state, and Federal conservation partners started tracking movements of Alabama shad and other fish species in the Apalachicola River (USFWS 2008, Ely *et al.* 2008, TNC 2010). The study also evaluated the feasibility of moving fish upriver of JWLD during the spawning season. The results of this collaborative study showed that the existing lock at JWLD could be operated to allow fish to move upriver through the lock where they could access additional spawning habitat. Based on these results, U.S. Army Corps of Engineers (USACE) began ''conservation locking'' (operating the lock at JWLD to provide Alabama shad access to upstream habitat) in 2005.

In 2012, the ''cooperator'' organizations (USACE, USFWS, NMFS, Georgia DNR, FFWCC, and TNC) signed a Memorandum of Understanding (MOU) clarifying their commitments and responsibilities in the continued implementation of fish passage at JWLD. The contents of the MOU are described in more detail in the ''Regulations on Dams'' section in ''*D. Inadequacy of Existing Regulatory Mechanisms.*'' In fulfillment of the cooperation outlined in the MOU, an annual meeting to discuss the issues and outcomes from the previous spring conservation locking cycle is held, usually in the early part of the following year (*i.e.,* January or February). At the annual meetings, the cooperators and other interested parties (*e.g.,* universities that are not signatories to the MOU, but are heavily involved in research activities associated with the conservation locking in the ACF River system) discuss lessons learned from the previous year and participate in planning the next cycle of spring conservation locking, including whether the locking operation and schedule can be improved. For example, during the planned lock maintenance that occurred during the 2013–2014 season, the cooperators were able to upgrade the method of delivering the attractant flow (a stream of high velocity water used to attract spawning fish) from a manual system to an electric pump as a more efficient way to direct shad through the lock when conservation locking resumed (S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014).

Population abundance estimates for Alabama shad in the ACF River system were determined through mark-recapture methods from 2005–2016. The estimated abundances for 2005–2016 are listed in the following table (the asterisks indicate years in which no conservation locking occurred due to maintenance and upgrades to the lock at JWLD). The table also shows the catch per unit effort (CPUE) of adult and juvenile Alabama shad during spring and fall sampling, respectively.

TABLE 1—ADULT AND JUVENILE ALABAMA SHAD RESEARCH RESULTS IN THE ACF RIVER SYSTEM

Year	Adult population estimate (spring)	Confidence interval (spring)	Adult CPUE (spring)	Juvenile CPUE (fall)
2005	25,935	17,715–39,535	20.47	n/a.
2006	2,767	838–5,031	6.10	0.1.
2007	8,511	5,211–14,674	13.17	5.75.
2008	5,253	1,592–9,551	13.00	16.17.
2009	10,753	3,258–19,551	9.20	0.
2010	98,469	51,417–127,251	7.17	22.4.
2011	26,193	22,371–43,713	72.93	25.
2012	122,578	57,911–282,872	100.6	1.9.
2013*	2,039	618–3,706	17.2	1.33.
2014*	n/a	n/a [86 fish captured; no re-captures]	6.5	3.33.
2015	324	58–3,240	6.8	0.
2016	n/a	[0 fish captured]	0	CPUE not yet calculated [20 juveniles captured].

In the period of conservation locking, Alabama shad have been successfully passed through the navigational lock at the most downstream dam on the ACF, JWLD, providing upstream migration to higher quality spawning and juvenile rearing habitat, which has potentially improved recruitment and lead to population increases (Ely *et al.* 2008, Young *et al.* 2012, Schaffler *et al.* 2015). Since conservation locking began, Alabama shad have been reported above JWLD in both the Chattahoochee River and the Flint River (2008–2010) by the Georgia DNR (Smith *et al.* 2011). The USACE reported Alabama shad in Lake George W. Andrews in the Chattahoochee River during recent sampling of the area (Smith *et al.* 2011). Only a few Alabama shad have been found in the Chattahoochee River, with the vast majority being found in the Flint River (Young 2010). In years when conservation locking occurred, the locks were operated twice a day to correspond with the natural movement patterns of migrating fish during spawning seasons (February through May) each year. During conservation locking, acoustically tagged Alabama shad

released below the dam have been found to pass upstream of the lock with 45 percent efficiency (Young 2010). Alabama shad can more easily access over 150 mi (241.4 km) of historical habitat and spawning areas in the ACF River system for the first time in more than 50 years now that the lock is operated to correspond with their natural spawning cues (TNC 2010).

Schaffler *et al.* (2015) completed a study on shad collected in 2010 and 2011 to determine whether fish passage efforts at JWLD were contributing recruits to the adult Alabama shad population. They evaluated otolith (inner ear bone) chemistry from spawning adult Alabama shad to determine the river reach within the ACF basin the fish originated from. They first examined the otolith chemistry of known-origin juveniles captured in freshwater reaches both upstream and downstream of JWLD. Then, they compared the distinct chemical signatures of the juvenile otoliths to those from returning spawning adults of unknown origin captured below the dam to assign river-reach natal origins. The results showed that the Flint River, inaccessible to Alabama shad prior to conservation locking, is the dominant source of recruits returning to spawn in the ACF River system making up 86 percent of the individuals captured. Schaffler *et al.* (2015) found no evidence that collection year, sex, or age impacted the origin of returning Alabama shad in the ACF River system, meaning the Flint River produced the majority of recruits in the ACF River system for the 2008–2010 cohorts of both males and females. The results from this study indicate that conservation locking is making a tremendous contribution to Alabama shad in the ACF River system, the bulk of the Alabama shad population in the ACF River system is spawning in the Flint River, and juvenile Alabama shad are able to successfully move downstream to contribute to the adult stock.

In 2005, the population estimate in the ACF River system was about 26,000 individuals, but decreased to less than 10,000 in both 2006 and 2007 (Ely and Young 2008). In 2008 and 2009, mark-recapture methods yielded an Alabama shad population estimate of approximately 5,200–10,700. However, one of the researchers noted that the Alabama shad population estimates for 2008 and 2009 (5,253 and 10,753 shad, respectively) are likely underestimates of the actual population numbers based on the results of a companion electrofishing study by Clemson University (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, February 8, 2016). Based on a predictive model developed by Clemson, the 2008 and 2009 Alabama shad population estimates would be closer to 8,500 and 26,000 shad, respectively.

Young (2010) estimated the number of Alabama shad in the ACF River system at 98,469 in 2010, almost 4 times larger than the previous high estimate of 25,935 in 2005 (Ely *et al.* 2008). Alabama shad were the most abundant species observed in the Apalachicola during spring sampling in 2010 (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016).

Within the ACF River system, the number of Alabama shad in 2011 was estimated at 26,193; this is lower than the 2010 value but slightly higher than the maximum abundance in the 2005–2009 period (Young 2011). The major difference between the 2010 and 2011 Alabama shad spawning runs was a lack of age-1 males in 2011. Ingram (2007) noted that fewer age classes and lower numbers of older, more mature, fish are indicative of a declining population. The 2011 run was dominated by older, larger adult females in excellent condition, a potential indicator of strong year classes in the future (Young 2011). Sammons and Young (2012) provided a report from the Apalachicola River, estimating the number of Alabama shad at 122,578 in 2012 (the largest since 2005). This spawning run was composed of many males presumed to be from the 2010 year class, as well as numerous older, larger adults of both sexes (presumably recruits from 2008 and 2009). In 2012, the abundance of 3- and 4-year-old fish made up the largest percentage of spawning Alabama shad, rather than 1- and 2-year-olds as in previous years (Ingram 2007), indicating a healthier population (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). Sammons and Young (2012) noted that a year of higher than average flows in 2009 may have contributed to spawning and recruitment successes in 2010 and 2012.

While conservation locking of Alabama shad at JWLD and monitoring of Alabama shad populations in the ACF River system continue to receive support and funding Alabama shad were not passed through the lock in 2013 and 2014 due to maintenance on the structure. However, 74 Alabama shad out of a total of 251 captured by researchers during 2013 were tagged and transported above JWLD and released (Kern 2016, Sammons 2013) in order to access habitat above the dam. Of the 74 tagged fish, 11 were verified as post-release mortalities, with another 3 suspected mortalities (Sammons 2013). It is unknown whether Alabama shad not captured by researchers successfully spawned at the shoal habitat below JWLD where they spawned prior to conservation locking (*Acipenser oxyrinchus desotoi;* T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). Also, during the maintenance period on the lock, the method of delivering the attractant flow (a stream of high velocity water used to attract spawning fish) was upgraded from a manual system to an electric pump as a more efficient way to direct shad through the lock when conservation locking resumed (S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014).

Conservation locking appears to have enhanced spawning and recruitment of Alabama shad in the ACF River system (Young 2010, 2011, Sammons and Young 2012, Schaffler *et al.* 2015). Although the ACF population of Alabama shad has been the largest known population for decades (Laurence and Yerger 1967), the lack of conservation locking in 2013 and 2014, combined with environmental conditions (cold and flooding) and the poor condition of spawning fish (discussed below), likely produced the weakest year class since research began on Alabama shad in the ACF River System in 2005. However, environmental conditions (cold, flooding, and the presence of large debris) and funding levels also hampered researchers' ability to survey the Alabama shad population in the ACF River system in 2013–2015 to develop reliable population estimates.

The Alabama shad population sampled below JWLD during the 2013 spawning season was low compared to previous seasons (Sammons 2013). A total of 309 Alabama shad were captured below JWLD and of those fish, 87 fish were tagged and 1 was recaptured, resulting in a population estimate of 2,039 Alabama shad (Sammons 2013). Sammons (2013) noted that most Alabama shad collected below JWLD in 2013 were in poor physical condition, with visible wounds (this will be discussed further in ''C. Disease and Predation''). The wounds were observed only on adult fish and not on younger fish, indicating the source may have occurred in the Gulf of Mexico (Sammons 2013). The wounds were also not observed on other anadromous species, indicating Alabama shad are either more susceptible to the source of the wounds or they are distributed in areas that the other species are not (Sammons 2013).

The wounds remain unexplained, but Sammons (2013) cited a news article reporting gash wounds on fish potentially associated with the Deepwater Horizon Oil Spill resembling the wounds found on Alabama shad. Sammons (2014) also cited Murawski *et al.* (2014) noting the anecdotal reports of skin lesions in offshore fish species in 2010 and 2011, but the symptoms declined by 2012. The sores have not been observed in any Alabama shad captured since 2013 (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016).

The Alabama shad captured below JWLD were tagged and/or released approximately 5 km above the dam (Sammons 2013). Most of the Alabama shad were relocated (detected again after release) in Lake Seminole just above the dam, but some fish were detected moving into the preferred spawning habitat in the Flint River (Sammons 2013). Although fewer fish were detected making a spawning run than in previous years, Alabama shad traveled greater distances from the area they were released in 2013 than in previous years (Sammons 2013).

Reasons for the lack of fish found below JWLD are unknown, but unusually cold water temperatures due to cooler weather patterns present throughout the Apalachicola River Basin in 2013 may have been a contributing factor (Sammons 2013). Water temperature serves as one of the main cues for Alabama shad to enter the ACF River system to spawn (Kern 2016, Sammons 2013). The researchers suspect that many Alabama shad had not yet entered the Apalachicola River to spawn during their sampling effort in the river, and this factored into the low numbers captured during 2013.

In 2014, 102 Alabama shad were captured below JWLD; 86 were tagged and released above JWLD (Sammons 2014). No fish were recaptured and a population estimate could not be calculated (Sammons 2014). Since conservation locking did not occur in 2013 or 2014 due to maintenance of the lock, Alabama shad likely did not pass upstream except for those transported by researchers. Sammons (2014) noted that the Alabama shad captured in 2014 were smaller than shad captured in the previous two years, but that the fish were in better condition and did not exhibit the wounds as the majority of the population did in 2013. Although few adult Alabama shad were captured in the spring 2014, juvenile Alabama shad were collected in the fall sampling above JWLD in 2014 (CPUE of 3.3 in the table above), indicating that adult Alabama shad had successfully passed upstream and spawned (P. Freeman, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, February 2016). Despite no abundance estimate being produced, juvenile CPUE in 2014 was higher than CPUEs in the 2 previous years.

Given the low numbers, Sammons (2014) believes that weak year classes were produced in 2013 and 2014. However, Sammons (2014) stated that water levels and temperature may have factored in to the low catches in 2014. Water levels and discharge were much higher during Alabama shad sampling in 2014 than in the previous 2 years and the mean catch rate of Alabama shad below JWLD was inversely correlated with mean daily discharge over the past 5 years (Sammons 2014). High water and discharge may have hindered catch rates, but spawning population size was also likely low (Sammons 2014). Reasons for the lack of fish found below JWLD are unknown, but may have also involved unusually cold water temperatures. As in 2013, water temperature was generally more than 2–4 °C cooler throughout the spawning season than in 2011 or 2012 (Sammons 2014). Abnormally low water temperatures in the Apalachicola River throughout the spring in 2013 and 2014 may have inhibited the usual spawning migration cues of this species, resulting in fewer fish migrating upstream (Sammons 2014). Sammons (2014) stated it is possible that a significant spawning population of this species persists in the Gulf of Mexico waiting for more normal spring conditions to return to the river before initiating their spawning run.

In 2015, conservation locking resumed, but the Alabama shad population estimate remained low (324 fish). Due to the lack of conservation locking in 2013 and 2014, and potentially the lack of successful spawning due to the poor condition of the Alabama shad observed in 2013 (Sammons 2013, 2014), it is probable that the actual number of returning adult Alabama shad in 2015 was low. Similar to the previous year, researchers noted factors that may have reduced their capture rates, such as high water levels and large amounts of debris in the river that hampered sampling, potentially leading to the low number of recaptures and the low population estimate (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, February 3, 2016).

In 2016, high water levels occurred early in the sampling season, but later returned to normal levels (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). No Alabama shad were captured in the Apalachicola River in 2016, and therefore an abundance estimate could not be produced for that year (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). However, Alabama shad were observed lower in the Apalachicola River by another researcher conducting striped bass surveys (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). The Alabama shad survey occurred about 2 km downstream of JWLD (Sammons 2014) and therefore would not have encountered Alabama shad occurring downstream of that location. The gill-netting survey conducted in Lake Seminole above JWLD to detect juvenile Alabama shad occurred in mid-December 2016 and produced 20 juvenile Alabama shad. Even though no adults were captured in the spring survey, the collection of juvenile shad above JWLD indicates that some adult Alabama shad did successfully pass through the lock and spawn in the ACF system in 2016 (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, December 15, 2016). At the time this 12-month determination was prepared, the researchers had not yet calculated the CPUE for the juvenile survey.

Funding levels and research effort may also have contributed to the differences in abundance estimates between 2013–2016 (low number of fish captured) and 2009–2012 (large number of fish captured). Funding levels were much higher in 2009–2012 and researchers were pursuing additional research questions beyond population estimates that required them to capture more fish (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). From 2009–2012, researchers logged more research time on the Apalachicola River and targeted higher numbers of Alabama shad, which produced robust population estimates. As noted, environmental conditions greatly hampered research efforts in 2013–2015. It is unknown whether catch rates were influenced by environmental factors in 2016 or were strictly a reflection of very low population numbers, but reduced funding further exacerbated researchers' ability to increase survey efforts to offset research difficulties or to opportunistically take advantage of improved environmental conditions when they occurred (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). The differences in the trends in Alabama shad adult population estimates and the CPUE of adult Alabama shad between 2005–2016

can partially be explained by the differences in sampling effort levels due to both environmental conditions and funding levels (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016), although researchers believe the Alabama shad spawning populations in the ACF River system in 2013–2016 were smaller, especially compared to the 2009–2012 spawning populations.

As described above, low numbers of Alabama shad were captured in 2013–2015 and no adult Alabama shad were captured in 2016, producing low or no population estimates. From 2013–2016, the primary cause of low Alabama shad captures is likely that low numbers of Alabama shad returned to spawn in the ACF River system during those years (Sammons 2013, 2014, T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). Conservation locking did not occur in 2013 and 2014 due to maintenance and improvements on the lock. Some Alabama shad captured by researchers were transported and released above JWLD, but the remaining fish in the population likely only had access to any downstream spawning habitat (Sammons 2013, 2014). However, while conservation locking appears to have significantly increased spawning and recruitment success of Alabama shad and expanded the species' access to additional habitat in the ACF River system, the ACF population has been the largest known population of Alabama shad for decades (Laurence and Yerger 1967) even before conservation locking occurred. The poor condition of Alabama shad in 2013, when most fish collected had unexplained external wounds (Sammons 2013, 2014), potentially led to poor spawning success and fewer returning spawners in the following years. The CPUE of juvenile Alabama shad in the Flint River in the fall of 2013 was low, although not the lowest observed and similar to the CPUE for 2012, which had the highest adult population estimate recorded since research commenced in 2005.

Environmental conditions may have affected both shad spawning activities and the ability of researchers to detect shad. Cold temperatures in 2013 and 2014 may have postponed the spring spawning runs until temperatures increased later in the season (and after Alabama shad research had already ceased), or the majority of Alabama shad may have forgone their annual spawning run and remained in their marine habitat (Sammons 2014). Water levels and discharge were much higher during Alabama shad sampling in 2014 than in the previous 2 years and may have hindered catch rates. The mean catch rate of Alabama shad below JWLD was inversely correlated with mean daily discharge over the past 5 years (Sammons 2014). This is similar to observations in other systems, and can mean high river discharge delayed or hindered spawning runs or affected the ability of researchers to capture shad. Kern (2016) found that the number of detections of tagged Alabama shad in 2013 and 2014, as well as the extent of upstream migration by shad, appeared to be influenced by river discharge, with the lowest number of detections and least amount of upstream movement occurring during years with relatively high river discharges. Sammons (2014; citing Holman and Barwick 2011, and Pierce *et al.* 1985) noted that the inverse relationship between capture of fish by electrofishing results and high water level is well known. Alabama shad detection in general proved surprisingly difficult to researchers, in both the ACF River and the Alabama River systems, with large gaps in detections between areas where Alabama shad were known to have occurred (Kern 2016; S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014; S. Sammons, Auburn University, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2015). Funding levels and research effort may also have contributed to the differences in abundance estimates between 2013–2016 (low number of fish captured) and 2009–2012 (large number of fish captured), with higher funding levels and increased effort in 2009–2012 compared to the later years (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016).

To further evaluate potential causes and effects of the low capture rates in the ACF River system in 2013–2016, we compared the adult population estimates and CPUEs from spring sampling with the CPUE of juveniles sampled above JWLD in the fall. The CPUE for juvenile shad is a metric derived from surveys designed to assess the recruitment success of Alabama shad upstream of JWLD. Given the growth rate of Alabama shad, surveys for juveniles upstream of JWLD in the fall would indicate success of the spring spawning that occurred earlier in the year. Trends in juvenile CPUE did not appear to follow trends in the adult population estimates or the adult CPUEs. Further, the trends in juvenile CPUE did not appear to reflect the trends in adult population estimates either 1 or 2 years later, when juveniles would be of spawning age. Recapture rates of tagged adult Alabama shad ranged from 0 to 2.2 percent per year for tagged shad. There was not a strong relationship ($r = 0.33$) between population size and CPUE, nor between population size and the number of recaptured fish ($r = 0.21$). However, there was a strong positive relationship between population size and the number of fish tagged ($r = 0.82$). Interestingly, there is a very poor fitting relationship between the number of fish tagged and the number of fish recaptured ($r = 0.15$), which indicates the results are potentially heavily influenced by variability in the number of recaptures in a given year. The researchers' ability to capture, but not as easily recapture fish, may provide some indication that difficulties in detecting Alabama shad during research efforts factored into the low population estimates in addition to the actual population size being low.

The low catch rates of Alabama shad in 2013–2016, although potentially influenced by environmental conditions, detection ability, and research effort, primarily indicate that Alabama shad populations were much lower during those years than in the previous years of research since 2005. However, for an r strategist species such as Alabama shad that is inherently prone to high levels of natural variability, it is very difficult to interpret a population trend from 11 years of population estimates, with no historical abundances available for comparison. The abundance estimates for Alabama shad in the ACF River System demonstrate that the abundance in the system for the 11-year period is highly variable, and no population trend is apparent. The confidence intervals around each of the abundance estimates in the table show the wide range of uncertainty inherent in the abundance data.

Based on the life history strategy of the species and the short period over which abundance estimates have been available, we cannot discern a pattern or trend in the Alabama shad population in the ACF River system. As an r strategist, Alabama shad have high natural mortality that is balanced by a high growth rate (Adams 1980). R strategist populations are well-adapted to cope with unstable, unpredictable environments, and this also produces high natural variability in their populations (Elliott and Quintino 2007). Adams (1980) noted that fisheries for r strategists are ''boom or bust,'' and although catches can be very large some years, they will be characterized by erratic production levels overall.

Alabama shad belong to the clupeoids, an order of fish that show striking interannual or decadal variation in productivity and abundance, with the ability to persist at extremely low population numbers for 50–100 years then undergo a remarkable recovery with the population growing as fast as 40 percent per year (Mace et al. 2002). Sammons (2013) also noted that increases of Alabama shad populations can happen very quickly, as demonstrated by the rapid rise in population size between 2006–2009 and 2010–2012 (Sammons 2013). While the Alabama shad population appears to be much smaller based on the last 4 years of tag-recapture data as compared to the previous 7 years, we did not detect a discernable trend, the high interannual variability is not unexpected for this species, and the species is adapted to recover from very low numbers of fish, even if the population persists at depressed levels for long periods of time.

The studies in the ACF River system have produced the only abundance estimates, either historical or current, for Alabama shad in any river system. The following sections of the determination present the historical and current distribution of Alabama shad in other systems, which is primarily based on capture data from general multi-species surveys, project monitoring, captures incidental to other research studies, and anecdotal information.

Mississippi River

The Mississippi River is the largest river basin in North America and drains portions of Montana, the Dakotas, Nebraska, Minnesota, Wisconsin, Iowa, Illinois, Indiana, Ohio, West Virginia, Pennsylvania, Colorado, Kansas, Missouri, Kentucky, Tennessee, Texas, Oklahoma, Arkansas, Mississippi, and Louisiana. Alabama shad were historically found in parts of the Mississippi River and its tributaries and several small spawning populations remain.

Upper Mississippi River Mainstem

The Upper Mississippi River is the portion of the river upstream of Cairo, Illinois. In the Upper Mississippi River, Alabama shad were recorded in the 1994 Annual Status Report: ''A Summary of Fish Data in Six Reaches of the Upper Mississippi River'' (Gutreuter *et al.* 1997) as being captured in a long-term fish resource monitoring program. The report was compiled by the U.S. Geological Survey (USGS), Minnesota DNR, Wisconsin DNR, Iowa DNR, the Illinois Natural History Survey, and the Missouri Department of Conservation. However, the Gutreuter *et al.* (1997) report did not include specific data on Alabama shad and other species, such as the number of fish caught, gear used, the location of capture, etc. Presently, there are 10 locks and dams on the Upper Mississippi River (north of the confluence with the Ohio River) that border the state of Iowa and an additional seven locks and dams south of the state that could prevent Alabama shad from reaching historical spawning grounds within Iowa (Steuck *et al.* 2010). In 1915, 48 Alabama shad were collected from the Upper Mississippi River near Keokuk, Iowa, and it was reported that some of these fish were able to make it past the Keokuk Dam (Lock and Dam #19) farther upstream (Coker 1928). Iowa DNR has collected no Alabama shad in the Upper Mississippi River in the areas between Lock and Dams #16 and #19 in the last 25 years (Smith *et al.* 2011). Barko's study (2004b) in the Upper Mississippi River, near the confluence of the Ohio and Missouri Rivers, found no Alabama shad between 1994 and 2000. A species richness study conducted by Koel (2004) indicates that the Upper Mississippi River in the state of Illinois does not support Alabama shad. The Upper Mississippi River Conservation Committee also indicated that there are only historical records of Alabama shad in the Upper Mississippi River, and none have been caught in over 10 years (Steuck *et al.* 2010). However, Wilcox (1999) and Ickes (2014) both list Alabama shad as being present in the Upper Mississippi River.

Missouri River

The Missouri River is a major tributary of the Mississippi River and flows through Montana, North and South Dakota, Nebraska, Iowa, Kansas, and Missouri. The lower Missouri River and its tributaries, located in the center of Missouri, probably supported the greatest number of Alabama shad in the state, although the records are limited (Smith *et al.* 2011). The Missouri Fish and Wildlife Information System, maintained by the Missouri Department of Conservation (MDC), states that Alabama shad spawn in the Missouri River and two of its tributaries, the Gasconade and Osage Rivers (MDC 2015, Pflieger 1997). The MDC's earliest record of an Alabama shad in the Gasconade River was 23 fish collected in 1947 (C. Gemming, MDC biologist, pers. comm. to J. Rueter, NMFS, September 21, 2016). A study determining the habitat use of juvenile fish in the lower Missouri River did not identify Alabama shad as being present between 1987 and 1988 (Brown and Coon 1994). However, Galat (2005) recorded the presence of the species in the Lower Missouri River in 2005, and stated that Alabama shad are rare in the Ozark Plateaus region in southern Missouri. The MDC reported the collections, by trawl and electrofishing, of Alabama shad from the Gasconade River (41 fish in 1989, 4 fish in 1997, 17 fish in 2000, and 26 fish in 2012); the purposes and locations of those studies were varied (*e.g.,* project monitoring and fish surveys) and they were not directed at collecting Alabama shad (C. Gemming, MDC biologist, pers. comm. to J. Rueter, NMFS, September 21, 2016).

Meramec River

The Meramec River is a tributary of the Mississippi River whose confluence is just south of the confluence of the Missouri River. The entire length of the river is contained within Missouri. Alabama shad were known to spawn in the Meramec River prior to 1978 (Mills *et al.* 1978) and a second spawning location in the river was discovered in the Big River tributary (Mills *et al.* 1978). Between 1980 and 1997, 88 juvenile and 8 adult Alabama shad were captured in Missouri rivers, including the Meramec River (Pflieger 1997). The University of Tennessee reported the collection of 33 Alabama shad from the Big River shoals in 1990 (Fishnet2 2016, Catalogue #29.12) Burr *et al.* (2004) and Buchanan *et al.* (2012) list the Meramec as one of the remaining spawning rivers of Alabama shad. The Missouri Fish and Wildlife Information System, maintained by the Missouri Department of Conservation, also states that Alabama shad spawn in the Meramec River (MDC 2015).

Lower Mississippi River Mainstem

The Lower Mississippi River is the portion of the river downstream of Cairo, Illinois. Alabama shad historically used the Mississippi River as a means to reach many of its tributaries, but none have been found in the lower portion of the waterway in recent years. Surveys conducted by USACE on the Lower Mississippi River (north of Baton Rouge, Louisiana) in the early 1980s show a slow decline in the number of adult and juvenile Alabama shad (Pennington 1980, Conner 1983, Smith *et al.* 2011). From the Thibodaux Weir on Bayou Lafourche, between Donaldsonville and Raceland, Louisiana, a single Alabama shad was caught using a gillnet in March of 2006 (Dyer 2007). Three Alabama shad were caught in Louisiana just west of Atchafalaya Bay between 1992 and 1996 by the Louisiana Department of Wildlife

and Fisheries (Smith *et al.* 2011). However, no records of shad have been reported in recent years in annual fish surveys conducted by USGS in other Louisiana streams and rivers (Smith *et al.* 2011).

Ohio River

The Ohio River is the largest tributary by volume of the Mississippi River and flows through Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, and Illinois. Although the species was present and abundant enough to support a small and brief commercial fishery during the late 19th century and early 20th century in Ohio, by 1989 the majority of Alabama shad had been extirpated from the Ohio River (Pearson and Pearson 1989). The USGS has not collected any Alabama shad from the Ohio River since 1993 and the USFWS has no records of Alabama shad in its database (Smith *et al.* 2011). Hammerson (2010) cites that Etnier and Starnes (1993) recorded the collection of a large adult from the Tennessee River (which flows into the Ohio River) just below Kentucky Dam in Marshall County, Kentucky, in July 1986. However, there have been no recent observations or collections of the species in the Tennessee River (Smith *et al.* 2011). Although the species was once present in the Clinch and Stones Rivers (tributaries of the Tennessee River), no collections of Alabama shad were made in these systems after 1993 (Hammerson 2010, Etnier and Starnes 1993). Historically, the Wabash River, another tributary of the Ohio River, was said to have a ''very limited number'' of Alabama shad in its waters in the mid-1800s (Daniels 1860).

Arkansas River

The Arkansas River is a major tributary of the Mississippi River that drains Colorado, Kansas, Oklahoma, and Arkansas. Alabama shad have not been collected in the Arkansas River since an 1892 collection of one specimen in the Mulberry River tributary (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013). A few specimens were captured from the Poteau River, a tributary of the Arkansas River, prior to the 1950s (Cross and Moore 1952), but Lindsey *et al.* (1983) stated the species' status was unclear. A compilation of 20 years of fish collection data from Arkansas riverine systems by Matthews and Robison (1988) indicated no records of Alabama shad. The species may have been extirpated from the watershed by the construction of dams in the McClelland-Kerr Arkansas River Navigation System in the early 1970s (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013).

Red River

The Red River, a major tributary of the Mississippi River, flows through Texas, Oklahoma, Arkansas, and Louisiana. The Washita, North Fork, Kiamichi, and Little Rivers, as well as Lake Texoma, are part of the Red River system. A compilation of 20 years of fish collection data from Arkansas riverine systems by Matthews and Robison (1988) indicated no records of Alabama shad in the Arkansas portion of the river. During a 6-year sampling period from 1996–2001, no Alabama shad were caught in the Red River (Buchanan *et al.* 2003). In a study on the effects of land alterations on fish assemblages, Rutherford *et al.* (1992) found no shad in the Little River. Presumably, Alabama shad are no longer able to reach their former spawning grounds in the Little River due to degradation of river habitat as a result of land modification (Buchanan *et al.* 2003). No Alabama shad were collected from Lake Texoma or any of its adjoining rivers (Red and Washita Rivers) between 1948 and 1958 (Riggs and Bonn 1959). The Denison Dam likely excluded the species from these areas. The Altus Dam also likely excluded the species from Red River tributaries, including the North Fork, Brier Creek, and Kiamichi River, since there are no longer reports of Alabama shad (Winston and Taylor *et al.* 1991, Matthews *et al.* 1988). In recent years, during general river surveys conducted by the University of Oklahoma, Alabama shad have not been collected in southeast and central Oklahoma (Smith *et al.* 2011).

Illinois and Marys Rivers

The Illinois and Marys Rivers are both minor tributaries of the Mississippi River contained solely within the state of Illinois. While there are historical records of shad within Illinois rivers (Smith *et al.* 2011), the historical abundance of Alabama shad in Illinois is not known. The first collection of Alabama shad from the Illinois River was 47 fish taken in 1950 (Moore 1973). In a thorough report of the biodiversity of the state's rivers and streams, Page (1991) found no evidence of Alabama shad. However, Burr *et al.* (1996) reported two juvenile Alabama shad, one near the mouth of the Marys River in 1994 and one in the Grand Tower in Devils Backbone Park in 1995. These two captures support the hypothesis that some adult shad were able to spawn in these areas during that time. Before these two captures, the last Alabama shad to be captured in Illinois was a juvenile in 1962 (Burr *et al.* 1996). Alabama shad appear to have been extirpated from many Illinois rivers and are considered rare in the state. Annual field studies conducted in the Illinois River by Illinois State University have resulted in no additional records of Alabama shad (Smith *et al.* 2011).

White River

The White River is a minor tributary of the Mississippi River that flows through Missouri and Arkansas and was recently discovered to contain a spawning population of Alabama shad (Buchanan *et al.* 2012). Matthews (1986) reported that no Alabama shad were found in White River tributaries from 1972–1973 or 1981–1983. However, the Arkansas Fish and Game Commission provided information during the public comment period on our 90-day finding that three Alabama shad were collected from the White River in 2006 (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013). Buchanan *et al.* (2012) were the first to report the species in the White River drainage when they collected 3 juvenile Alabama shad over a sand-gravel bar in August 2006. The researchers believe the shad were spawned in the mainstem White River or one of its tributaries and they noted that the morphology and size of the White River specimens compared well with Alabama shad previously reported from other drainages in the state.

Ouachita River

The Ouachita River is a minor tributary of the Mississippi River and flows through Arkansas and Louisiana. The Ouachita River system includes the Little Missouri and Saline Rivers. The Ouachita and Little Missouri Rivers contain spawning populations of Alabama shad (Buchanan *et al.* 1999). Four pre-1900 records of Alabama shad from the Ouachita River are known: One specimen near Hot Springs and three at Arkadelphia (Buchanan *et al.* 1999). Buchanan *et al.* (1999) reported that 16 juvenile specimens were collected from the Saline River in 1972 and 3 juvenile specimens at the juncture of the Little Missouri and Ouachita rivers in 1982. Buchanan *et al.* (1999) collected over 300 juvenile Alabama shad from the Ouachita River and the Little Missouri River between 1997 and 1998, and noted that Alabama shad were abundant at the four sites where they were collected. Buchanan *et al.* (1999) also documented a 1.3-kilogram (kg) adult taken on an artificial lure in April 1997

in the Ouachita River below Remmel Dam. The Arkansas Fish and Game Commission provided information during the public comment period on our 90-day finding that 10 Alabama shad were collected from the Ouachita River in 2005 during a survey to evaluate the influence of increased minimum flows after the relicensing of the Remmel Dam (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013). Several Alabama shad from the Ouachita River were also collected and photographed on October 12, 2012, for the purpose of illustrating a new edition of the ''Fishes of Arkansas'' (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013).

Although the Saline River in Arkansas is the only free flowing river left in the state, there have been no recent reports of Alabama shad (Buchanan 1999). The Monroe Museum of Natural History at the University of Louisiana has 16 Alabama shad that were collected from the Saline River in 1972 (Buchanan *et al.* 2012). During the public comment period on the 90-day finding, the Arkansas Fish and Game Commission provided information from Layher *et al.* (1999) that their targeted assessment of Alabama shad at 80 sites in the Saline River did not encounter the species in the 4,863 fish collected and that severe drought conditions may have influenced the results (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013). Throughout the year, Arkansas State University conducts general fish sampling in the state's rivers and no captures of Alabama shad have been reported in recent years (Smith *et al.* 2011).

Lake Pontchartrain, Lake Maurepas, and the Tangipahoa River

Alabama shad are only caught sporadically in the state of Louisiana, and there are limited data for the species in its rivers (Smith *et al.* 2011). The Tangipahoa River begins in southwest Mississippi and drains into Lake Pontchartrain in Louisiana. Due west of Lake Pontchartrain, and connected by Pass Manchac and North Pass, is Lake Maurepas. No Alabama shad were caught in the Tangipahoa River in 1994 (Knight 1994) and none were collected in Lake Pontchartrain between 1996 and 2000. However, individuals were collected in Lake Maurepas from 1983 to 1984 and in 2009 using trawl and gillnets, indicating that some fish still pass through Lake Pontchartrain (Hastings 1987, O'Connell *et al.* 2004, O'Connell *et al.* 2009).

Pearl River

Multispecies studies of the Pearl River were conducted by Tulane University from 1963–1988 (Gunning and Suttkus 1990). Gunning and Suttkus (1990) looked at the relative abundance of 84 species over the course of the 25-year study, with sampling occurring at multiple stations in Louisiana and Mississippi either on a quarterly or annual basis. At stations where quarterly sampling was conducted, the spring survey occurred in February in the Mississippi portion of the river and April in the Louisiana portion of the river. Approximately 30 minutes were spent at each station unless the river was flooded and water depth limited sampling ability. Records from the Gunning and Suttkus (1990) sampling surveys show a steady decline in catches of Alabama shad. Sampling occurred in 16.1 km of the river above and below Bogalusa, Louisiana, for 25 years; a 64.4 km section of the West Pearl River was sampled for 16 years; and, a 64.4 km portion of the East Pearl River was sampled for 16 years. Between 1963 and 1965, 384 Alabama shad were caught from all river segments combined. Between 1965 and 1979, only 33 Alabama shad were captured. One Alabama shad was captured in the Pearl River between 1979 and 1988 (Gunning and Suttkus 1990). Gunning and Suttkus (1990) attributed the declining catch of Alabama shad to declining abundance of the species.

In the Gunning and Suttkus (1990) study, only one 30-minute multispecies survey was conducted during the spring once per year at some of their Pearl River stations. The studies targeting Alabama shad in the ACF River system are conducted over a 3-month period each year to ensure their collections encompass the peak spawning migration of Alabama shad, which can vary from year to year based on factors such as temperatures and river discharge (Sammons 2013, 2014, Kern 2016). Gunning and Suttkus (1990) state that the consistency of their methodology and the length of their study are sufficient to accurately indicate relative abundance. Gunning and Suttkus (1990) does provide one of the few long-term studies available for this species. However, as noted previously, low numbers of recorded Alabama shad individuals may be due, at least in part, to insufficient sampling effort during appropriate times (*i.e.,* spawning migrations) and with the appropriate gear to target the species (Mettee and O'Neil 2003). This was observed in the ACF in large differences in Alabama shad captured in multispecies surveys conducted by FFWCC (J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013) versus studies targeting Alabama shad in ACF (Young 2010, 2011) during the same time period.

Smith *et al.* (2011) state no Alabama shad have been captured in the Pearl River since then, although FishNet contains records of Alabama shad captured from the Pearl River in 1996 by the Illinois Natural History Survey and 2004 by Tulane University (Fishnet2 2016, Catalogue #38236 and #198208).

Pascagoula River

The Pascagoula River system, made up of the Pascagoula, Leaf, and Chickasawhay Rivers, is the only system within the state of Mississippi inhabited by Alabama shad (Mickle *et al.* 2010, Mickle 2010). A total of 531 Alabama shad (all age classes) were captured in the Pascagoula River system between 2004 and 2007 (307 from the Pascagoula River, 200 from the Leaf River, and 24 from the Chickasawhay River; Smith *et al.* 2011). The Pascagoula River system has one of the remaining spawning populations of Alabama shad as evidenced by Mickle's (2006) collection of 193 age-0 Alabama shad from 10 sites between 2004 and 2005. The Leaf and Pascagoula Rivers contain the highest populations of Alabama shad within this system due to their unimpounded waters and variety of habitats, with a smaller Alabama shad population in the Chickasawhay River (Mickle *et al.* 2010, Mickle 2010). Between 2004 and 2006, Mickle *et al.* (2010) captured 133 juvenile Alabama shad (66 from the Leaf River, 55 from the Pascagoula River, and 12 from the Chickasawhay River). Small numbers of Alabama shad were also caught in Black Creek, a tributary of the Pascagoula River, in 1986 and the late 1990s (Adams *et al.* 2000).

Mobile Bay and the Mobile River Basin

The Mobile River basin spans Mississippi, Alabama, Georgia, and Tennessee. The Mobile River, which empties into Mobile Bay, branches upstream into the Alabama, Cahaba, Tallapoosa, Coosa, Tombigbee, and Black Warrior Rivers. The Alabama shad was first described as a species in 1896 in the Black Warrior River near Tuscaloosa, Alabama (Jordan and Evermann 1896). Alabama shad were once prevalent in the Mobile River basin (Evermann and Kendall 1897).

Numerous juvenile Alabama shad were recorded in the Alabama River in 1951, the late 1960s, and the early 1970s

(Boschung 1992, Mettee and O'Neil 2003). A single Alabama shad (15.3 cm) was also captured in Dog River (a small tributary draining into Mobile Bay) in 1964 (Williams and Gaines 1974, Boschung 1992, Hammerson 2010). On the Alabama River, Claiborne Lock and Dam was opened for navigation in 1969 (Freeman *et al.* 2005). Upstream from Claiborne Lock and Dam, Millers Ferry Lock and Dam was constructed for the purpose of both power generation and navigation, with the lock opening in 1969 and power coming on line in 1970. Sampling in Mobile Bay in 1972 yielded no Alabama shad. Two individuals were caught in the Alabama River in the 1990s: One in 1993 below Claiborne Lock and Dam, and one in 1995 below Miller's Ferry Lock and Dam (Smith *et al.* 2011). More recently, in February 2004, a single specimen (32.8 cm) was captured by the Alabama Department of Conservation and Natural Resources, Marine Resources Division, in Heron Bay (adjacent to Mobile Bay), presumably making its upstream spawning migration (Smith *et al.* 2011). The Alabama Division of Wildlife and Freshwater Fisheries conducted a year-long study in 2009 in the Alabama River that did not collect any Alabama shad.

Despite the existence of a thorough historical fisheries record of the Cahaba River system, no recent captures of Alabama shad from the upper reaches of the Cahaba River are documented. Both the Pierson *et al.* (1989) general fish faunal survey of the river from 1983–1988 and the Onorato *et al.* (1998 and 2000) sampling between 1995–1997 found no Alabama shad present in the upper region of the Cahaba River. The last Alabama shad collected was in 1968 and the only previously recorded fish reported in the Cahaba River at Centreville, Alabama, was in 1965 (Onorato *et al.* 2000, Boschung 1992). The last specimen to be captured from the Coosa River was in 1966 (Boschung 1992). No Alabama shad were captured during fish sampling in the Tallapoosa River by Freeman *et al.* (2001).

Mettee and O'Neil (2003) state that Alabama shad have not been found in the Tombigbee River since the 1901 construction of the Tombigbee lock system in the waterway. However, records provided by the Mississippi Museum of Natural Science during the public comment period on our 90-day finding showed that 5 Alabama shad were captured in the Tombigbee River in 1969 and one in 1971 (M. Roberts, Curator of Fishes, Mississippi Museum of Natural Science, pers. comm. to K. Shotts, NMFS, October 21, 2013). In the Black Warrior River of Alabama, where the species was first described in 1896, one Alabama shad was subsequently collected, over one hundred years later in 1998 (Mettee and O'Neil 2003).

Conservation locking, similar to efforts conducted in the ACF River system, was undertaken on the Alabama River at Claiborne Lock and Dam and Miller's Ferry Lock and Dam in 2009 by the Alabama Department of Conservation and Natural Resources, USACE, and Auburn University after USGS suggested the locks could be used as a means of fish passage (Simcox 2012). At that time, no efforts were made to quantify passage efficiency or even monitor which species may be passing upstream and downstream through the locks. Freeman *et al.* (2005) stated that substantial potential for restoring populations of migratory, large-river fishes such as Alabama sturgeon (*Scaphirhynchus suttkusi*), Gulf sturgeon, Alabama shad, and southeastern blue sucker (*Cycleptus meridionalis*) entailed modifying Claiborne and Miller's Ferry, the two downstream-most dams on the Alabama River. Enhancing fish passage at Claiborne and Millers Ferry Locks and Dams could restore connectivity between the lower Alabama River and the Cahaba River, encompassing over 400 km of riverine habitat from the Gulf to the fall line.

In 2014, a study was initiated to determine if conservation locking could be used to pass Alabama Shad upriver or downriver during spawning season through the navigation locks at Claiborne Lock and Dam and Miller's Ferry Lock and Dam. With support from the FFWCC and Georgia DNR, Alabama shad from the ACF River system were collected and tagged before being stocked in the Alabama River. Fifteen Alabama shad were tagged and released below Claiborne Lock and Dam, and an additional 38 Alabama shad were tagged and released above the dam. These fish were tracked both upstream and downstream of the dam. Of the Alabama shad released above the dam, 18 were later detected at 18 different locations, and 7 definite mortalities (no movement between successive locations) were eventually confirmed. The 7 confirmed mortalities occurred in the section of the Alabama River below Claiborne Lock and Dam to its confluence with the Tombigbee River. Kern and Sammons (2015) note that further research is necessary to determine whether Alabama shad found suitable spawning habitat in this location and halted downstream movements, or whether they died as a result of cumulative stress from handling and transport. One fish was detected approximately 53 mi (85 km) below Claiborne Lock and Dam, indicating successful downriver passage through the lock. Twenty fish were never detected. There were large areas where no tagged fish were detected, and some fish moved over 50 mi (80 km) in 2 days. ''Leap-frogging'' was also observed, with shad being detected at downstream and upstream locations, but escaping detection in between.

Of the 15 tagged fish released below Claiborne Lock and Dam, 3 were detected 93 times. One fish was detected 12 days after release below Gravine Island (just north of Mobile Bay) and was detected again upriver 6 days later, just below Claiborne Lock and Dam. This movement pattern indicated ''fallback'' (fish that move a great distance downriver shortly after stocking), but in this case, the fish eventually moved upriver. Another fish remained in the vicinity of Claiborne Lock and Dam for 9 days and was not detected thereafter. A third fish was detected several times moving downstream after release but not later. No tagged Alabama shad were detected above Claiborne Lock and Dam and researchers hypothesized this low number could have been due to high water events or mortalities.

In 2015, 27 Alabama shad from the ACF River system were tagged and stocked below Miller's Ferry Lock and Dam (and above Claiborne Lock and Dam). Detections of tagged fish were much higher in 2015 than 2014, likely due to higher river flows in 2014 (Kern and Sammons 2015), with 17 of the 27 fish detected for a total of 371 detections. Similar to 2014, large movements over short time periods were observed, with most of the movements being in a downstream direction. No fish were found to have successfully navigated upstream of Miller's Ferry Lock and Dam, although many of the fish passed downstream of Claiborne Lock and Dam.

Escambia River and Conecuh River

The Conecuh River begins in Alabama and becomes the Escambia River at the Florida border. Alabama shad were documented in the Escambia/Conecuh River system as early as 1900 (Evermann and Kendall 1900). This system contains one of the known remaining Alabama shad spawning populations (Smith *et al.* 2011). Bailey (1954) reported the capture of two individuals in the Escambia River in 1954. In 2009, two Alabama shad were caught in the Escambia River by FFWCC, one in spring and one in the fall (Smith *et al.* 2011; E. Nagid, FFWCC, pers. comm. to K. Shotts, NMFS, November 26, 2014). Studies indicate there are small populations of Alabama shad in

southern Alabama, including within the Conecuh River (Barkuloo 1993, Adams *et al.* 2000, Mettee and O'Neil 2003). Smith *et al.* (2011) reported that 11 Alabama shad were captured in the Conecuh River in 2000 and one in 2010 by the Alabama Department of Wildlife and Fisheries.

Choctawhatchee River

The Choctawhatchee River begins in Alabama. As it flows south, it is joined by one of its tributaries, the Pea River, then continues through the Florida panhandle and into the Gulf of Mexico. Some studies indicate there are small spawning populations of Alabama shad in southern Alabama, including in the Choctawhatchee and Pea Rivers (Barkuloo 1993, Adams *et al.* 2000, Mettee and O'Neil 2003, Young 2010). Smith *et al.* (2011) reported the capture of 400 Alabama shad from the Choctawhatchee River system in 2000.

Ochlockonee River

Alabama shad were historically present in the Ochlockonee River, a fast running river that flows from Georgia into Florida. Smith *et al.* (2011) reported that the last specimens to be collected in the Ochlockonee River were captured in 1977 below Jackson Bluff Dam (Swift 1977). During the public comment period announced in the 90-day finding, FFWCC reported that 4 Alabama shad were collected near the Talquin (Jackson Bluff) Dam in 2011 (J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013).

Econfina River

The Econfina River is a minor river draining part of the Big Bend region of Florida. It empties into Apalachee Bay. Historical data for Alabama shad are not available for this river, but, FFWCC reported during the public comment period that 1 Alabama shad was collected in the Econfina River in 2006 (J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013).

Suwannee River

The Suwannee River originates from the Okefenokee Swamp in Georgia and runs south through Florida. Historically, the Suwannee River has been the easternmost boundary of the Alabama shad's range (Herald and Strickland 1946). There is still a spawning population of Alabama shad in the Suwannee River (Smith *et al.* 2011). Sporadic sampling in the Suwannee River has included Alabama shad (Mettee and O'Neil 2003). Records from the Florida Museum of Natural History and the FFWCC show that 3–27 Alabama shad were collected annually between 1990–1995 (FishNet2 2016; search terms ''*Alosa alabamae,*'' ''1990–2016,'' and ''Suwannee''). Mickle (2010) collected 6 fish. Smith *et al.* (2011) reported that FFWCC caught 15 Alabama shad on the Withlacoochee River, a tributary of the Suwannee River, in late November 2010 (Smith *et al.* 2011). The Florida Museum of Natural History also shows that 2 Alabama shad were collected in 2015 (FishNet2 2016; Catalogue #238044 and #238066).

Extinction Risk Assessment

We estimated both the current extinction risk for Alabama shad and the anticipated risk in the foreseeable future. We defined the ''foreseeable future'' as the timeframe over which threats or the species' response to those threats can be reliably predicted to impact the biological status of the species. First, we evaluated demographic factors associated with population viability (abundance, productivity, spatial distribution, and diversity) and how they are contributing to the extinction risk of Alabama shad. We then performed a threats assessment using the factors listed in Section 4(a)(1) of the ESA by identifying the severity of threats that exist now and estimating their severity in the foreseeable future.

We used the methods developed by Wainwright and Kope (1999) to organize and summarize our findings on the contributions of the demographic factors and threats listed in ESA Section 4(a)(1) to the extinction risk of Alabama shad. This approach has been used in the review of many other species (Pacific salmonids, Pacific hake, walleye pollock, Pacific cod, Puget Sound rockfishes, Pacific herring, and black abalone, and foreign sawfishes) to summarize the status of the species according to demographic risk criteria. McElhany *et al.* (2000) examined short and long-term trends in abundance, productivity, spatial structure, and genetic variability as the primary indicators of risk. Populations that are more fragmented have less genetic exchange and therefore less connectivity, increasing the risk of extinction. Loss of fitness and loss of diversity can occur from random genetic effects and increase the risk of extinction for a species. We used the five-level qualitative scale from Wainwright and Kope (1999) to describe our assessment of the risk of extinction for Alabama shad for each demographic category, both currently and in the foreseeable future. We also used this scale to describe our assessment of each of the threats from ESA Section 4(a)(1). At the lowest level, a factor, either alone or in combination with other factors, is considered ''unlikely'' to significantly contribute to risk of extinction for a species. The next lowest level describes a factor that, on its own, is considered to be at ''low'' likelihood of contributing to the extinction risk, but could contribute in combination with other factors. The next level is considered a ''moderate'' risk of extinction for the species, but in combination with other factors contributes significantly to the risk of extinction. A ranking of ''likely'' means that factor by itself is likely to contribute significantly to the risk of extinction. Finally, the most threatening factors are considered ''highly likely'' to contribute significantly to the risk of extinction.

Both ''low'' and ''moderate'' rankings require that the demographic factor or threat be considered alone, as well as in combination with other factors. In this determination, we first consider each of the demographic factors and threats independently, then evaluate how they may interact in combination to contribute to the extinction risk of Alabama shad. Our rankings of demographic factors and threats do not translate directly to extinction risk conclusions. Ranking simply describes how we considered the information. For instance, one or more demographic factors could be ranked as ''highly likely'' to be contributing to the extinction risk of a species without concluding that the species is threatened or endangered. For example, low abundance may be considered to present a moderate threat to the extinction risk of Alabama shad, but is offset by the species' high productivity and wide spatial distribution.

In some cases, there was not enough information or too much uncertainty in pending outcomes to rank a threat's contribution to the risk of extinction for Alabama shad using the categories established by Wainwright and Kope (1999). In those cases, we classify the contribution of the threat to the extinction risk of Alabama shad as being ''unknown.'' Even for threats we ultimately classify as unknown, we provide and evaluate whatever information is available, in some cases providing information on how related surrogate species (*e.g.,* other *Alosas*) may be responding to the identified potential threat. NMFS recently issued updated ESA listing guidance (May 26, 2016) that states in order to list a species, the agency must affirmatively determine on the basis of a set of scientific facts that a species is at risk. The ESA does not allow for listings to be based on giving the species the benefit of the doubt. The guidance

clarifies that in the absence of any information about threats to a species, the null hypothesis is that the risk is low (generally low, not as defined by Wainwright and Kope (1999). Specific supporting information must be cited in order to elevate the potential threat to a moderate or high risk category (again generally, not as defined by Wainwright and Kope (1999). In cases where we classified a threat as having an ''unknown'' risk to the species, we considered whether the ''unlikely'' or ''low'' category established in Wainwright and Kope (1999) was most appropriate. Because the ''low'' category by definition states that a threat could contribute to the extinction risk of a species in combination with other factors, per the listing guidance, we ultimately evaluated ''unknown'' threats as being ''unlikely'' to significantly contribute to the risk of extinction for Alabama shad.

We determined the extinction risk for the species as a whole by integrating the demographic risks and the threats assessment, including considerations of any uncertainty in the risks and threats. We made a determination as to whether the species warrants listing as threatened or endangered, or whether we believe listing is not warranted. Finally, we determined whether there was a significant portion of the species' range that may warrant listing as threatened or endangered.

Foreseeable Future

Per NMFS' May 2016 revised listing guidance, the ''foreseeable future'' describes the extent to which the Secretary can, in making determinations about the future conservation status of the species, reasonably rely on predictions about the future (Department of the Interior Solicitor's Memorandum M–37021, ''The Meaning of 'Foreseeable Future' in Section 3(20) of the Endangered Species Act'' (Jan. 16, 2009)). Those predictions can be in the form of extrapolation of population or threat trends, analysis of how threats will affect the status of the species, or assessment of future events that will have a significant new impact on the species. We believe that the appropriate period of time corresponding to the foreseeable future should account for the Alabama shad's life-history characteristics and the most significant threats facing the species.

The Alabama shad is an early-maturing species (Mickle *et al.* 2010) with high productivity (Mettee and O'Neil 2003, Ingram 2007). Like other members of the *Alosa* family, Alabama shad populations may fluctuate significantly from year to year (Sammons and Young 2012). The time period associated with the foreseeable future for Alabama shad should be long enough to assess population response while taking into consideration the high variability inherent in the species. Below, we discuss generation time in relation to our ability to reliably predict the species' conservation status.

In defining the foreseeable future, we considered generation time, specifically defined here as the time it takes for a sexually mature Alabama shad to be replaced by offspring with the same spawning capacity. Age-2 to age-4 fish make up the majority of spawning Alabama shad; therefore, using our definition, the generation time for Alabama shad is 4–8 years. Generation time is inversely related to productivity and/or resilience. Highly productive species with short generation times are more resilient than less productive, long-lived species, as they are quickly able to take advantage of suitable conditions for reproduction (Mace *et al.* 2002). Species with shorter generation times, such as Alabama shad (4–8 years), experience greater population variability than species with long generation times, because they maintain the capacity to replenish themselves more quickly following a period of low survival (Mace *et al.* 2002). We believe that the impacts from the threats on the biological status of the species can be confidently predicted within the 12- to 24-year (three-generation) timeframe. Given their high population variability, projecting out further than three generations could lead to considerable uncertainty in estimating the population trajectory for Alabama shad. The timeframe of three generations is widely used to assess trends in populations and has been applied to decision-making models by many other conservation management organizations, including the American Fisheries Society (AFS), the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES), and the International Union for Conservation of Nature (IUCN).

The foreseeable future timeframe is also a function of the reliability of available data regarding the identified threats and extends only as far as the data allow for making reasonable predictions about the species' response to those threats. In our extinction risk assessment, we determined the abundance of Alabama shad and the presence of dams are the highest ranked threats, both contributing a moderate level of risk to Alabama shad. The remaining threats are ranked as either contributing a low or unknown level of risk to Alabama shad, or being unlikely to contribute to the species extinction risk.

Small populations may have less of a buffer against threats than large populations (McElhany *et al.* 2000). We ranked low abundance as posing a moderate threat to Alabama shad's extinction risk. Our consideration of generation time above discusses how the abundance of Alabama shad is variable, and the species can fluctuate widely from year to year. We determined projecting out further than three generations could lead to considerable uncertainty in estimating the population trajectory for Alabama shad.

We also consider the timeframe over which the effect of dams on Alabama shad populations can be predicted. Dams are believed to be the main cause of the initial decline of Alabama shad. Existing dams continue to block habitat and cause downstream effects today, but few new dams have been built since the mid-1980s (Graf 1999). The threat of dams to Alabama shad has not increased for the past 30 years, and is not expected to increase in the future due to the advent of environmental laws and public awareness that occurred after the era of big dam building (Doyle *et al.* 2003, Graf 1999). The threat of dams to Alabama shad is more likely to decrease in the future, as dams are either removed or additional fish passages are added. Environmental concerns are coinciding with a policy window in which many private dams are coming up for regulatory re-licensing with the Federal Energy and Regulatory Commission (FERC) and operational guidelines for publicly-operated dams are being reviewed (Doyle *et al.* 2003). Upstream effects from dams may be reduced through fish passage technology, which is becoming increasingly efficient (Roscoe and Hinch 2010). Fish passage may be voluntarily implemented at dams, or even required by Federal regulations in some instances. Downstream effects from dams are also becoming better understood and dam operators are becoming more willing and able (and may be required in some instances) to alter operations to minimize the ecological effects downstream (Poff and Hart 2002). Further, an estimated 85 percent of the dams in the United States will be near the end of their operational lives by 2020 (Doyle *et al.* 2003). Economic considerations and environmental concerns may result in dam removals, as maintenance, operation, repairs are often much costlier than dam removal (Doyle *et al.* 2003, Stanley and Doyle 2003).

It is unknown to what extent the implementation of fish passage, modifications to dam operations, or dam removal will occur in rivers inhabited by Alabama shad. The lack of new dam building in the past 30 years coupled with increased environmental regulation and public awareness makes it unlikely that the threat of dams to Alabama shad will increase and more likely that there could be a decrease of this threat to the species. However, we cannot predict where dam modifications or removal may occur, and how Alabama shad may be affected. Our ability to predict the response of Alabama shad populations to the threat is limited by the life history characteristics of the species (*i.e.,* its variability in response to all of the factors affecting the population) rather than any variability in the threat of dams itself.

In defining foreseeable future, we further considered the interaction of demographic characteristics (parameters describing the viability of a population, such as abundance and productivity) and the species' response to various threats, primarily dams. Smith *et al.* (2011) conducted a population viability analysis (PVA) on Alabama shad in the ACF River system. Researchers selected 20 years as the timeframe over which the PVA could reliably model population responses of Alabama shad based on the species' demographic characteristics and various combinations of natural and anthropogenic threat scenarios affecting their survival and growth. The 20-year timeframe used in the PVA falls within the three-generation timeframe discussed above. This timeframe takes into account aspects of the species' life history and also allows the time necessary to provide for the recovery of populations. Thus, we determined for the purpose of the extinction risk assessment, a 20-year timeframe, corresponding approximately to the three-generation time period, to be appropriate for use as the foreseeable future for Alabama shad.

Demographic Risks

Threats to a species' long-term persistence are manifested demographically as risks to its abundance, population growth rate, spatial structure and connectivity, and genetic and ecological diversity. These demographic risks provide the most direct indices or proxies of extinction risk. A species at very low levels of abundance and with few populations will be less tolerant to environmental variation, catastrophic events, genetic processes, demographic stochasticity, ecological interactions, and other processes compared to large numbers in many populations (*e.g.,* Meffe and Carroll 1994, Caughley and Gunn 1996). A population growth rate that is unstable or declining over a long period of time has less resiliency to future environmental change (*e.g.,* Lande 1993, Middleton and Nisbet 1997, Foley 1997). A species that is not widely distributed across a variety of well-connected habitats is at increased risk of extinction due to environmental perturbations, including catastrophic events, compared to a species that is widely distributed (Schlosser and Angermeier 1995, Hanski and Gilpin 1997, Tilman and Lehman 1997, Cooper and Mangel 1999). A species that has lost locally adapted genetic and ecological diversity may lack the ability to exploit a wide array of environments and endure short- and long-term environmental changes (*e.g.,* Groot and Margolis 1991, Wood 1995). Assessing extinction risk of a species involves evaluating whether risks to its abundance, population growth rate, spatial structure, and/or diversity are such that it is at or near an extinction threshold, or likely to become so in the foreseeable future.

Abundance

A small population faces a host of risks intrinsic to its low abundance while large populations exhibit a greater degree of resilience (McElhany *et al.* 2000). The only population estimates available for Alabama shad are from the ACF River system in Florida, Alabama, and Georgia. This system is believed to have the largest population of Alabama shad. Population estimates fluctuated widely from 2005 to 2015. For instance, 26,193 Alabama shad were estimated to be in the system in 2011. The following year, the estimate of Alabama shad peaked at 122,578. Sammons and Young (2012) noted that the population sizes of species in the *Alosa* genus commonly fluctuate widely. Researchers in the ACF River system believe that Alabama shad abundance may be a response to conservation efforts in the system (Schaffler *et al.* 2015). They also note that variability in population number may be linked to environmental conditions. Specifically, Sammons and Young (2012) believe that heavy rainfall in 2009 may have led to strong year classes in 2010 and 2012.

No population estimates are available for other rivers, although several hundred Alabama shad have been captured in studies conducted in the past 15–20 years in the Pascagoula (Mississippi), Choctawhatchee (Florida/Alabama), and Ouachita (Arkansas/Louisiana) River systems. The annual Alabama shad population estimates in the ACF River system were developed through mark-recapture studies. The initial capture of less than a hundred to over 1,000 Alabama shad resulted in population estimates of thousands to over 100,000 Alabama shad. Mark-recapture can be used to produce abundance estimates without capturing every individual in the population because in addition to counting the number of individuals captured during the study, they estimate the detection probability of individuals (*i.e.,* the probability that an individual will be captured during the study; Yoccoz *et al.* 2001). Detection probability can be influenced by population size, but can also be influenced by the sampling season and methodologies used, as well as a species' habitat affinities (Gu and Swihart 2004). Population estimates cannot be reliably developed from studies that collect a species, but do not consider its associated detection probability. Pellet and Schmidt (2005) note that it is often very difficult, if not impossible, to detect all individuals, populations, or species, and found during their surveys that the detection probability for a common species of tree frog was very high, while the detection probability of a common toad species was very low. Yoccoz *et al.* (2001) note that detection probability is generally less than 100 percent and usually variable. Although we cannot estimate the population abundance of Alabama shad in the Pascagoula, Choctawhatchee, and Ouachita Rivers, based on the likelihood that the species' detection probability is less than 100 percent, we can infer that the sizes of those Alabama shad populations are greater than the hundreds of fish collected in those systems. For instance, during the 2013 targeted study in the ACF, 251 Alabama shad were captured and 1 recaptured to yield the population estimate of 2,039 (S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014).

Generally, the number of Alabama shad in rivers other than the ACF, Pascagoula, Choctawhatchee, and Ouachita is likely to be small. A multi-state, multi-agency report from 1994 (Gutreuter *et al.* 1997) indicates that Alabama shad were found in the Upper Mississippi River, but does not note the number or locations of fish caught. Smaller numbers (one to several dozens) of Alabama shad have been captured in the last 25 years in portions of the Lower Mississippi River, Mississippi River tributaries (Missouri, Marys, and

White Rivers), Mobile, Escambia, Conecuh, Ochlockonee, Econfina, and Suwannee Rivers.

Alabama shad was never an economically important species, and, therefore, information from fisheries statistics, such as landings data, is rare. Hildebrand (1963) noted that Alabama shad were considered unfit for human consumption, and the lack of demand produced no incentive to capture the species or record its presence and abundance. Most of the recent directed research studies on Alabama shad have occurred in the ACF and Pascagoula River systems. Capture data for other systems comes from general multi-species surveys, captures incidental to other research studies, and anecdotal information. Mettee and O'Neil (2003) note that low numbers of recorded Alabama shad individuals may be due, at least in part, to insufficient sampling effort during appropriate times (*i.e.,* spawning migrations) and with the appropriate gear to target the species. Hildebrand (1963) noted the importance of proper gear, citing greatly increased catches of Alabama shad that occurred in Kentucky when surface-fishing seines were substituted for bottom-fishing seines. The lack of data is echoed in the responses received from fish and wildlife agencies during the public comment period on our 90-day finding. The Arkansas Fish and Game Commission stated they could not assess the status of Alabama shad in their state because of the scarcity of information on the species, the lack of targeted surveys, and the unknown detectability of the species (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013). It is unknown whether the lack or low numbers of Alabama shad reported for many river systems accurately reflects the abundance in those systems or whether it is indicative of the lack of targeted studies, but ultimately, the population abundance in these areas is still unknown.

The threshold abundance below which Alabama shad populations cannot rebound (quasi-extinction) is unknown. In conducting the PVA on Alabama shad from the ACF River system, Smith *et al.* (2011) conservatively assumed 420 females as the threshold for quasi-extinction based on the lowest recorded population abundance for the ACF River system at the time (from Ely *et al.* 2008). That assumption was not based on a minimum number of females needed to recover the population, but instead the lowest number of females observed in the viable population during previous studies. In fact, Smith *et al.* (2011) report that a viable spawning population persists in the Suwannee River at the eastern edge of the species' range, even though sporadic sampling since 2003 has only reported a total of 6–15 individual Alabama shad. We do not have historical abundances of Alabama shad, which can be indicative of abundance levels associated with low extinction risk. However, populations may also be at low risk of extinction at abundance levels below historical levels, and accurate estimates of historical abundance are not essential for evaluating extinction risk. Information from other species in the *Alosa* genus indicates that the species can rebound from extremely low abundance. The 12-month determination for 2 species of river herring (78 FR 48944; August 12, 2013), which determined that listing alewives (*A. pseudoharengus*) and blueback herring (*A. aestivalis*) under the ESA was not warranted, states that highly fecund, short generation time species like river herring may be able to withstand a 95 to 99 percent decline in biomass (Mace *et al.* 2002). The 12-month determination (78 FR 48944; August 12, 2013) states that both alewives and blueback herring may have declined by more than 98 percent from their historical baseline (Limburg and Waldman 2009), but that the abundance of each species is stable or increasing, indicating the species are self-sustainable and are at a low to moderate-low risk of extinction.

Directed studies and current data on Alabama shad abundance are mostly lacking. The available population estimates for the ACF River system since 2005 are relatively large and highly variable. Ely *et al.* (2008) compared Alabama shad and American shad. They noted that, given the similarities in life history characteristics of Alabama shad and American shad and the similarities in discharge, drainage area, and latitude between the Apalachicola River and other southeastern rivers, the populations of adult Alabama shad and American shad might be expected to be similar. Ely *et al.* (2008) cited the number of American shad reaching the first barrier to migration in the Savannah River, estimated as nearly 190,000 (Bailey *et al.* 2004), and the number in the Altamaha River system estimated as 133,000 (Georgia DNR 2005), and concluded that the population size of the Alabama shad in the Apalachicola River from 2005–2007 (approximately 2,700–26,000 shad) was relatively small. Subsequent to the Ely *et al.* (2008) study, the numbers of Alabama shad in the Apalachicola River generally increased, ranging from 2,000–122,500 from 2008–2012. It is not known what the historical abundance of Alabama shad was in the ACF River system, but the Alabama Shad Restoration Plan for the ACF River System (NMFS *et al.* 2012) projected that the carrying capacity (the maximum population of a species that can survive indefinitely in a given environment) for Alabama shad in the ACF is approximately 1.3 million adults. Capture data from other systems are limited or lacking but suggest low to moderate sized populations in some rivers and absence in others.

The only current population estimates available for Alabama shad are in the ACF River system. Because Alabama shad were never commercially or recreationally important, few historical records exist. There are no recorded historical population sizes in any river systems for comparison, although anecdotal information on observations and small, short-lived fisheries provide some historical context (*e.g.,* Coker 1929, 1930). However, many researchers recognize that Alabama shad populations have experienced decline from historical population sizes (*e.g.,* Gunning and Suttkus 1990, Buchanan *et al.* 1999, Mettee and O'Neil 2003, Mickle *et al.* 2010).

Declines have been estimated in other *Alosa* species with longer historical records. Hall *et al.* (2012) attempted to estimate historical alewife populations in Maine for the years 1600–1900 using analyses of nineteenth and twentieth century harvest records and waterway obstruction records dating to the 1600s and estimated that obstructed spawning access reduced the annual alewife productivity per watershed to 0–16 percent of pre-dam estimates. The 12-month listing determination for river herring (78 FR 48944; August 12, 2013) reported that of the riverine stocks of alewife and blueback herring for which data were available and were considered in a stock assessment, 22 were depleted, 1 was increasing, and the status of 28 stocks could not be determined because the time-series of available data was too short. In most recent years, 2 riverine stocks were increasing, 4 were decreasing, and 9 were stable, with 38 rivers not having enough data to assess recent trends. Both alewives and blueback herring may already be at or less than 2 percent of the historical baseline. Because historical landings data are available for alewife and blueback herring, population modeling was feasible and used to determine the stability of the stocks in light of the declines. The conclusion of the 12-

month determination (78 FR 48944; August 12, 2013) was that listing alewife and blueback herring under the ESA was not warranted because the abundance of each species is stable or increasing, indicating the species are self-sustainable and are at a low to moderate-low risk of extinction.

Population sizes of Alabama shad and other *Alosa* species are known to be variable and the species can quickly rebound from low population numbers. Alabama shad are spawning and persisting in river systems along the Gulf Coast and in tributaries of the Mississippi River. Even smaller populations are considered to be self-sustaining (*e.g.,* eastern Alabama rivers, Mettee and O'Neil 2003, Suwannee River, Smith *et al.,* 2011). The range of Alabama shad appears to be stable (Smith *et al.* 2011). However, low abundance in combination with other factors could contribute significantly to the risk of extinction since smaller populations have less of a buffer against threats than larger populations. This aligns with the definition of a ''moderate risk'' under the risk classification system by Wainwright and Kope (1999).

For comparison, the next highest ranking under Wainwright and Kope's (1999) classification system is for a threat that is presently low or moderate, but is likely to increase to high risk in the foreseeable future if present conditions continue. Although based largely on anecdotal information rather than population estimates and trends, we believe there is sufficient evidence to indicate that there have been declines in the abundance of Alabama shad and their low abundance could contribute significantly to their long-term risk of extinction. However, we do not have information suggesting that threats to Alabama shad populations are likely to lead to further decline to the point that their abundance would present a high risk to the species. The primary threat that led to the initial decline of the species was the installation of dams that block access to upriver spawning habitat (evaluated under Factor A of this listing determination). Although most dams are still in place and represent an obstacle to spawning Alabama shad, very few dams have been built in the last 30 years (Graf 1999). Few environmental laws were in existence when the dams were originally built, but the development and implementation of conservation measures in the last 20 years (Doyle *et al.* 2003) are likely to lessen the effect of dams on Alabama shad rather than to pose an increasing threat to the species. Other threats evaluated in this listing determination are ranked as either contributing a low or unknown level of risk to Alabama shad, or being unlikely to contribute to the species extinction risk. As discussed in each of these sections evaluating these threats, we do not have information that they will increase in the foreseeable future. Therefore, we ranked abundance throughout its range as contributing a moderate level of risk to the overall current and foreseeable extinction risk of Alabama shad.

Productivity

Population growth rate (productivity) and factors that affect productivity provide information on how well a population is responding in the habitats and environmental conditions it is exposed to during its life cycle (McElhany *et al.* 2000). Whether a species' productivity has declined, or is declining, toward the point where populations may not be sustainable and whether habitat quality restricts productivity to non-sustainable levels are key pieces of information in assessing a species' extinction risk (Wainwright and Kope 1999). In assessing the productivity of Alabama shad, we considered life history traits, the number of spawning populations, and trends in abundance over time.

Several life history traits make Alabama shad a relatively productive species (Smith *et al.* 2011). They reach sexual maturity quickly. Males start spawning as early as 1 year old, and females start spawning at 2 years old (Mickle *et al.* 2010). Female Alabama shad are known to release large numbers of eggs. Individual females in the Apalachicola River produce from 26,000–250,000 eggs and from 36,000–357,000 in the Choctawhatchee River (Mettee and O'Neil 2003, Ingram 2007). Females may have multiple spawning periods within the same spawning season (Mettee and O'Neil 2003). Because of the age range among spawning Alabama shad (1–5 years for males, 2–6 years for females), individuals may spawn multiple times in a lifetime (Laurence and Yerger 1967, Mettee and O'Neil 2003, Ingram 2007, Mickle *et al.* 2010). Recent information from the ACF River system suggests that female Alabama shad may spawn only once during their lifetime, but may release several batches of eggs during the weeks that they are spawning (S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, November 2015).

We also considered the number of Alabama shad spawning populations to assess the productivity of Alabama shad. The largest spawning population of Alabama shad is in the ACF River system, with smaller spawning populations believed to exist in the Missouri/Gasconade/Osage, Meramec, White, Ouachita/Little Missouri, Pascagoula/Leaf/Chickasawhay, Escambia/Conecuh, Choctawhatchee/Pea, and the Suwanee River systems. The life history traits of Alabama shad combined with the presence of multiple spawning populations contributes to the productivity potential of Alabama shad. Highly productive species with short generation times, like Alabama shad, are more resilient than less productive, long lived species, as they are quickly able to take advantage of suitable conditions for reproduction (Hutchings and Reynolds 2004, Mace *et al.* 2002, Musick 1999). Species with shorter generation times, such as Alabama shad (4 to 8 years), experience greater population variability than species with long generation times, because they maintain the capacity to replenish themselves more quickly following a period of lower survival (Mace *et al.* 2002). This resilience was observed in the ACF River system when Alabama shad populations quickly increased when access to upstream spawning habitat was re-established by conservation locking through an existing dam.

Alabama shad populations are generally believed to have declined in many areas where they were historically found. However, it is difficult to quantify any declines because of a lack of historical abundance data for most river systems and the lack of current population estimates for populations other than the ACF River system. Records of Alabama shad in the Pearl River are fairly complete and show a steady decline of the species. This decline was based on the total number of fish captured over time; it did not include estimating population numbers through the use of mark-recapture methods, like those used in the Apalachicola River. In the Pearl River, consistent sampling occurred in several sections of the river over 16–25 years: 384 fish captured 1963–1965; 33 captured 1965–1979; and 1 individual captured 1979–1988 (Gunning and Suttkus 1990). Since then no records of shad have been reported during annual fish surveys conducted by several of the state's universities in the Pearl River (Smith *et al.* 2011). Surveys conducted by USACE on the Lower Mississippi River (north of Baton Rouge, Louisiana) in the early 1980s also recorded the number of individuals encountered and showed a slow decline in the number of both adult and juvenile Alabama shad (Pennington 1980, Conner 1983, Smith *et al.* 2011). We can use the low

numbers or lack of Alabama shad captures/observations throughout the rest of their range to indicate declines from historical abundances. But it is hard to relate those numbers with the estimates for the Apalachicola that were calculated using mark-recapture techniques. However, it is clear that while once abundant enough to support small commercial fisheries in Alabama, Arkansas, Kentucky, Indiana, Ohio, and Iowa, Alabama shad are rarely collected throughout much of their former range (Adams *et al.* 2000, Daniels 1860). Alabama shad are believed to possibly be extirpated from the Ohio River since 1989 (Pearson and Pearson 1989). Alabama shad are considered rare in the state of Illinois and appear to have been extirpated from many rivers in the state (Smith *et al.* 2011).

Declines have been estimated in other *Alosa* species with longer historical records. Hall *et al.* (2012) attempted to estimate historical alewife populations in Maine for the years 1600–1900 using analyses of nineteenth and twentieth century harvest records and waterway obstruction records dating to the 1600s. They estimated that obstructed spawning access in 9 watersheds reduced the annual alewife productivity per watershed to 0–16 percent of pre-dam estimates, equaling a cumulative lost fisheries production of 11 billion fish from 1750 to 1900 (Hall *et al.* 2012).

Attempts have been made to estimate past abundances of Alabama shad and habitat carrying capacity for conservation planning by using examples from other *Alosa* species. Comparisons have been made between Alabama shad and American shad. Ely *et al.* (2008) noted that, given the similarities in life history characteristics of Alabama shad and American shad and the similarities in discharge, drainage area, and latitude between the Apalachicola River and other southeastern rivers, the populations of adult Alabama shad and American shad might be expected to be similar. Ely *et al.* (2008) cited the number of American shad reaching the first barrier to migration in the Savannah River, estimated as nearly 190,000 (Bailey *et al.* 2004), and the number in the Altamaha River system estimated as 133,000 (Georgia DNR 2005), and concluded that the population size of the Alabama shad in the Apalachicola River from 2005–2007 (approximately 2,700–26,000 shad) was relatively small. Subsequent to the Ely *et al.* (2008) study, the numbers of Alabama shad in the Apalachicola River generally increased, ranging from 2,000–122,500 from 2008–2012 (as noted earlier, the 2013–2015 data was considered to be skewed by sampling difficulties). Additionally, Ely *et al.* (2008) noted that fluctuations in abundance of American shad are well documented (citing Hattala *et al.* 1996, Atlantic States Marine Fisheries Commission 1998, Moring 2005) and variations in year-class strength typically observed in this genus suggest that populations of Alabama shad are capable of recovering quickly to historical levels under favorable conditions. A multi-agency Alabama Shad Restoration Plan for the Apalachicola-Chattahoochee-Flint River System (NMFS *et al.* 2012) calculated that the carrying capacity for the system is 1.3 million adult Alabama shad (700,000 in the Chattahoochee and 600,000 in the Flint), derived from the amount of free-flowing habitat in the mainstem and major tributaries of the Flint and Chattahoochee Rivers and using American shad population indices as a surrogate.

In summary, we find the productivity potential for Alabama shad is relatively high, given its life history characteristics and the presence of multiple spawning populations within the species' range. This relatively high productivity potential of Alabama shad was confirmed in the ACF River system when population numbers greatly increased when access to historical spawning habitat was provided. Available data suggest a decline in abundance in many systems. Other *Alosa* species with longer and more complete historical records, such as alewife, have also shown declines in abundance. A comparison with American shad populations at similar latitudes and a habitat study indicate that the Alabama shad population in the ACF River system may be smaller than expected and below carrying capacity in the system. Managers and researchers note that low numbers of recorded Alabama shad individuals may be due, at least in part, to insufficient sampling effort during appropriate times (*i.e.,* spawning migrations) and with the appropriate gear to target the species. We ranked productivity, on its own, to be at low risk of contributing significantly to the current and foreseeable risk of extinction for Alabama shad.

Spatial Distribution

McElhany *et al.* (2000) stated that spatial structure is an important consideration in evaluating population viability because it affects evolutionary processes and can affect a population's ability to respond to environmental change. Wainwright and Kope (1999) stated that it is important to determine whether existing populations adequately represent historical patterns of geographic distribution and biodiversity and whether population fragmentation poses a risk. The historical distribution of Alabama shad spanned the Gulf Coast from the Suwannee River, Florida, to the Mississippi River, Louisiana. Within the Mississippi River and its tributaries, the species spanned north to Illinois and Iowa, westward to Oklahoma, and eastward to Kentucky and Ohio. The species is believed to be extirpated in some of the farthest reaches of its historical range, such as the Upper Mississippi River and Mississippi River tributaries in Oklahoma, Illinois, and Kentucky/Ohio. However, Alabama shad can still be found in river systems in Arkansas, Missouri, and along the Gulf Coast. The current range of Alabama shad encompasses a diverse array of habitats, which potentially contributes to population stability. Smith *et al.* (2011) state that the current range of Alabama shad is believed to be stable.

Maps displaying the best available information on the historical and current range (presence) of Alabama shad by river, including where the species continues to spawn, can be found at: *http://sero.nmfs.noaa.gov/protected_resources/listing_petitions/species_esa_consideration/index.html* (see Figures 1 and 2 for the eastern and western portions of the range, respectively). Historical and current range, as well as spawning rivers, are based on reports of the species presence from the literature (see the ''Distribution and Abundance'' section), but the maps do not represent the number of fish reported from a river system. In most cases, we do not have information on the exact portion(s) of river systems historically or currently inhabited by Alabama shad, or where spawning habitat is located. In the ACF River system (where the majority of recent directed research on Alabama shad is occurring), the map shows that Alabama shad likely do not pass above dams at Albany and George Andrews Lake. In other systems, it is unknown to what degree locks and dams and/or low head dams block upstream passage or allow some shad to move upstream and downstream. This is discussed in greater detail in the ''Dams'' section under ''A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.'' In cases where no information is available on the specific extent of Alabama shad or its spawning habitat within a river system, we included the entire river

system as part of the range of Alabama shad.

In developing the maps reflecting the historical and current range of Alabama shad, we determined we would include positive reports of Alabama shad over the last 24 years. The 24-year time frame was selected because dams within the geographic range of Alabama shad were completed 30 or more years ago (mid-1980s; Graf 1999). Since dams have the ability to alter the range of shad within rivers, older/pre-dam studies reporting shad would not reflect any alterations of the species' distribution due to the dam. Further, any alterations in the distribution of Alabama shad may not happen immediately after construction of a dam. Therefore we considered the maximum age observed in Alabama shad (6 years; Mettee and O'Neil 2003). We only included reports of Alabama shad that occurred at least 6 years after the era of dam-building ended (*i.e.,* 24 years ago or less). Positive reports of Alabama shad in a river system in the last 24 years would indicate that new generations of shad persisted in the river system after the end of the dam-building era, even if a dam was constructed in the system. Therefore, positive reports collected during the 24-year time frame accounted for the presence of dams with the range of Alabama shad. We also used information from the literature on where the species is potentially extirpated to indicate the historical versus current range. In many instances, the information demonstrating persistence during the last 24 years is limited to just one or several verified identifications of Alabama shad. However, in view of the high productivity of shad, the challenges associated with detecting the species in non-targeted studies, and the episodic, anecdotal nature of available information, we believe it is reasonable to extrapolate from information confirming presence during the last 24 years that Alabama shad continue to occur in these systems.

In some cases, such as the Mississippi River, Alabama shad are shown to inhabit a tributary but not the river mainstem. Although the mainstem is not included as part of the historical range, this does not necessarily indicate Alabama shad are not present in the mainstem, only that we did not find a positive report of their presence in the last 25 years. In the example of the Mississippi River, the river mainstems are often not the subject of research surveys as high river flows and high vessel traffic raise concerns for human safety. Also, as noted earlier in this determination, Alabama shad can be difficult to detect, in both non-targeted or targeted surveys. Positive reports in the tributaries without reports from the mainstem could indicate the presence of landlocked populations or it could simply indicate that shad were present in the mainstem, but not surveyed or detected. Given the pelagic nature of Alabama shad, and their migratory life style, we believe that Alabama shad likely inhabit the mainstem of the rivers adjacent to the tributaries where they were reported.

Spatial structure contributes to the resiliency of populations to various disturbances, which can occur across a range of spatial scales, from localized disturbances affecting a few miles of stream and therefore only a portion of a population, to regional impacts from events such as droughts that affect multiple populations (Williams *et al.* 2008). Hilborn *et al.* (2003) state there is growing recognition that many fish stocks consist of multiple combined geographic components. Spatial diversity in populations can lead to greater stability in fish species (Jorgensen *et al.* 2016). Schindler *et al.* (2010) referred to this as a ''portfolio effect'' that is analogous to the effects of asset diversity on the stability of financial portfolios. Hilborn *et al.* (2003) reported a ''portfolio effect'' in the resilience of sockeye salmon in Bristol Bay, Alaska, which the researchers attributed to the maintenance of diverse geographic locations and life history strategies that comprise the sockeye salmon stock. At different times during the 1900s, different geographic regions and different life history strategies contributed to the productivity of the stock, and Hilborn *et al.* (2003) concluded this likely buffered the stock against large-scale environmental conditions, providing long-term stability. Jorgensen *et al.* (2016) studied Chinook salmon populations from the Columbia River and also observed differential contributions of populations to species productivity, noting differences in migratory corridors, climate, and geology as potential factors.

The current range of Alabama shad (the species' portfolio) encompasses a diverse array of habitats, which potentially contributes to population stability. Many Federal agencies and non-governmental organizations classify terrestrial and aquatic systems based on ecoregions, large areas of similar climate where ecosystems recur in predictable patterns (USFS 2016). Ecoregions are a widely recognized and applied geospatial unit for conservation planning, developed to represent the patterns of environmental and ecological variables known to influence the distribution of biodiversity features at broad scales (Abell *et al.* 2008). The boundaries of an ecoregion encompass an area within which important ecological and evolutionary processes most strongly interact (Abell *et al.* 2008). Conservation of blocks of natural habitat large enough to be resilient to large-scale disturbances and long-term changes are essential for large river systems in particular (Abell *et al.* 2008).

Under several widely used ecoregion classification systems, Alabama shad populations inhabit heterogeneous habitats across multiple diverse ecoregions. Alabama shad occupy six ecoregion ''divisions'' that the U.S. Forest Service classifies based on precipitation, temperature, and vegetation or other natural land cover. The Environmental Protection Agency (EPA) identified four levels of ecoregions by analyzing patterns of biotic and abiotic phenomena, both terrestrial and aquatic. These phenomena include geology, landforms, soils, vegetation, climate, land use, wildlife, and hydrology (EPA 2016). Even at the coarsest level, the EPA's Level I ecoregion, which highlights major ecological areas, Alabama shad populations occupy 2 of the 12 ecoregions in the continental United States: The Eastern Temperate Forests and the Great Plains. The species occupies 4 of the 25 Level II ecoregions, and 14 of the 105 Level III ecoregions. The Nature Conservancy (TNC) uses a terrestrial ecoregion classification system similar to the EPA Level III ecoregions. Alabama shad populations occupy nine TNC terrestrial ecoregions.

TNC also uses freshwater ecoregions with boundaries describing broad patterns of species composition and associated ecological and evolutionary processes (Abell *et al.* 2008). Along the Gulf Coast, Alabama shad occupy four freshwater ecoregions: The Apalachicola (containing the ACF River system and the Econfina River), the West Florida Gulf (includes the Escambia and Choctawhatchee River systems), Mobile Bay (containing the Mobile River system), and the Lower Mississippi (includes portions of the White River). In the northern part of their range, Alabama shad occupy three freshwater ecoregions: The Central Prairie (containing the Missouri River and its tributary, the Osage River), the Ozark Highlands (including a portion of the White River), and the Ouachita Highlands (including the Ouachita River and its Little Missouri River tributary). The ecoregions along the Gulf Coast are similarly defined by humid subtropical climates, but diverge in other characteristics. The Apalachicola ecoregion lies entirely within the coastal

plain, but the variety of habitats found in its rivers provide the foundation for a diverse freshwater fauna. Rivers in the Apalachicola ecoregion flow through shaded ravines with cool spring inputs, resembling habitats of more northerly regions. This ecoregion supports more species than adjacent lowland ecoregions. The West Florida Gulf ecoregion is defined by the lowland drainages that flow through extensive floodplain oak-hickory-pine forests. This ecoregion does not boast the same fish richness as the neighboring Mobile Bay. The Mobile Bay ecoregion has the highest level of aquatic diversity in the eastern Gulf. This is largely due to the variety of physiographic provinces occurring in this ecoregion, its size, and its escape from Pleistocene glaciation. This ecoregion is centered in central Alabama and includes eastern Mississippi, western Georgia, and a small area in southern Tennessee. The northern part of the ecoregion is characterized by Appalachian Blue Ridge and Appalachian mixed mesophytic forests, considered some of the most biologically diverse temperate forests in the world. These grade into Southeastern mixed forests, which are demarcated from conifer forests in the south by the fall line of the Atlantic Piedmont. Historically, rivers and streams in this ecoregion stretched over 1000 mi. Today, flow in the Mobile River is regulated by a series of upstream reservoirs on the Etowah, Coosa, and Tallapoosa rivers, and to a lesser extent by the locks and dams of the Tombigbee River. The Lower Mississippi ecoregion is also distinguished by its species richness, particularly in fish. The entire Mississippi basin has served as a center for fish distribution as well as a glacial refugium, and as such it is home to many of the species found in surrounding drainages. As a result, it is the second richest ecoregion in North America.

Compared to other ecoregions, Alabama shad experience different climatic conditions in the Central Prairie, which has hot continental summers and cold winters, with periodic arctic blasts. Most of the streams and rivers in the ecoregion are meandering with low to moderate flow. The diversity of species in this ecoregion is high relative to adjacent ecoregions due to the presence of diverse habitats that were not interrupted during glacial periods. The Ozark Highlands ecoregion is part of the western Mississippi River drainage but is distinctive because of its relative biogeographical isolation. It is a region of high gradient headwater streams surrounded by coastal plains and prairie. The Ozark Highlands contain a diversity of freshwater habitats, including fens, sinkholes and springs, which feed the clear headwaters of larger, free-flowing streams. Many of these habitats served as refugia during periods of glacial maximas. The Ozarks are home to a unique assemblage of species. Like the Ozark Highlands, the Ouachita Highlands ecoregion is distinguished by its relative biogeographic isolation. The ecoregion is a source area for several larger streams and is an area of high-gradient and spring-fed springs, and can almost be considered an island surrounded by the Great Plains, coastal plains, and prairie. The ecoregion is characterized by oak-hickory-pine forests, which are some of the best developed in the United States.

Habitat heterogeneity is considered to be important for the stability of populations, and Oliver *et al.* (2010) found that heterogeneous landscapes containing a variety of suitable habitat types were associated with more stable population dynamics in a butterfly species. Oliver *et al.* (2010) noted that many studies have suggested that the beneficial effects of heterogeneity may buffer a broad range of taxa against environmental change. Based on common ecoregion classifications, the watersheds inhabited by Alabama shad populations contain a diverse array of landscapes, vegetation, geology, hydrology, and climate.

We also considered the spatial structure of the spawning populations of Alabama shad. In assessing the viability of salmonid populations, which are anadromous and exhibit homing tendencies like Alabama shad, McElhany *et al.* (2000) stated that it is practical to focus on spawning group distribution and connectivity because many of the processes that affect small population extinction risk depend on the breeding structure. The spatial arrangement of suitable spawning and rearing habitat within a watershed can be dynamic through time as a result of periodic disturbances that create a mosaic of varying habitat conditions (Reeves *et al.* 1995). Efforts to understand population diversity have focused on population connectedness, through the analysis of DNA collected from individuals across the landscape or tagging data to quantify dispersal between populations (Jorgensen *et al.* 2016). Alabama shad continue to spawn in river systems in Florida, Alabama, Georgia, Mississippi, Louisiana, Arkansas, and Missouri. While most Alabama shad spawn in their natal rivers, Waters *et al.* (2000) proposed that shad species may stray more than other anadromous fishes and estimated that American shad are expected to have over 10 effective migrants per generation. In fact, Mickle *et al.* (2006) and Kreiser and Schaefer (2009) found slight genetic distinctions between populations from the Mississippi River basin and coastal Gulf of Mexico drainages. Kreiser and Schaefer (2009) attributed this to Alabama shad straying from their natal rivers at a rate of about 10 migrants per generation, consistent with the estimate by Waters *et al.* (2000) for American shad. This indicates the possibility that Alabama shad could enhance and repopulate nearby river systems within their range. This was also observed in anadromous Pacific salmon. Similar to Alabama shad, these species exhibit high spawning site fidelity, but are well-adapted to dynamic environments through straying by adults (to connect populations) and high fecundity (also similar to Alabama shad; Reeves *et al.* 1995, Jorgensen *et al.* 2016).

The historical range of Alabama shad has contracted and this species is believed to be extirpated from some river systems. Few targeted research studies were conducted since the time a majority of dams may have altered Alabama shad's distribution, therefore we can rely only on anecdotal reports from monitoring activities and multispecies surveys from the last 24 years to determine their current range. However, the remaining spawning populations of the species appear to be geographically widespread. Their range appears to have become stable once dam building ended, and lost access to spawning habitat is likely to be restored through dam removal and fish passage, and protections under environmental laws have increased. Although spawning populations in some places are small, the species exists in multiple ecoregions, representing a diverse array of ecosystems that has the potential to buffer the species against environmental changes and promote population stability. Genetic studies (Kreiser and Schaefer 2009, Waters *et al.* 2000) show that exchange between river populations is occurring at higher rates than is expected for other anadromous species. Therefore, we ranked spatial distribution throughout its range, on its own, to be at low risk of contributing significantly to the current and foreseeable risk of extinction for Alabama shad.

Diversity

In a spatially and temporally varying environment, genetic diversity is

important for species and population viability because it (1) allows a species to use a wider array of environments than they could without it, (2) protects a species against short-term spatial and temporal changes in the environment, and (3) provides the raw material for surviving long-term environmental changes (McElhany *et al.* 2000). Small populations may be at risk from random genetic effects, Allee effects, and directional effects (Wainwright and Kope 1999).

Alabama shad are believed to be philopatric and generally return to the same rivers to spawn, which has resulted in slight genetic differences among river drainages (Meadows *et al.* 2008, Mickle 2010). These genetic differences could result in characteristics (*e.g.,* faster growth rates, higher temperature tolerance, etc.) that lead to variable spawning strategies among river drainages. Kreiser and Schaefer (2009) also noted slight genetic differences between Alabama shad from the Mississippi River basin and coastal Gulf of Mexico drainages; however, they determined there has been no significant genetic differentiation among different river populations of Alabama shad.

Moyer (2012) evaluated the genome of Alabama shad collected from the ACF River system to assess the influence of genetic factors on their extinction risk, including whether the construction of JWLD blocking access to upstream spawning habitat affected their genetic diversity. Genetic diversity of Apalachicola River shad was calculated based on the average number of alleles (the possible forms in which a gene for a specific trait can occur), observed heterozygosity (having different alleles in regard to a specific trait), and expected heterozygosity. Moyer (2012) found no evidence of fine-scale population structure in the ACF River system. The observed genetic variation found in Alabama shad was lower than expected based on other shad studies. These findings suggest that the genetic variation of Alabama shad in the ACF River system has been severely reduced by a bottleneck event. Moyer (2012) concluded that the bottleneck likely did not result from the construction of JWLD or from any other anthropogenic activity. Moyer (2012) stated the reduced genetic diversity appears to be the result of past events that occurred during the Pleistocene. Bowen *et al.* (2008) made a similar determination for Alabama shad while studying the phylogenetic relationships across North American *Alosa* species. Their study also indicated that the genetic bottleneck occurred when the originating ancestor(s) of Alabama shad traveled around the Florida peninsula into the Gulf of Mexico during or after the Pleistocene and became geographically separated from Atlantic populations.

Loss of genetic diversity can reduce an organism's adaptive capacity to respond to differing environmental conditions and increase a species' extinction risk. However, population bottlenecks can also have positive outcomes on a species' genetic diversity, fitness, and extinction risk (Bouzat 2010). Moyer (2012) noted that populations or species that have undergone population bottlenecks throughout their evolutionary history may have reduced genetic load. Genetic load is the combination of harmful genes that are hidden in the genetic make-up of a population and may be transmitted to descendants. The genetic load of a population reduces the fitness of that population relative to a population composed entirely of individuals having optimal genotypes. Hedrick (2001) stated that a population with reduced genetic load resulting from a bottleneck may have increased viability and be more likely to recover from near-extinction than a population that has not experienced such an evolutionary bottleneck.

Modeling conducted by Moyer (2012) indicated that the Pleistocene bottleneck for Alabama shad was intense. The maintenance of genetic variability in a finite population can be understood through the concept of effective population size, which is not an actual abundance estimate but an estimate of the number of individuals in an ideal population that would give the same rate of random genetic drift (change in the frequency of a gene variant) as in the actual population (Lande 1988). The effective population size for Alabama shad during the bottleneck was estimated to be between 76 and 398, meaning 76–398 individuals is the population size during the Pleistocene estimated to have been necessary to result in the relatively low genetic diversity observed in members of the species today. Moyer (2012) also noted that the bottleneck event was prolonged (145–987 shad generations) and he concluded that it may have purged much of the species' genetic load, making the population less prone to fitness decreases in the event of another bottleneck. Moyer (2012) concluded the risk of population decline and extinction in Alabama shad from the ACF River basin due to reduced genetic diversity appears to be low and is not of immediate importance to the short- or long-term persistence of Alabama shad in the ACF River system.

In summary, we found no significant genetic differences between Alabama shad from different river populations, based primarily on information provided in Kreiser and Schaefer (2009) and Moyer (2012). A genetic evaluation of Alabama shad from the ACF River system (Moyer 2012) showed genetic diversity is low, likely resulting from a bottleneck that occurred during the Pleistocene rather than any recent anthropogenic factors. Moyer (2012) stated that the reduced genetic diversity resulting from the Pleistocene bottleneck potentially reduced the genetic load of Alabama shad, which decreases their extinction risk and increases their viability and chances of recovery. We ranked diversity, on its own, to be at low risk of contributing significantly to the current and foreseeable risk of extinction for Alabama shad.

Threats Assessment

Next we consider whether any of the five factors specified in section 4(a)(1) of the ESA are contributing to the extinction risk of Alabama shad.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Effects to Alabama shad's riverine habitat are contributing to the species' extinction risk now, and are likely to continue into the foreseeable future. The primary cause for declines in Alabama shad populations is believed to be the presence of dams, which can block access to upstream spawning habitats (NMFS *et al.* 2012, Mettee and O'Neil 2003). Existing literature cites other threats to Alabama shad, including dredging (Mettee and O'Neil 2003), sedimentation (Mettee and O'Neil 2003), and water quality degradation (Mettee *et al.* 1996), although there is little specific information on how Alabama shad populations may be responding to those threats. Recently identified and ongoing potential threats to Alabama shad include water allocation issues, climate change, and the Deepwater Horizon (DWH) oil spill.

Dams

The construction of dams that block access to upstream habitat has long been considered the primary reason for declines of Alabama shad and other anadromous fish species (NMFS *et al.* 2012). Dynesius and Nilsson (1994) list three of the river systems inhabited by Alabama shad (the Mississippi, Apalachicola, and Mobile Rivers) as being strongly affected by the presence

of dams. Despite a lack of species-specific data, the proliferation of impassable structures constructed on rivers within its range is believed to have restricted adult Alabama shad from reaching their historical spawning grounds, which severely reduced or eliminated their ability to reproduce (Pflieger 1997, Mettee and O'Neil 2003). Most surveys and studies of Alabama shad focused on fish below dams (Laurence and Yerger 1967, Mills 1972), while collection records from state and Federal agencies, as well as ichthyological collections, indicate a rarity of specimens collected upstream of dams (Coker 1930, Etnier and Starnes 1993). In addition, similar declines in American shad populations have resulted from dam construction (Limburg and Waldman 2009). Pringle *et al.* (2000) note that *Alosa* species, such as river herring and American shad, have established themselves outside their native ranges and in landlocked populations when dams blocked their natural habitat. In the Mississippi River system, Alabama shad are shown to inhabit several tributaries but have not been recently reported within the river mainstem. Positive reports in the tributaries without reports from the mainstem could indicate the presence of landlocked populations of Alabama shad or it could indicate that shad were present in the mainstem, but not surveyed or detected.

Within the state of Iowa there are 10 locks and dams on the Upper Mississippi River (north of the confluence with the Ohio River) and an additional 7 locks and dams to the south that could prevent Alabama shad from reaching historical spawning grounds (Steuck *et al.* 2010). Noting that large numbers of Alabama shad congregated below Keokuk Dam, Iowa, but few were ever captured above it, Coker (1930) reasoned that the dam likely limited the upstream passage of the species in the Upper Mississippi River. Dams in Mississippi River tributaries also block Alabama shad from reaching spawning habitat. Construction of dams in the McClelland-Kerr Arkansas River Navigation System in the early 1970s may have led to the extirpation of Alabama shad in that system (M. Oliver, Chief of Fisheries, Arkansas Fish and Game Commission, pers. comm. to K. Shotts, NMFS, November 5, 2013). The Denison and Altus Dams block access to habitat in the Red and Washita Rivers (Smith *et al.* 2011).

Dams have been constructed at or below the fall line in many river systems along the Gulf Coast and prevent spawning migrations into the Piedmont (NMFS *et al.* 2012). In Georgia and Alabama, there is evidence that Alabama shad historically occurred above the fall line in the Flint and Chattahoochee Rivers (Mettee and O'Neil 2003, Couch *et al.* 1996) and in the upper Coosa and Tallapoosa River systems (Freeman *et al.* 2005). An Alabama shad record exists above the fall line into the Piedmont from the Cahaba River, Alabama (Mettee *et al.* 1996). There are many locks, dams, and other impoundments in the Mobile River basin that cumulatively impound approximately 44 percent of the river mainstem length in the basin as well as portions of many tributary streams (Pringle *et al.* 2000). Only a few Alabama shad have been found in the Tombigbee River, a tributary of the Mobile River, since the construction of the Tombigbee lock system in the waterway in 1901 (M. Roberts, Curator of Fishes, Mississippi Museum of Natural Science, pers. comm. to K. Shotts, NMFS, October 21, 2013). On the Alabama River, Claiborne Lock and Dam was opened for navigation in 1969 (Freeman *et al.* 2005). Upstream from Claiborne Lock and Dam, Millers Ferry Lock and Dam was constructed for the purpose of both power generation and navigation, with the lock opening in 1969 and power coming on line in 1970. Numerous juvenile Alabama shad were recorded in the Alabama River in 1951, the late 1960s, and the early 1970s (Boschung 1992, Mettee and O'Neil 2003). However, only two individuals have been caught in the Alabama River in more recent years, one in 1993 below Claiborne Lock and Dam and one in 1995 below Miller's Ferry Lock and Dam (Smith *et al.* 2011). In 2009, conservation locking during spawning season was instituted at Claiborne Lock and Dam and Miller's Ferry Lock and Dam (Simcox 2009). In 2014 and 2015, conservation locking coupled with stocking of Alabama shad was undertaken to provide access above Claiborne and Miller's Ferry Locks and Dams and to enhance Alabama shad populations in the river system.

Legislation focused on flood control, navigation, and hydropower passed in the late 1920s through the mid-1940s resulted in the development and construction of over a dozen major impoundments on the mainstem Missouri River, but there are approximately 17,200 minor dams and reservoirs on the river and its tributaries, most of which are small, local irrigation structures (USACE 2006). Alabama shad spawn in the Missouri River, as well as two of its tributaries, the Gasconade and Osage Rivers (Smith *et al.* 2011). The Powersite Dam, a hydroelectric dam, was constructed far upstream in the Missouri portion of the White River in 1913. In 2006, researchers collected the first Alabama shad in the White River (Buchanan *et al.* 2012); the collected specimens were juveniles believed to have been spawned in the river. The Remmel Dam was constructed on the Ouachita River in 1924 to provide electrical power for southern Arkansas and surrounding states. While the dam blocks access to upstream habitat for most of the year, Alabama shad are successfully spawning in the Ouachita and Little Missouri Rivers (Buchanan 1999). Buchanan *et al.* (1999) note that during March and April of most years, the peak months of the spring spawning run, high water frequently flows over and around the structure, allowing Alabama shad to move into habitats upstream of Remmel Dam.

The Elba-Pea River Dam was constructed for power generation on the Pea River tributary of the Choctawhatchee River in the early 1900s. Studies indicate there are small spawning populations of Alabama shad in the Choctawhatchee and Pea Rivers (Barkuloo 1993, Adams *et al.* 2000, Mettee and O'Neil 2003, Young 2010). Dams were constructed on the Conecuh/Escambia (Point A Dam) and Apalachicola Rivers (JWLD) beginning in 1929 and 1947, respectively. River traffic on the Apalachicola River resulted in the lock being operated frequently, allowing passage and sustaining reproduction of the resident Alabama shad population. Historically, JWLD was operated continuously 24 hours per day for commercial barge traffic (Sammons 2013). With the elimination of commercial traffic in the late 1960s, lock operation was reduced to 8 hours per day for on-demand passage of recreational boats, reducing the number of lockages to less than 100 per year from a high of 1200. Barge traffic decreased and lock operation became infrequent when navigational dredging ceased in 2001 (J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013). Recently, conservation locking on the Apalachicola River has given Alabama shad access to previously blocked habitat upstream of JWLD, although 15 other impoundments/reservoirs currently exist upstream on the Chattahoochee and Flint Rivers (NMFS *et al.* 2012). Populations of Alabama shad continue to use the Conecuh/Escambia and ACF River systems for spawning.

Dams are believed to be the primary reason for declines in all three of the anadromous species native to the Gulf

of Mexico (USFWS 2009a). In addition to Alabama shad, anadromous Gulf sturgeon and striped bass (*Morone saxatilis*) have also been blocked by dams from accessing upstream habitat in river systems draining into the Gulf. Gulf sturgeon were listed as threatened in 1991 (56 FR 49653) and occur in river systems from Louisiana to Florida, in nearshore bays and estuaries, and in the Gulf of Mexico. While overfishing caused initial declines in Gulf sturgeon populations, the listing determination cited dams as a current threat to the species. Striped bass were native to Gulf of Mexico rivers from the Suwannee River in Florida to the rivers draining into Lake Pontchartrain in eastern Louisiana and southwestern Mississippi. Striped bass populations began declining in the early 1900s, and by the mid-1960s had disappeared from all Gulf rivers except for the ACF River system of Alabama, Florida, and Georgia (USFWS 2009a). In addition to blocking upstream habitat, it is believed that downstream effects from the dam, such as impaired water quality and channelization may have prevented successful spawning (USFWS 2009a). The USFWS and Gulf states began cooperative efforts to restore and maintain Gulf striped bass populations in the late 1960s, mainly through stocking of hatchery-raised fingerlings, and this effort continues today (USFWS 2009b). Related anadromous *Alosa* species on the East Coast, such as the American shad, have also experienced declines due to dams blocking access to upstream habitat (Limburg and Waldman 2009).

Spawning populations of Alabama shad inhabit the Meramec, Gasconade, Suwannee, and Pascagoula River systems, all of which are free-flowing systems unmodified by dams (Heise *et al.* 2005, MDC 2001, 2015, Mickle *et al.* 2010; J. Wilcox, FFWCC, pers. comm. to K. Shotts, NMFS, November 12, 2013). However, other spawning populations of Alabama shad, including the largest known spawning population in the ACF River system, use river systems that have been dammed since the early to mid-1900s. Recent conservation locking is currently having a positive effect on Alabama shad in the ACF River system, and this population has been considered to be the largest population since at least 1967 (McBride 2000).

While dams are known to impede upstream access to habitat, access may still be possible under certain conditions. Fish may be able to pass upstream and downstream during high water conditions at ''low head'' dams, which are low vertical structures that have been constructed across rivers or streams to raise the water level, normally producing vertical water surface drops of one to several feet. Fish may also pass through navigation locks when they are open for vessel traffic. Coker (1929) noted lack of observation in locks. However, Zigler *et al.* (2004) note that there is considerable opportunity for fish to use some locks for upstream and downstream movement. Ickes (2014) states that all of the dams on the Upper Mississippi River are ''semi-permeable'' to fish passage in that they all have locks that fish could use to move upstream and downstream. With the exception of two of the locks, all are open and run-of-the-river for part of the year, up to as much as 35 percent of the time annually (Ickes 2014).

Zigler *et al.* (2004) found that the dams on the Upper Mississippi River are typically low head dams that allow fish passage under certain conditions. Downriver fish passage can occur through the locks and gated sections of the dam, as well as over the top of the dam (Wilcox 1999). Fish can sometimes swim over low head dams when water levels in the river are high enough, although Wilcox (1999) notes that most upriver passage on the Upper Mississippi River occurs through the gated sections of the dams. Zigler *et al.* (2004) observed that navigation dams are operated with partially closed dam gates during most of the year to increase dam head and maintain water levels in navigation pools. Fish can likely pass downstream through partially closed dam gates unharmed (Zigler *et al.* 2004, Moen *et al.* 1992). Upstream passage is possible, but likely impeded to some degree, when gates are partially closed due to increased current velocity, which increases with increasing dam head (Zigler *et al.* 2004). In a tagging study of paddlefish, a species selected as representative of migratory fish species whose movements have likely been adversely affected by dams, Zigler *et al.* (2004) showed 12–33 percent of the tagged fish moved upstream, downstream, or both during years with high river discharge through the low head dams, but no movement was observed during time periods with a weak flood pulse. Studies by Brooks *et al.* (2009) and Tripp and Garvey (2011) in the Upper Mississippi River found that the degree to which upriver movement was impeded by lock and dam structures varied among species, but that each of their 5 study species had the capability to negotiate dams whether the lock gates were closed or open. Wilcox (1999) found similar results in that strong swimming species (*e.g.,* sturgeon, bass, and herrings) had the most success moving upriver through structures, but Alabama shad and other migratory fish species included in the study were also able to move upstream through Upper Mississippi River locks and dams when hydraulic conditions were favorable. Wilcox (1999) described the difference in hydraulic conditions when gates are in the open and closed positions. Velocities through the gated sections of the dams are highest when dam gates are in the water (closed). When the dam gates are raised from the water (open) during higher levels of river discharge, uncontrolled conditions exist, and open channel flow occurs in the gate bay openings. Opportunity for upriver fish passage through dams is greatest during uncontrolled conditions due to the lower velocities through the dam gate openings. Dams with lower controlled discharge capacity may therefore present more frequent and longer windows of opportunity for upriver fish passage than dams with higher discharge capacity (Wilcox 1999).

USFWS (2012) conducted a 2-year study starting in 2010 to determine whether Lock and Dam #1 (a low head dam) creates a barrier to fish passage on the Osage River, which supports a spawning population of Alabama shad. USFWS (2012) determined through captures of pallid and hybrid sturgeon marked in other studies that Lock and Dam #1 was passable at certain flows, but presented a barrier at others. Fish passage upstream of Lock and Dam #1 was detected by USFWS (2012). Passage was determined through collection of fish above and below the dam, rather than by acoustically or radio tracking fish. Therefore it is unknown whether upstream passage was achieved by fish swimming over the dam or passing through the lock. However, since upstream passage is typically more difficult for fish due to swimming against the river current, it is likely that downstream passage is also possible since upstream passage was documented to occur. USFWS (2012) also noted that the 115-year-old dam was unstable and would need to be removed or repaired in the very near future.

While dams are believed to be the main cause of the initial decline of Alabama shad, and continue to block habitat and cause downstream effects today, few new dams are being built (Graf 1999). Some dams in the United States date back centuries. The greatest rate of increase in reservoir storage occurred from the late 1950s to the late 1970s, with more dams (and some of the largest) built in the 1960s than in any

other decade (Graf 1999). In the ''golden age'' of U.S. dam building, thousands of large and small dams were built to supply power, reduce flood hazard, improve navigation, and impound water for irrigation and urban water supply with little thought to the environmental impacts, long-term fate, inevitable aging, and need for continued maintenance, renovation, or even removal of dams (Doyle *et al.* 2003, Pejchar and Warner 2001). There have been few new dams built since the mid-1980s and the nation's era of dam building is over (Graf 1999). Further, the aging of America's dams, coupled with increasing awareness of their environmental costs, has brought dam decommissioning and removal to the attention of the scientific community, management agencies, and the general public (Doyle *et al.* 2003). It is only since the late 1990s that the topic of dam removal has become common due to the convergence of economic, environmental, and regulatory concerns (Doyle *et al.* 2003). An understanding about how dams severely impair free-flowing rivers has become firmly established both in the United States and abroad and this knowledge has entered into the public debate on river conservation, both in terms of greater willingness of reservoir managers to minimize downstream ecological effects and of increased calls for outright dam removal (Poff and Hart 2002).

By 2020, an estimated 85 percent of the dams in the United States will be near the end of their operational lives (Doyle *et al.* 2003). The current intensification of economic and environmental concerns is coinciding with a policy window in which many private dams are coming up for regulatory re-licensing with FERC and operational guidelines for publicly-operated dams are being reviewed (Doyle *et al.* 2003). Stanley and Doyle (2003) predict that the aging of the U.S. dam infrastructure will make dam removal even more common in the future. American Rivers (2015) reports that 1,300 dams were removed between 1912 and 2015. Lovett (2014) notes that 1,150 of those dams were removed in the last 20 years, most of which were dams lower than 5 meters (16.4 feet) but also taller dams in recent years. In 2004, 2012, and 2013, 5 dams within the current range of Alabama shad in the ACF and Alabama River systems were removed (American Rivers 2015). Another 10 dams were removed since 1999 in the historical range of Alabama shad in the Mississippi, Tennessee, and Ohio Rivers (American Rivers 2015). The rapid aging of dams (especially small ones) and the costs of maintaining old dams suggests that dam removal will continue for the foreseeable future (Poff and Hart 2002). The benefits of dams have been routinely exaggerated and the costs have been frequently underestimated, prompting policy-makers to increasingly consider dam removal as a policy option (Pejchar and Warner 2001). The cost of repairing a small dam can be as much as three times greater than the cost of removing it (Born *et al.* 1998). In contrast, many cost-effective methods for water conservation in cities already exist, and new technologies are constantly evolving that will enable even greater efficiencies, reducing the amount of water that needs to be extracted from rivers through the use of dams and reservoirs (Richter and Thomas 2007). As dams in the U.S. age beyond their intended design lives (Doyle *et al.* 2008), some states are providing incentives to remove dams as means of river restoration (Ardon and Bernhardt 2009).

Besides dam removal, various designs of fishways or fish ladders have been developed to enable fish to pass upstream of barrier dams. The recognized need to pass fish upstream of dams and other obstacles inspired many seminal studies on fish swimming performance, energetics, and biomechanics (Castro-Santos *et al.* 2009). Within the last 50 years fishways and other passage operations have become increasingly sophisticated and efficient, their design a product of collaboration between hydraulic engineers and biologists (Roscoe and Hinch 2010). The presence of a fishway alone does not guarantee that the fish are able to pass upstream of the barrier to their movement and fishways do not always perform as intended (Roscoe and Hinch 2010). However, upstream passage technologies are considered to be well developed and well understood for the main anadromous species, including *Alosa* species (Larinier and Marmulla 2004). In the ACF and Alabama River systems, Federal, state, and non-governmental organizations are collaborating and utilizing existing facilities (*i.e.,* opening navigation locks) during spawning season to pass Alabama shad and other species upstream, with demonstrated success in the ACF River system, but with unknown results in the Alabama River.

River restoration will play an increasing role in environmental management and policy decisions, and has even become a highly profitable business (Bernhardt *et al.* 2005, Ardon and Bernhardt 2009). Bernhardt *et al.* (2005) synthesized information on 37,099 river restoration projects in the National River Restoration Science Synthesis (NRRSS) database. Fish passage is one of the four most commonly stated goals of river restoration, along with water quality management, instream habitat improvement, and riparian management. The NRRSS database shows that of the 58 percent of projects where cost information was available, $9.1 billion has been spent on river restoration projects since 1970. Bernhardt *et al.* (2005) notes that the majority of the money ($7.5 billion) spent on restoration was spent between 1990–2003, indicating that river restoration is a relatively recent and growing phenomenon. Specific river flow patterns cue anadromous species like Alabama shad to migrate and reproduce. To mitigate negative effects of flow patterns created by dams, dam operations are increasingly being adapted toward releasing ''environmental flows,'' the appropriate quantity, quality, and timing of water flows required to sustain freshwater and estuarine ecosystems (Lehner *et al.* 2011).

In summary, dams have impacted anadromous species populations and are believed to be the primary cause for the observed decline of Alabama shad. Existing dams continue to block access to upstream spawning habitat, although few new dams are being built today. The current diminished abundance of Alabama shad is a reflection of historical effects of the dams over decades, although the threat to Alabama shad from existing dams may be reduced with effective fish passage, conservation locking, dam removal, and other forms of river restoration. We believe that the presence of dams is contributing a moderate level of risk to the overall current extinction risk of Alabama shad, but could decrease in the foreseeable future with the increasing focus on restoring access to fish habitat blocked by dams.

Water Quality

Changes in water quality parameters (turbidity, flow, oxygen content, and pollutants) are a potential threat to Alabama shad. The presence of dams, dredging, and watershed activities can alter water quality in riverine and coastal habitat used by Alabama shad. In addition to blocking access to habitat, dams can degrade spawning, nursery, and foraging habitat downstream by altering flow, water temperature, and oxygen levels. Mettee *et al.* (2005) state that seasonal flow patterns in dammed rivers have been replaced by pulsed releases that alter water temperature and

DO levels, as well as nutrient and sediment transport.

Dredging can also affect water quality. Several decades ago, when vessel traffic on the Apalachicola River was much greater, the USACE frequently dredged the river to maintain depth of the navigation channel. The dredged material was placed along the river banks and eventually became re-suspended in the river. The dredged material (finer sands and clays) settled on the river bottom and filled in spaces between grains of the coarser sands and gravel that served as spawning habitat for Alabama shad (Mills 1972). McBride (2000) reports that dredging affected *Alosa* species, including Alabama shad, in Florida rivers through re-suspension of particulate matter in the water column, alteration of natural flow patterns, and removal of river-bottom habitat.

Alabama shad and their habitat are also exposed to sediment and pollutants introduced from land-based activities. Agriculture, silviculture, and industrial, commercial, and residential development in the watershed contribute to degraded water quality in rivers and coastal waters inhabited by Alabama shad. Wastewater treatment, municipal stormwater, industrial discharges, land clearing, and construction of impervious surfaces are examples of activities that increase runoff into the watershed, introduce sediment and pollutants, and lead to low DO. There are no specific data linking exposure to altered water quality parameters with responses in Alabama shad populations. However, McBride (2000) noted that the effects of declining water quality from low DO and industrial discharges were seen in other *Alosa* species on the Atlantic Coast throughout the nineteenth century.

States are required to report water quality conditions to the EPA under Sections 305(b) and 303(d) of the Clean Water Act. We reviewed the water quality assessment reports (available at *http://www.epa.gov/waters/ir/index.html*) for rivers occupied by Alabama shad spawning populations, as well as the Mobile/Alabama River system where Alabama shad conservation activities are occurring. Rivers were assessed by the states between 2008 and 2014, with most rivers assessed more recently (2012–2014). The water quality assessment reports provide information on river segments that have good water quality, as well as segments that are impaired. While the reports list what the impairment is based on (*e.g.,* the presence of heavy metals, sediment, or low DO), the reports rarely specify the source of the impairment (*e.g.,* dam releases, dredging, industrial discharge, or stormwater runoff). However, the water quality assessment reports provide some information on the water quality conditions Alabama shad are exposed to in the riverine areas they use.

We reviewed the water quality assessment reports for the following river systems: (1) ACF; (2) the Missouri/Gasconade/Osage; (3) Meramec; (4) White; (5) Ouachita/Little Missouri; (6) Pascagoula/Leaf/Chickasawhay; (7) Mobile/Alabama; (8) Escambia/Conecuh; (9) Choctawhatchee/Pea; and (10) the Suwanee. Of the approximately 4,500 combined river mi in these systems, water quality was deemed good for 2,150 or 48 percent of the assessed mi. Approximately 2,100 mi (47 percent) were designated as impaired based on one or more factors, and 275 mi were not assessed. Within each river system, between 6 percent and 100 percent of the river mi assessed were deemed to be impaired (too polluted or otherwise degraded to meet water quality standards) for one or more factors.

With the exception of the Meramec and White Rivers, all or portions of every other river system we looked at were impaired due to mercury levels. The EPA states that coal-burning power plants are the largest human-caused source of mercury emissions into the air within the United States, accounting for over 50 percent of all domestic human-caused mercury emissions (EPA 2014a). Mercury in the air may settle into rivers, lakes, or estuaries, where it can be transferred to methylmercury through microbial activity. Methylmercury can accumulate in fish at levels that may harm the fish and the other animals that eat them (EPA 2014b). Other heavy metals (copper, zinc, and lead) were found in impaired waters in the Meramec and Ouachita/Little Missouri River systems. There are no known studies on the effects to Alabama shad from exposure to, or accumulation of, mercury and other heavy metals.

All river systems we evaluated, with the exception of the Meramec and the Pascagoula/Leaf/Chicksawhay River systems, had some impaired river segments due to low DO. Low DO can cause lethal and sublethal (metabolic, growth, feeding) effects in fish. Different species have different oxygen requirements. For instance, sturgeon species, considered to be benthic species, are known to be more highly sensitive to low DO (less than 5 milligrams per liter (mg/L)) than other fish species (Niklitschek and Secor 2009a, 2009b). DO is often lowest at the benthos compared to the water column. Tagatz (1961) found that juvenile American shad (an *Alosa* species more closely related to Alabama shad than sturgeon) are able to acclimate to low oxygen concentrations (2–4 mg/L) when other environmental conditions are satisfactory. Howell and Simpson (1994) looked at the abundance of a variety of finfish captured across DO levels in Long Island Sound, New York, and found that American shad were captured in 79 percent of the tows in waters with DO greater than or equal to 3 mg/L. American shad were captured in 40 percent of the tows with DO levels of 2–2.9 mg/L, but no captures were made in waters where DO was less than 2 mg/L. The classification of Alabama shad as a pelagic species, meaning they inhabit the water column, indicates they are present above the benthos in areas where DO levels are usually higher. This suggests that Alabama shad could be less susceptible to the effects of low DO than other species, such as sturgeon.

Segments of several river systems inhabited by Alabama shad were designated as impaired due to biota. The water quality assessment reports define this category as ''the community of aquatic animals (fish, reptiles, amphibians, aquatic insects or others) normally expected in a healthy waterway is unhealthy, reduced, or absent, and the exact cause of the problem is unknown.'' The Chattahoochee River was designated impaired based on fish biota. Georgia DNR (2008) reported to the EPA that studies completed during 1998–2003 showed modification of the fish community in the Chattahoochee River. The general cause was determined to be the lack of fish habitat due to stream sedimentation. Even with access to the Chattahoochee River restored as a result of conservation locking at JWLD, Alabama shad preferentially spawn in the Flint River over the Chattahoochee River. Sammons (2014) conducted a study to determine habitat usage by Alabama shad in the Flint and Chattahoochee Rivers and did not find a single shad in the Chattahoochee during 4 years of tracking. The Flint and Osage Rivers are designated impaired due to benthic and aquatic macroinvertebrates, respectively. The Leaf River is also designated impaired due to biological impairment. It is unknown whether these conditions affect Alabama shad.

Sedimentation was listed as a potential threat to Alabama shad (Mettee and O'Neil 2003). Segments of the White, Leaf, and Conecuh Rivers were designated as impaired due to sedimentation. Other causes of

impairments listed in the water quality assessment reports include the presence of PCBs (Chattahoochee River), organic material (Conecuh River), algal growth/chlorophyll-*a* (Suwannee River), and salinity/solids/chlorides/sulfites (Suwannee River). It is unknown how these conditions affect Alabama shad.

We also reviewed the National Coastal Condition Report (NCCR) published by the EPA to gauge the recent water quality conditions experienced by Alabama shad in coastal waters. The NCCR IV (EPA 2012) graded the overall conditions of the Gulf Coast region as ''fair,'' with an overall condition score of 2.4 out of a possible 5.0. Comparatively, the overall condition of the nation's coastal waters was also rated ''fair,'' with an overall condition score of 3.0. Using 2003–2006 data, the water quality index (based on parameters such as dissolved nitrogen, phosphorus, and oxygen, chlorophyll *a* concentrations, and water clarity) for the coastal waters of the Gulf Coast region overall was rated as ''fair.'' Only 10 percent of the region was rated as ''poor,'' although estuaries with ''poor'' water quality conditions were found in all five Gulf states. The Gulf Coast region is rated ''good'' for DO concentrations, with less than 5 percent of the coastal area rated ''poor'' for this factor. Although hypoxia is a relatively local occurrence in Gulf Coast estuaries, the occurrence of hypoxia in the Gulf Coast shelf waters is much more widespread. The Gulf of Mexico hypoxic zone is the second-largest area of oxygen-depleted waters in the world (Rabalais *et al.* 2002b). This zone, which occurs in waters on the Louisiana shelf to the west of the Mississippi River Delta, was not assessed for NCCR IV (EPA 2012) and the ''good'' rating for DO concentrations in the Gulf Coast region provided in the report is not indicative of offshore conditions. Because the life history of the Alabama shad in offshore Gulf of Mexico waters is unknown, it is not possible to determine if these conditions affect Alabama shad.

In summary, water quality has been cited by multiple studies as a threat to Alabama shad (*e.g.,* Mills 1972, Mettee *et al.* 1996, 2005, McBride 2000). Water quality assessments required by the Clean Water Act, as well as assessments of water quality along the Gulf Coast reported in NCCR IV (EPA 2012), indicate that water quality in some portions of the Alabama shad's range are good, while other areas are impaired by heavy metals, low DO, and other issues. Although it is likely that Alabama shad are exposed to water quality issues in their coastal and riverine environments, there are no clear data directly linking water quality problems with declines in Alabama shad, and the species may be less susceptible to some impairment factors (*e.g.,* low DO) than other species. The NCCR I–IV reports (EPA 2001, 2005, 2008, 2012) show that coastal water quality in the Gulf of Mexico has improved since 2001. As coastal populations grow and industrial, commercial, and residential development increases, water quality issues could also grow. At this time it is unknown what risk water quality presents to Alabama shad now or in the foreseeable future.

Water Allocation

Water allocation issues are a growing concern in the southeastern United States. Transferring water from one river basin to another can fundamentally and irreversibly alter natural water flows in both the originating and receiving basins, and exacerbate any existing water quality issues. Reallocation of water between river basins can affect DO levels, temperature, and the ability of the basin of origin to assimilate pollutants (Georgia Water Coalition 2006).

Water allocation issues have traditionally occurred primarily in the Western United States, but they are also occurring in the Southeast, with one of the biggest interstate allocation disputes occurring between Alabama, Florida, and Georgia (SELC 2015a, Ruhl 2003). These three states have fought over the future allocation of water in the ACF and Alabama/Coosa/Tallapoosa (ACT) River basins for decades (SELC 2015a) as population growth is driving competing water demands for urban, agricultural, and ecological uses. A 2006 study by the Congressional Budget Office (CBO 2006) reported that Georgia had the sixth highest population growth (26.4 percent) in the nation, followed by Florida (23.5 percent). The per capita water use in Georgia has been estimated to be 8 to 10 percent greater than the national average, and 17 percent higher than per capita use in neighboring states (UGA 2002). Georgia needs water to supply the large metro Atlanta area; Alabama needs its water supply for power generation, municipal uses, and fisheries; and Florida seeks to maintain its shellfish industry in Apalachicola Bay (SELC 2015a). Water shortages have already occurred and are expected to continue due to the rapid population growth anticipated over the next 50 years (Cummings *et al.* 2003). In an ongoing U.S. Supreme Court case, in 2014 Florida sued Georgia seeking to establish that it is entitled to equitable apportionment of the waters of the ACF River Basin and appropriate injunctive relief against Georgia to sustain an adequate flow of fresh water into the Apalachicola Region (*State of Florida* v. *State of Georgia,* No. 142, Original).

It is not known how much water is already being removed from rivers used by Alabama shad because there is little information concerning actual withdrawals and virtually no information concerning water discharges. This is particularly the case for municipal and industrial uses because water use permits are not required in Georgia for withdrawals less than 100,000 gallons per day (Cummings *et al.* 2003) and discharge permits are not required unless discharge contains selected toxic materials. Agricultural water use permits are not quantified in any meaningful way, thus neither water withdrawals nor return flows are measured (Fisher *et al.* 2003). The Metropolitan North Georgia Water Planning District, which was created through legislation in 2001 and includes 15 counties and 93 cities (Cole and Carver 2011), is the only major metropolitan area in the country with more than 100 jurisdictions implementing a long-term comprehensive water management program that is required and enforced. Since plan implementation, total water consumption in the region has dropped by 10 percent despite a one million person increase in population. The District's Water Supply and Water Conservation Management Plan (2009) recommends that the Georgia General Assembly consider requiring permits for withdrawals less than 100,000 gallons per day within the Metro Water District.

Large withdrawals of water (such as those for municipal and agricultural use) from rivers result in reduced water quantity and quality (altered flows, higher temperatures, and lowered DO). Florida and Georgia have developed water management plans in attempts to provide comprehensive basin-wide strategies for management of the water resources; Alabama is also developing a plan. Many cost-effective methods for water conservation in cities already exist, and new technologies are constantly evolving that will enable even greater efficiencies, reducing the amount of water that needs to be extracted from rivers (Richter and Thomas 2007).

It is unclear whether Alabama shad in the ACF system have been affected by these ongoing water allocation issues. The Georgia Ecological Services Office of the USFWS (2015) states that several species of snails and mussels have gone extinct in the ACT and ACF systems

due to alterations in water quantity and quality. Currently, there are 65 ESA-listed species in the ACT and ACF systems. USFWS (2015) has provided instream flow guidelines to Georgia, Alabama, and Florida that describe flow regime features that would protect these listed species. It is unknown whether water allocation issues contribute to Alabama shad's extinction risk, either now or in the foreseeable future.

Climate Change

Changes in temperature, precipitation, drought, flooding, and sea level due to climate change could further exacerbate existing water quality and quantity issues in rivers and coastal areas used by Alabama shad. The Intergovernmental Panel on Climate Change (IPCC) in its fifth and most recent assessment report (IPCC AR5 2014) presented four Representative Concentration Pathways (RCPs) to assess future climate changes, risks, and impacts. The RCPs describe four possible 21st century pathways of greenhouse gas emissions and atmospheric concentrations, air pollutant emissions, and land use. The IPCC did not identify any scenario as being more likely to occur than any other. Because we cannot predict whether and how climate conditions may change, it is our policy to assume climate conditions will be similar to the status quo in making ESA listing determinations (memorandum from D. Wieting, Director of the Office of Protected Resources, to E. Sobeck, Assistant Administrator for Fisheries, regarding guidance for treatment of climate change in NMFS ESA decisions, January 4, 2016). In this listing determination, we use a baseline scenario, which is one without additional efforts to constrain emissions of greenhouse gases, leading to the RCP8.5 pathway, a scenario with very high greenhouse gas emissions (IPCC AR5 2014), in evaluating potential climate effects to Alabama shad.

The southern distributional limit for all *Alosa* species is believed to be determined by water temperature (McBride 2000). Although there have been no studies on the thermal tolerances of Alabama shad, other *Alosa* species cannot tolerate water temperatures greater than 32 °C; therefore, it is likely that Alabama shad cannot tolerate high water temperatures (Beitinger 1999). Under RCP8.5, the predicted increase in temperature from the 1850–1900 period to the end of the 21st century (2081–2100) is likely to exceed 2 °C (IPCC AR5 2014). However, current temperature trends indicate that warming has been less pronounced and less robust in the Southeast United States. Within North America, the Southeast is predicted to have the smallest changes in mean annual temperature, between 1.5–2.5 °C by the mid-21st century (IPCC AR5 2014). It is unknown what level of temperature increases could affect the current distribution and range of Alabama shad.

Precipitation can affect riverine habitat used by Alabama shad through increased runoff and introduction of sediment and pollutants. While precipitation is generally expected to increase for the northern portion of North America, little to no change in the annual average precipitation over the average recorded for 1986–2005 is predicted to occur in the Southeast by the mid-21st century (2046–2065) under RCP8.5 (IPCC AR5 2014). This is also the prediction for the late 21st century (2081–2100) for most of the Alabama shad's range. A small portion of the species' western range is in an area where greater than or equal to 66 percent of the prediction models for the late 21st century indicated changes in annual precipitation would occur, although the models could not predict whether precipitation would increase or decrease.

Similar to increased precipitation, increased flooding can also affect riverine habitat used by Alabama shad through increased runoff and introduction of sediment and pollutants. Conversely, increased periods of drought that result in lower than normal river flows can restrict access to habitat areas, expose previously submerged habitats, interrupt spawning cues, reduce thermal refugia, and exacerbate water quality issues, such as water temperature, reduced DO, nutrient levels, and contaminants. IPCC AR5 (2014) states that changes in the magnitude or frequency of flood events have not been attributed to climate change, as floods are generated by multiple mechanisms (*e.g.,* land use, seasonal changes, and urbanization). IPCC AR5 (2014) also states that it is not possible to attribute changes in drought frequency in North America to climate change.

Sea level rise resulting from climate change is projected to continue during the 21st century, at a rate faster than observed from 1971 to 2010. The projected increase in sea level for the period 2081–2100, relative to 1986–2005, is 0.45 to 0.82 meters with medium confidence under the scenario RCP8.5 (IPCC AR5 2014). Sea level rise is expected to occur in more than 95 percent of the ocean area by the end of the 21st century, although it will not be uniform across regions (IPCC AR5 2014). About 70 percent of the coastlines worldwide are projected to experience a sea level change within ±20 percent of the global mean (IPCC AR5 2014). A rise in sea level will likely create more estuarine areas and push the salt wedge farther upstream; this will likely impact any water intake structures located in the newly estuarine areas and may also increase the potential for salt water to enter aquifers (U.S. Global Research Group 2004). Saltwater intrusion will stress the availability of water in the southeast. The IPCC AR5 (2014) states that in the Southeast, ecosystems and irrigation are projected to be particularly stressed by decreases in water availability due to the combination of climate change, growing water demand, and water transfers to urban and industrial users. Existing water allocation issues could be exacerbated, potentially stressing water quality. However, it is unknown how Alabama shad may be affected by sea level rise in the future.

Most observations of climate change responses in species involve alterations in phenology (Parmesan 2006). Phenology is the study of how seasonal and interannual variations in the environment affect the timing of critical stages and events in a species' life cycle (Anderson *et al.* 2013). Phenological shifts attributed to climate change have been identified in both terrestrial and aquatic biota (Ellis and Vokoun 2009). In the marine ecosystem, the most important physical factors affecting phenology are water temperature and light, with the response to and importance of each factor being species dependent (Anderson *et al.* 2013). Importantly, climate change affects temperature but not photoperiod or light, which is key when considering the environmental cues that trigger species' migrations.

For marine species, climate-driven changes in temperature can modify the phenology of annual migrations to spawning grounds (Pörtner and Peck 2010). Seasonal temperature increases have been shown to correlate with changes in the timing of fish movement, with shifts towards earlier migrations of anadromous fish (Quinn and Adams 1996, Juanes *et al.* 2004) and earlier annual spawning events (Ahas and Aasa 2006). The importance of temperature in regulating the behavior and dynamics of *Alosa* species during spawning has been documented in several reviews (Aprahamian *et al.* 2010, Mettee and O'Neil 2003, Quinn and Adams 1996).

Ellis and Vokoun (2009) compared temperature records with fish surveys for anadromous alewives in several southern New England streams back to

the 1970s. They determined that 13 °C was a consistent predictor of spawning run timing for alewives in one historical and three recent stream studies over several years. They found that stream temperatures in the spring warmed to 13 °C about 12 days earlier in recent years than they did in the 1970s. Ellis and Vokoun (2009) concluded alewife runs occur about 12 days earlier on average than they did in the 1970s.

Aprahamian *et al.* (2010) used a stock-recruitment model with a temperature component to estimate the effects on twaite shad (*A. fallax*) in the Severn Estuary in Great Britain from an increase in temperature resulting from climate change. They determined a 1 °C increase in water temperature would shift the spawning run into the River Severn 6–10 days earlier, and a 2 °C would shift the spawning run 16–17 days earlier. Aprahamian *et al.* (2010) also predicted that a 1–2 °C temperature increase would result in an increase in twaite shad abundance, likely through increased hatching success and growth rate.

Quinn and Adams (1996) identified shifts in spawning migrations in another *Alosa* species, American shad, in response to changes in temperature. Records show that annual spring warming has occurred progressively earlier in the Columbia River since 1950. Fish counts from Bonneville Dam indicate that the peak migration of American shad, introduced into the river in the late 1800s, occurs approximately 38 days earlier than it did in 1938 and correlates with the warming trend. Quinn and Adams (1996) also looked at the timing of sockeye salmon (*Oncorhynchus nerka*), and noted that while the species' upriver migration is 6 days earlier than it was in 1949, that period lags behind the rate of environmental change. Quinn and Adams (1996) state that salmon migration is primarily controlled by population-specific responses to cues such as photoperiod (a factor not affected by climate change) rather than species-specific responses to temperature (a factor that is affected by climate change), as may be the case in shad.

The differences in the environmental cues triggering spawning migration, as well as the life history differences, between shad and salmon highlight how species may be affected differently by climate change. A species with close links between the environments experienced by spawning adults and their offspring (*e.g.,* spawning within the migratory corridor and a brief larval period) should behaviorally adjust the timing of migration and spawning to optimize conditions for both the adult and the offspring in response to environmental variation. Shad spawn in the river mainstem and have a brief incubation period (Quinn and Adams 1996). Spawning adult shad experience conditions that will be closely correlated to those affecting survival of their offspring during incubation and hatching. In contrast, when greater spatial and temporal separation occur between the environmental conditions experienced by migrating adults and their offspring, as is the case with salmon, genetic control over the timing of their spawn is greater than the response to environmental cues. This can result in a decoupling of cues that initiate migration (*e.g.,* photoperiod, which is not affected by climate change) and the state of the target habitat that can be affected by climate-sensitive factors, such as temperature, flow, DO, etc. In some Pacific salmon species, such as sockeye, migration into freshwater may precede spawning by several months, fry emergence by many months, and the time of seawater entry by juveniles by a year or more (Groot and Margolis 1991). These salmon move through a mainstem migratory corridor that is separate from the spawning and incubation areas in tributaries that may be subjected to different thermal and hydrological regimes. The ability of *Alosa* species to shift the timing of their spawning migrations in response to temperature, and the close spatial and temporal proximity of habitats occupied by spawning adults and newly spawned offspring, likely buffer Alabama shad from some aspects of climate change.

Climate change may also disrupt the timing between the life cycles of predators and prey (Parmesan 2006). The presence of both the predators of Alabama shad and their prey sources may be shifted temporally or spatially due to climate change. Also, changes in water temperature could impact prey production, with greater production in warmer years (Aprahamian *et al.* 2010). Year-class strength in American shad has been shown to be positively correlated with zooplankton density, as shown by an increase in the percentage of larval fish with food in their guts (Aprahamian *et al.* 2010). However, ocean currents, fronts, and upwelling and downwelling zones play significant roles in the distribution and production of marine ecosystems, and it is not yet predictable how these features are likely to change in response to alterations in temperature, precipitation, runoff, salinity, and wind (Scavia *et al.* 2002). Little is known about predators of Alabama shad, in either the marine or riverine environment. It is unknown how phenological shifts brought on by climate change may affect interactions between Alabama shad, their predators, and their prey.

In summary, under the RCP8.5 scenario, there could be a 2.6–4.8 °C temperature increase by the end of the 21st century (2081–2100) relative to 1986–2005. However, current temperature trends indicate that warming has been less pronounced and less robust in the Southeast United States. Within North America, the Southeast United States is predicted to have the smallest changes in mean annual temperature (IPCC AR5 2014). Little to no changes in precipitation that could increase runoff are predicted within the range of Alabama shad. Sea level rise resulting from climate change is projected to continue during the 21st century, at a rate faster than observed from 1971 to 2010. However, it is unknown how Alabama shad may be affected by sea level rise in the future. The IPCC AR5 (2014) states that in the Southeast, ecosystems and irrigation are projected to be particularly stressed by decreases in water availability due to the combination of climate change, growing water demand, and water transfers to urban and industrial users. Existing water allocation issues could be further exacerbated, potentially stressing water quality. Most observations of climate change responses in species involve alterations in phenology, the study of how seasonal and interannual variations in the environment affect the timing of critical stages and events in a species' life cycle (Parmesan 2006, Anderson *et al.* 2013). For marine species, climate-driven changes in temperature can modify the timing of annual migrations to spawning grounds, which has been observed in other *Alosa* species. Studies on American shad (Quinn and Adams 1996), alewives (Ellis and Vokoun 2009), and twaite shad (Aprahamian *et al.* 2010) demonstrated that those species were able to shift their spawning migrations earlier to adapt to warmer temperatures occurring earlier in the year. A comparison of responses to climate change in American shad and salmon showed that the behavioral responses of adult shad to warming temperatures (*i.e.,* earlier spawning migrations) should optimize conditions for both the adults and the offspring, as there is less spatial and temporal separation between the environmental conditions experienced by migrating adults and their offspring in shad compared to salmon (Quinn and Adams 1996, Groot and Margolis 1991).

However, it is unknown how spatial and temporal changes in migration in Alabama shad may affect both their predator and prey relationships. Ultimately, it is unknown how climate change may contribute to the current and foreseeable risk of extinction of Alabama shad.

Deep Water Horizon Oil Spill

On April 20, 2010, while working on an exploratory well in the Gulf of Mexico (approximately 50 mi southeast of the Mississippi River Delta, Louisiana, and 87 mi south of Dauphin Island, Alabama), the semi-submersible DWH drilling rig experienced an explosion and fire. The rig subsequently sank, and oil and natural gas began leaking into the Gulf of Mexico. The well was temporarily capped on July 15, 2010, which significantly reduced the amount of leaking oil, but the well was not ultimately sealed and declared ''effectively dead'' until September 19, 2010. Estimates on the amount of released oil varied widely and over time, but final official estimates indicated 53,000–62,000 barrels were released per day as a result of the event; the total amount of oil released into the Gulf of Mexico was estimated at 4.9 million barrels (780,000 m^3) (McNutt *et al.* 2011). In addition, approximately 2.1 million gallons of chemical dispersant were applied to surface waters (1.4 million gallons) and directly at the wellhead (0.77 million gallons) between May 15 and July 12, 2010 (Kujawinski *et al.* 2011).

There have been no studies of the effects of the DWH spill on Alabama shad and no reports or collections of shad affected by the spill. Chakrabarty *et al.* (2012) estimated that the DWH spill zone overlapped with 1.26 percent of Alabama shad's nearshore habitat. This estimate is based on the percentage of the species' historical collection records that occur within the spill zone. Because few historical records for Alabama shad exist in some Gulf Coast systems, and almost no data exist for Alabama shad in the marine environment, the estimate by Chakrabarty *et al.* (2012) is likely an underestimate of the overlap of the DWH spill zone with habitat used by Alabama shad. However, it does confirm that Alabama shad may have been exposed to oil or chemical dispersants associated with the DWH spill.

Fish exposed to oil can be impacted directly through uptake by the gills, ingestion of oil or oiled prey, effects on egg and larval survival, or changes in the ecosystem that support the fish (USFWS 2010). Adult fish may experience reduced growth, enlarged livers, changes in heart and respiration rates, fin erosion, and reproductive impairment when exposed to oil (USFWS 2010, Snyder *et al.* 2015). Oil has the potential to impact spawning success as the eggs and larvae of many fish species are highly sensitive to oil toxins (USFWS 2010).

There have been no studies on the effects of the DWH spill on Alabama shad. Based on their life history, it is likely that the earliest and most vulnerable life stages (eggs and larvae) were not exposed to oil and dispersants. The oil spill occurred in April when females are upriver, releasing their eggs at spawning sites. Over the summer, as oil recovery and cleanup was occurring, the newly spawned Alabama shad larvae were in their riverine habitats maturing. Alabama shad from northern rivers start the downstream migration toward marine waters in late summer. In comparison, shad from Gulf Coast river systems have been observed to stay upriver as late as December. Therefore, it is likely some juvenile and non-spawning adult Alabama shad were exposed to oil and dispersants associated with the DWH spill, but not the actively spawning adults and early life stages.

Polycyclic aromatic hydrocarbons (PAH) are considered the most toxic component of crude oil to marine life and are ubiquitous pollutants in the marine environment (Snyder *et al.* 2015). Exposure to PAHs has been linked with a variety of sublethal effects in fish, including DNA damage, internal and external lesions, gill and organ abnormalities, reduced adult fitness, altered and reduced growth, decreased fecundity, and reduced survival to maturity (Snyder *et al.* 2015). Red snapper (*Lutjanus campechanus*) sampled since 2013 show spatial variation in tissue concentrations of PAH metabolites (Snyder *et al.* 2015). Red snapper caught closer to the Mississippi River and the DWH spill area had higher PAH metabolite concentrations than snapper caught on the west Florida shelf. Additionally, the red snapper caught near the Mississippi River showed a decrease in PAH metabolite concentrations over time, indicating an exposure event to elevated PAHs that dissipated over time. Meanwhile, the snapper from the west Florida shelf showed no decrease in PAH metabolites over time, suggesting they were not exposed to elevated PAHs from the DWH spill. This indicates that the largest spawning population of Alabama shad, the population from the ACF River basin, and other populations in rivers that drain into the west Florida shelf may not have been exposed to oil and dispersants from the DWH spill, although this is uncertain.

Despite widespread contamination of offshore waters by the DWH spill and to a lesser extent, coastal waters, the results of a study by Moody *et al.* (2013) provided little evidence for large-scale acute or persistent oil-induced impacts on organisms that complete all or a portion of their life cycle within an estuary in Point-aux-Pins, Alabama. The abundance of resident estuarine species declined significantly following the DWH spill, but returned to pre-spill abundances by 2011. There was no significant decline in the abundance of transient species (those that only spent a portion of their life cycle in the estuary), even though transient species were more likely exposed to oiling in the marine environment. Moody *et al.* (2013) concluded that despite the presence of localized oiling in coastal habitats outside Louisiana, the most severe oil impacts were largely relegated to the deep sea. Fodrie and Heck (2011) reviewed pre- and post-DWH fish data collected by trawl surveys in nearshore seagrass habitats from Louisiana to Florida. They concluded that immediate, catastrophic losses of 2010 year classes of marine organisms were largely avoided, and that no shifts in species composition occurred following the DWH spill. Fodrie and Heck (2011) also noted that there is increasing evidence that the acute impacts of the DWH spill may be concentrated in the deep ocean rather than shallow-water, coastal ecosystems where Alabama shad are known to occur.

Little is known about Alabama shad in the marine environment, even though the species spends the majority of its life there. We considered the potential for effects to the species from the DWH spill by looking at studies of other offshore species. Rooker *et al.* (2013) looked at abundance and occurrence of the larvae of four deep-ocean species in relation to the DWH spill: Blackfin tuna (*Thunnus atlanticus*), blue marlin (*Makaira nigricans*), dolphinfish (*Coryphaena hippurus*), and sailfish (*Istiophorus platypterus*). They determined that both the abundance and percent occurrence declined in 2010 for all four species relative to the 3 years prior to the DWH oil spill, suggesting that changes in environmental conditions, possibly linked to the presence of oil and dispersants, may have contributed to observed inter-annual variability. The most conspicuous 2010 declines were seen in billfish (blue marlin and sailfish) larvae. Given these larvae are typically restricted to surface waters compared to the other taxa surveyed (blackfin tuna

and dolphinfish), it is possible their exposure to DWH toxic compounds affected early life survival. However, Rooker *et al.* (2013) also note that inter-annual variability of larval abundance and distribution is relatively common for pelagic larvae in the Gulf of Mexico. Part of the apparent decline in billfish, dolphinfish, and tuna larvae therefore may be due to shifts in biological or oceanographic conditions and not entirely attributable to the DWH oil spill.

In summary, there are no data indicating Alabama shad were directly affected by the DWH spill. The spill occurred in April when the most vulnerable early life stages of Alabama shad were in riverine areas and it is unlikely they were directly exposed. The older juveniles and adults that entered coastal and nearshore waters in late summer through winter may have been exposed to toxins from the DWH spill, but studies of other coastal species indicate recovery occurred the following year. It is likely that the worst acute effects of DWH were experienced further offshore in the marine environment. Although we have almost no information on the marine portion of Alabama shad's life cycle, it is doubtful this smaller anadromous species spends a significant portion of its life cycle far offshore like the large oceanic species (*e.g.,* tuna and billfish). We ranked exposure to oil and other toxins from the DWH spill, on its own, as having a low risk of contributing to the extinction risk of Alabama shad. It is unknown whether the DWH spill will contribute to the extinction risk of Alabama shad in the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Small commercial fisheries for Alabama shad once existed in Alabama, Arkansas, Kentucky, Indiana, Ohio, and Iowa (Adams *et al.* 2000, Daniels 1860). Based on existing records, Alabama shad populations have never supported an important or sizeable commercial or recreational fishery, at least since the 19th century (NMFS *et al.* 2012). Buchanan *et al.* (1999) reported that a ''limited'' commercial fishery existed in the Mississippi River system in the late 1800s. Only small catches of the species have been recorded for a few years in the statistical reports of the U.S. Fish Commission (Hildebrand 1963). The total reported commercial landings of Alabama shad were 3,165 kg (6,978 pounds) in 1889 (Hildebrand 1963). The U.S. Fish Commission Report for 1901 reported that a total of 3,154 kg (6,955 pounds) of the ''newly described species'' of ''Ohio'' shad (a species later determined to be the same species as Alabama shad) were caught in the Ohio River in West Virginia, Indiana, and Kentucky, valued at $355 (Townsend 1902). The report stated that the species had likely been caught in that river for a ''number of years.'' The 1901 report stated there was no catch of ''Ohio'' (Alabama) shad in Alabama, Arkansas, Illinois, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, Ohio, South Dakota, Tennessee, and Wisconsin. The following year (1902), Hildebrand (1963) reported Alabama shad landings of 68 kg (150 pounds) from Alabama, with no commercial landings reported since. Hildebrand (1963) noted that Alabama shad were still numerous enough in Kentucky and Ohio to be taken in considerable quantities, but were undesirable for human consumption, and no attempts were made to catch and sell them. Coker (1930) stated that there were enough ''Ohio'' (Alabama) shad at the Keokuk Dam in Iowa in 1915 to support a substantial fishery, but that none developed, and ''a few'' have been taken commercially from the Ohio River. Coker (1930) observed that ''Ohio'' (Alabama) shad in the Mississippi River had no economic value at that time. The FFWCC (McBride 2000) notes that even though there have been significant fisheries for other *Alosa* species like American shad, hickory shad (*A. mediocris*), and blueback herring, a fishery for Alabama shad never developed in Florida. McBride (2000) also states that recreational fishing for Alabama shad began around 1950 but has not developed significantly. There are currently no directed fisheries for Alabama shad in any U.S. waters (Smith *et al.* 2011). Mills (1972) noted that striped bass fishermen used Alabama shad as bait. NMFS *et al.* (2012) reported that fishermen occasionally catch Alabama shad in the Apalachicola River below JWLD for bait to use while fishing for striped bass or flathead catfish (*Pylodictis olivaris*). Some Alabama shad are also collected for scientific research and for educational purposes. However it is unlikely that past or present collection or harvest (utilization) of Alabama shad for commercial, recreational, scientific, or education purposes, alone or in combination with other factors, has contributed significantly to the species' extinction risk. Further, given the lack of the sizeable harvest in the past, we do not anticipate the development of new fisheries or that directed harvest levels will otherwise increase in the future. Therefore, collection or harvest of Alabama shad is unlikely to significantly contribute to the species' extinction risk in the foreseeable future.

C. Disease and Predation

Most of the Alabama shad collected during research and monitoring associated with JWLD conservation locking activities in 2013 had large, open sores or gash-like wounds, in some cases exposing organs and bone (Sammons 2013; S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014). These sores or wounds were not observed on other fish species collected (*e.g.,* gizzard shad [*Dorosoma cepedianum*] and mullet [*Mugil* spp.]), indicating Alabama shad are either more susceptible to the source of the wounds or they are distributed in areas that the other species are not (Sammons 2013). The wounds were only observed on adult Alabama shad and not on younger fish, indicating the source may have occurred in the Gulf of Mexico (Sammons 2013). A researcher attending the 2014 JWLD Fish Passage Year-End Summary Meeting suggested that the pictures of the Alabama shad sores or wounds looked similar to symptoms of a disease that occurred in blueback herring on the Atlantic Coast. The 12-month listing determination for alewife and blueback herring (78 FR 48944; August 12, 2013) states that mycobacteria, which can cause ulcers, emaciation, and sometimes death, have been found in many Chesapeake Bay fish, including blueback herring. Alabama shad with the wounds generally appeared to be in poor condition and suffered higher than normal mortality due to handling and tag insertion (Sammons 2013). Sammons (2013) also cited a news article reporting gash wounds on fish potentially associated with the Deepwater Horizon Oil Spill resembling the wounds found on Alabama shad. It is unknown what caused the sores or wounds in Alabama shad in the ACF River system and what percentage of the population may have been impacted. The sores have not been observed in any of the ~200 Alabama shad captured since 2013 (T. Ingram, Georgia DNR, pers. comm. to K. Shotts, NMFS, June 6, 2016). It is unknown whether disease is contributing to the species' extinction risk.

Little information is available regarding predation on Alabama shad in freshwater systems and no information regarding predation in marine environments (NMFS *et al.* 2012). Like other clupeids, Alabama shad are likely

prey for piscivorous fishes, such as striped bass (Pattillo *et al.* 1997). NMFS *et al.* (2012) noted that birds of prey (bald eagles and osprey) have been observed eating Alabama shad from the Apalachicola River. There is no available information suggesting Alabama shad populations are significantly affected by predation. It is unlikely that predation, alone or in combination with other factors, is significantly contributing to Alabama shad's extinction risk.

D. Inadequacy of Existing Regulatory Mechanisms

Regulations on Harvest of Alabama Shad

The harvest or collection of Alabama shad is not regulated in Federal waters, although the legal authority exists, and regulations could be implemented as necessary through the Magnuson-Stevens Fishery conservation and Management Act. A variety of protective regulations exist in the states within the species' historical range (NMFS *et al.* 2012), although there are currently no directed fisheries for Alabama shad in any U.S. waters (Smith *et al.* 2011). Since January 1, 1997, hook-and-line has been the only allowable fishing gear for *Alosa* species in the State of Florida, with a limit of 10 shad (as an aggregate of Alabama, American, and hickory shad) for both recreational and commercial fishermen (Chapter 68B–52.001 of the Florida Administrative Code). In Louisiana, recreational regulations limit the taking of shad species (unspecified) to 50 pounds (22.7 kilograms) per day, with no size limit (NMFS *et al.* 2012). Alabama shad are not listed as a game fish in the Mississippi Department of Wildlife fishing regulations and may be taken as bait with dip/landing net, cast net, boat mounted scoop, or wire basket by resident anglers with the appropriate fresh or salt water recreational fishing license for personal use during sport fishing (NMFS *et al.* 2012). Alabama shad is a protected species in both Alabama and Georgia, and may only be collected with a state-issued scientific collector's permit that specifies Alabama shad. No recreational or commercial harvest is permitted in either state (NMFS *et al.* 2012). Alabama shad are classified as non-game fish in Missouri and Arkansas, and there are no catch or possession limits.

Although there are no restrictions on the harvest of Alabama shad in marine waters, virtually nothing is known about the life history of the species in the marine environment and only 5 specimens have ever been recorded from marine waters. It is highly unlikely that fishermen or researchers would be able to successfully target the species in the marine environment. Harvest and collection of Alabama shad is restricted to varying degrees in Louisiana, Alabama, Georgia, and Florida, while no restrictions are in place in Mississippi, Arkansas, or Missouri. Under ''Overutilization for Commercial, Recreational, Scientific, or Educational Purposes'' (Factor B), we determined that it is unlikely that past or present collection or harvest (utilization) of Alabama shad has contributed significantly to the species' extinction risk. We also determined under Factor B that, given the lack of the sizeable harvest in the past, we do not anticipate the development of new fisheries or that directed harvest levels will otherwise increase in the future. Therefore, although harvest and collection of Alabama shad is regulated in some areas where the species occurs, but not in others, we believe that the existing laws are adequate to regulate the low levels of harvest and collection and are unlikely contributing to the extinction risk of Alabama shad.

Regulations on Dams

The Federal Power Act (FPA) (16 U.S.C. 791–828), as amended, provides for protecting, mitigating damages to, and enhancing fish and wildlife resources (including anadromous fish) impacted by hydroelectric facilities regulated by FERC. FERC must consult with state and Federal resource agencies on proposed hydroelectric projects and implement recommendations concerning fish and wildlife and their habitat, *e.g.,* including spawning habitat, wetlands, instream flows (timing, quality, quantity), reservoir establishment and regulation, project construction and operation, fish entrainment and mortality, and recreational access. FERC must also consult with Federal and state resource agencies to renew the operating licenses for existing dams and must address impacts to natural resources. Both NMFS and USFWS, and in certain cases, U.S. Federal land management agencies, prescribe mandatory fish passage conditions for inclusion in hydropower licenses. These agencies and state resource agencies also may make nonbinding recommendations for additional mitigation to promote fish protection (OTA 1995). Specific regulations in section 10(j) of the FPA provide that licenses issued by FERC contain conditions to protect, mitigate damages to, and enhance fish and wildlife based on recommendations received from state and Federal agencies during the licensing or license renewal process. With regard to fish passage, Section 18 of the FPA requires a FERC licensee to construct, maintain, and operate fishways prescribed by the Secretary of the Interior or the Secretary of Commerce. Section 18 also allows that a fishway prescription can be reserved to address impacts that become apparent in the future.

The presence of dams that block Alabama shad from accessing upstream spawning habitat is believed to be the primary cause of their decline in some river systems (NMFS *et al.* 2012, USFWS 2009a). The era of big dam building began in the 1930s, but slowed over time with the advent of environmental laws and alternative power sources (USBR 2015). The greatest rate of increase in reservoir storage occurred from the late 1950s to the late 1970s, with more dams (and some of the largest) built in the 1960s than in any other decade (Graf 1999). In the ''golden age'' of U.S. dam building, thousands of large and small dams were built with little thought to the environmental impacts (Doyle *et al.* 2003). While very few new dams have been constructed since 1980 (Graf 1999), FERC continues to renew licenses under the FPA for existing dams due to expiring licenses, modifications to power generating capabilities, or no prior license because the dam was constructed pre-FPA. FERC's initial mandate under the FPA of 1920 was the regulation of energy production, distribution, and availability; and the promotion of hydropower (OTA 1995). Environmental concerns were largely addressed through a number of laws that were enacted (some much later than the original FPA) to protect natural resources and the environment, including: the Fish and Wildlife Coordination Act (1934), Wild and Scenic Rivers Act (1968), National Environmental Policy Act (1970), Federal Water Pollution Control Act/ Clean Water Act (1972/1977), and the Endangered Species Act (1973; OTA 1995). In 1986, Congress passed the Electric Consumers Protection Act (ECPA), a series of amendments to the FPA, which was designed, in part, to place greater emphasis on environmental considerations in licensing decisions. The FPA, as amended by ECPA, directs FERC to give equal consideration to the full range of purposes related to the potential value of a stream or river, including energy conservation, fish and wildlife resources (including spawning grounds and habitat), and other aspects of environmental quality in addition to

hydropower development. Although mandatory fish passage authority rested with the Federal resource agencies since the early part of this century, the ECPA was instrumental in elevating the importance of non-developmental values in and increasing FERC's accountability for licensing decisions (OTA 1995). Through the addition of section 10(j), Federal and state resource agencies may recommend conditions to protect, enhance, or mitigate for damages to fish and wildlife resources under the FPA.

FERC licenses have a term of 30 to 50 years, so NMFS' involvement in the licensing process to ensure the protection and accessibility of upstream habitat, and to improve habitat degraded by changes in water flow and quality from dam operations, may only occur 2–3 times a century for a particular project. However, an estimated 85 percent of the dams in the United States will be near the end of their operational lives by 2020 (Doyle *et al.* 2003). The current intensification of economic and environmental concerns is coinciding with a policy window in which many private dams are coming up for regulatory re-licensing with FERC (Doyle *et al.* 2003). Alabama shad may benefit from fishway requirements under section 18 of the FPA when prescriptions are made to address anadromous fish passage and during the re-licensing of existing hydroelectric dams when anadromous species are considered. Mitigation technologies to reduce the adverse effect of hydropower on the nation's fish resources have been employed, although not consistently, since the early 1900s; while their effectiveness is often poorly understood, in a review of 16 case studies, the majority demonstrated positive results for migratory fish stemming from technology implementation (OTA 1995). Decommissioning and/or removal of existing dam facilities as an alternative to relicensing has been raised more frequently since 1993 and as part of the movement toward greater scrutiny of the adverse impacts of hydropower plants on certain fish populations (OTA 1995). Lovett (2014) notes that 1,150 dams have been removed in the last 20 years. However, dam removal options are faced by a number of very real environmental, economic, and political constraints and, thus, are infrequently considered as alternatives to fish passage development.

The FPA does not apply to non-hydropower dams, such as those operated by USACE for navigation purposes. However, under Section 7(a)(2) of the ESA, Federal agencies are required to consult with NMFS or USFWS on activities that may affect listed species. Dam maintenance, repairs, and operational changes may require ESA Section 7 consultation and allow conservation measures benefitting listed species to be recommended or required. Alabama shad may also benefit from the conservation measures implemented for other species with similar needs or in similar habitats. USFWS (2007) completed a biological opinion under Section 7 of the ESA on USACE's drought operations for the Interim Operating Plan for JWLD in the ACF system. While that biological opinion did not evaluate Alabama shad it did analyze effects to Gulf sturgeon and three species of mussels (fat threeridge, purple bankclimber, and Chipola slabshell). USFWS (2007) determined that while there were likely to be some adverse effects to the mussels, the drought operations are not likely to jeopardize the continued existence of any of the species or destroy their critical habitat. Because Alabama shad have similar water quality and quantity requirements to Gulf sturgeon, the conservation efforts for the sturgeon likely benefit shad. Federal agencies may also choose to use their authorities and resources for the conservation of species.

In two river systems inhabited by Alabama shad, the ACF and Alabama River systems, USACE has voluntarily cooperated with state and Federal agencies to implement conservation locking for Alabama shad and other anadromous species. In 2012, the ''cooperator'' organizations (USACE, USFWS, NMFS, Georgia DNR, FFWCC, and TNC) signed a Memorandum of Understanding (MOU) clarifying their commitments and responsibilities in the continued implementation of fish passage at JWLD. In Part B. of the MOU, ''Statement of Mutual Benefit and Interests'', the cooperator organizations agree to: (1) Provide mutual assistance, share information and technology, and coordinate efforts for fish passage, (2) discuss a strategy for providing passage at JWLD for the conservation and restoration of migratory fishes in the ACF River Basin, consistent with authorized project purposes, (3) initiate and participate in a JWLD Fish Passage Partnership and discuss yearly fish passage operation for migratory fishes at JWLD. Collaborate, assist, and support research, monitoring, outreach, and related activities for determining the effects of fish passage on migratory fish populations and habitats at JWLD and the ACF River Basin, (4) foster partnerships that support the passage of migratory fishes in Georgia and Florida among state agencies, federal agencies, and the public within the ACF River Basin, and (5) designate a Partnership Coordinator from one of the cooperators in order to facilitate the partnership and fulfill the purpose of the MOU. The Partnership Coordinator shall provide a report of the annual fish passage operations, results, and related activities to all cooperators.

In fulfillment of the cooperation outlined in the MOU, an annual meeting to discuss the issues and outcomes from the previous spring conservation locking cycle is held, usually in the early part of the following year (*i.e.,* January or February). Powerpoints presented at the meeting, data summaries, reports to funding agencies, and journal articles or other publications resulting from research in the ACF are provided to cooperators and interested parties, satisfying the annual reporting noted in #5 of Part B. of the MOU. At the annual meeting, the cooperators and other interested parties (*e.g.,* universities that are not signatories to the MOU, but are heavily involved in research activities associated with the conservation locking in the ACF) discuss lessons learned from the previous year and participate in planning the next cycle of spring conservation locking, including whether the locking operation and schedule can be improved. For example, during the planned maintenance on the lock that occurred during the 2013–2014 season, the cooperators were able to upgrade the method of delivering the attractant flow (a stream of high velocity water used to attract spawning fish) from a manual system to an electric pump as a more efficient way to direct shad through the lock when conservation locking resumed (S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014).

Although the MOU does not require implementation of conservation locking at JWLD, USACE had demonstrated a commitment to continuing conservation locking. The current operations considered in developing alternatives for the updated USACE Master Water Control Manual (FEIS; December 2016) includes standard operating procedures for conservation locking at the JWLD to benefit Alabama shad. All alternatives considered in the FEIS included conservation locking. The FEIS indicates that in most years since the spring of 2005, USACE has operated the lock at JWLD between March and May to facilitate downstream-to-upstream passage of Alabama shad in cooperation with pertinent state and federal agencies. In general two fish locking

cycles are performed each day. While studies are ongoing to determine the most appropriate technique and timing for the locks, the number of lock cycles per day will not change (FEIS 2016).

The presence of dams that block Alabama shad from accessing upstream spawning habitat is believed to be the primary cause of their decline in some river systems. The purpose of the original FPA of 1920 was the regulation of energy production, distribution, and availability, and the promotion of hydropower, and dams were built with little or no regard for the environmental consequences. The adverse environmental effects, including effects to anadromous fish species, were largely unaddressed until the 1970s with the enactment of several major environmental laws. However, the FPA itself was amended by the ECPA in 1986, which directed FERC to give equal consideration to environmental issues. The FPA, through Section 18 and 10(j), provides opportunities to implement conservation measures at existing dams. Although some dams are not subject to the FPA, other mechanisms exist to achieve conservation measures in addition to fish passage at non-FPA dams (Section 7 consultation and voluntary efforts such as conservation locking). Therefore, we ranked the inadequacy of existing dam regulations as having a low risk of contributing significantly to the current and foreseeable risk of extinction for Alabama shad.

Regulations Associated With Water Quality

The Federal Water Pollution Control Act, and amendments (FWPCA) (33 U.S.C. 1251–1376), also called the ''Clean Water Act,'' mandates Federal protection of water quality. The law also provides for assessment of injury, destruction, or loss of natural resources caused by discharge of pollutants. Section 404 of the FWPCA prohibits the discharge of dredged or fill material into navigable waters without a permit. The main responsibility for water quality management resides with the states in the implementation of water quality standards, the administration of the National Pollutant Discharge Elimination System (NPDES) program (where the state has received EPA approval to do so), and the management of non-point sources of pollution. Section 303(d) of the Clean Water Act requires states to identify waters that do not meet or are not expected to meet water quality standards. Each state develops Total Maximum Daily Loads (TMDLs) for its water quality-limited waters. A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that load among the various point and non-point sources of that pollutant. Section 402 of the Clean Water Act created a system for permitting wastewater discharges. Collectively the NPDES sets specific limits on discharge of various types of pollutants from point-source outfalls. A non-point source control program focuses primarily on the reduction of agricultural siltation and chemical pollution resulting from rain runoff into streams. Efforts to reduce non-point pollution currently rely on the use of land management practices to reduce surface runoff through programs administered primarily by the Department of Agriculture.

Water quality has been cited as a threat to Alabama shad (Mettee and O'Neil 2003, Mettee *et al.* 1996). We reviewed the water quality assessment reports for rivers occupied by Alabama shad submitted by individual states to the EPA under Sections 305(b) and 303(d) of the Clean Water Act. The assessment reports prepared by the states show that water quality in approximately half of the river mi within the species' current range is deemed to be good. The remaining areas are impaired for one or more reasons, including the presence of heavy metals, low DO, impaired biota, sedimentation, and the presence of other organic and inorganic contaminants. Further a comparison of NCCR I–IV, published by the EPA in 2001, 2005, 2008, and 2012, shows a pattern of overall improving water quality in the Gulf of Mexico, with the overall condition improving from NCCR I to IV. Contaminant loads in sediments and in fish tissue also improved from ''poor'' to ''fair.'' The DO content of coastal waters in the Gulf Coast has remained ''good'' in all four reports. Based on this recent record of performance, regulatory mechanisms governing water quality are at a low risk of contributing significantly to the current and foreseeable risk of extinction for Alabama shad.

Regulatory Mechanisms for Climate Change

Greenhouse gas emissions are regulated through multi-state and international agreements, and through statutes and regulations, at the national, state, or provincial level. One of the key international agreements relevant to attempts to control greenhouse gas emissions, the Copenhagen Accord, was developed in 2009 by the Conference of Parties to the United Nations Framework Convention on Climate Change. The Copenhagen Accord identifies specific information provided by Parties on quantified economy-wide emissions targets for 2020 and on nationally appropriate mitigation actions to help achieve the goal of capping increasing average global temperature at 2 °C above pre-industrial levels. The last conference of the Parties to the United National Framework Convention on Climate Change was held in Lima, Peru, in December 2014. The resulting decisions from the meeting were primarily to continue ongoing efforts to reach a new agreement for emissions reductions to be adopted at the 2015 meeting in Paris, France, and to have those implemented by 2020. The new agreement would maintain the same overall goal as the Copenhagen Accord, to cap additional warming at 2 °C.

Within the United States, President Barack Obama released the President's Climate Action Plan in June 2013. The plan is three-pronged, including proposed actions for mitigation, adaptation, and international leadership. The actions listed for mitigation include completing carbon pollution standards for new and existing power plants, accelerating clean energy permitting, increasing funding for clean energy innovation and technology, increasing fuel economy standards, increasing energy efficiency in homes, businesses, and factories, and reducing other greenhouse gas emissions including hydrofluorocarbons and methane. The plan states that the United States is still committed to reducing greenhouse gas emissions 17 percent below 2005 levels by 2020 if all other major economies agree to similar reductions. Additional efforts made domestically related to climate change are more focused on facilitating adaptation to the impending changes to the environment due to climate change in order to maintain the country's natural and economic resources, but do not directly address the emission of greenhouse gas.

National and international efforts to limit climate change are ambitious, but their success is uncertain since major agreements are still being formulated, and the outcomes of ongoing activities are not yet known. Likewise, the effects of climate change on Alabama shad and their habitat are also not yet known. However, climate change predictions by the IPCC (IPCC AR5 2014) suggest that temperature increases throughout the range of Alabama shad of 1.5–2.5 °C by the mid-21st century may be less than other areas in North America (2.5–4 °C by the mid-21st century), even with no additional efforts to constrain

greenhouse gas emissions. Flooding and drought are not attributable to climate change, and the IPCC predicts little to no change in average annual precipitation within the range of Alabama shad through 2065, although the predictions are less certain for the remainder of the 21st century (IPCC AR5). Sea level rise associated with climate change may salinize groundwater and decrease freshwater availability, exacerbating existing water allocation issues. Regulatory mechanisms addressing water allocation issues (discussed in the following section) are likely to have as much immediate impact on this issue as regulatory mechanisms addressing the causes of sea level rise. It is unknown how regulations addressing climate change may contribute to Alabama shad's extinction risk, either now or in the foreseeable future.

Regulatory Mechanisms Associated With Water Allocation

It is unknown whether water allocation issues contribute to Alabama shad's extinction risk. Regulations associated with water allocation are both an intra- and inter-state issue. Within a state's borders, state laws determine rights to use water (CBO 2006). In the East, water rights are formed under riparian doctrine, meaning ownership of land adjacent to a body of water (riparian land) conveys the right to use the water in a way that is reasonable (Ruhl 2003, CBO 2006). Determining what is reasonable involves consideration of the purpose of the use, the suitability of the use to the body of water, economic and social values of the use, the extent of harm caused, the practicality of avoiding any harm by adjusting the methods or quantities of use, and the fairness of making the user who causes harm bear losses (CBO 2006). In practice today, owners of riparian land must obtain permits from a state agency to use water. Permits may also be available to others who do not own riparian land. The charters incorporating most cities give them power to procure water for public purposes and to supply the domestic needs of their residents, and states have modified the riparian doctrine by introducing exceptions that allow municipal uses (CBO 2006).

In Georgia, the 15-county Metropolitan North Georgia Water Planning District was created through legislation to manage the water supply and its consumption for economic, environmental, and social well-being. The Metropolitan North Georgia Water Planning District prohibits the inter-basin transfers of water from outside the district to meet water supply demands within the district (Cole and Carver 2011). The Metropolitan North Georgia Water Planning District encompasses the Atlanta metropolitan area, the most populous area in Georgia and the ninth largest metro area in the U.S. Therefore, regulations that limit inter-basin transfers would benefit Alabama shad by limiting the amount of water removed from rivers within their range. Georgia's Board of Natural Resources adopted an instream flow policy in 2001 that ensures the minimum flows required to protect aquatic habitat, such as that for Alabama shad, are maintained downstream of new water withdrawals (Cole and Carver 2011). In Florida, when determining whether the public interest is served by a transfer of groundwater from one water district to another, or surface water from one county to another, the governing board or department must consider an array of factors, including the potential environmental impacts (Cole and Carver 2011). The State of Florida statutes require local governments to consult with water suppliers to ensure that adequate water supplies will be in place and available to serve a new development by the time the local government issues the development's certificate of occupancy (Cole and Carver 2011). In addition to state laws governing water allocation, many states within the range of Alabama shad also have state water plans that are intended to be comprehensive strategies for the long-term management of water resources on a watershed basis. Georgia, Florida, Missouri, and Arkansas have state water plans in place, and Alabama and Louisiana have draft plans. The state plans vary in detail and goals, but generally attempt to balance economic, public health, and environmental needs. Water planning that considers environmental needs, such as downstream habitat for fish, are likely to benefit Alabama shad because it increases the likelihood that adequate water flows will be available.

When water allocation issues arise between states, there are generally three ways to resolve the issue. States can enter into a compact agreeing to a division of resources, which would then require congressional approval (Ruhl 2003). Second, the commerce clause of the Constitution gives Congress the authority to allocate interstate waters to serve the national interest, even if doing so means overriding state law (Ruhl 2003, CBO 2006). The third option is for states to take their dispute to the U.S. Supreme Court, which can exercise its jurisdiction to arrive at an equitable apportionment of the water (Ruhl 2003).

The major water allocation issues affecting Alabama shad are between Alabama, Georgia, and Florida over use of water in the ACT and ACF River basins. SELC (2015b) documented the following history of the dispute, which ensued in 1989 after USACE recommended reallocation of water from reservoirs in the ACT and ACF basins to supply the Atlanta, Georgia, metro area. Alabama sued USACE, stating they had ignored environmental impacts on the downstream states and breached their duty to benefit all downstream users. Florida intervened on the side of Alabama, and Georgia and metro Atlanta municipalities intervened or initiated their own lawsuits against USACE for not allowing the reservoirs to serve current and future water supply needs. The lawsuit was put on hold to allow the three states and USACE to negotiate a resolution, conduct comprehensive studies, and create a structure that would allow the states to work together. Each state passed a compact, and they were ratified by Congress in 1997. However, agreement could not be reached, the compacts expired without resolution in 2003 and 2004, and the states went back to court. The litigation continued for over a decade. In 2009, a judge ruled that Lake Lanier (part of the ACF basin) was not authorized to supply water to metro Atlanta. The ruling was reversed by the 11th Circuit Court of Appeals and after the U.S. Supreme Court subsequently declined to hear the case, the litigation was temporarily suspended. Currently at the U.S. Supreme Court is a case brought by Florida against Georgia alleging harm to Apalachicola Bay resulting from Georgia's disproportionate use of water from the ACF River system.

We evaluated water allocation issues under the ''Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range'' (Factor A). Transferring water from one river basin to another can alter natural water flows in both the originating and receiving basins, and exacerbate any existing water quality issues. It is not known how much water is already being removed and transferred from rivers used by Alabama shad. The biggest interstate allocation dispute is occurring in Alabama, Florida, and Georgia over the future allocation of water in the ACF and ACT River basins. While the outcomes of water allocation and the regulatory mechanisms governing it are unknown, the Alabama shad population in the ACF continues to be the largest known spawning population, and

conservation locking is occurring in both the ACF and ACT basins to reduce the effects of dams, the primary threat to the species in both systems. Under Factor A, we determined that it is unknown whether water allocation issues contribute to Alabama shad's extinction risk, either now or in the foreseeable future. It is also unknown whether the regulatory mechanisms for managing water allocation in Alabama shad's riverine habitat are adequate or whether they are contributing to the species' extinction risk, either now or in the foreseeable future due to the complexity of the issue, the length of time (more than 25 years) the issue has persisted, and the inability of the major stakeholders to come to agreement or final decision. However, state and Federal agencies and an environmental organization (USACE, USFWS, NMFS, Georgia DNR, FFWCC, and TNC) did achieve agreement in the signed 2012 MOU for a cooperative fish passage strategy at JWLD that it was to their mutual interest and benefit to coordinate efforts for fish passage for the conservation and restoration of migratory fish, such as Alabama shad, in the ACF River Basin.

Other Regulatory Mechanisms Affecting Alabama Shad

Other ESA listings and critical habitat designations for species within the range of Alabama shad may also promote the conservation of Alabama shad. For instance, Gulf sturgeon, listed under the ESA as threatened in 1991 (56 FR 49653), inhabit many of the same rivers along the Gulf of Mexico as Alabama shad. Critical habitat for Gulf sturgeon was designated in 2003 (68 FR 13370). The primary constituent elements of Gulf sturgeon critical habitat include habitat elements that are also important for shad (*i.e.,* abundant food items, riverine spawning sites, riverine aggregation areas, flow regime, water quality, sediment quality, and safe and unobstructed migratory pathways). Measures to improve habitats and reduce impacts to Gulf sturgeon may directly or indirectly benefit Alabama shad. Both species are anadromous; adults spawn in freshwater in the spring and early summer then migrate back into estuarine and marine waters. Many of the habitats that Gulf sturgeon occupy are also habitats that Alabama shad use for spawning, migration, and juvenile rearing. Therefore, protection measures for Gulf sturgeon, such as improved fish passage and water quality, or reduction of water withdrawals, may also provide a benefit to Alabama shad. Passage for sturgeon species, although less studied, has become more of a priority in recent years (Kynard *et al.* 2008), while passage technologies are considered to be well developed and well understood for the main anadromous species, including *Alosa* species (Kynard *et al.* 2008, Larinier and Marmulla 2004). Sturgeon species are known to be more highly sensitive than most other species to water quality problems, such as low DO and contaminants (Niklitschek and Secor 2009a, 2009b, Dwyer *et al.* 2005). Because Alabama shad are likely easier to pass through fish passages and are less susceptible to water quality problems, it is reasonable that measures to improve fish passage and water quality for Gulf sturgeon will apply to Alabama shad, as well.

Alabama shad in the ACF River system have been found to be the host for the larvae of an ESA-listed freshwater mussel (S. Herrington, The Nature Conservancy, pers. comm. to K. Shotts, NMFS, JWLD Fish Passage Year-End Summary Meeting, January 2014). The purple bankclimber, a freshwater mussel listed as threatened under the ESA (63 FR 12664), is potentially one of the species using Alabama shad to transport larvae upstream. Critical habitat for the purple bankclimber and other listed freshwater mussels has been designated in the ACF River system (72 FR 64286), and the primary constituent elements include a geomorphically stable stream channel, stream substrate with low to moderate amounts of silt and clay, permanently flowing water, water quality, and fish hosts that support the larval life stages of the seven mussels. Conservation actions to benefit the purple bankclimber mussel could potentially protect both the Alabama shad and its habitat. For example when the USFWS consulted on the drought operations for the Interim Operating Plan for JWLD in 2007, they considered effects to the purple bankclimber. Reasonable and prudent measures required by USFWS (2007) during drought operations that may benefit Alabama shad include (1) adaptively managing operation of the system using information collected on species and their habitats, upstream water use, and climatic conditions, (2) increasing the lower threshold for reservoir storage from 8,000 to 10,000 cubic feet per second (*i.e.,* increasing flows in downstream areas by limiting reservoir storage during low flow times), (3) modifying the operation plan to provide higher minimum flow to the Apalachicola River when conditions permit, and (4) evaluating the sediment dynamics and channel morphology in the Apalachicola River to allow better prediction of the effects of operations on species in the riverine environment.

Thus, other ESA listings and critical habitat designations, are unlikely contributing to the extinction risk of Alabama shad. Overall, harvest and collection of Alabama shad are adequately controlled through the state regulations. Regulatory mechanisms governing water quality appear to be having success, although water quality is still impaired in some areas throughout the Alabama shad's range. The outcomes of state, Federal, and international laws governing dams, water allocation, and climate change, and their adequacy in protecting Alabama shad and their habitat, are unknown. Therefore, we ranked the inadequacy of regulatory mechanisms overall as having a low risk of contributing significantly to the current and foreseeable risk of extinction for Alabama shad.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Bycatch, the incidental catch of a species in fisheries targeting another species, is a potential threat to Alabama shad in the marine environment. Although there are no reports of Alabama shad being taken as bycatch in fisheries, many fisheries lack comprehensive bycatch monitoring (Harrington *et al.* 2005, Crowder and Murawski 1998). While bycatch in shrimp trawls is a significant source of mortality for many finfish in the Southeast, no *Alosa* species were recorded during mandatory observer reporting from the Gulf of Mexico shrimp trawl fishery in 2007–2010 (Scott-Denton *et al.* 2012). Guillory and Hutton (1982) surveyed incidental catch in the Louisiana Gulf menhaden (*Brevoortia patronus*) purse seine fishery in 1980 and 1981 by taking samples at processing plants. Total bycatch comprised 2.68 percent by number and 2.35 percent by weight of the menhaden catch. While no Alabama shad were found in the bycatch, another *Alosa* species, the skipjack herring, made up 0.1 percent both by number and weight of the overall bycatch. Hutchings and Reynolds (2004) stated that clupeids are more resilient than other fish in the marine environment, attributed in part to their reduced vulnerability to bycatch. There are no reports of Alabama shad being taken as bycatch in fisheries, although we have no information on life history or location of Alabama shad within the marine environment and much bycatch goes unreported. It is unknown whether incidental capture in other fisheries contributes to Alabama shad's

extinction risk, either now or in the foreseeable future.

Conclusions on Extinction Risk of Alabama Shad Throughout Its Range

The presence of dams throughout the Alabama shad's range blocks access to upstream spawning sites in many rivers and is believed to be the primary cause of population decline in the species. While there are little historical or current data quantifying declines in Alabama shad, we believe that the species' abundance is reduced from historical levels. We believe both low abundance and the presence of dams are the greatest threats to Alabama shad and ranked both as posing moderate risks to the species. We noted these factors could, in combination with other factors, contribute significantly to their risk of extinction. In this section, we consider these factors in combination with other relevant demographic factors and threats to determine whether synergistic effects would result in a significantly greater extinction risk for Alabama shad to the extent that the species' persistence is at risk.

The abundance of Alabama shad in many river systems is considered to be low. However, we have estimates of current abundance from only one river system and we do not have any historical abundance estimates of Alabama shad, which can be indicative of abundance levels associated with low extinction risk. However, populations may also be at low risk of extinction at abundance levels below historical levels, and accurate estimates of historical abundance are not essential for evaluating extinction risk. Whether a species qualifies for listing under the ESA depends on whether the species is in danger of extinction or likely to become so within the foreseeable future as a result of one or more of the factors described in section 4(a)(1) of the ESA. If a species is viable at its current population levels into the foreseeable future, it is irrelevant whether that population level is or is not close to its historical levels. We believe the low abundance of Alabama shad is offset by the high productivity and spatial distribution of the species, which is believed to be stable. We ranked productivity and spatial distribution as having a low probability of posing an extinction risk to the species. Alabama shad are highly productive, reaching spawning age at 1–2 years, and spawning multiple times during a single spawning season, as well as potentially throughout their lifetime. The nine known Alabama shad spawning populations are widely distributed, ranging from Gulf Coast rivers and their tributaries, from the Suwannee River, Florida, to the Mississippi River, including Lower Mississippi tributaries in the Midwest.

Although some of these spawning populations are small, this wide geographic distribution of spawning populations increases the resiliency of the species, reducing its vulnerability to catastrophic events such as storms, disease, or manmade threats, which usually occur at smaller scales. The short generation time for the species also adds to its resiliency, allowing it to take advantage of suitable habitat conditions for reproduction. The spawning success of Alabama shad in the ACF River system illustrates this ability to take advantage of newly available spawning habitat made accessible through conservation locking at JWLD.

Alabama shad are anadromous and generally return to their natal rivers to spawn. While the genetic diversity of Alabama shad is low, likely due to natural bottleneck events that occurred during the Pleistocene, we ranked diversity as having a low probability of posing an extinction risk to the species. The bottleneck is believed to have reduced their genetic load (presence of harmful genes) and genetic analyses indicate the species strays into other river systems to spawn at a greater rate than most anadromous species. This higher rate of straying into other river systems, combined with the species' high productivity and ability to take advantage of suitable environmental conditions, along with the wide spatial distribution of the spawning populations increases the species resilience and could allow individuals to enhance smaller river populations and repopulate river systems that have experienced declines or extirpations.

Existing dams continue to block access by Alabama shad to upstream habitat, although few new dams are being built today. Under ''Inadequacy of Existing Regulatory Mechanisms'' (Factor D), we ranked the inadequacy of regulatory mechanisms regulating dams, primarily the FPA and ESA, as posing a low risk of extinction to the species. The FPA provides for protecting, mitigating damages to, and enhancing fish and wildlife resources, including anadromous fish, impacted by hydroelectric facilities regulated by the FERC. The FPA does not apply to non-hydropower dams, such as those operated by USACE for navigation purposes, but maintenance, repairs, and operational changes may require ESA section 7 consultation and allow conservation measures benefitting Alabama shad and other species to be recommended or required. In two river systems inhabited by Alabama shad (the ACF and Alabama River systems), USACE has voluntarily cooperated with state and Federal agencies to implement conservation locking for Alabama shad and other anadromous species. Conservation locking in the Alabama River, occurring since 2009, has only been coupled with stocking and monitoring since 2014, and any benefits to the species are not expected to be evident for a few years. Conservation locking in the ACF River system has had success. The abundance of Alabama Shad in the ACF has been variable, but higher in many of the years, since locking began. Also, a study by Schaffler *et al.* (2015) reported that 86 percent of Alabama shad were spawned above JWLD after conservation locking began. Even more compelling is a genetic study (Schaffler *et al.* 2015) that shows 86 percent of the spawning adult Alabama shad in the ACF were spawned in the Flint River, which has only become accessible with the recent conservation locking. In light of the inter-agency cooperation with other entities noted above in the discussion of the ACF system, we expect conservation locking to continue at JWLD. Although dams exist in other river systems, spawning populations of Alabama shad have persisted in a number of those systems notwithstanding the presence of obstacles to passage, as shown in range maps and discussed above.

We also evaluated water quality and the adequacy of regulations governing water quality in combination with the moderate threats of low abundance and the presence of dams, because water quality is often cited as a concern for Alabama shad and dams may affect water quality. Dredging and land-based activities (agriculture, silviculture, and industrial, commercial, and residential development) can also result in degraded water quality in rivers and coastal waters inhabited by Alabama shad. We looked at state water quality reports, required by Sections 305(b) and 303(d) of the Clean Water Act, for river systems inhabited by Alabama shad spawning populations. Of the assessed river mi, about half were deemed to have good water quality and half were impaired. Low DO, mercury, impaired biota, and sedimentation were listed as the primary impairments, although there are no known studies linking these impairments to effects in Alabama shad or indicating that the species is susceptible to effects from these impairments. We reviewed the EPA's NCCR I–IV reports, which show that the overall condition of the Gulf Coast

region is fair and coastal water quality in the Gulf of Mexico has improved since 2001. We ranked water quality as having an unknown probability of posing an extinction risk to the species. We ranked the inadequacy of regulations governing water quality as having a low probability of posing an extinction risk to the species, as landmark laws such as the Clean Water Act have successfully worked to improve and maintain water quality in aquatic habitats supporting Alabama shad. We do not believe water quality or the inadequacy of regulations governing water quality, alone or in combination with other factors, are contributing significantly to the extinction risk of Alabama shad.

Other known threats ranked as posing an unknown, unlikely, or low risk of extinction to Alabama shad include climate change, direct harvest, bycatch, and the regulatory mechanisms governing these and other threats. National and international efforts to stem climate change are ambitious, but their success is uncertain since major agreements are still being formulated, and the outcomes of ongoing activities are not yet known. The effects of climate change on Alabama shad and their habitat are also uncertain, although based on the species' life history and evidence from responses by other *Alosa* species to temperature shifts, we believe there is a low probability of this factor contributing significantly to the extinction risk of Alabama shad. Data and literature suggest that harvest of Alabama shad, either directly for commercial, recreational, or scientific purposes or as incidental bycatch, is unlikely to contribute to the extinction risk of Alabama shad and existing regulatory mechanisms are adequate to control harvest. Additionally, environmental regulations, such as the FWCA and the ESA listing and critical habitat designations for other species are likely benefitting the species. We do not believe climate change, direct harvest, bycatch, and the regulatory mechanisms governing these and other threats, alone and in combination with other factors, are contributing significantly to the extinction risk of Alabama shad.

We were unable to rank the contribution of water allocation and the adequacy of regulatory mechanisms governing it, DWH, and disease and predation to the extinction risk of Alabama shad. Water allocation issues are a growing concern in the Southeast United States. One of the biggest interstate allocation disputes is ongoing between Alabama, Florida, and Georgia over the future allocation of water in the ACF and ACT River basins. The complexity of the issue, the length of time (more than 25 years) that the water allocation issue remains unresolved, and the inability of the major stakeholders to come to agreement or final decision, as well as the fact that we do not know whether or how Alabama shad may be affected by water allocation issues, leads to great uncertainty about the adequacy of regulatory mechanisms for managing water allocation in Alabama shad's riverine habitat. While the outcomes of water allocation and the adequacy of the regulatory mechanisms governing it are unknown, the Alabama shad population in the ACF continues to be the largest known spawning population, and conservation locking is occurring in both the ACF and ACT basins to alleviate the effects of dams, the primary threat to the species in both systems. There is no evidence that Alabama shad were affected immediately after the DWH oil spill. Given that the spill occurred in April when the most vulnerable early life stages were in riverine areas, it is unlikely they were directly exposed. The more mature Alabama shad that entered coastal and nearshore waters following the DWH spill in late summer through winter may have been exposed to toxins from the DWH spill, but studies of other coastal species affected by the spill show that most recovered by the following year. It is likely that the worst acute effects were experienced further offshore in the marine environment and more studies will be necessary to determine any long-term, chronic impacts from the DWH spill. There are few data on disease and predation in relation to Alabama shad and it is unknown whether either factor is contributing to the species' extinction risk.

In summary, we did not identify any demographic factors or threats that are likely or highly likely to contribute significantly to the Alabama shad's risk of extinction. We conclude that the greatest threats to Alabama shad, low abundance and the presence of dams, pose a moderate threat to the species. However, these threats, alone and in combination with other factors, do not pose a significant risk of extinction. Other demographic factors that pose a low likelihood of contributing to extinction risk, and potentially offset the threats of low abundance and dams, include the species' high productivity, wide spatial distribution, and genetic evidence that the presence of harmful genes has been reduced and genetic transfer between spawning populations is likely occurring at a greater rate than for most anadromous species. While dams originally led to declines in Alabama shad, the lack of new dam construction, the adequacy of regulations governing new and existing dams, and ongoing conservation efforts also reduce the effects of dams on Alabama shad. We believe water quality, climate change, direct harvest, bycatch, and the inadequacy of the regulatory mechanisms governing these and other threats are not contributing, alone or in combination, to the extinction risk of Alabama shad. We evaluated other threats (water allocation issues, DWH, disease, and predation), but found there was not enough information or too much uncertainty in pending outcomes, to determine their contribution to the extinction risk of Alabama shad. Based on these conclusions, we find that the Alabama shad is at low risk of extinction throughout all of its range, now and in the foreseeable future.

Significant Portion of the Range Evaluation

The ESA definitions of ''endangered'' and ''threatened'' species refer to two spatial scales: A species' entire range or a significant portion of its range. We initially evaluated the extinction risk of Alabama shad throughout its entire range and found it to be low. So we must consider if a ''significant portion of its range'' is at higher risk, such that it elevates the entire species' status to endangered or threatened. However, this evaluation can only be conducted if a ''significant portion of its range'' where the species' status is more imperiled can be identified.

The USFWS and NMFS have jointly finalized a policy interpreting the phrase ''significant portion of its range'' (SPOIR) (79 FR 37578; July 1, 2014). The SPOIR policy provides that: (1) If a species is found to be endangered or threatened in only a significant portion of its range, the entire species is listed as endangered or threatened, respectively, and the ESA's protections apply across the species' entire range; (2) a portion of the range of a species is ''significant'' if the species is not currently endangered or threatened throughout its range, and the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction or likely to become so in the foreseeable future, throughout all of its range; and (3) the range of a species is considered to be the general geographical area within which that species can be found at the time we make any particular status determination. We evaluated

whether substantial information indicated that (i) the portions may be significant and (ii) the species occupying those portions may be in danger of extinction or likely to become so within the foreseeable future (79 FR 37578; July 1, 2014). Under the SPOIR policy, both considerations must apply to warrant listing a species as threatened or endangered throughout its range based upon its status within a portion of the range.

We reviewed the best available information on Alabama shad and considered several relevant factors in identifying whether portions of the species' range may be significant: (1) Population abundance, (2) contributions to other populations, and (3) concentration and acuteness of threats. Based on these criteria, we initially identified only one population, the Alabama shad that spawn in the ACF River system, as potentially constituting a SPOIR. First, we considered population abundance. The Alabama shad population spawning in the ACF is believed to be one to several orders of magnitude larger than other spawning populations. Next we considered the potential contribution of the ACF spawning population to other populations. Genetic analyses indicate that Alabama shad spawn in systems other than their natal system at a rate of about 10 migrants per year. Because the spawning population in the ACF River system is large relative to other systems, migrants from the ACF may make greater contributions as compared to shad from smaller populations. The loss of the largest spawning population of Alabama shad would leave only smaller populations of Alabama shad and could make the species as a whole less resilient to environmental perturbations, including catastrophic events. Finally, we looked at concentration and acuteness of threats. While the majority of threats to Alabama shad are neither concentrated nor acute in specific portions of the species' range, the ACF River system is one of two river systems within the range of Alabama shad that we identified as being threatened by water allocation issues.

We initially identified the spawning population of Alabama shad in the ACF River system as being potentially significant under the SPOIR policy because (1) it is believed to be the largest spawning population by one to several orders of magnitude, (2) it could contribute to the viability of the species as a whole because of its large relative size and potential role in enhancing other river populations through outmigration, and (3) the threat of water allocation issues is concentrated in the ACF River system. We did not identify any other SPOIRs since (1) we do not have abundance estimates for any other Alabama shad populations, although they are believed to be at least one order of magnitude smaller than the ACF population, (2) we do not have information that another population is making significant contributions to other populations, and (3) we did not identify any other populations that were differentially experiencing concentrated nor acute threats compared to other populations.

Following the SPOIR policy, we next evaluated whether the species occupying this portion of the range may be in danger of extinction or likely to become so within the foreseeable future. In our evaluation of the status of the species range-wide, we determined that none of the demographic risks or threats contribute, alone or in combination, to extinction risk for Alabama shad to the extent that the species' persistence is at risk. We believe this conclusion also applies to the Alabama shad in the ACF River system. We did identify the threat of water allocation as being concentrated in the ACF River system. As with the range-wide evaluation, we were unable to rank the contribution of water allocation, as we do not have information that water allocation is affecting Alabama shad, or the adequacy of regulatory mechanisms governing it to the extinction risk of Alabama shad in ACF, due to the complexity of the issue, the length of time (more than 25 years) that the water allocation issue remains unresolved, and the inability of the major stakeholders to come to agreement or final decision. While the outcomes of water allocation and the regulatory mechanisms governing it are unknown, upstream water withdrawals for public use have been occurring for over 25 years during which time the Alabama shad population in the ACF has persisted. The ACF population of Alabama shad continues to be the largest known spawning population. The abundance of Alabama shad in the ACF has been variable, but generally higher since conservation locking was undertaken, alleviating the effects of dams, the primary threat to the species in the system. The genetic study by Schaffler *et al.* (2015) shows that 86 percent of the spawning adult shad were spawned upstream of JWLD in newly available habitat in the Flint River, which was inaccessible prior to conservation locking.

We were able to model and quantify the resilience of Alabama shad from the ACF River system since it is the most studied population with the most available data, including the only population abundance estimate. Smith *et al.* (2011) conducted a population viability analysis (PVA) of Alabama shad in the ACF River system that estimated the future size and risk of extinction of Alabama shad. The results of any PVA are not an absolute predictor of what will happen to a population or a species; rather, a PVA is a tool to explore potential consequences of management actions in light of an uncertain future.

Using a sex-specific (females only), age-structured model, Smith *et al.* (2011) used data from the literature (*e.g.,* age at maturity, annual spawning period, natural mortality, carrying capacity, available habitat, frequency of drought, and anthropogenic mortality) and projected changes in population size over time under different scenarios (*e.g.,* varying mortality, survivorship, carrying capacity, and density dependence). Each modeled scenario was run 10,000 times to provide estimates of the range of possible values under the stochastic conditions specified. Smith *et al.* (2011) reported the estimated number of females returning to the ACF as the proportional increase or decrease in the population after 20 years from the initial population size (12,400 females). Quasi-extinction rates were measured as the probability of fewer than 420 females returning at least 1 year over 20 years. The number of females (420) used to initiate the model was taken from Ely *et al.* (2008; lower 95 percent confidence limit) as the approximate lowest population size, since historical population sizes of Alabama shad in the ACF River system are not available.

In most scenarios (15 out of 20), the PVA revealed positive proportional change in mean abundance from initial abundance and averaged about 250 percent for these positive scenarios (Smith *et al.* 2011). In 2 scenarios, the population abundance was relatively stable over the 20-year time period. In 3 scenarios, there was an overall decrease in population abundance after 20 years. The baseline model (*i.e.,* no anthropogenic mortality, density dependence affecting all vital rates, current carrying capacity of 75,687 females) predicted the population would increase to 23 percent of carrying capacity after 5 years and 37 percent after 10 years (Smith *et al.* 2011). When introducing potential mortality from downstream passage through dams under different scenarios, the number of females was still 16–37 percent of carrying capacity in 10 years. Only one scenario resulted in a 50-percent or higher probability of reaching quasi-extinction in 14 years (median time)

during the 20-year projection (Smith *et al.* 2011). The remaining scenarios with population declines (scenarios m and s) did not drop below the quasi-extinction level more than 50 percent of the time.

While Smith *et al.*'s (2011) PVA cannot predict precisely the population size of the Alabama shad population in the ACF River system in the future, it demonstrates that Alabama shad populations are highly resilient and will likely increase, even when faced with anthropogenic induced mortality and drought, under all but the most dire conditions. While available information suggests the spawning population of Alabama shad in the ACF may be significant, we do not find that the species within this portion of its range is in danger of extinction nor do we believe it is likely to become so in the foreseeable future. Consequently, we are unable to identify a SPOIR for Alabama shad that would change the listing determination relative to the status of the species range-wide.

Listing Determination

Section 4(b)(1) of the ESA requires that NMFS make listing determinations based solely on the best scientific and commercial data available after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any state or foreign nation, or political subdivision thereof, to protect and conserve the species. We have independently reviewed the best available scientific and commercial information on Alabama shad, including the petition, public comments submitted on our 90-day finding, and other published and unpublished information. We considered each of the section 4(a)(1) factors to determine whether it presented an extinction risk to the species. We found that the risk of extinction to Alabama shad throughout its entire range was low. We could not identify a SPOIR that was both significant and where the species' status is threatened or endangered. Therefore, our determination is based on a synthesis and integration of the foregoing information, factors, and considerations, and their effects on the status of the species throughout its entire range. We conclude that the Alabama shad is not presently in danger of extinction, nor is it likely to become so in the foreseeable future, throughout all or a significant portion of its range, and that listing as threatened or endangered is not warranted.

Peer Review

In December 2004, the Office of Management and Budget (OMB) issued a Final Information Quality Bulletin for Peer Review establishing minimum peer review standards, a transparent process for public disclosure of peer review planning, and opportunities for public participation. The OMB Bulletin, implemented under the Information Quality Act (Pub. L. 106–554) is intended to enhance the quality and credibility of the Federal government's scientific information, and applies to influential or highly influential scientific information disseminated on or after June 16, 2005. To satisfy our requirements under the OMB Bulletin, we obtained independent peer review of our review of the status of Alabama shad, including our extinction risk analysis. Three independent specialists were selected from the academic and scientific community, Federal and state agencies, and the private sector for this review. All peer reviewer comments were addressed prior to dissemination of the publication of this 12-month determination. The peer review comments can be found at: *http://www.cio.noaa.gov/services_programs/prplans/ID322.html*.

References

A complete list of all references cited herein is available at: *http://sero.nmfs.noaa.gov/protected_resources/listing_petitions/species_esa_consideration/index.html*.

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: January 5, 2017.

Samuel D. Rauch, III,

Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

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Part IV

Department of Homeland Security

Federal Emergency Management Agency

44 CFR Part 206

Establishing a Deductible for FEMA's Public Assistance Program; Proposed Rule

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

44 CFR Part 206

[Docket ID FEMA–2016–0003]

RIN 1660–AA84

Establishing a Deductible for FEMA's Public Assistance Program

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Supplemental advance notice of proposed rulemaking.

SUMMARY: The Federal Emergency Management Agency (FEMA) is considering implementing a Public Assistance deductible that would condition States' receipt of FEMA reimbursement for the repair and replacement of public infrastructure damaged by a disaster event. The primary intent of the deductible concept is to incentivize greater State resilience to future disasters, thereby reducing future disaster costs nationally. On January 20, 2016, FEMA (the Agency) published an Advance Notice of Proposed Rulemaking (ANPRM) seeking comment on a Public Assistance deductible concept. The ANPRM provided a general description of the concept that many commenters found insufficient to provide meaningful comment. In an effort to offer the public a more detailed deductible concept upon which to provide additional feedback, the Agency is issuing a supplemental ANPRM (SANPRM) that presents a conceptual deductible program, including a methodology for calculating deductible amounts based on a combination of each State's fiscal capacity and disaster risk, a proposed credit structure to reward States for undertaking resilience-building activities, and a description of how FEMA could consider implementing the program. At this stage of the rulemaking process, the deductible remains only something that FEMA is considering. The policy conceived of in this document is not a proposal. In this document, FEMA is providing what is merely a description of a direction FEMA could take in future rulemaking in an effort to solicit further feedback from the public. After considering the comments it receives, or as a result of other factors, FEMA may expand on or redevelop this concept.

DATES: Comments must be submitted by April 12, 2017.

ADDRESSES: You may submit comments, identified by Docket ID FEMA–2016–0003, by one of the following methods:

Federal eRulemaking Portal: http://www.regulations.gov. Follow the instructions for submitting comments.

Mail/Hand Delivery/Courier: Regulatory Affairs Division, Office of Chief Counsel, Federal Emergency Management Agency, 8NE, 500 C Street SW., Washington, DC 20472.

FOR FURTHER INFORMATION CONTACT: Jotham Allen, Federal Emergency Management Agency, 500 C Street SW., Washington, DC 20472, 202–646–1957.

SUPPLEMENTARY INFORMATION:

I. Public Participation

We encourage you to participate in this rulemaking by submitting comments and related materials. We will consider all comments and material received during the comment period.

If you submit a comment, identify the agency name and the docket ID for this rulemaking, indicate the specific section of this document to which each comment applies, and give the reason for each comment. You may submit your comments and material by electronic means, mail, or delivery to the address under the **ADDRESSES** section. Please submit your comments and material by only one means.

Regardless of the method used for submitting comments or material, all submissions will be posted, without change, to the Federal e-Rulemaking Portal at *http://www.regulations.gov,* and will include any personal information you provide. Therefore, submitting this information makes it public. You may wish to read the Privacy Act notice that is available via a link on the homepage of *www.regulations.gov.*

Viewing comments and documents: For access to the docket to read supporting documents, a supplemental guidance document, and an annual notice template, and comments received, go to the Federal e-Rulemaking Portal at *http://www.regulations.gov.* Background documents and submitted comments may also be inspected at FEMA, Office of Chief Counsel, 500 C Street SW., Washington, DC 20472–3100.

II. Executive Summary

On January 20, 2016, FEMA published an Advance Notice of Proposed Rulemaking (ANPRM), 81 FR 3082, seeking comment on a concept that would incorporate a deductible requirement into the Public Assistance program. The ANPRM provided a general description of this concept, followed by a list of questions for the public, the answers to which would help FEMA assess all aspects of the deductible concept, including how to calculate the deductible, the scope of the deductible, how to satisfy the deductible, how this concept could influence change, implementation considerations and an estimated impact. With input received from the ANPRM, FEMA has developed a more detailed potential deductible concept and seeks further public comment via this SANPRM. The goal of this SANPRM is to gather additional public comment about the specific aspects of a programmatic approach that the Agency recognizes would represent a change to the existing Federal disaster support system.

The Public Assistance deductible would condition the States' receipt of FEMA reimbursement for the permanent repair and replacement of public infrastructure damaged by a disaster event. FEMA believes the deductible requirement could incentivize State risk reduction efforts, mitigate future disaster impacts, and lower recovery costs for the whole community. In addition, the deductible requirement addresses concerns raised by Members of Congress, the Government Accountability Office (GAO), and the Department of Homeland Security's Office of the Inspector General (DHS OIG) over the last several years, and potentially addresses concerns that the current disaster declaration process inadequately assesses State capacity to respond to and recover from a disaster without Federal assistance.

In this SANPRM, FEMA is presenting a model, or potential, deductible program to provide more specifics of what the deductible requirement may entail for detailed public feedback. Detailed public comments on this potential program, in particular on the methodologies for calculating each State's deductible and the estimates for each State's projected credits, could assist FEMA in the development of a future proposed rule.

Under the deductible concept, each State would be expected to expend a predetermined, annual amount of its own funds on emergency management and disaster costs before FEMA would provide Public Assistance for the repair and replacement of public infrastructure damaged by a disaster event. This annually predetermined amount is the State's deductible. However, satisfying the deductible would not be required before FEMA would provide assistance for other types of assistance, such as debris removal or emergency protective measures. Importantly, States may

choose to earn credits toward satisfying their deductible through a variety of activities that could reduce risk and improve preparedness, thereby reducing future disaster costs to both the State and Federal government.

FEMA could calculate annually the deductible amount (in dollars) for each State based on an index of State risk and fiscal capacity. FEMA anticipates a scaled implementation of a deductible requirement over a yet-to-be-determined period of years with starting deductibles in year one as follows in Table 1:

TABLE 1—FIRST YEAR STARTING DEDUCTIBLES BEFORE CREDITS [1]

First year starting deductibles (before credits)	
State	Year 1 starting deductible (in millions)
Alabama	$6.74
Alaska	1.00
Arizona	9.01
Arkansas	4.11
California	52.53
Colorado	7.08
Connecticut	5.04
Delaware	1.27
Florida	26.51
Georgia	13.66
Hawaii	1.92
Idaho	2.21
Illinois	14.43
Indiana	9.14
Iowa	4.30
Kansas	4.02
Kentucky	6.12
Louisiana	6.39
Maine	1.87
Maryland	8.14
Massachusetts	9.23
Michigan	13.94
Minnesota	7.48
Mississippi	4.18
Missouri	8.44
Montana	1.40
Nebraska	2.58
Nevada	3.81
New Hampshire	1.86
New Jersey	12.40
New Mexico	2.90
New York	27.32
North Carolina	13.45
North Dakota	1.00
Ohio	16.27
Oklahoma	5.29
Oregon	5.40
Pennsylvania	17.91
Rhode Island	1.48
South Carolina	6.52
South Dakota	1.15
Tennessee	8.95
Texas	35.46
Utah	3.90
Vermont	1.00

[1] For a full explanation of how the first year starting deductibles could be calculated under this model program, please refer to Section V, Subsections A–F of this notice.

TABLE 1—FIRST YEAR STARTING DEDUCTIBLES BEFORE CREDITS [1]—Continued

First year starting deductibles (before credits)	
State	Year 1 starting deductible (in millions)
Virginia	11.28
Washington	9.48
West Virginia	2.61
Wisconsin	8.02
Wyoming	1.00

To offset the deductible requirement, FEMA could provide each State with an opportunity to apply for credits. The credits could incentivize States to dedicate resources on activities that are demonstrated to promote and support readiness, preparedness, mitigation, and resilience. Such activities could include adopting and enforcing building codes that promote disaster resilience, funding mitigation projects, or investing in disaster relief, insurance, and emergency management programs. FEMA believes that every State is already undertaking activities that would qualify them for credits and reduce their deductible requirement, such as investing in mitigation projects or granting tax incentives for projects that reduce risk. Based on FEMA's projection of possible credits for activities each State is presently engaged in, FEMA estimates a potential adjusted deductible requirement in year one as follows in Table 2:

TABLE 2—POTENTIAL FIRST YEAR FINAL DEDUCTIBLES ADJUSTED FOR PROJECTED CREDITS [2]

Potential first year "final" deductibles (adjusted for projected credits)	
State	"Final" adjusted deductible (in millions)
Alabama	5.01
Alaska	0.74
Arizona	4.88
Arkansas	2.49
California	7.63
Colorado	5.24
Connecticut	3.72
Delaware	0.94
Florida	10.85
Georgia	9.99
Hawaii	1.68
Idaho	1.66
Illinois	3.47

[2] For a full explanation of how each State's projected credits were calculated and how those credits impacted the projected first year's final deductibles under this model program, please refer to Section V, Subsections G–H of this notice.

TABLE 2—POTENTIAL FIRST YEAR FINAL DEDUCTIBLES ADJUSTED FOR PROJECTED CREDITS [2]—Continued

Potential first year "final" deductibles (adjusted for projected credits)	
State	"Final" adjusted deductible (in millions)
Indiana	2.81
Iowa	1.70
Kansas	3.45
Kentucky	4.65
Louisiana	5.57
Maine	1.46
Maryland	5.78
Massachusetts	5.11
Michigan	8.53
Minnesota	1.25
Mississippi	2.51
Missouri	4.78
Montana	0.77
Nebraska	1.52
Nevada	2.03
New Hampshire	0.91
New Jersey	4.89
New Mexico	2.02
New York	19.59
North Carolina	2.48
North Dakota	0.30
Ohio	11.75
Oklahoma	3.33
Oregon	3.91
Pennsylvania	5.52
Rhode Island	1.20
South Carolina	4.92
South Dakota	0.92
Tennessee	7.06
Texas	26.99
Utah	1.99
Vermont	0.63
Virginia	4.89
Washington	8.91
West Virginia	1.91
Wisconsin	6.17
Wyoming	0.71

Under the deductible concept, FEMA would continue to recommend whether a State should receive a major disaster declaration pursuant to the current factors outlined in Federal policy (44 CFR 206.48(a)). If a State receives a major disaster declaration authorizing Public Assistance reimbursement, the State would then be required to first satisfy its annual deductible requirement (as adjusted by credits) before FEMA would provide reimbursement for Public Assistance permanent work. If a State has not fully satisfied its deductible through earned credits, following a major disaster declaration the State would then identify one or more permanent work projects proposed under the disaster declaration to satisfy the remaining deductible amount (*i.e.,* the State chooses the selected project(s) and the project(s) would be ineligible for FEMA assistance). In order to ensure timely

and complete response to the evacuation and immediate protection of life and property, FEMA would fund eligible emergency protective measures and debris removal regardless of whether or not the State has met its deductible requirement.

FEMA could implement the deductible program by regulation, supplemented by a guidance document and annual notices. The regulation could set forth broadly that FEMA will annually calculate deductible and credit amounts and could describe how a deductible requirement could be applied post-declaration. The guidance document could set forth more specifically the annual schedule, and how FEMA will calculate deductible and credit amounts, and the annual notice could provide FEMA's determination on State deductible amounts for the following year. A draft guidance document and example annual notice are included in the docket for this rulemaking at *www.regulations.gov* under docket ID FEMA–2016–0003 for public review and comment.

Under this concept, FEMA would condition the provision of grant assistance for the permanent repair and replacement of building infrastructure that is damaged by a major disaster upon the State's meeting a Public Assistance deductible. It would not apply to any other form of FEMA assistance, including emergency assistance, Individual Assistance, or the Hazard Mitigation Grant Program. Since the Public Assistance deductible would condition States' receipt of FEMA funds, it would not apply to Indian Tribes, the District of Columbia, or US territories. The deductible would not change the official disaster declaration request process, or the factors that FEMA considers when making disaster declaration recommendations to the President.

A deductible program could leverage FEMA's Public Assistance program to reward States for investing in readiness, preparedness, mitigation, and resilience, thereby increasing the nation's ability to reduce disaster impacts and costs for all levels of government, individuals, and the private sector. FEMA seeks comment on all details of this concept, especially regarding how the deductible could be calculated and the types and amounts of deductible credit that could be granted.

III. Background and Development of the Deductible Concept

Although the Federal government has been providing supplemental disaster relief to States and localities since the early 1800s, the Disaster Relief Act of 1974,[3] which was amended and renamed the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) in 1988,[4] formally established the foundation of the current disaster assistance system. Generally, FEMA directly provides or coordinates this assistance.

Pursuant to this system, the Federal government provides various forms of financial and direct assistance following disasters. One of the primary types of support FEMA provides to affected jurisdictions is repair, restoration, and replacement assistance through the Public Assistance program.[5] The Public Assistance program is FEMA's principal means for assisting jurisdictions that are financially overwhelmed by the costs of repairing, restoring, and replacing public facilities damaged by disasters, such as buildings, roads, bridges, and other types of publicly-owned infrastructure.

On average, FEMA has distributed approximately $4.6 billion in grants each year through the Public Assistance program over the past decade. Of the nearly $60 billion awarded through the Public Assistance program between 2005 and 2014, over 65 percent was for eligible recovery projects termed ''permanent work'' and for project management costs. Permanent work includes expenses for repair, restoration, and replacement that are not related to debris removal or emergency protective measures.[6]

Before an affected jurisdiction can receive funding through the Public Assistance program, the President of the United States must authorize it.[7] The Governor typically makes a request through FEMA for a Presidential declaration of an emergency or major disaster authorizing the Public Assistance program.[8] Upon receipt, FEMA is responsible for evaluating the Governor's request and providing a recommendation to the President regarding its disposition.[9]

When considering a jurisdiction's request for a major disaster declaration authorizing the Public Assistance program, FEMA considers six factors.[10] These factors include:

1. Estimated cost of the assistance;[11]
2. Localized impacts;[12]
3. Insurance coverage in force;[13]
4. Hazard mitigation;[14]
5. Recent multiple disasters;[15] and
6. Programs of other Federal assistance.[16]

FEMA evaluates every request with regard to each of these delineated factors, to the extent applicable. However, there is a very strong correlation between the first factor, estimated cost of the assistance, and the likelihood that FEMA will recommend that the President issue a major disaster declaration.

Under the current system, if a State demonstrates that an incident has caused a certain level of damage to a State to address the damage caused, FEMA would likely recommend that the President declare a major disaster. A major disaster indicates that the President has determined that the incident has caused ''damage of sufficient severity and magnitude to warrant major disaster assistance under [the Stafford Act] to supplement the efforts and available resources of States, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.''[17] Consequently, if the President declares a major disaster authorizing Public Assistance, FEMA will provide supplemental financial assistance grants, which pay for not less than 75 percent of eligible costs.[18]

Conversely, if the President does not issue a major disaster declaration, the amount of damage is presumed to be within the capabilities of the affected jurisdictions and any supporting disaster relief organizations. In that case, the affected State is responsible for all of the costs of the incident, although the State will often pass many of the costs on to local jurisdictions. For example, under current regulations FEMA may determine a particular State based on its population is able to independently handle up to $1,000,000 in damage without the need for supplemental Federal assistance. Under the current approach, an incident need only identify damage at that amount to suggest that supplemental Federal assistance is needed. If the governor of that State requests a major disaster declaration for an incident causing $999,999 in damage, it is likely that

[3] Disaster Relief Act of 1974, Public Law 93–288 (1974).

[4] Public Law 100–707 (1988). Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93–288 (1974), as amended; 42 U.S.C. 5121 *et seq.*

[5] *See* 42 U.S.C. 5172.

[6] *See* 44 CFR 206.201(j).

[7] *See* 42 U.S.C. 5170b, 5192; see also 44 CFR 206.38, 206.40.

[8] 42 U.S.C. 5170, 5191.

[9] *See* 44 CFR 206.37(c).

[10] *See* 44 CFR 206.48(a).

[11] *Id.* at § 206.48(a)(1).

[12] *Id.* at § 206.48(a)(2).

[13] *Id.* at § 206.48(a)(3).

[14] *Id.* at § 206.48(a)(4).

[15] *See* 44 CFR 206.48(a)(5).

[16] *Id.* at § 206.48(a)(6).

[17] 42 U.S.C. 5122(2) (defining a major disaster for purposes of the Act).

[18] 42 U.S.C. 5170b(b).

supplemental Federal assistance will not be authorized and the State will be responsible for the entirety of the loss. However, if instead the incident caused exactly $1,000,000 in damage, supplemental Federal assistance may be authorized and FEMA would provide reimbursement grants through the Public Assistance program for at least $750,000 (75 percent of eligible costs). This has the effect of FEMA providing Public Assistance funding for activities and damage that are identified to be within State capabilities.

Since 1986, FEMA has used a per capita indicator to compare the estimated cost of the incident and the capabilities of the requesting jurisdiction.[19] This per capita indicator was originally set at $1.00 per person and is based on the jurisdiction's decennial census population. FEMA selected $1.00 because it appeared at the time to be a reasonable portion of per capita personal income (PCPI) for a State to contribute towards the cost of a disaster.[20] Collectively, this amount also ''correlate[d] closely to about one-tenth of one percent of estimated General Fund expenditures by States.'' [21] The per capita indicator remained at $1.00 from 1986 until 1999 when FEMA began to add inflation to the value annually. FEMA did not, however, adjust the per capita indicator for inflation retroactively. Consequently, since 1999, the per capita indicator has risen to its 2016 value of $1.41.[22]

FEMA publishes the updated per capita indicator in the **Federal Register** each year. FEMA then multiplies the indicator by the State's most recent decennial population to determine the amount of damage that a State is expected to be able to independently manage without the need for supplemental Federal assistance. For example, if a State had a population at the time of the 2010 decennial census population of 1,500,000, FEMA would multiply that by the 1.41 indicator and arrive at a State-level indicator of 2,115,000. In other words, FEMA would expect that the State would be able to handle at least 2,115,000 in eligible damage without the need for supplemental Federal assistance.

FEMA has established, through regulation, a 1,000,000 minimum for any major disaster, regardless of the calculated indicator.[23] The 1,000,000 floor is not subject to inflationary adjustments. Although FEMA considers every request for a Presidential major disaster declaration in the light of each applicable regulatory factor, the probability of an incident being declared based on the amount of disaster damage and the State-specific per capita indicator has been over 80 percent for the past 10 years (494 of 589 declared major disasters). In other words, whether damage assessments find an amount of damage that meets or exceeds the Public Assistance per capita indicator is highly correlated to whether that State will ultimately receive supplemental Federal assistance for that incident.

Since the per capita indicator was initially adopted in 1986, it has lost its relation to both of the metrics upon which it was first calculated. In 1986, PCPI in the United States was 11,687.[24] By 2015, PCPI had risen to 48,112, an increase of over 300 percent.[25] FEMA has applied inflation adjustments since 1999, and the per capita indicator has risen by just 41 percent over that same period.

A retrospective analysis conducted by FEMA suggests that if the per capita indicator had kept pace with PCPI, 70 percent of the major disasters between 2005 and 2014 would not have been declared. This would have transferred all of the costs for 408 disasters to the 49 States that would likely have each had at least one less major disaster declared. As an example, Missouri and Oklahoma would have each have had 19 fewer major disasters declared.

Overall, Public Assistance grants would have been reduced by 10 percent had these 408 major disasters not been declared, resulting in 5 billion dollars less in Federal disaster assistance to the States.[26] Twenty-one States would have each received over 100 million less in Public Assistance, with California having received 761 million less, New York more than 600 million less, and Texas over 366 million less.

Table 3 presents a State-by-State retrospective synopsis of the likely impacts a PCPI-adjusted per capita indicator would have had on declared major disasters between 2005 and 2014. To conduct this analysis, FEMA adjusted the per capita indicator for each year by multiplying the previous year's national per capita personal income value for each State by 0.0001. This maintains the 0.01% ratio of the per capita indicator to per capita personal income that FEMA noted when it established the original per capita indicator.

TABLE 3—IMPACT OF PCPI-ADJUSTED PER CAPITA INDICATOR ON PAST DISASTER ACTIVITY

[2005–2014]

State	Change in numbers of disasters	Public assistance change (actual in 2015$)
Alabama	−12	−$156,634,854
Alaska	−8	−16,686,176
Arizona	−5	−32,864,734
Arkansas	−15	−105,560,705
California	−12	−761,414,191
Colorado	−3	−12,035,081

[19] The per capita indicator is applied at the State level for major disaster declarations; however, a second indicator is also used at the local level to determine which counties are declared within the State.

[20] Disaster Assistance; Subpart C, the Declaration Process and State Commitments, 51 FR 13332, Apr. 18, 1986.

[21] *Id.*

[22] Notice of Adjustment of Statewide Per Capita Indicator, 80 FR 61836, Oct. 14, 2015.

[23] 44 CFR 206.48(a)(1).

[24] *See* Disaster Assistance; Subpart C, the Declaration Process and State Commitments, 51 FR 13332, Apr. 18, 1986

[25] Per Capita Personal Income (PCPI) is calculated annually by the United States Department of Commerce's Bureau of Economic Analysis. The 2015 PCPI data is available at *http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1&acrdn=6%20-%20reqid=70&step=30&isuri=1&7022=21&7023=0&7024=non-industry&7033=-1&7025=0&7026=00000&7027=2015&7001=421&7028=3&7031=0&7040=-1&7083=levels&7029=21&7090=70#reqid=70&step=30&isuri=1&7022=21&7023=0&7024=non-industry&7033=-1&7025=0&7026=00000&7027=2015&7001=421&7028=3&7031=0&7040=-1&7083=levels&7029=21&7090=70.* [1) Select *Annual State Personal Income and Employment.* 2) Select *Personal Income, Population, Per Capita Personal Income, Disposable Personal Income, and Per Capita Disposable Personal Income (SA1, SA51).* 3) Select *SA1—Personal Income Summary: Personal Income, Population, Per Capita Personal Income.* 4) *Select United States, Levels, and Per Capita Personal Income (Dollars).* 5) Select *2015.*

[26] Dollar amounts were adjusted to 2015 dollars (2015).

TABLE 3—IMPACT OF PCPI-ADJUSTED PER CAPITA INDICATOR ON PAST DISASTER ACTIVITY—Continued

[2005–2014]

State	Change in numbers of disasters	Public assistance change (actual in 2015$)
Connecticut	−4	−34,539,160
Delaware	−2	−2,734,920
Florida	−7	−170,847,001
Georgia	−5	−105,365,782
Hawaii	−5	−19,758,046
Idaho	−5	−11,113,622
Illinois	−11	−279,253,502
Indiana	−8	−98,604,662
Iowa	−13	−103,292,537
Kansas	−12	−74,419,056
Kentucky	−11	−98,057,973
Louisiana	−6	−40,610,199
Maine	−11	−31,102,969
Maryland	−7	−120,907,360
Massachusetts	−7	−135,316,467
Michigan	−3	−36,000,794
Minnesota	−10	−114,692,904
Mississippi	−7	−37,337,169
Missouri	−19	−275,421,878
Montana	−5	−11,589,893
Nebraska	−16	−67,235,065
Nevada	−4	−15,984,383
New Hampshire	−11	−39,448,267
New Jersey	−11	−207,572,077
New Mexico	−6	−37,173,106
New York	−15	−600,294,475
North Carolina	−8	−124,991,358
North Dakota	−6	−11,015,041
Ohio	−6	−131,629,728
Oklahoma	−19	−120,128,934
Oregon	−8	−61,741,829
Pennsylvania	−7	−144,293,529
Rhode Island	−1	−641,448
South Carolina	−1	−12,859,770
South Dakota	−8	−11,791,000
Tennessee	−13	−113,576,960
Texas	−9	−366,759,151
Utah	−6	−33,421,146
Vermont	−8	−10,790,332
Virginia	−8	−159,073,446
Washington	−8	−158,351,021
West Virginia	−10	−59,884,181
Wisconsin	−6	−55,046,806
Total	−408	−5,429,864,688

The Public Assistance per capita indicator has also fallen short of keeping pace with State general fund expenditures. According to the National Association of State Budget Officers (NASBO), State general fund spending in 2015 totaled 759.4 billion.[27] Collectively, the States' per capita indicators equaled 435.3 million in 2015. Consequently, the relation of the per capita indicator to State general fund expenditures is just 57 percent of what it was in 1986.

The failure of the per capita indicator to keep pace with changing economic conditions and the increasing frequency and costs of disasters has led to criticism of the per capita indicator. Those critiques have emphasized that the per capita indicator is artificially low. Many have called for FEMA to find ways to decrease the frequency of disaster declarations and Federal disaster costs, by increasing the per capita indicator to transfer costs back to State and local jurisdictions. These have included recommendations from GAO,[28] reports of the DHS OIG,[29] and proposed legislation.[30]

[27] NASBO, Fiscal Survey of States, Fall 2015, located at *https://higherlogicdownload.s3.amazonaws.com/NASBO/9d2d2db1-c943-4f1b-b750-fca152d64c2/UploadedImages/Fiscal%20Survey/Fall%202015%20Fiscal%20Survey%20of%20States%20(S).pdf.*

[28] *See, e.g.,* GAO, Disaster Assistance: Improvements Needed in Disaster Declaration Criteria and Eligibility Assurance Procedures, GAO–01837 (2001); See also, GAO, GAO–12–838, Federal Disaster Assistance: Improved Criteria Needed to Assess Eligibility and a Jurisdiction's Capability to Respond and Recover On Its Own, 29 (2012).

[29] *See* Office of Inspector General, OIG–12–79, Opportunities to Improve FEMA's Public Assistance Preliminary Damage Assessment Process 3, Department of Homeland Security (2012).

[30] *See, e.g.,* S.1960, Fairness in Federal Disaster Declarations Act of 2014, 113th Cong.; H.R. 3925, Fairness in Federal Disaster Declarations Act of 2014, 113th Cong. (establishing criteria for FEMA to incorporate in rulemaking with specific weighted factors); H.R. 1859, Disaster Declaration Improvement Act of 2013, 113th Cong. (requiring

Concluding that the per capita indicator is artificially low,[31] the GAO recommended that the FEMA Administrator ''develop and implement a methodology that provides a more comprehensive assessment of a jurisdiction's capability to respond and to recover from a disaster without federal assistance.'' [32]

As FEMA considered these observations and recommendations, FEMA was finalizing its 2014–2018 Strategic Plan [33] that includes Strategic Priority 4: Enable Disaster Risk Reduction Nationally.[34] Objective 4.2 of the Strategic Plan is to ''incentivize and facilitate investments to manage current and future risk'' [35] through ''facilitate[ing] collaboration to strengthen risk standards, leverage market forces, and guide resilient investments'' [36] as well as through ''reshap[ing] funding agreements with States, tribal governments, and localities to expand cost-sharing and deductibles,'' [37] inter alia.

FEMA also considered the President's emphasis on advancing national resilience. The President issued three related Executive Orders in the past two years to build resilience through (1) establishing a Federal flood risk management standard,[38] (2) establishing a Federal earthquake risk management standard,[39] and (3) requiring agencies to enhance the resilience of buildings to wildfire in the wildland-urban interface.[40] FEMA has been seeking ways to leverage its programs and resources to further other resilience-building efforts as well. For example, FEMA has instituted a policy to establish hazard resistant minimum standards for Public Assistance projects.[41]

In early 2014, FEMA began to explore the possibility of introducing a deductible to the Public Assistance program as a way to leverage the program to encourage resilience and address some of the concerns raised by GAO. Accordingly, FEMA convened a working group of subject-matter experts from within the agency. During the ensuing months, the working group extensively explored the declaration process, the policies and workings of the Public Assistance program, the applicable legal authorities and limitations, and many other areas that would be necessary to inform the development of a deductible concept.

In the course of this research, FEMA reviewed a related rulemaking effort that was a contemporary to the 1986 development of the per capita indicator. FEMA had proposed a regulation that sought to establish (1) ''capability indicators'' for the major disaster declaration decision-making process, (2) a requirement for Governors to make commitments on behalf of their States and local governments to assume a portion of the Public Assistance costs, and (3) a sliding cost-share based on the capability indicators.[42] The proposed rule was met with vocal and widespread criticism by Congress and the emergency management community and FEMA ultimately abandoned the effort.[43] Two of the primary criticisms of FEMA's proposed 1986 rulemaking:

1. FEMA did not recognize the efforts and expenditures that States were already committing to disaster response and recovery; and

2. FEMA did not offer sufficient engagement with key stakeholders during the developmental process.

Considering this background, the FEMA working group developed three guiding principles that were designed to control and direct the impact of the deductible concept:

1. Encourage and incentivize risk-informed mitigation strategies on a broad scale, while also recognizing current State activities;

2. Incentivize consistent fiscal planning by all States for disasters and establish mechanisms to better assess State fiscal capacity to respond to disasters; and

3. Ensure the supplemental nature of FEMA assistance.

Through these guiding principles, the working group designed an initial deductible concept that could leverage the Public Assistance program to recognize risk reduction investments that the States were already undertaking and to incentivize risk reduction best practices nationwide as a means to reduce future disaster impacts and costs for the whole community rather than simply transferring response and recovery costs from the Federal government to State and local jurisdictions. The working group also determined further exploration of the deductible concept should be cognizant of the two primary criticisms of FEMA's proposed 1986 rulemaking: The failure to recognize the efforts and expenditures that States were already committing to disaster response and recovery and the insufficient engagement with key stakeholders.

In its 2015 updated response to the GAO recommendations, FEMA presented three options that it planned to continue investigating:

1. Adjust the per capita indicator to better reflect current national and State-specific economic conditions;

2. Develop an improved methodology for considering factors in addition to the per capita indicator; and

3. Implement a State-specific deductible concept for States to satisfy before qualifying for Public Assistance.

After further investigation and consideration of the alternatives, FEMA decided to further develop the deductible concept because of its relationship to Strategic Priority 4 and its potential for reducing risk and disaster costs for the whole community through incentivizing targeted investments. Moving forward, FEMA plans to pursue closeout of the GAO recommendation through development of the deductible concept for the Public Assistance program. However, FEMA will continue to consider alternatives to the deductible concept going forward, including the GAO's recommendation to significantly increase the current per capita indicator as described in Sections III and VI(A).

IV. Advance Notice of Proposed Rulemaking

FEMA issued the ANPRM to introduce the deductible concept with the emergency management community and the public. The ANPRM consisted of basic background information concerning the declarations process and a very high-level overview of a deductible concept. In keeping with the preliminary and developmental state of the concept at that time, the ANPRM offered few specifics concerning the

new regulations concerning major disaster declarations).

[31] GAO 12–838, supra FN22, at 24.

[32] *Id.* at 50.

[33] *See generally* FEMA Strategic Plan: 2014–2018, available at *http://www.fema.gov/media-library-data/1405716454795-3abe60aec989ecce518c4cdba67722b8/July18FEMAStratPlanDigital508HiResFINALh.pdf.*

[34] *Id.* at 23.

[35] *Id.* at 26.

[36] *Id.* at 27.

[37] *Ibid.*

[38] Executive Order 13,690, 80 FR 6425, Feb. 4, 2015.

[39] Executive Order 13,717, 81 FR 6407, Feb. 2, 2016.

[40] Executive Order 13,728, 81 FR 32223, May 20, 2016.

[41] Public Assistance Required Minimum Standards Policy, FP–104–109–4, Sep. 30, 2016, available at *https://www.fema.gov/media-library/assets/documents/124326.*

[42] *See* Disaster Assistance; Subpart C, the Declaration Process and State Commitments, 51 FR 13332, Apr. 18, 1986; see also Disaster Assistance; Subpart E—Public Assistance—Eligibility Criteria, 51 FR 13341, Apr. 18, 1986; Disaster Assistance; Subpart H, Public Assistance Project Administration, 51 FR 13357, Apr. 18, 1986.

[43] Inquiry into FEMA's Proposed Disaster Relief Regulations: Hearing Before the Subcomm. on Investigations and Oversight of the H. Comm. On Public Works and Transportation, 99th Cong. (1986).

organization or implementation of a deductible. Chiefly, the ANPRM included an extensive list of questions that FEMA was seeking to answer regarding how a deductible program could be best structured and applied to achieve the principles outlined above. These questions were wide ranging in specificity to address all potential aspects of the deductible concept. FEMA presented these questions in an impartial manner to solicit as many relevant responses as possible. This was effective in generating varied responses to questions upon which opinions differed, but in many cases commenters noted it was difficult if not impossible to answer specific questions without a more detailed description of the deductible concept. As a result, commenters provided more general and conceptual responses to the questions asked. FEMA believes that it would have benefited from receiving more specific and detailed feedback, and that the information contained in those types of comments would have been very helpful to the rulemaking process.

In all, FEMA received approximately 150 comments on the ANPRM.[44] These comments came from 35 entities representing 28 individual States, 28 local jurisdictions, and 2 Indian Tribal Nations. FEMA also received comments from 19 professional industry groups, 3 governmental associations, and 9 research and policy organizations.

FEMA reviewed the comments that were received and incorporated the concerns and suggestions into the potential deductible program presented in this SANPRM. FEMA noted many concerns in the comments regarding how the deductible could be applied, or the burdens, either financial or administrative, that it could create for the States. FEMA addressed these concerns in the design concept. In other cases, it was clear that FEMA had not provided enough background information for commenters to offer practicable suggestions. Some comments may have benefited from FEMA providing additional explanation of the current disaster declaration processes, more specificity regarding the Public Assistance program, and a more expansive description of the deductible concept itself. FEMA concluded that it had not offered sufficient information in the ANPRM to enable the public to fully participate in commenting on all aspects of the concept. Consequently, FEMA is providing the public more detail on its concept for a deductible program in this SANPRM.

Notwithstanding the limitations on specificity in the ANPRM, FEMA received support for the concept as a means by which to achieve the goals of reducing disaster impacts and costs through improved preparedness activities and expanded investments in mitigation and risk reduction. Many commenters pointed out that the deductible program could be a preferred outcome compared to increasing the per capita indicator and the potential transfer of financial responsibility to State and local governments that would result. Some commenters found merit in the deductible concept as a way through which to reduce costs, but also to improve disaster resiliency by investing before an incident and incurring reduced costs related to response and recovery over the long term.

In addition to seeking comment via the ANPRM, FEMA continued to conduct research to inform the design of the deductible concept. FEMA recognizes that establishing the methodology for calculating the deductible in an equitable, accurate, and transparent way is essential to any future deductible proposal. Further, for any approach to sustain the rigors of analytic and economic review, FEMA recognized that it would benefit from leveraging external expertise to better develop a methodology that was defensible and reproducible.

With the assistance of the Department of Homeland Security (DHS) Science and Technology Directorate's Office of University Programs, FEMA contracted with the Center for Risk and the Economic Analysis of Terrorism Events (CREATE), a DHS Center of Excellence, to support development of the deductible calculation. CREATE is known for its experience in hazard assessment research, as well as statistical and economic modeling capabilities. CREATE dedicated a team of research and academic experts to develop a reliable methodology for calculating a deductible that is cognizant of the principles established by the FEMA working group; namely that the proposed formula be reflective of the individual capabilities and risks unique to each State and that the calculus function in a transparent and replicable way utilizing publically available information and data.

FEMA also contracted with a leading emergency management consulting firm to conduct additional research pertinent to developing the deductible. With the assistance of the National Emergency Management Association, this firm reached out to nine States on FEMA's behalf to assist those States with identifying information pertinent to the development of the deductible concept.[45] At the next stage of development, FEMA will make every effort to gather data from a larger sample of States, preferably all States, so that the proposal may be as representative as possible. FEMA also invites States to specifically correct any erroneous assumptions made for purposes of developing this SANPRM deductible concept during the comment period.

Specifically, the consulting firm assisted FEMA with understanding the methods and strategies currently used by these nine States to pay for the costs of emergency management programs, mitigation initiatives, and disaster response and recovery. The firm also researched innovative preparedness programs that the nine States have developed to further encourage planning and resiliency-building, such as tax credit incentive programs for individuals, localities, and State entities.

FEMA primarily used the information it obtained from the consulting firm to estimate baselines of current State investments that FEMA then used to set initial credit approvals at levels likely to encourage additional investment and program growth. FEMA also leveraged the information to assist in preparing targeted outreach efforts during the comment period of the ANRPM, such as those held with the National Governor's Association, the National Association of Counties, the National Emergency Management Association, Big City Emergency Managers, National League of Cities, and the International Association of Emergency Managers. These targeted engagements enabled FEMA to draw attention to the ANPRM, explain the purpose and background of the deductible concept with key stakeholders, and to solicit additional details that could be particularly pertinent to informing FEMA's deductible design considerations.

Following closure of the ANPRM comment period, FEMA compiled the comments received, the research performed by CREATE, and the research on State disaster funding and incentive programs and formulated the potential deductible program concept described in this SANPRM.

FEMA believes that this deductible concept is capable of meaningfully reducing the nation's overall risk profile over time. Calculating a deductible is, however, complex. FEMA also

[44] The comments can be viewed on the docket for this rulemaking at *www.regulations.gov* under docket ID FEMA–2016–0003.

[45] The States contacted were California, Florida, Minnesota, New York, Pennsylvania, Texas, Washington, Wyoming, and Vermont.

understands a deductible could be a significant change to FEMA's largest supplemental disaster assistance program. FEMA is therefore committed to continuing to dialogue with its emergency management partners on how best to design a program that will achieve mutually-beneficial goals without the undue transfer of responsibility or the creation of unnecessarily burdensome administrative bureaucracy.

V. Potential Deductible Program

A. Calculation Methodology

There is innate uncertainty in the likelihood of disaster events that prevents perfection in a deductible concept and complicates a complete understanding of the complex disaster environment within which the deductible program would operate. However, not unlike the commercial insurance markets, these uncertainties can be quantified and analyzed over geographic areas and over long periods of time with increasing precision. These calculations could be used to approximate the relative exposure of certain regions, in this case the States, to future disaster costs. These estimates could then be reflected in the relative value of a State's deductible.

Arriving at a calculation methodology is thus one of the most critical aspects of moving the deductible program beyond the conceptual stage and requires public comment. FEMA believes that the methodology should be transparent, reproducible, defensible, and equitable. Additionally, FEMA believes that the approach should reflect fundamental purposes of the Stafford Act, namely that the Federal government support those States that are overwhelmed by the response to and recovery from a natural disaster. Therefore, it is most appropriate to calculate each State's deductible based upon the aspects of fiscal capacity and disaster risk that are unique to the State. FEMA could do this through a four-step process: (1) Establishing the base deductible, (2) calculating the fiscal capacity index, (3) calculating the risk index, and (4) normalizing the deductible amounts. FEMA has included a step-by-step table in the rulemaking docket that demonstrates how each State's starting deductible amount was calculated for purposes of this SANPRM. That table and those deductible amounts are included only as an example of how the deductible concept may function. If implemented, the actual deductible amounts will be dictated by the parameters of the proposal ultimately adopted.

B. Establishing the Base Deductible

As with the rest of the SANPRM all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

FEMA begins its conceptual methodology by establishing an annual base deductible that would be shared nationwide (*i.e.,* the same amount for each State), and would then be increased or decreased for each State based upon a State's fiscal capacity and risk profile relative to the other States. FEMA utilized historic annual amounts of Public Assistance provided to States to establish the model base deductible. Although FEMA hopes to incentivize risk reduction and resilience that could reduce overall disaster impacts and costs, not solely those eligible for reimbursement through the Public Assistance program, FEMA believes it is important that the base deductible for the Public Assistance program shares a nexus with the program itself.[46]

As developed by FEMA, the base deductible utilized in this conceptual model is the median average amount of Public Assistance received across all 50 States in the past 17 years.[47] FEMA summed the total amount of Public Assistance delivered to each State from 1999 to 2015 and then divided by 17 to determine the per State average annual amount of Public Assistance. FEMA then created a ranked list of those average amounts and determined the median value. Because there are 50 States, the median value is the average of the results for the States situated at the 25th and 26th positions, which was 22,202,726. FEMA rounded the median average amount to 22.2M and imputed this amount to every State as the initial base deductible for the subsequent year.

FEMA believes that this may be a reasonable approach to establishing a base deductible because it would leverage approximately 25 percent of the average amount that FEMA awards in Public Assistance each year to incentivize reducing risk. Based on comments received in response to the ANPRM, FEMA believes that States are already making investments that would offset a portion of this amount through credits. By adjusting each State's base deductible amount to account for its individual risk and fiscal capacity, as described in the subsequent subsections, this approach could yield a meaningful deductible amount for each State, while still providing the greatest incentive to States that have the greatest potential for effectively reducing risk and future disaster costs. FEMA believes this could balance the potential benefits of the disaster deductible program with the need to continue supporting our State partners when disasters exceed their capabilities. See Table 4 for a breakdown of the cumulative and average amount of Public Assistance that each State received from 1999 through 2015.

TABLE 4—STATE RANK OF FEDERAL ASSISTANCE FROM 1999–2015

[In 2015 dollars]

No.	State	Total federal share obligated (1999–2015)	Annual average federal share obligated
1	New York	$21,671,388,334	$1,274,787,549
2	Louisiana	16,621,415,286	977,730,311
3	Florida	6,399,822,001	376,460,118

[46] See generally Section 406 of the Stafford Act which authorizes FEMA to provide funding to assist State, territorial, Tribal and local governments, as well as certain private nonprofit organizations that provide governmental-type services, with the restoration of disaster damaged infrastructure. Because this underlying authority for the program is for public infrastructure, FEMA believes that it is important that the deductible remains connected to Public Assistance funding for that infrastructure.

[47] FEMA used Public Assistance data from 1999 to 2015 adjusted for inflation to 2015 dollars where necessary using the Consumer Price Index inflation calculator provided by the Bureau of Labor Statistics and available at *http://www.bls.gov/data/inflation_calculator.htm.* Prior to 1999, FEMA utilized a data management process that was different from the current system. Furthermore, prior to 1999, FEMA had different policies in place that would have also affected the way that Public Assistance was awarded. The data from the 1999–2015 period is the most reliable that FEMA has available. FEMA expects to add additional data to the calculation each year to increase accuracy over time and to account for long-term shifts in Public Assistance, rather than using a rolling window of data for the annual calculation. This will also limit the impact of any outlier years in terms of Public Assistance awards, both for high and low extremes.

TABLE 4—STATE RANK OF FEDERAL ASSISTANCE FROM 1999–2015—Continued

[In 2015 dollars]

No.	State	Total federal share obligated (1999–2015)	Annual average federal share obligated
4	Mississippi	4,180,836,633	245,931,567
5	Texas	4,094,422,168	240,848,363
6	New Jersey	2,357,737,579	138,690,446
7	Iowa	1,826,578,453	107,445,791
8	California	1,437,292,282	84,546,605
9	Oklahoma	1,131,691,340	66,570,079
10	Kansas	1,080,772,444	63,574,850
11	North Carolina	953,206,418	56,070,966
12	Missouri	888,379,570	52,257,622
13	Alabama	841,956,023	49,526,825
14	Arkansas	744,651,963	43,803,057
15	North Dakota	679,833,405	39,990,200
16	Virginia	643,863,349	37,874,315
17	Kentucky	615,307,272	36,194,545
18	Tennessee	602,295,312	35,429,136
19	Pennsylvania	557,230,633	32,778,273
20	Nebraska	435,308,536	25,606,384
21	Washington	428,584,871	25,210,875
22	Minnesota	426,982,553	25,116,621
23	Massachusetts	422,663,583	24,862,564
24	Colorado	408,338,653	24,019,921
25	South Carolina	384,041,986	22,590,705
M	Median	377,446,341	22,202,726
26	Ohio	370,850,697	21,814,747
27	Georgia	328,820,892	19,342,405
28	West Virginia	311,011,683	18,294,805
29	Illinois	309,990,918	18,234,760
30	Vermont	297,996,556	17,529,209
31	Connecticut	284,870,352	16,757,080
32	South Dakota	284,612,022	16,741,884
33	New Mexico	274,303,673	16,135,510
34	Maryland	265,115,281	15,595,017
35	Indiana	237,955,033	13,997,355
36	Alaska	203,258,189	11,956,364
37	Wisconsin	174,472,096	10,263,064
38	Oregon	144,641,218	8,508,307
39	New Hampshire	137,674,702	8,098,512
40	Maine	91,683,905	5,393,171
41	Hawaii	87,697,345	5,158,667
42	Montana	70,196,126	4,129,184
43	Arizona	68,642,964	4,037,821
44	Rhode Island	63,361,303	3,727,135
45	Michigan	42,583,629	2,504,919
46	Delaware	39,007,437	2,294,555
47	Utah	34,208,312	2,012,254
48	Nevada	30,275,261	1,780,898
49	Wyoming	12,973,750	763,162
50	Idaho	11,695,737	687,985

After establishing this base deductible that is shared by every State, FEMA differentiated the States and ascribed individual deductibles according to each State's relative fiscal capacity and unique disaster risk profile. Fiscal capacity is important because the intent of FEMA's Stafford Act programs, including Public Assistance, is to supplement the capabilities of State and local jurisdictions. Disaster risk is important because it is the primary driver of Public Assistance expenditures and its reduction is the primary purpose of the deductible concept.

Because FEMA is seeking to reduce risk through the deductible, and it is precisely through this risk reduction that the nation could realize the promise of the deductible program in decreasing disaster impacts and costs, FEMA has considered in this calculation prioritizing the risk portion of the deductible calculation by a ratio of 3:1 compared to the fiscal capacity portion. In other words, when a State's base deductible is adjusted, 75 percent of the adjustment results from the State's relative risk profile and the remaining 25 percent stems from the State's relative fiscal capacity.

C. Calculating the Fiscal Capacity Index

As with the rest of the SANPRM all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

To calculate a State's relative fiscal capacity, FEMA, with the assistance of CREATE, developed a composite of four individual fiscal capacity indices. FEMA and CREATE considered multiple potential indicators of fiscal capacity. The four indicators selected to

comprise the composite fiscal capacity index were each determined to represent a separate and distinct aspect of a State's economy and governmental resources; however. FEMA welcomes comment on whether these are the best indicators to leverage and whether there are others that should be considered as well. The four fiscal capacity indices that FEMA includes in the model deductible calculation are based on each State's per capita Total Taxable Resources (TTR), per capita surplus/deficit, per capita reserve funding, and the State's bond rating. FEMA will use the most recent indices.

TTR is an annual measure of fiscal capacity calculated by the United States Department of Treasury.[48] Essentially, TTR considers all of the income streams available within each State, including gross domestic product, corporate withheld earnings, and other capturable revenue. TTR does not measure how much revenue a State actually captures, but instead, measures how much revenue, in real dollars, a State has access to as compared to other States. As a per capita index, the State's total TTR in real dollars is then divided by the State's population. This places high-population States on equal footing with low-population States with regard to the index.

The surplus/deficit and the reserve fund indices operate in similar fashion. In each case, the State's value (surplus/deficit or reserve) is divided by the State's population. That amount is then compared with the per capita value of the median State. This creates indices of relative strength for each.

The surplus/deficit index is built using data provided by the Annual Survey of State Government Finances provided by the United States Census Bureau of the Department of Commerce.[49] The reserve fund index is built using data provided by the Fiscal Survey of the States conducted regularly by NASBO.[50] FEMA believes that both the surplus or deficit that a State is running and the amount of funding that a State holds in reserve are relevant indicators of a State's overall fiscal well-being and ability to independently address the financial costs of disasters.

Finally, the bond rating index is similarly calculated by dividing the State's bond rating by the median State's bond rating. In this model, FEMA calculates the bond rating index based upon data provided by the Pew Charitable Trusts from Standard & Poor's State Credit Ratings.[51] FEMA believes that the resulting relative index is an indicative proxy of the State's ability to quickly raise the funding liquidity necessary to respond to and recover from disaster incidents.

FEMA averaged these four indices of relative fiscal strength into a consolidated fiscal capacity index, each factor being equally weighted. This index accounts for 25 percent of a State's base deductible adjustment. However, FEMA also realized that, due to diversity in economic drivers and varying population sizes, some States may demonstrate a particular fiscal capacity indicator that is a statistical outlier compared with its other factors and the indicators of other States. To minimize the impact of these outliers on the disaster deductible formula, FEMA capped the impact of any individual fiscal capacity indicator at five times the median State's relative strength. In other words, if the median State's per capita reserve fund is $100 and is ascribed a value of 1.0 on the index, a State with an outlier per capita reserve fund value of $800 could be imputed the maximum per capita reserve fund value of $500, and therefore still receive an index value of 5.0, instead of the 8.0 index value that could otherwise be warranted. FEMA capped each fiscal capacity indicators in this way to contain the variability of the overall index and smooth the impact on outlier States.

D. Calculating the Composite Risk Index

As with the rest of the SANPRM, all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

FEMA explored multiple leading alternatives for predicting disaster losses. For the model described in this SANPRM, FEMA used an Average Annualized Loss (AAL) methodology for calculating each State's relative disaster risk level.

AAL is a proxy for risk commonly used in risk modeling that considers the expected losses from a particular hazard per year when averaged over many years. Generally, AAL is calculated by multiplying the likelihood of the hazard occurring in a particular year by the likely cost of the event if it does occur. For example, if the likelihood of a hazard occurring is 0.2 percent, such as for a 500-year event, and the likely loss generated by that level of event is $1 billion, the AAL for the hazard in the vulnerable area would be $2 million ($1B x 0.002).[52]

There are numerous sources of AAL data for hazards. Proprietary catastrophic risk models developed by companies such as AIR Worldwide (AIR), Risk Management Solutions (RMS), and CoreLogic (EQECAT) are three primary sources of AAL and risk information used by the reinsurance industry.[53] FEMA considered these sources, but did not pursue them due to the proprietary, closed nature of the underlying risk models. Instead, FEMA used the AAL values produced using FEMA's Hazus platform.

Hazus is a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes. Hazus uses Geographic Information Systems (GIS) technology to estimate physical, economic, and social impacts of disasters.[54] FEMA used AAL estimates generated using Hazus because it is a well-established and familiar platform for many emergency managers and, most importantly, it is an open-source platform that will provide complete transparency to stakeholders concerning FEMA's deductible calculations.

FEMA used the Hazus-based AAL estimates to create a simplified risk index for each State. Specifically, FEMA summed the most recently available AAL estimates[55] for each State for each

[48] Additional information regarding Total Taxable Resources (TTR), including the methods for calculating and the current TTR estimates, can be found on the Web site of the Department of the Treasury at *https://www.treasury.gov/resource-center/economic-policy/taxable-resources/Pages/Total-Taxable-Resources.aspx.*

[49] Additional information concerning the Annual Survey of State Government Finances, including the survey methodology and latest survey results, can be found on the Web site of the United States Census Bureau at *https://www.census.gov/govs/state/.*

[50] Additional information concerning the Fiscal Survey of States, including the survey methodology and latest survey results, can be found on the Web site of the National Association of State Budget Officers at *https://www.nasbo.org/mainsite/reports-data/fiscal-survey-of-states.*

[51] Additional information concerning the data provided by the Pew Charitable Trusts can be found on their Web site at *http://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2014/06/09/sp-ratings-2014.*

[52] A 500-year event is an event that has the statistical likelihood of occurring once every 500 years, or in other words, a 1 in 500 chance (0.2%).

[53] A short discussion about catastrophic modeling and a description of the three proprietary AAL models identified here can be found on the Marsh, LLC Web site at *https://www.marsh.com/content/dam/marsh/Documents/PDF/US-en/Marsh-Insights-Property-Fall-2012.pdf.*

[54] For additional information, visit FEMA's Hazus Web site at *http://www.fema.gov/hazus.*

[55] FEMA uses estimates of AAL generated using FEMA's Hazus software. Cited AAL estimates were inflation-adjusted to 2015 dollars where necessary using the Consumer Price Index inflation calculator provided by the Bureau of Labor Statistics and available at *http://www.bls.gov/data/inflation_calculator.htm.*

of the three Hazus hazards: Earthquakes,[56] floods (both coastal and riverine),[57] and hurricanes (wind only).[58] Collectively, these three hazards accounted for more than 75 percent of all Public Assistance awarded during the 10-year period between 2005 and 2014.

FEMA created a composite risk index around the median cumulative AAL. FEMA arranged each State's cumulative AAL (the sum of the State's earthquake, flooding, and hurricane AALs) in order from the largest cumulative AAL to the smallest. Because there is an even number of States, FEMA averaged the cumulative AALs of the States in the 25th and 26th positions to determine the overall median cumulative AAL. FEMA assigned this amount a value of 1.0 and indexed each State's relative cumulative AAL to determine the State's risk index score.

For example, consider a State with the following Hazus-based AALs:

Hurricane: $875 million
Flooding: $2 billion
Earthquake: $25 million

Cumulative: $2.9 billion (Hurricane AAL + Flooding AAL + Earthquake AAL) FEMA conducted the same calculation for each State and then ordered them from largest to smallest in terms of each State's cumulative AAL.

If the median cumulative AAL across all of the States is $1.45 billion, that would be ascribed a score of 1.0 on the risk index, the hypothetical State above would receive a risk index score of 2.0 because its cumulative AAL is twice as large as the median cumulative AAL ($2.9 billion versus $1.45 billion, respectively). For purposes of calculating the State's Public Assistance deductible, the State could be considered to have twice the risk of the median State.

The AALs produced using Hazus vary from State to State depending upon the types of hazards that each State is prone to and the levels of loss that those hazards have the ability to create in those States. Consequently, the per capita cumulative AALs are not evenly distributed across the States and a few States have higher risk index scores because of that. Every State should be assigned a deductible that is reasonable and achievable. In this model, FEMA capped the composite risk index values in a manner similar to the way FEMA capped the components of the fiscal capacity index.

FEMA capped the fiscal capacity components at a value of 5.0. This means that FEMA ignored any computed fiscal capacity that is greater than five times the median State's fiscal capacity for that factor. Because of the overall emphasis on risk, and similar to the deductible formula ratio of 3:1 risk to fiscal capacity, FEMA capped a State's risk index at a score of 15.0. In other words, FEMA ignored any calculated risk that is in excess of 15 times the risk of the median State.

E. Normalizing the Deductible Amounts

As with the rest of the SANPRM, all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

FEMA used the base deductible, composite risk index, and fiscal capacity index established above to calculate the post-indexed deductible value for each State. As explained previously, 75 percent of the total index adjustment to the base deductible is determined by the State's relative risk profile and the remaining 25 percent is determined by the State's relative fiscal capacity. For the final step in the deductible calculation process, FEMA normalized the post-indexed values to establish each State's final deductible amount. Normalization is a statistical term that can mean different things in different contexts. In the case of the deductible, FEMA uses normalization to mean adjusting the post-indexed values to equal the pre-indexed values overall.

Specifically, FEMA multiplied the base deductible that it established in the first step by 50 to establish the overall deductible ceiling for the 50 States. FEMA then summed all of the post-indexed deductible values of each State. If the sum of these post-indexed values exceeded the deductible ceiling established by the base deductible, FEMA made a downward adjustment to each State's post-indexed deductible so that its final amount remained the same relative to every other State, but so that the sum of all of the States' post-indexed deductibles equaled the base deductible ceiling.

For example, assume that the base deductible is calculated to be $25 million. This is the amount that each State begins with prior to the application of the fiscal capacity index and risk index. FEMA multiplies the base deductible ($25 million) by 50 to calculate the cumulative deductible ceiling for that year. In this case the deductible ceiling would be $1.25 billion for the year ($25 million × 50 = $1.25 billion).

If, after applying the indices to each State's base deductible, the sum of all of the resulting, post-indexed deductibles exceeded the $1.25 billion dollar ceiling, FEMA would normalize the deductible amounts so that the sum of all of them equals $1.25 billion. This would decrease the final deductible amounts of every State, but each State would remain in the same position relative to every other State. If a State had a post-indexed deductible that was twice that of another State that State would still have a final deductible that was twice the deductible of the other State, but both final deductibles would be lower.

Normalization is a common statistical approach for addressing variations that occur when adjustments are made to values through indices of relativity, which both the fiscal capacity and risk index are. This important step could ensure that the Public Assistance deductibles remain rooted in their nexus to the Public Assistance program. This final step, normalization, will establish the Starting Deductible for each state.

F. Calculating Each State's Starting Deductible

As with the rest of the SANPRM, all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

As summarized above, the base deductible will be multiplied by the sum of: 0.75 multiplied by the State's Composite Risk Index and 0.25 multiplied by the State's Composite Fiscal Capacity Index. That calculation establishes an adjusted deductible for each State. FEMA will then normalize the adjusted deductibles to ensure that the total sum of all of the adjusted deductibles equals the sum of the base deductibles. This methodology yields

[56] KS Jaiswal, et al. (2015). Estimating Annualized Earthquake Losses for the Conterminous United States. Earthquake Spectra: December 2015, Vol. 31, No. S1, pp. S221–S243. FEMA is unable to post a copy of the document in the docket due to copyright restrictions. A summary of the document and purchase information is available at *http://dx.doi.org/10.1193/010915EQS005M.*

[57] Hazus AAL results for flood (coastal and riverine) are available at *https://data.femadata.com/Hazus/FloodProjects/AAL/StateAAL_proj.zip* and *http://www.arcgis.com/home/item.html?id=cb8228309e9d405ca6b4db6027df36d9.* Accessed June 2, 2016. Note that Hazus flood AAL estimates are not available for Hawaii and Alaska; these losses are estimated by indexing against National Oceanic and Atmospheric Administration (NOAA) flood loss estimates from 2011–2014, available at *http://www.nws.noaa.gov/hic/summaries/.*

[58] FEMA Mitigation Directorate, Hazus-MH Estimated Annualized Hurricane Losses for the United States (unpublished draft report), September 2006.

the following model normalized deductibles for each State in 2016:

TABLE 5—MODEL 2016 STARTING DEDUCTIBLES

State	Starting deductible ($M)
Alabama	$12.96
Alaska	19.42
Arizona	18.67
Arkansas	8.01
California	141.03
Colorado	7.08
Connecticut	20.85
Delaware	8.03
Florida	141.53
Georgia	17.65
Hawaii	9.17
Idaho	7.68
Illinois	14.43
Indiana	12.23
Iowa	10.63
Kansas	9.54
Kentucky	9.47
Louisiana	73.90
Maine	8.52
Maryland	9.26
Massachusetts	30.34
Michigan	23.20
Minnesota	9.44
Mississippi	13.32
Missouri	11.38
Montana	6.23
Nebraska	9.93
Nevada	8.81
New Hampshire	7.92
New Jersey	29.28
New Mexico	11.11
New York	51.70
North Carolina	17.50
North Dakota	10.09
Ohio	25.86
Oklahoma	10.40
Oregon	24.62
Pennsylvania	21.88
Rhode Island	12.30
South Carolina	11.60
South Dakota	8.25
Tennessee	16.68
Texas	73.72
Utah	7.73
Vermont	8.64
Virginia	13.51
Washington	27.30
West Virginia	23.39
Wisconsin	13.50
Wyoming	10.47
Average	22.20
Median	12.26
Minimum	6.23
Maximum	141.53

These deductibles represent FEMA's assessment of each State's fiscal capacity and risk profile as of 2016. FEMA has included a table in the rulemaking docket for this SANPRM that shows every step for each State with regard to how these notional deductibles were calculated for purposes of this concept. These deductibles would be reduced by any credits that FEMA approves for the State pursuant to the annual deductible credit menu. The following section will detail the types of credits that FEMA expects to initially offer.

G. Credit Structure

As with the rest of the SANPRM all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

A potential credit structure could offer States the ability to partially or fully satisfy their deductible in advance of a major disaster declaration. While simply raising the per capita indicator to qualify for Public Assistance would reduce Federal costs, a potential credit structure, if successful, could eventually deliver the true benefits of reduced risk and realized disaster response and recovery cost savings nationwide. FEMA's goal is to design a model credit structure that would create financial and economic incentives for meaningful State investments in preparedness and risk-reduction measures.

FEMA believes that the model credit structure described in this SANPRM would allow every State to earn credits for activities that each would already be undertaking, and also improve risk reduction and resilience building for States that choose to expand those activities. To that end, the deductible model described in this SANPRM includes seven potential categories of credits.

Due to the differences among the credit categories and their likely effects upon reducing risk, each category offers a unique credit-to-cost ratio, and a few have caps to provide States with an opportunity to develop a potentially diverse portfolio of risk reduction strategies.

FEMA would monitor which credits States elect to earn and would continue to refine its credit offerings each year. FEMA would provide an annual notice of credit offerings so that States would have ample opportunity to carefully consider all of their options. FEMA would also continue to engage with the States and with key intergovernmental organizations to ensure that the credit structure is calibrated to provide the right levels of reward to incentivize continuous improvement for each State in the disaster resilience and emergency management contexts.

FEMA recognizes that any additional program could create some additional administrative burden to State and Federal governments. However, FEMA is committed to limiting that burden to successfully carry out the program and ensure that it is applied effectively. The following sections detail the administrative steps and timelines currently envisioned for the program. FEMA has carefully considered both the likely burden and the likely benefit underlying each of the seven credit categories and believes that each category represents potential activities worth pursuing and incentivizing. Each of the seven credit categories received generally favorable support from those who commented on the ANPRM. FEMA seeks additional public input on these categories and on the potential administrative burdens of assembling the supporting information.

1. Dedicated Funding for Emergency Response/Recovery Activities

A State that has planned for and taken fiscal steps to address the financial impacts of potential disasters ahead of time is better prepared to immediately respond to and to rapidly recover from a major disaster. FEMA recognizes that States use multiple strategies for addressing the financial consequences of a disaster, including: Supplemental State appropriations, issuing recovery bonds, diverting funding from other State programs or cutting State agency operating budgets, and imposing special tax assessments to raise recovery resources. FEMA, however, has also observed that the time required to enact many of these ad-hoc funding strategies can significantly delay a State's ability to rapidly respond to a disaster.

FEMA believes that response and recovery efforts could be improved if the affected States maintain dedicated disaster relief funds. By having this funding available, these States also could potentially obviate the need to reduce or eliminate other planned State services to divert funding to disaster operations and infrastructure repair. For example, a State could divert funding for summer roadway maintenance or improvements to cover debris removal costs following a hurricane or snow removal costs following a major winter storm. States that maintain a dedicated disaster relief fund may be able to more rapidly ameliorate disaster consequences, leverage supplemental Federal assistance programs, and repair public buildings and infrastructure, without diverting funding from other important initiatives.

Furthermore, States without dedicated disaster relief funds could find themselves in the position of incurring new public obligations, or in some cases debt, while simultaneously suffering from the tax losses of disaster-

induced decreased economic activity. By having a dedicated fund available to address the direct costs of disaster response and damage restoration, States could be better positioned to address these secondary disaster consequences.

In order to incentivize States to take the proactive step of establishing and funding a dedicated disaster relief fund in advance, this potential model credit structure includes $1.00 in deductible credit for every $1.00 of State funding that the State has appropriated and deposited in a qualifying disaster relief fund during the course of the previous year. This credit may account for up to 20 percent of the State's annual deductible. Funds that are carried over or that expire and are reappropriated for the same limited purpose could still qualify for the credit.

2. Expenditures for Non-Stafford Act Response and Recovery Activities

FEMA received multiple comments during the ANPRM comment period that emphasized that FEMA does not fully understand or appreciate the amount of investment that States already make in emergency management and disaster recovery. Commenters pointed out that for every major disaster declared, that there are multiple smaller incidents that do not rise to the level of warranting supplemental Federal assistance, but nonetheless exceed local capabilities and often require State funding support for response and recovery activities. FEMA seeks to encourage States to continue providing State-level assistance to overwhelmed localities, even when Federal assistance may be unavailable.

Commenters also noted that counties and cities often lack the independent ability to raise the necessary financial resources to address the costs of significant localized impacts. In these cases, the support provide by their State partners is invaluable to ensuring that adequate funding is available to support the response and recovery operations necessary to assist the affected localities and survivors. Additionally, commenters explained that, even following a major disaster declaration, supplemental Federal assistance is typically only made available to the most severely impacted jurisdictions within the affected State. However, there are other communities that are not designated, but nonetheless have experienced damage resulting from the same incident. The commenters postulated that the damage experienced within these non-declared jurisdictions may nevertheless still exceed their individual capacities to effectively respond and recover, necessitating additional support from their State partners. This is, the commenters offered, an additional burden upon the State that the current system of Public Assistance does not recognize or incentivize.

FEMA seeks to preserve and strengthen this important State-local relationship and to incentivize States to continue providing assistance when jurisdictional capabilities are exceeded, regardless of the availability of supplemental Federal assistance. In order to do so, this potential deductible model includes $1.00 in deductible credit for every $1.00 of annual State funding that the State expends to respond and/or recover from an incident that either: (1) Does not receive a Stafford Act declaration or, (2) affects a locality not designated for Public Assistance by a major disaster declaration. In either case, the Governor of the State would be required to declare a State of emergency, or issue a similar proclamation, pursuant to applicable State law. In this model, this credit could account for up to 20 percent of the State's annual deductible.

3. Expenditures for Mitigation Activities

Integral to any effort to lessen the risks associated with and consequences of disaster is effective mitigation. Mitigation is the act of lessening or avoiding the impacts of a hazard, typically through engineered solutions. The linkage between advanced mitigation and lowering disaster impacts and costs has been demonstrated many times, both through academia and research, and also in practical application.

FEMA provides funding assistance for mitigation projects through several programs, including the Hazard Mitigation Grant Program and the Pre-Disaster Mitigation Grant Program, as well as to mitigation-enhanced restoration projects through the Public Assistance program authorized by Section 406 of the Stafford Act.[59] FEMA recognizes, however, that States often invest significantly in mitigation efforts apart from these Federal assistance programs. FEMA seeks to recognize those continued investments and incentivize additional investments by providing significant credit for direct mitigation-related expenditures through the Public Assistance deductible program.

This model includes $3.00 in deductible credit for every $1.00 in State spending on qualifying mitigation activities. FEMA will not count State matching funds toward the calculation of the credit, so therefore these State expenditures must be either independent of any other Federal assistance program or must be in excess of the minimum cost-share requirement of any applicable Federal assistance program. For purposes of this credit, FEMA defined qualifying mitigation activities as it does under FEMA's Hazard Mitigation Assistance Guidance.[60]

Due to the importance of incentivizing mitigation activities to the success of the deductible program in reducing future disaster impacts and costs nationwide, FEMA is not currently considering capping the potential mitigation credit that may be earned in this model. In other words, a State could fully satisfy its annual deductible by investing at least one-third of its deductible amount in qualifying mitigation activities each year. This could not only fully satisfy the State's deductible well in advance of any declaration activity, thereby eliminating application of the deductible in the State for that year, but could also deliver the State future savings by reducing the severity or consequences of forthcoming disasters. FEMA also seeks comment specifically on whether incentivizing further spending by State governments using credit mechanisms of mitigation expenditure credits and non-Stafford expenditure credits could potentially dampen or crowd out private mitigation expenditures.

4. Insurance Coverage for Public Facilities, Assets, and Infrastructure

States have choices when it comes to how they elect to address their disaster risks. Some States have chosen to establish dedicated disaster relief funds that can be leveraged to address the costs of disasters without jeopardizing other services and operations. Other States have elected to purchase third-party insurance to cover some of those costs, while others have established self-insurance risk pools to better distribute the risk. Regardless of the choice that is made, FEMA may choose to encourage pre-disaster financial preparedness through the deductible program.

The model FEMA is currently contemplating includes percentage deductible credits for States that elect to utilize insurance policies as a means to address future disaster costs. To qualify for credit, the insurance policy must cover costs related to losses that would otherwise qualify for reimbursement

[59] 42 U.S.C. 5172.

[60] *See* Hazard Mitigation Assistance Guidance, Part III, section E.1.3.1, available at this link *https://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.pdf.*

assistance through the Public Assistance program. For purposes of the credit, the policies must provide guaranteed coverage for losses from natural hazards, fires, explosions, floods, or terrorist attacks. For a self-insurance fund or risk pool, FEMA would verify through the State Insurance Commissioner, or similar State official, that the fund or pool is actuarially sound and solvent.

This model includes credit based on the aggregate limits of applicable State policies, rather than on the premiums paid for coverage. Consequently, FEMA believes that States choosing to insure against future disaster risk would have very large overall limits, even though a particular incident would likely only affect a fraction of the total insured property. For example, if a State maintains $1M policies on 10 facilities across the State, the aggregate limit of the policy coverage is $10M, even though it is unlikely that all 10 facilities will suffer an insured loss at the same time. FEMA believes this could be a reasonable and equitable approach because both the deductible and insurance coverage levels should largely be driven by each State's individual risk profile.

This model includes a potential three-tier incentive structure for insurance coverage based upon multiples of each State's annual deductible amount as follows:

TABLE 6—INSURANCE COVERAGE CREDIT SCHEDULE

Coverage amount	Credit (percentage of deductible)
50x Deductible ≤ Coverage <100x Deductible	5
100x Deductible ≤Coverage <150x Deductible	10
150x Deductible ≤ Coverage	15

For example, if a State has an annual deductible of $30 million and carries insurance policies on public facilities with an aggregate limit of $3.6 billion, the State could receive a credit equal to 10 percent of its initial deductible, or $3 million. This is because $3.6 billion is 120 times the amount of the State's deductible ($30 million) and is within the range of 100 to 150 times the deductible that FEMA suggests should receive a 10 percent credit. This outcome could be the same whether the State chose to purchase its insurance through third-party insurers or reinsurers or chose to self-insure and self-manage the risk. FEMA could confirm coverage level through the insurance contract or, for self-insurance, through the appropriate State official that the self-insurance fund is actuarially sound up to the $3.6 billion limit. Given the specific goal of incentivizing mitigation, FEMA seeks comment on the inclusion of insurance coverage credits in the deductible model.

5. Building Code Effectiveness Grade Schedule (BCEGS®)

The Insurance Services Office, Inc. (ISO), a leading provider of information concerning risk assessment and property and casualty insurance, has explored the relationship of building codes to risk reduction. According to a recent ISO report:

> [M]odel building codes have most clearly addressed the hazards associated with wind, earthquake, and fire. Experts maintain that buildings constructed according to the requirements of model building codes suffer fewer losses from those perils. If municipalities adopt and rigorously enforce up-to-date codes, losses from other risks (including man-made perils) may also decrease.[61]

FEMA agrees with the ISO's analysis that building codes, when adopted and properly enforced, have the ability to reduce future disaster risk on a broad scale. Consequently, in this model FEMA incorporated deductible credits to States that have committed to adopting, promoting, and enforcing building codes.

This model includes an escalating credit structure that provides moderate incentive to simply participate in ISO's Building Code Effectiveness Grading Schedule (BCEGS®) program and increasing incentives as States reach higher levels of adoption and enforcement. ISO provides BCEGS® scores for both residential and commercial codes and enforcement, each on an improving scale from 10 to 1. In 2015, over 60 percent of States had BCEGS® scores of 4 or 5 in each category.

The following model incentive structure is based on each State's annual BCEGS® score for both residential and commercial building codes:

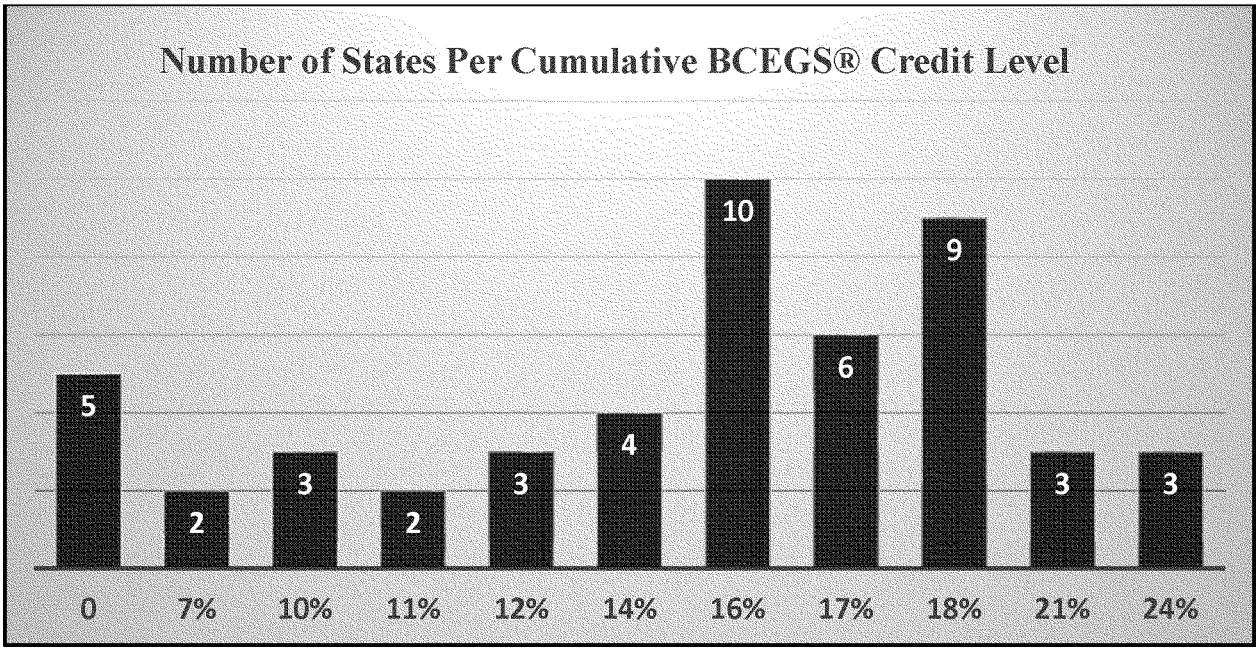
TABLE 7—BCEGS CREDIT SCHEDULE

BCEGS® score	Residential credit (percentage of deductible)	Commercial credit (percentage of deductible)
1	20	20
2	15	15
3	12	12
4	9	9
5	8	8
6	6	6
7	5	5
8	4	4
9	3	3
10	2	2

This structure could allow States to earn between 4 percent and 40 percent credits based upon their residential and commercial BCEGS® scores. As of 2015, 45 States participate in the BCEGS® program and could have received, at a minimum, the 4 percent credit for doing so under this structure. Based on 2015 scores, the average participating State could receive a 16 percent reduction to their deductible amount. The smallest credit would have been 7 percent and the largest would have been 24 percent. The following chart depicts the number of States per credit level in 2015.

[61] Insurance Services Office, Inc., *National Building Code Assessment Report: ISO's Building Code Effectiveness Grading Schedule* (2015), 8, available at *https://www.isomitigation.com/downloads/ISO-BCEGS-State-Report_web.pdf.*

Figure 1: Number of States per Cumulative BCEGS Credit Level



6. Tax Incentive Programs

FEMA recognizes that the most effective ways to reduce risk across the entire nation employ a whole-community approach that involves every level of government, the private sector, and the citizenry in taking steps to promote and increase resilience. With that in mind, FEMA included in this model credit to States for tax-incentive programs designed to encourage preparedness or mitigation activities.

For example, a State may offer an income tax credit for elevating homes or host a sales-tax holiday for personal preparedness supplies. FEMA would defer to the States to decide what types of programs would be most successful and appropriate given each State's unique considerations and risks, however the program would still need to maintain a clear nexus with preparedness, mitigation, or resilience building. In some cases, a State may offer a program that incentivizes general preparedness, or it may decide to target a program to a specific hazard, such as the installation of hurricane straps or seismic retrofits to existing building foundations.

Regardless, this model includes credits to States for these types of innovative tax incentive programs. FEMA would allow States to request credit for both the direct costs of the program (administration, advertising, etc.), and for the indirect costs, such as forgone tax revenue. In both cases, FEMA would approve $2.00 in deductible credit for every $1.00 in State funding expended or foregone.

Because FEMA sees this credit as a type of whole-community risk reduction, in this model FEMA is not currently including a cap on this particular credit. In other words, a State with a large enough tax incentivize program(s) could largely offset its deductible by annually foregoing tax revenue, through credits/deductions offered to businesses and/or citizens, equal to half of its deductible amount. FEMA specifically requests comment on the types of tax incentive programs that have a nexus to preparedness and disaster risk reduction and their effectiveness, both in terms of cost effectiveness and outcome effectiveness.

7. Expenditures on State Emergency Management Programs

Perhaps the most visible factor in a State's ability to address disasters in the broad sense is the quality of its emergency management program. States have organized their emergency management function in a number of different ways. In some States, emergency management is a standalone office, whereas in other States the function is embedded in a broader public safety or military organization.

The Federal government provides numerous types of assistance to States to develop, maintain, and implement their emergency management programs. At FEMA, assistance is generally available through the Emergency Management Performance Grant Program,[62] the Homeland Security Grant Program,[63] including both the State Homeland Security Program[64] and the Urban Area Security Initiative,[65] and through management costs awarded in administering Stafford Act declarations.

In order to further incentivize States to allocate their own resources to their emergency management enterprises, this model includes a deductible credit for annual State expenditures supporting State emergency management programs beyond any cost-share required by a Federal assistance program or grant. FEMA solicits comments on what types of emergency management enterprises and activities could be eligible for deductible credit within this category and information relating to the current level of State investment in these enterprises and activities.

FEMA includes in this model $1.00 in deductible credit for every $1.00 that a State invests in emergency management beyond the cost-share required by a Federal program. A State could satisfy up to 20 percent of its annual Public Assistance deductible through this credit.

8. Emergency Management Accreditation Program (EMAP®) Credit Enhancement

The Emergency Management Accreditation Program (EMAP®) is an independent non-profit organization

[62] 6 U.S.C. 762.
[63] 6 U.S.C. 603.
[64] 6 U.S.C. 605.
[65] 6 U.S.C. 604.

that offers an emergency management program review and recognition program.[66] EMAP® is a completely voluntary program and accreditation is not presently a factor in any FEMA program. However, FEMA recognizes that EMAP® provides a valuable resource to accredited programs by establishing best practices and offering a level of independent accountability.

This model includes a credit enhancement to States that voluntarily seek and achieve provisional or full EMAP® accreditation. FEMA could increase the credit amount by 5 percent for three credit types for EMAP® accreditation, but specifically seeks comment on the appropriate value of this credit amount. These three credits could be:

1. Dedicated funding for emergency response and recovery activities;
2. expenditures for non-Stafford Act response and recovery activities; and
3. expenditures on State emergency management programs.

Specifically, instead of offering $1.00 in deductible credit for each $1.00 in qualifying State funding and expenditures, FEMA would instead approve $1.05 for each $1.00 in qualifying State funding and expenditures for States maintaining current EMAP® provisional or full accreditation. The credit caps applicable to each credit category would remain unchanged. FEMA believes that applying the credit enhancement in this manner could encourage States to seek and/or maintain EMAP® accreditation and that by doing so, could demonstrate improved readiness to confront the consequences of disasters.

9. Credit Summary

Table 8 provides an overview of the credits that FEMA is envisioning, the amount of credit that could be approved, any cap that FEMA envisions applying, and whether an enhancement is available to the credit.

TABLE 8—SUMMARY CREDIT MENU

Credit No.	Credit name	Credit amount	Credit cap	EMAP® enhancement
1	Dedicated Funding for Emergency Response/ Recovery Activities.	$1.00 in credit for each $1.00 in qualifying deposits.	20%	Yes.
2	Expenditures for Non-Stafford Act Response and Recovery Activities.	$1.00 in credit for each $1.00 in qualifying expenditures.	20%	Yes.
3	Expenditures for Mitigation Activities	$3.00 in credit for each $1.00 in qualifying expenditures.	No Cap	No.
4	Insurance Coverage for Public Facilities, Assets, and Infrastructure.	% reduction based on qualifying coverage above deductible amount.	N/A	No.
5	Building Code Effectiveness Grade Schedule (BCEGS®).	% reduction to the starting deductible based on BCEGS®.	N/A	No.
6	Tax Incentive Programs	$2.00 in credit for every $1.00 in qualifying costs.	No Cap	No.
7	Expenditures on State Emergency Management Programs.	$1.00 in credit for every $1.00 in qualifying expenditures.	20%	Yes.

H. Estimates of Initial Credits

Based upon the preliminary research discussed above and interviews with key stakeholders and subject matter experts, FEMA believes that every State would receive deductible credit under the preceding credit structure for activities and investments that each State is already undertaking; however, there may be some States that have been able to undertake more credit-qualifying activities than others.

As with the rest of the SANPRM, all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

FEMA has used the information that it has available to estimate the amount of credit that each State might qualify for initially. In many cases, however, FEMA anticipates offering credit for activities for which there is very little information readily available. Where information is lacking, FEMA attempted to use assumptions as to current State activities. For instance, FEMA was unable to identify annual amounts of forgone revenue from a State tax incentive program and thus assumed an amount equal to 1 percent of a State's starting deductible.[67] FEMA intentionally utilized what it believes are conservative estimates where uncertainty exists and assumptions were needed. FEMA has attempted to estimate the amount of credit that each State might qualify for initially to provide context on the potential impact of the deductible requirement. FEMA welcomes comments on its assumptions with information more readily available to each State.

Overall, based on this analysis, FEMA anticipates that the average State would receive initial credits worth approximately 40 percent of its first deductible without making any changes to its current spending or activities. Across the States, FEMA expects that these initial credits would range from a minimum of approximately 6 percent to a maximum of approximately 85 percent. Table 9 depicts FEMA's estimates for each State under this model. Specifically, Table 9 indicates each State's applicable model starting deductible, the credit amount from each of the seven categories of credits, the total estimated credits (shown both as a dollar value and percentage of the starting deductible amount), and the model final deductible amount that the State would carry into the new year.

This potential final deductible amount represents what each State would potentially need to satisfy if it experiences a disaster that results in disaster damages that exceed the amount of credits that FEMA has approved. It is the remaining amount that is not offset by the credits that a State has earned.

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[66] Additional information on EMAP can be found at *https://www.emap.org/index.php.*

[67] For example, given Alabama's starting deductible of $12.96 million, FEMA assumes forgone revenues from the State's tax incentive program of $129,574.

Table 9: Initial Estimated Deductible Credit Amounts - Expected 2016 Investments Only (in millions)

State	Full Starting Deductible	Dedicated Fund Credit (20% cap)	Non-Stafford Expenditures Credit (20% cap)	Mitigation Activity Credit	Insurance Coverage Credit	Building Code Credit	Tax Incentives Credit	Emergency Management Credit (20% cap)	Total Estimated Credits	Credit % of Full Deductible	Full Final Deductible
Alabama	**$12.96**	$0.00	$0.51	$0.51	$0.00	$1.55	$0.26	$0.50	**$3.33**	25.7%	**$9.63**
Alaska	**$19.42**	$0.00	$0.20	$0.37	$0.00	$3.11	$0.39	$0.89	**$4.96**	25.5%	**$14.46**
Arizona**	**$18.67**	$3.73 *	$0.10	$0.58	$0.00	$3.36	$0.37	$0.39	**$8.55**	45.8%	**$10.12**
Arkansas**	**$8.01**	$1.60 *	$0.11	$0.32	$0.00	$0.96	$0.16	$0.00	**$3.15**	39.4%	**$4.85**
California**	**$141.03**	$28.21 *	$6.34	$21.13	$0.00	$33.85	$2.82	$28.21 *	**$120.55**	85.5%	**$20.48**
Colorado**	**$7.08**	$0.01	$0.06	$0.14	$0.35	$1.13	$0.14	$0.00	**$1.84**	26.0%	**$5.24**
Connecticut	**$20.85**	$0.00	$0.23	$0.73	$0.00	$1.67	$0.42	$2.41	**$5.46**	26.2%	**$15.39**
Delaware	**$8.03**	$0.00	$0.01	$0.30	$0.00	$1.28	$0.16	$0.35	**$2.09**	26.1%	**$5.93**
Florida**	**$141.53**	$0.00	$9.80	$8.71	$0.00	$33.97	$2.83	$28.31 *	**$83.60**	59.1%	**$57.92**
Georgia**	**$17.65**	$0.00	$0.20	$0.48	$0.88	$2.82	$0.35	$0.00	**$4.74**	26.9%	**$12.91**
Hawaii	**$9.17**	$0.00	$0.01	$0.36	$0.00	$0.00	$0.18	$0.61	**$1.17**	12.7%	**$8.00**
Idaho	**$7.68**	$1.54 *	$0.00	$0.23	$0.00	$0.00	$0.15	$0.00	**$1.92**	25.0%	**$5.76**
Illinois**	**$14.43**	$0.00	$0.46	$4.87	$0.72	$1.73	$0.29	$2.89 *	**$10.96**	76.0%	**$3.47**
Indiana**	**$12.23**	$0.32	$0.76	$3.11	$0.61	$0.98	$0.24	$2.45 *	**$8.47**	69.3%	**$3.76**
Iowa**	**$10.63**	$2.13 *	$0.41	$0.55	$0.00	$1.70	$0.21	$1.43	**$6.43**	60.5%	**$4.20**
Kansas**	**$9.54**	$0.00	$0.17	$0.24	$0.00	$0.76	$0.19	$0.00	**$1.36**	14.2%	**$8.18**
Kentucky**	**$9.47**	$0.00	$0.10	$0.28	$0.00	$1.71	$0.19	$0.00	**$2.27**	23.9%	**$7.21**
Louisiana**	**$73.90**	$0.00	$2.72	$1.03	$0.00	$0.00	$1.48	$4.21	**$9.44**	12.8%	**$64.46**
Maine	**$8.52**	$0.00	$0.17	$0.17	$0.00	$1.36	$0.17	$0.00	**$1.87**	21.9%	**$6.66**
Maryland**	**$9.26**	$0.00	$0.04	$0.33	$0.46	$1.67	$0.19	$0.00	**$2.69**	29.0%	**$6.57**
Massachusetts **	**$30.34**	$0.00	$0.07	$1.94	$0.00	$4.85	$0.61	$6.07 *	**$13.54**	44.6%	**$16.80**
Michigan**	**$23.20**	$3.15	$0.01	$0.74	$0.00	$4.18	$0.46	$0.47	**$9.01**	38.8%	**$14.19**
Minnesota	**$9.44**	$1.89 *	$0.06	$1.66	$0.47	$1.70	$0.19	$1.89 *	**$7.86**	83.3%	**$1.58**
Mississippi**	**$13.32**	$0.70	$0.84	$0.86	$0.00	$0.00	$0.27	$2.66 *	**$5.33**	40.0%	**$7.99**
Missouri**	**$11.38**	$0.00	$1.94	$0.37	$0.57	$1.82	$0.23	$0.00	**$4.93**	43.4%	**$6.45**
Montana	**$6.23**	$1.25 *	$0.11	$0.19	$0.00	$1.12	$0.12	$0.00	**$2.79**	44.9%	**$3.44**

State	Full Starting Deductible	Dedicated Fund Credit (20% cap)	Non-Stafford Expenditures Credit (20% cap)	Mitigation Activity Credit	Insurance Coverage Credit	Building Code Credit	Tax Incentives Credit	Emergency Management Credit (20% cap)	Total Estimated Credits	Credit % of Full Deductible	Full Final Deductible
Nebraska**	**$9.93**	$1.99 *	$0.60	$0.28	$0.00	$0.99	$0.20	$0.00	**$4.07**	40.9%	**$5.87**
Nevada**	**$8.81**	$1.76 *	$0.00	$0.06	$0.00	$2.11	$0.18	$0.00	**$4.11**	46.7%	**$4.70**
New Hampshire	**$7.92**	$0.00	$0.31	$0.72	$0.00	$1.27	$0.16	$1.58 *	**$4.04**	51.0%	**$3.88**
New Jersey**	**$29.28**	$0.00	$0.97	$3.30	$0.00	$7.03	$0.59	$5.86 *	**$17.74**	60.6%	**$11.55**
New Mexico**	**$11.11**	$0.00	$0.13	$0.39	$0.00	$2.00	$0.22	$0.62	**$3.36**	30.2%	**$7.75**
New York**	**$51.70**	$0.00	$7.46	$0.96	$0.00	$5.17	$1.03	$0.00	**$14.63**	28.3%	**$37.07**
North Carolina**	**$17.50**	$3.50 *	$1.08	$1.82	$0.88	$3.15	$0.35	$3.50 *	**$14.27**	81.5%	**$3.23**
North Dakota	**$10.09**	$1.50	$0.17	$1.40	$0.00	$1.82	$0.20	$2.02 *	**$7.11**	70.5%	**$2.98**
Ohio**	**$25.86**	$0.00	$0.10	$0.90	$0.00	$4.66	$0.52	$1.01	**$7.19**	27.8%	**$18.67**
Oklahoma**	**$10.40**	$1.05	$0.85	$0.09	$0.00	$1.66	$0.21	$0.00	**$3.85**	37.1%	**$6.54**
Oregon	**$24.62**	$0.05	$0.02	$0.31	$0.00	$5.91	$0.49	$0.00	**$6.78**	27.5%	**$17.84**
Pennsylvania**	**$21.88**	$2.10	$0.90	$2.29	$1.09	$3.94	$0.44	$4.38 *	**$15.14**	69.2%	**$6.74**
Rhode Island	**$12.30**	$0.00	$0.01	$0.29	$0.00	$1.48	$0.25	$0.30	**$2.32**	18.9%	**$9.98**
South Carolina**	**$11.60**	$0.00	$0.06	$0.44	$0.00	$2.09	$0.23	$0.04	**$2.85**	24.6%	**$8.75**
South Dakota	**$8.25**	$0.00	$0.04	$0.12	$0.00	$1.32	$0.16	$0.00	**$1.64**	19.9%	**$6.61**
Tennessee**	**$16.68**	$0.00	$0.09	$0.44	$0.00	$2.67	$0.33	$0.00	**$3.53**	21.2%	**$13.15**
Texas	**$73.72**	$0.00	$3.56	$0.79	$0.00	$11.79	$1.47	$0.00	**$17.61**	23.9%	**$56.10**
Utah**	**$7.73**	$1.55 *	$0.01	$0.22	$0.00	$1.86	$0.15	$0.00	**$3.78**	48.9%	**$3.95**
Vermont**	**$8.64**	$0.00	$0.12	$0.37	$0.00	$1.56	$0.17	$0.98	**$3.20**	37.0%	**$5.44**
Virginia**	**$13.51**	$0.00	$0.10	$1.47	$0.68	$2.43	$0.27	$2.70 *	**$7.65**	56.7%	**$5.85**
Washington	**$27.30**	$0.00	$0.60	$0.50	$0.00	$0.00	$0.55	$0.00	**$1.64**	6.0%	**$25.66**
West Virginia	**$23.39**	$0.00	$0.29	$0.48	$0.00	$3.74	$0.47	$1.30	**$6.29**	26.9%	**$17.10**
Wisconsin	**$13.50**	$0.14	$0.43	$0.50	$0.00	$1.62	$0.27	$0.15	**$3.11**	23.0%	**$10.39**
Wyoming	**$10.47**	$0.75	$0.00	$0.15	$0.00	$1.88	$0.21	$0.00	**$3.00**	28.6%	**$7.47**
Average	**$22.20**	$1.18	$0.87	$1.37	$0.13	$3.59	$0.44	$2.16	**$9.74**	38.7%	**$12.46**

State	Full Starting Deductible	Dedicated Fund Credit (20% cap)	Non-Stafford Expenditures Credit (20% cap)	Mitigation Activity Credit	Insurance Coverage Credit	Building Code Credit	Tax Incentives Credit	Emergency Management Credit (20% cap)	Total Estimated Credits	Credit % of Full Deductible	Full Final Deductible
Median	**$12.26**	$0.00	$0.17	$0.48	$0.00	$1.72	$0.25	$0.37	**$4.43**	29.6%	**$7.61**
Minimum	**$6.23**	$0.00	$0.00	$0.06	$0.00	$0.00	$0.12	$0.00	**$1.17**	6.0%	**$1.58**
Maximum	**$141.53**	$28.21	$9.80	$21.13	$1.09	$33.97	$2.83	$28.31	**$120.55**	85.5%	**$64.46**

* Values marked with an asterisk in Table 9 indicate that the State has reached the applicable cap for that credit category.

** States marked with a double asterisk in Table 9 indicate that the State received a 5 percent EMAP bonus in the dedicated fund, non-Stafford expenditures, and emergency management credit categories.

I. Deductible Program Timeline and Procedures

FEMA is committed to developing a Public Assistance deductible program that is effective, but that also minimizes the cost and administrative burden required of our State partners. FEMA expects to request the minimum amount of information and reporting necessary for the program to be successful. To do this, FEMA's model concept could follow a strict and consistent programmatic schedule throughout the year so that States could have a clear understanding of current and upcoming expectations. FEMA designed this potential model schedule to operate on the calendar year to provide simplicity and standardization across jurisdictions that operate on various iterations of the fiscal year.

As with the rest of the SANPRM all numbers, figures, criteria, timeframes, and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

1. Model Timeline

On August 1 of each year, FEMA could issue an Annual Notice of Public Assistance Deductible Amounts (Annual Notice). This notice could be published in the **Federal Register** and would indicate each State's pre-credit deductible amount. The Annual Notice could provide sufficient detail regarding the calculation methodology to provide transparency regarding the source of the deductible figures. If a State believes that FEMA has made a technical error in calculating its deductible, the State could be able to appeal the amount. In addition, FEMA would not expect to otherwise change the calculation methodology without advance notice to the States and an opportunity for each State to offer feedback.

Contemporaneously with the issuance of the Annual Notice, FEMA would publish in the **Federal Register** the Application and Submission Information for Public Assistance Deductible credits to provide guidance concerning the deductible credits that could be offered during the next year and an application form for credits. FEMA does not anticipate making significant changes to the credit structure year over year, but could constantly and actively be monitoring credit types and amounts and may adjust the structure as necessary to improve the program's effectiveness over time. FEMA anticipates engaging extensively with States in making any adjustments to the credit structure.

Credit applications could be due to FEMA by September 1 of each year. Because there might be a limited period of about one month to complete the application for deductible credits, it would be important that States assess and account for their past year's activities before the Annual Notice is published or quickly thereafter.

The actual application could be minimal compared to other Federal applications, grant applications in particular. FEMA envisions a simple form in which a State could request the appropriate amount of credit for each credit category, include a brief description of the activity for which the credit is requested, provide the contact information for a subject matter expert that can answer questions about the activity, and affix the signatures of the appropriate State officials.

For example, a State may request $1.5 million in credit for spending $500,000 moving a fire station out of a flood hazard area (mitigation would be credited $3.00:$1.00). Likewise, a State may request a 16 percent reduction for maintaining BCEGS® scores of 5 for both the commercial and residential building code categories. Generally, the State would not need to submit any additional information or supporting documentation to support its request.

FEMA would review the State's submission and make a determination of the amount of deductible credit to be approved. FEMA could actively reach out to the State-identified subject matter expert if any additional information would be needed for purposes of determining whether the activity would qualify for credit. If the activity appeared to qualify, either from the face of the credit application or after consulting with the State subject matter expert, FEMA would approve the appropriate amount of credit up to the credit category cap (for the categories to which a cap applies).

FEMA envisions notifying each State individually by October 1 of the amount of credit approved and the remaining deductible, if any, that would apply during the subsequent calendar year. If FEMA approved any less credit than what the State requested, FEMA would include an explanation of the rationale for the discrepancy. In the case that FEMA did not fully approve the State's credit request, the State could be able to appeal the determination to FEMA. For this model timeline, FEMA envisions appeals of credit determinations would be due by December 1.

Once FEMA has adjudicated any appeals and all credit has been approved, FEMA could issue a notice in the **Federal Register** no later than January 1 of the subsequent year announcing each State's beginning deductible amount, the amount of credit approved, and the final remaining deductible, if any.

TABLE 10—NOTIONAL DEDUCTIBLE PROGRAM ANNUAL MILESTONES

Date	Actor	Activity
		• FEMA publishes *Annual Notice of Public Assistance Deductible Amounts* in the **Federal Register.**
August 1	*FEMA*	• FEMA publishes *Application and Submission information for Public Assistance Deductible Credits* in the **Federal Register**, which provides formal credit guidance and the credit application form.
September 1	*States*	• Deadline for States to submit the *Application for Public Assistance Deductible Credits.*[68]
October 1	*States*	• Deadline for States to appeal FEMA's determination of the pre-credit deductible amounts.
October 1	*FEMA*	• FEMA completes review of the credit applications and notifies each State of the credit amounts approved and FEMA's proposed final deductible amount.
November 1	*FEMA*	• FEMA notifies States of the outcome of any pre-credit deductible amount appeals.
December 1	*States*	• Deadline for States to appeal FEMA's approved credit amounts and/or proposed final deductible amount.
January 1	*FEMA*	• FEMA notifies States of the outcome of any pending appeals and publishes each State's final deductible and credit amounts in the **Federal Register**.

[68] Activities undertaken after the cutoff date for applying for credits would be applied to the next year's deductible. For example, activities undertaken in October would not be applied to the deductible in effect 3 months later, but instead to the one in effect 15 months later.

TABLE 10—NOTIONAL DEDUCTIBLE PROGRAM ANNUAL MILESTONES—Continued

Date	Actor	Activity
Beginning January 1.	*FEMA*	• FEMA provides supplemental Public Assistance for all of the credits that a State has earned in every disaster. • For any permanent work disaster costs exceeding the State's earned credits, FEMA applies the remaining final deductible amount, if any.

2. Post Disaster Deductible Procedures

FEMA believes it is important that for every major disaster, the States receive assistance for emergency protective measures and debris removal. FEMA does not want to delay those essential activities in the immediate aftermath of a disaster incident. Under FEMA's deductible concept, FEMA assistance for debris removal and emergency protective measure projects could follow the normal procedures and receive funding at the applicable cost share for that disaster.

FEMA envisions applying the deductible amount (*i.e.,* the portion of a State's deductible not fully satisfied by the credits earned, if any) on an annual basis and only to the provision of supplemental Federal assistance for permanent repair and replacement activities. For repair and replacement assistance, the State would receive supplemental Federal assistance only after it has satisfied its deductible requirement.

If in a given year the affected State has not fully satisfied its annual Public Assistance deductible with the credits that it earned and a major disaster is declared, after the declaration the State would be asked to identify projects that have a preliminary cost estimate (Federal and non-Federal share combined) equal to the unsatisfied deductible amount. With agreement by FEMA as to the preliminary cost estimate, those projects the State selects to satisfy the remaining deductible would be deemed ineligible under Section 406 of the Stafford Act.[69] The State would assume responsibility for these projects.[70] FEMA would require that the States identify these projects within the first 60 calendar days after a disaster declaration so as not to impede the provision of supplemental Federal assistance for other projects.

After the State satisfies its deductible in any major disaster event, any remaining eligible repair and replacement projects resulting from disasters declared in that year could receive supplemental Federal assistance in accordance with the standard procedures of the Public Assistance program. If there are insufficient projects to satisfy the full remaining deductible requirement, the unsatisfied portion of the deductible could be carried forward to any additional major disasters declared within the State that year. Any deductible that is remaining unsatisfied at the end of the year would expire. Each year could start the deductible cycle anew with regards to the starting deductibles, credits earned, and final deductibles.

If a State has an unsatisfied deductible requirement remaining after a major disaster, and it receives a second major disaster declaration that year, pursuant to this initial version of the deductible concept, the State would be required to identify a project or grouping of projects that have a preliminary cost estimate (Federal and non-Federal share combined) equal to the unsatisfied deductible requirement. With agreement by FEMA as to the preliminary cost estimate, these projects would be deemed ineligible costs pursuant to Section 406 of the Stafford Act. Once the State has satisfied its annual deductible requirement, all eligible costs in subsequent disaster declarations could be processed for reimbursement through standard Public Assistance program procedures.

Consider a State that has a starting deductible of $25 million and has earned credits of $15 million. The State's final deductible would be $10 million. This is the amount that the State would need to satisfy before it can receive permanent repair and replacement assistance. Suppose the State experiences a major disaster that requires $3 million in debris removal and causes $8 million in damage to public infrastructure. FEMA would document the debris removal costs on Project Worksheets and process all of those eligible costs for reimbursement assistance at the applicable disaster cost share, typically 75 percent Federal. The State could be responsible for paying for all of the permanent work repairs because the $8 million in damage is less than the State's $10 million final deductible for that calendar year.

If the State receives a second major disaster declaration in the same calendar year, the State would need to identify $2 million in permanent work to satisfy the deductible remaining after the first disaster. After the deductible is fully met, all additional eligible costs could be documented on Project Worksheets and processed for reimbursement assistance pursuant to the applicable cost share and standard rules and procedures of FEMA's Public Assistance program.

Any deductible amount remaining unsatisfied due to lack of eligible disaster costs at the end of a year would be canceled. For example, consider a State with a starting deductible of $30 million. The State then requests and is granted credits worth $20 million. FEMA notifies the State on January 1 that it has a final deductible amount of $10 million for the following calendar year. The State does not experience any incidents during the calendar year for which the President declares a major disaster. The $10 million final deductible could expire and be cancelled at the end of the calendar year and the State could receive a new final deductible amount for the next year.

J. Validation Procedures

FEMA desires for the deductible program to recognize, reward, and incentivize mitigation and resilience building best practices.

As with the rest of the SANPRM all numbers, figures, criteria and processes detailed in this section are notional. They are intended to aid the public in understanding how a potential deductible program could operate and to spur discussion and feedback.

In order to ensure that the program is both effective in truly incentivizing risk reduction and is being continually improved, FEMA would seek to validate a portion of the credits that States are approved each year.

FEMA believes that its analysis will ultimately show that reviewing a sample of credit approvals would be sufficient to ensure the fidelity of the approvals and ultimately, confidence in the credibility of the deductible program. FEMA solicits comment on this

[69] Stafford Act, supra FN4, § 406(b) (providing the ''Federal share of assistance under this section shall be not less than 75 percent of the *eligible cost* of repair, restoration, reconstruction, or replacement carried out under this section'') (emphasis added).

[70] Costs of satisfying the deductible, like cost share costs, would not qualify for credit towards the next year's deductible.

assumption and the ideal portion of credit submissions that would be subject to validation. Whatever the case, FEMA would notify the State of its intent to validate credits and would specify precisely which credits are to be validated.

During the validation process, FEMA would review the records and documentation that States maintain to support their credit requests. Every State would likely have different standards for documentation and each credit may require a different type of documentation, none of which FEMA plans to prescribe; however, each State would be responsible for maintaining and providing, upon FEMA's notice of intent to validate a credit, sufficient documentation to reasonably and objectively substantiate the credit approval. FEMA anticipates that States would have to maintain the relevant documentation for at least 5 years. FEMA requests comment from States regarding the capital and startup costs that may be involved in this recordkeeping requirement as well as suggestions for how FEMA may minimize the burden on States to keep this information.

In the event that FEMA is unable to validate a credit award, either because the underlying State activity did not actually qualify for deductible credit or because the State was unable to produce sufficient documentation to objectively validate the credit approval, FEMA would notify the State of its failure to validate the credit. FEMA would detail the applicable requirements of the deductible credit that was approved and specifically why FEMA was unable to validate it.

Once FEMA notifies the State that FEMA was unable to validate a credit, FEMA could permit the State 60 days to appeal the determination. If the State's appeal is denied, FEMA would add any credit approval that could not be validated to the applicable State's deductible amount in the next year. If FEMA was able to validate the credit on appeal, the credit approval would stand and FEMA would make no further inquiry or take any other adverse action. FEMA seeks comment on whether and when further action could be appropriate in the case of a State which has submitted consistently unverifiable credits.

For example, consider a State that has received a credit approval of $3 million for a tax incentive program that allows consumers to purchase hurricane preparedness supplies without paying sales tax during the first weekend of hurricane season each year. In this case, this particular credit has been included within the sample of credit approvals selected for validation. FEMA notifies the State of its intent to validate the credit and requests the necessary supporting documentation. The State is able to produce documentation for $100,000 of qualifying advertising costs and $1.1 million worth of foregone sales tax receipts. Because the credit concept offers a deductible credit at a ratio of $2.00:$1.00 for this credit, FEMA would be able to validate $2.4 million worth of credit. FEMA notifies the State of its failure to validate $600,000 of credit and of FEMA's intent to increase the State's next annual deductible by $600,000 to compensate for the amount of the previous credit approval that FEMA was unable to validate.

In this case, the State appeals the approval and is able to produce documentation of an additional $600,000 in forgone tax receipts from the sales tax holiday. FEMA is now able to validate the entire credit approval and would not add any additional amount to the State's next deductible.

K. Possible Implementation Strategy

FEMA will gather the suggestions and concerns that have been expressed through the ANPRM and SANPRM and use them to determine whether it can design a deductible concept that achieves FEMA's overall guiding principles, but does so in a way that is both appreciative of and responsive to the needs and concerns of its emergency management partners, particularly the States to which it would apply. If FEMA decides the deductible program has continued merit, FEMA would issue a Notice of Proposed Rulemaking (NPRM) before possibly issuing a final rule. No aspect of the deductible concept would be implemented prior to publishing a final rule in the **Federal Register**.

Even if a final rule is published, FEMA also recognizes that implementing such a fundamental change would require sufficient time to enable all parties to thoughtfully and strategically adapt to the new structure in the form best befitting each.

Consequently, FEMA would likely not apply any deductible for at least one year following publication of a final rule. Thereafter, FEMA's concept envisions a phased implementation strategy that would make most States responsible for only a partial deductible amount in the beginning of the program and delaying full application of the deductible requirement for most States over a scheduled implementation period.

Specifically, FEMA is considering capping the first year deductible at each State's then-current per capita indicator as determined by FEMA pursuant to 44 CFR 206.48(a)(1). FEMA could then increase each State's deductible by a share of the unapplied deductible, which for the purposes of this model is 50 percent, each year thereafter until the State reaches the full deductible amount. FEMA could recalculate the full deductible amount annually based on the fiscal capacity and risk index methodology described above. Through this method and based on the model FEMA provides in this SANPRM, half of the States could reach their full deductible within 4 years and all of the States could reach their full deductible within 9 years. Two States, Illinois and Colorado, could potentially reach their full deductible in the first year because the contemplated deductible methodology produces deductibles below their current Public Assistance per capita indicators. Figure 2 depicts the application of this implementation strategy over the first 3 years of the deductible program. Figure 3 depicts the number of States that are forecast to reach their full deductible, as calculated in this model, in each year. Table 11 depicts the model starting deductibles for each State in each year based on current calculations.

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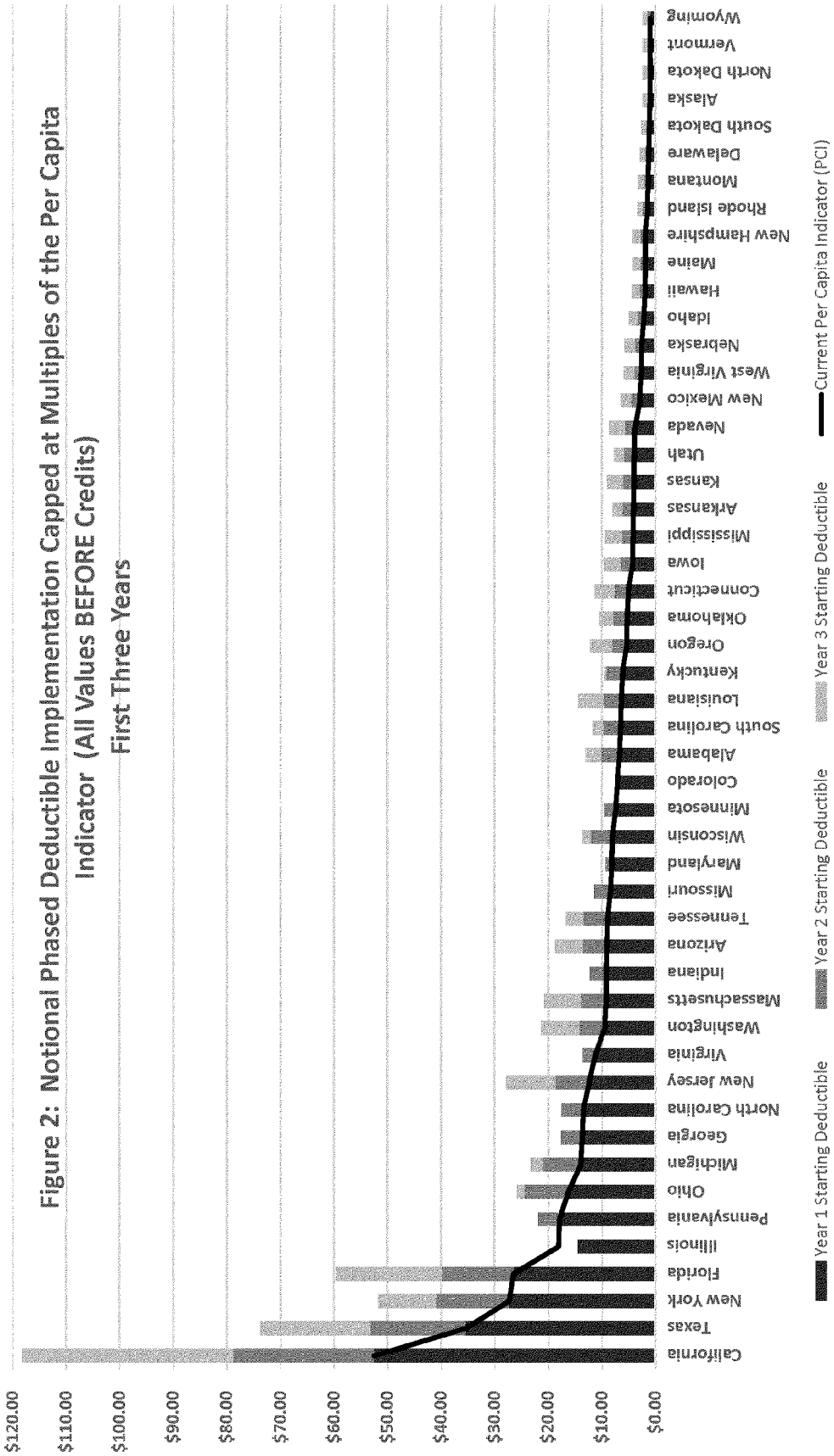
Figure 2: Notional Phased Deductible Implementation Capped at Multiples of the Per Capita Indicator (All Values BEFORE Credits)
First Three Years
$120.00
$110.00
$100.00
$90.00
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$0.00
California
Texas
New York
Florida
Illinois
Pennsylvania
Ohio
Michigan
Georgia
North Carolina
New Jersey
Virginia
Washington
Massachusetts
Indiana
Arizona
Tennessee
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Colorado
Alabama
South Carolina
Louisiana
Kentucky
Oregon
Oklahoma
Connecticut
Iowa
Mississippi
Arkansas
Kansas
Utah
Nevada
New Mexico
West Virginia
Nebraska
Idaho
Hawaii
Maine
New Hampshire
Rhode Island
Montana
Delaware
South Dakota
Alaska
North Dakota
Vermont
Wyoming
Year 1 Starting Deductible
Year 2 Starting Deductible
Year 3 Starting Deductible
Current Per Capita Indicator (PCI)

Figure 3: Number of Years Until Application of the Full Starting Deductible – Notional

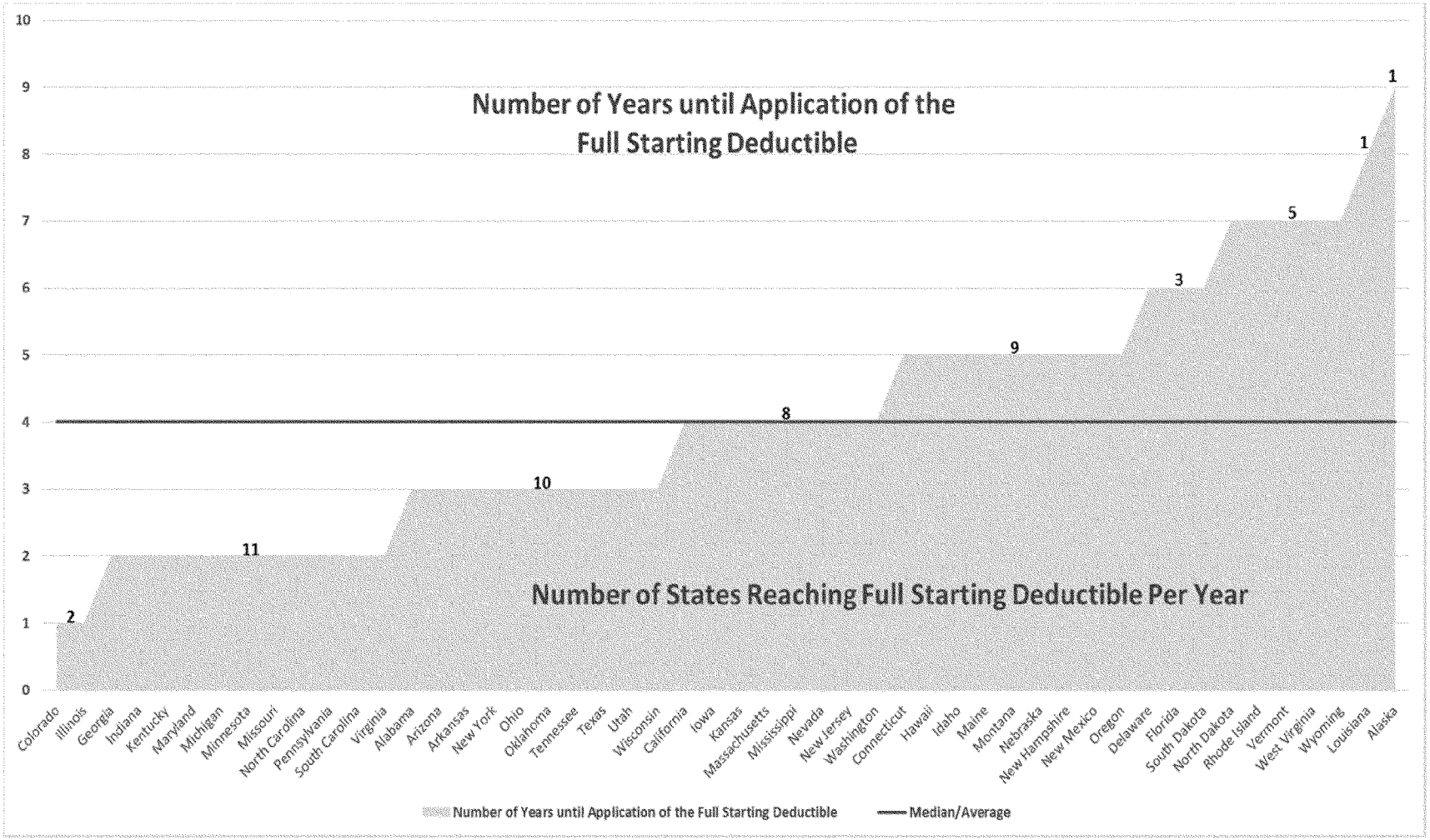


Table 11: Notional Phased Deductible Implementation with Starting Cap at the Current Per Capita Indicator and Subsequent Annual Caps at 1.5x the Previous Year's Deductible Amount

All Amounts in Millions $ Shaded Cells Indicate Capped Values		Year 1 Starting Deductible	Year 2 Starting Deductible	Year 3 Starting Deductible	Year 4 Starting Deductible	Year 5 Starting Deductible	Year 6 Starting Deductible	Year 7 Starting Deductible	Year 8 Starting Deductible	Year 9 Starting Deductible	Full Starting Deductible
State	Current Per Capita Indicator (PCI)	Cap Applied is Lesser of: PCI or Full Starting Deductible	1.5x Previous Year's Starting Deductible or Full Starting Deductible								
Alabama	$6.74	$6.74	$10.11	$12.96	$12.96	$12.96	$12.96	$12.96	$12.96	$12.96	$12.96
Alaska	$1.00	$1.00	$1.50	$2.25	$3.38	$5.06	$7.59	$11.39	$17.09	$19.42	$19.42
Arizona	$9.01	$9.01	$13.52	$18.67	$18.67	$18.67	$18.67	$18.67	$18.67	$18.67	$18.67
Arkansas	$4.11	$4.11	$6.17	$8.01	$8.01	$8.01	$8.01	$8.01	$8.01	$8.01	$8.01
California	$52.53	$52.53	$78.80	$118.19	$141.03	$141.03	$141.03	$141.03	$141.03	$141.03	$141.03
Colorado	$7.09	$7.08	$7.08	$7.08	$7.08	$7.08	$7.08	$7.08	$7.08	$7.08	$7.08
Connecticut	$5.04	$5.04	$7.56	$11.34	$17.01	$20.85	$20.85	$20.85	$20.85	$20.85	$20.85
Delaware	$1.27	$1.27	$1.91	$2.86	$4.29	$6.43	$8.03	$8.03	$8.03	$8.03	$8.03
Florida	$26.51	$26.51	$39.77	$59.65	$89.47	$134.21	$141.53	$141.53	$141.53	$141.53	$141.53
Georgia	$13.66	$13.66	$17.65	$17.65	$17.65	$17.65	$17.65	$17.65	$17.65	$17.65	$17.65
Hawaii	$1.92	$1.92	$2.88	$4.32	$6.48	$9.17	$9.17	$9.17	$9.17	$9.17	$9.17
Idaho	$2.21	$2.21	$3.32	$4.97	$7.46	$7.68	$7.68	$7.68	$7.68	$7.68	$7.68
Illinois	$18.09	$14.43	$14.43	$14.43	$14.43	$14.43	$14.43	$14.43	$14.43	$14.43	$14.43
Indiana	$9.14	$9.14	$12.23	$12.23	$12.23	$12.23	$12.23	$12.23	$12.23	$12.23	$12.23
Iowa	$4.30	$4.30	$6.45	$9.68	$10.63	$10.63	$10.63	$10.63	$10.63	$10.63	$10.63
Kansas	$4.02	$4.02	$6.03	$9.05	$9.54	$9.54	$9.54	$9.54	$9.54	$9.54	$9.54
Kentucky	$6.12	$6.12	$9.18	$9.47	$9.47	$9.47	$9.47	$9.47	$9.47	$9.47	$9.47
Louisiana	$6.39	$6.39	$9.59	$14.38	$21.57	$32.35	$48.52	$72.79	$73.90	$73.90	$73.90
Maine	$1.87	$1.87	$2.81	$4.21	$6.31	$8.52	$8.52	$8.52	$8.52	$8.52	$8.52
Maryland	$8.14	$8.14	$9.26	$9.26	$9.26	$9.26	$9.26	$9.26	$9.26	$9.26	$9.26
Massachusetts	$9.23	$9.23	$13.85	$20.77	$30.34	$30.34	$30.34	$30.34	$30.34	$30.34	$30.34
Michigan	$13.94	$13.94	$20.91	$23.20	$23.20	$23.20	$23.20	$23.20	$23.20	$23.20	$23.20
Minnesota	$7.48	$7.48	$9.44	$9.44	$9.44	$9.44	$9.44	$9.44	$9.44	$9.44	$9.44

Mississippi	$4.18	$4.18	$6.27	$9.41	$13.32	$13.32	$13.32	$13.32	$13.32	$13.32	$13.32
Missouri	$8.44	$8.44	$11.38	$11.38	$11.38	$11.38	$11.38	$11.38	$11.38	$11.38	$11.38
Montana	$1.40	$1.40	$2.10	$3.15	$4.73	$6.23	$6.23	$6.23	$6.23	$6.23	$6.23
Nebraska	$2.58	$2.58	$3.87	$5.81	$8.71	$9.93	$9.93	$9.93	$9.93	$9.93	$9.93
Nevada	$3.81	$3.81	$5.72	$8.57	$8.81	$8.81	$8.81	$8.81	$8.81	$8.81	$8.81
New Hampshire	$1.86	$1.86	$2.79	$4.19	$6.28	$7.92	$7.92	$7.92	$7.92	$7.92	$7.92
New Jersey	$12.40	$12.40	$18.60	$27.90	$29.28	$29.28	$29.28	$29.28	$29.28	$29.28	$29.28
New Mexico	$2.90	$2.90	$4.35	$6.53	$9.79	$11.11	$11.11	$11.11	$11.11	$11.11	$11.11
New York	$27.32	$27.32	$40.98	$51.70	$51.70	$51.70	$51.70	$51.70	$51.70	$51.70	$51.70
North Carolina	$13.45	$13.45	$17.50	$17.50	$17.50	$17.50	$17.50	$17.50	$17.50	$17.50	$17.50
North Dakota	$1.00	$1.00	$1.50	$2.25	$3.38	$5.06	$7.59	$10.09	$10.09	$10.09	$10.09
Ohio	$16.27	$16.27	$24.41	$25.86	$25.86	$25.86	$25.86	$25.86	$25.86	$25.86	$25.86
Oklahoma	$5.29	$5.29	$7.94	$10.40	$10.40	$10.40	$10.40	$10.40	$10.40	$10.40	$10.40
Oregon	$5.40	$5.40	$8.10	$12.15	$18.23	$24.62	$24.62	$24.62	$24.62	$24.62	$24.62
Pennsylvania	$17.91	$17.91	$21.88	$21.88	$21.88	$21.88	$21.88	$21.88	$21.88	$21.88	$21.88
Rhode Island	$1.48	$1.48	$2.22	$3.33	$5.00	$7.49	$11.24	$12.30	$12.30	$12.30	$12.30
South Carolina	$6.52	$6.52	$9.78	$11.60	$11.60	$11.60	$11.60	$11.60	$11.60	$11.60	$11.60
South Dakota	$1.15	$1.15	$1.73	$2.59	$3.88	$5.82	$8.25	$8.25	$8.25	$8.25	$8.25
Tennessee	$8.95	$8.95	$13.43	$16.68	$16.68	$16.68	$16.68	$16.68	$16.68	$16.68	$16.68
Texas	$35.46	$35.46	$53.19	$73.72	$73.72	$73.72	$73.72	$73.72	$73.72	$73.72	$73.72
Utah	$3.90	$3.90	$5.85	$7.73	$7.73	$7.73	$7.73	$7.73	$7.73	$7.73	$7.73
Vermont	$1.00	$1.00	$1.50	$2.25	$3.38	$5.06	$7.59	$8.64	$8.64	$8.64	$8.64
Virginia	$11.28	$11.28	$13.51	$13.51	$13.51	$13.51	$13.51	$13.51	$13.51	$13.51	$13.51
Washington	$9.48	$9.48	$14.22	$21.33	$27.30	$27.30	$27.30	$27.30	$27.30	$27.30	$27.30
West Virginia	$2.61	$2.61	$3.92	$5.87	$8.81	$13.21	$19.82	$23.39	$23.39	$23.39	$23.39
Wisconsin	$8.02	$8.02	$12.03	$13.50	$13.50	$13.50	$13.50	$13.50	$13.50	$13.50	$13.50
Wyoming	$1.00	$1.00	$1.50	$2.25	$3.38	$5.06	$7.59	$10.47	$10.47	$10.47	$10.47
Average	$8.70	$8.62	$12.29	$15.94	$18.39	$20.28	$21.24	$22.02	$22.16	$22.20	$22.20
Median	$6.26	$6.26	$8.64	$10.04	$11.01	$11.49	$11.49	$11.92	$12.27	$12.27	$12.27
Maximum	$52.53	$52.53	$78.80	$118.19	$141.03	$141.03	$141.53	$141.53	$141.53	$141.53	$141.53
Minimum	$1.00	$1.00	$1.50	$2.25	$3.38	$5.06	$6.23	$6.23	$6.23	$6.23	$6.23

FEMA believes that this approach would allow States the opportunity to adapt to the deductible concept and to take steps that would earn additional credits and begin to address their future disaster risk, without applying deductibles at levels that would be punitive.

Similar to the phased implementation of the deductible amounts, FEMA envisions a phased application of credits in lockstep to each State's deductible amount. This would be done by applying the credits earned each year in the same proportion of the State's capped deductible to its full deductible. For example, if a State's starting deductible is equal to its full deductible in a given year, FEMA would apply all of the credits earned in that year. However, if because of phased implementation the starting deductible is a lesser amount, for example 25 percent of the full deductible, FEMA would apply the same percentage as a cap to the credits earned, or in this case 25 percent.

Table 12 depicts each State's notional starting deductible for the first 9 years of the deductible program. It also depicts the model final deductibles that FEMA expects would be applied in each year. As described above, these model final deductibles are the model starting deductibles minus the amount of credits that each State earns in that particular year. For the purposes of this model, FEMA has estimated the amount of credit that each State might earn in the first year based on activities that FEMA believes every State is already undertaking. These amounts were depicted in Table 9. To extrapolate into the out years, FEMA assumed that each State would increase the amount of credit earned by 5 percent year-over-year. FEMA then deducted that amount, in proportion of the starting deductible to full deductible as described above, to calculate the model projected final deductible amounts for each State in each of the first 9 years.

These amounts are only estimates, however, and will be affected by many factors, including changes to the base deductible, changes to each State's relative risk or fiscal capacity, the amount of credit each State earns in the first year for activities already underway, and changes to those activities that result in more or less than 5 percent year-over-year credit increases. All shaded values are capped.

Table 12: Phased Deductible Implementation Including Projected Credits (in millions)

Cap Applied is Lesser of:		PCI or Full Starting Deductible		1.5x Previous Year's Starting Deductible or Full Starting Deductible																
State	Current Per Capita Indicator (PCI)	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8		Year 9		Full Starting Deductible
		Year 1 Starting Deductible	Year 1 Final Deductible	Year 2 Starting Deductible	Year 2 Final Deductible	Year 3 Starting Deductible	Year 3 Final Deductible	Year 4 Starting Deductible	Year 4 Final Deductible	Year 5 Starting Deductible	Year 5 Final Deductible	Year 6 Starting Deductible	Year 6 Final Deductible	Year 7 Starting Deductible	Year 7 Final Deductible	Year 8 Starting Deductible	Year 8 Final Deductible	Year 9 Starting Deductible	Year 9 Final Deductible	
Alabama	$6.74	$6.74	$5.01	$10.11	$7.38	$12.96	$9.29	$12.96	$9.11	$12.96	$8.91	$12.96	$8.71	$12.96	$8.50	$12.96	$8.27	$12.96	$8.04	$12.96
Alaska	$1.00	$1.00	$0.74	$1.50	$1.10	$2.25	$1.62	$3.38	$2.38	$5.06	$3.49	$7.59	$5.12	$11.39	$7.49	$17.09	$10.95	$19.42	$12.09	$19.42
Arizona	$9.01	$9.01	$4.88	$13.52	$7.02	$18.67	$9.24	$18.67	$8.77	$18.67	$8.28	$18.67	$7.76	$18.67	$7.21	$18.67	$6.64	$18.67	$6.04	$18.67
Arkansas	$4.11	$4.11	$2.49	$6.17	$3.62	$8.01	$4.54	$8.01	$4.36	$8.01	$4.18	$8.01	$3.99	$8.01	$3.79	$8.01	$3.58	$8.01	$3.36	$8.01
California	$52.53	$52.53	$7.63	$78.80	$8.07	$118.19	$6.81	$141.03	$1.48	$141.03	$0.00	$141.03	$0.00	$141.03	$0.00	$141.03	$0.00	$141.03	$0.00	$141.03
Colorado	$7.09	$7.08	$5.24	$7.08	$5.15	$7.08	$5.05	$7.08	$4.95	$7.08	$4.84	$7.08	$4.73	$7.08	$4.61	$7.08	$4.49	$7.08	$4.36	$7.08
Connecticut	$5.04	$5.04	$3.72	$7.56	$5.48	$11.34	$8.07	$17.01	$11.85	$20.85	$14.21	$20.85	$13.88	$20.85	$13.53	$20.85	$13.17	$20.85	$12.78	$20.85
Delaware	$1.27	$1.27	$0.94	$1.91	$1.38	$2.86	$2.04	$4.29	$2.99	$6.43	$4.40	$8.03	$5.36	$8.03	$5.23	$8.03	$5.09	$8.03	$4.94	$8.03
Florida	$26.51	$26.51	$10.85	$39.77	$15.10	$59.65	$20.80	$89.47	$28.29	$134.21	$37.85	$141.53	$34.83	$141.53	$29.50	$141.53	$23.90	$141.53	$18.01	$141.53
Georgia	$13.66	$13.66	$9.99	$17.65	$12.67	$17.65	$12.42	$17.65	$12.16	$17.65	$11.89	$17.65	$11.60	$17.65	$11.30	$17.65	$10.98	$17.65	$10.65	$17.65
Hawaii	$1.92	$1.92	$1.68	$2.88	$2.49	$4.32	$3.71	$6.48	$5.52	$9.17	$7.75	$9.17	$7.68	$9.17	$7.60	$9.17	$7.52	$9.17	$7.44	$9.17
Idaho	$2.21	$2.21	$1.66	$3.32	$2.44	$4.97	$3.60	$7.46	$5.30	$7.68	$5.35	$7.68	$5.23	$7.68	$5.11	$7.68	$4.98	$7.68	$4.84	$7.68
Illinois	$18.09	$14.43	$3.47	$14.43	$2.92	$14.43	$2.35	$14.43	$1.74	$14.43	$1.11	$14.43	$0.44	$14.43	$0.00	$14.43	$0.00	$14.43	$0.00	$14.43
Indiana	$9.14	$9.14	$2.81	$12.23	$3.34	$12.23	$2.89	$12.23	$2.42	$12.23	$1.93	$12.23	$1.42	$12.23	$0.88	$12.23	$0.31	$12.23	$0.00	$12.23
Iowa	$4.30	$4.30	$1.70	$6.45	$2.35	$9.68	$3.22	$10.63	$3.19	$10.63	$2.81	$10.63	$2.42	$10.63	$2.01	$10.63	$1.58	$10.63	$1.13	$10.63
Kansas	$4.02	$4.02	$3.45	$6.03	$5.13	$9.05	$7.62	$9.54	$7.97	$9.54	$7.89	$9.54	$7.80	$9.54	$7.72	$9.54	$7.63	$9.54	$7.53	$9.54
Kentucky	$6.12	$6.12	$4.65	$9.18	$6.87	$9.47	$6.97	$9.47	$6.84	$9.47	$6.71	$9.47	$6.57	$9.47	$6.43	$9.47	$6.28	$9.47	$6.12	$9.47
Louisiana	$6.39	$6.39	$5.57	$9.59	$8.30	$14.38	$12.35	$21.57	$18.38	$32.35	$27.33	$48.52	$40.61	$72.79	$60.33	$73.90	$60.62	$73.90	$59.95	$73.90
Maine	$1.87	$1.87	$1.46	$2.81	$2.16	$4.21	$3.19	$6.31	$4.71	$8.52	$6.25	$8.52	$6.13	$8.52	$6.01	$8.52	$5.89	$8.52	$5.76	$8.52
Maryland	$8.14	$8.14	$5.78	$9.26	$6.44	$9.26	$6.29	$9.26	$6.15	$9.26	$5.99	$9.26	$5.83	$9.26	$5.66	$9.26	$5.47	$9.26	$5.29	$9.26
Massachusetts	$9.23	$9.23	$5.11	$13.85	$7.36	$20.77	$10.55	$30.34	$14.67	$30.34	$13.88	$30.34	$13.06	$30.34	$12.20	$30.34	$11.29	$30.34	$10.34	$30.34
Michigan	$13.94	$13.94	$8.53	$20.91	$12.38	$23.20	$13.27	$23.20	$12.77	$23.20	$12.25	$23.20	$11.70	$23.20	$11.13	$23.20	$10.52	$23.20	$9.89	$23.20
Minnesota	$7.48	$7.48	$1.25	$9.44	$1.19	$9.44	$0.77	$9.44	$0.34	$9.44	$0.00	$9.44	$0.00	$9.44	$0.00	$9.44	$0.00	$9.44	$0.00	$9.44
Mississippi	$4.18	$4.18	$2.51	$6.27	$3.64	$9.41	$5.26	$13.32	$7.15	$13.32	$6.84	$13.32	$6.52	$13.32	$6.18	$13.32	$5.82	$13.32	$5.45	$13.32
Missouri	$8.44	$8.44	$4.78	$11.38	$6.20	$11.38	$5.94	$11.38	$5.67	$11.38	$5.39	$11.38	$5.09	$11.38	$4.77	$11.38	$4.44	$11.38	$4.10	$11.38
Montana	$1.40	$1.40	$0.77	$2.10	$1.11	$3.15	$1.59	$4.73	$2.28	$6.23	$2.84	$6.23	$2.67	$6.23	$2.49	$6.23	$2.30	$6.23	$2.11	$6.23
Nebraska	$2.58	$2.58	$1.52	$3.87	$2.20	$5.81	$3.18	$8.71	$4.58	$9.93	$4.98	$9.93	$4.74	$9.93	$4.48	$9.93	$4.20	$9.93	$3.92	$9.93
Nevada	$3.81	$3.81	$2.03	$5.72	$2.92	$8.57	$4.16	$8.81	$4.05	$8.81	$3.81	$8.81	$3.56	$8.81	$3.30	$8.81	$3.03	$8.81	$2.74	$8.81
New Hampshire	$1.86	$1.86	$0.91	$2.79	$1.30	$4.19	$1.83	$6.28	$2.57	$7.92	$3.01	$7.92	$2.76	$7.92	$2.51	$7.92	$2.24	$7.92	$1.95	$7.92
New Jersey	$12.40	$12.40	$4.89	$18.60	$6.77	$27.90	$9.26	$29.28	$8.74	$29.28	$7.72	$29.28	$6.64	$29.28	$5.51	$29.28	$4.32	$29.28	$3.07	$29.28
New Mexico	$2.90	$2.90	$2.02	$4.35	$2.97	$6.53	$4.35	$9.79	$6.36	$11.11	$7.03	$11.11	$6.82	$11.11	$6.61	$11.11	$6.38	$11.11	$6.15	$11.11
New York	$27.32	$27.32	$19.59	$40.98	$28.80	$51.70	$35.57	$51.70	$34.76	$51.70	$33.92	$51.70	$33.03	$51.70	$32.09	$51.70	$31.11	$51.70	$30.08	$51.70
North Carolina	$13.45	$13.45	$2.48	$17.50	$2.52	$17.50	$1.77	$17.50	$0.98	$17.50	$0.15	$17.50	$0.00	$17.50	$0.00	$17.50	$0.00	$17.50	$0.00	$17.50
North Dakota	$1.00	$1.00	$0.30	$1.50	$0.39	$2.25	$0.50	$3.38	$0.62	$5.06	$0.73	$7.59	$0.76	$10.09	$0.56	$10.09	$0.09	$10.09	$0.00	$10.09
Ohio	$16.27	$16.27	$11.75	$24.41	$17.28	$25.86	$17.93	$25.86	$17.54	$25.86	$17.12	$25.86	$16.68	$25.86	$16.22	$25.86	$15.74	$25.86	$15.24	$25.86
Oklahoma	$5.29	$5.29	$3.33	$7.94	$4.85	$10.40	$6.16	$10.40	$5.94	$10.40	$5.72	$10.40	$5.49	$10.40	$5.24	$10.40	$4.98	$10.40	$4.71	$10.40
Oregon	$5.40	$5.40	$3.91	$8.10	$5.76	$12.15	$8.46	$18.23	$12.41	$24.62	$16.38	$24.62	$15.97	$24.62	$15.53	$24.62	$15.08	$24.62	$14.60	$24.62
Pennsylvania	$17.91	$17.91	$5.52	$21.88	$5.98	$21.88	$5.19	$21.88	$4.35	$21.88	$3.48	$21.88	$2.56	$21.88	$1.59	$21.88	$0.58	$21.88	$0.00	$21.88
Rhode Island	$1.48	$1.48	$1.20	$2.22	$1.78	$3.33	$2.64	$5.00	$3.90	$7.49	$5.77	$11.24	$8.53	$12.30	$9.19	$12.30	$9.04	$12.30	$8.87	$12.30
South Carolina	$6.52	$6.52	$4.92	$9.78	$7.26	$11.60	$8.46	$11.60	$8.30	$11.60	$8.14	$11.60	$7.96	$11.60	$7.78	$11.60	$7.59	$11.60	$7.39	$11.60
South Dakota	$1.15	$1.15	$0.92	$1.73	$1.36	$2.59	$2.02	$3.88	$2.99	$5.82	$4.42	$8.25	$6.16	$8.25	$6.05	$8.25	$5.94	$8.25	$5.83	$8.25
Tennessee	$8.95	$8.95	$7.06	$13.43	$10.44	$16.68	$12.79	$16.68	$12.59	$16.68	$12.39	$16.68	$12.17	$16.68	$11.95	$16.68	$11.71	$16.68	$11.46	$16.68
Texas	$35.46	$35.46	$26.99	$53.19	$39.85	$73.72	$54.30	$73.72	$53.33	$73.72	$52.31	$73.72	$51.24	$73.72	$50.12	$73.72	$48.94	$73.72	$47.70	$73.72
Utah	$3.90	$3.90	$1.99	$5.85	$2.85	$7.73	$3.56	$7.73	$3.35	$7.73	$3.14	$7.73	$2.91	$7.73	$2.66	$7.73	$2.41	$7.73	$2.15	$7.73
Vermont	$1.00	$1.00	$0.63	$1.50	$0.92	$2.25	$1.33	$3.38	$1.93	$5.06	$2.78	$7.59	$4.00	$8.64	$4.35	$8.64	$4.14	$8.64	$3.91	$8.64
Virginia	$11.28	$11.28	$4.89	$13.51	$5.48	$13.51	$5.08	$13.51	$4.65	$13.51	$4.21	$13.51	$3.75	$13.51	$3.26	$13.51	$2.75	$13.51	$2.21	$13.51
Washington	$9.48	$9.48	$8.91	$14.22	$13.32	$21.33	$19.92	$27.30	$25.40	$27.30	$25.31	$27.30	$25.21	$27.30	$25.10	$27.30	$24.99	$27.30	$24.88	$27.30
West Virginia	$2.61	$2.61	$1.91	$3.92	$2.81	$5.87	$4.13	$8.81	$6.07	$13.21	$8.89	$19.82	$13.02	$23.39	$14.96	$23.39	$14.54	$23.39	$14.10	$23.39
Wisconsin	$8.02	$8.02	$6.17	$12.03	$9.12	$13.50	$10.07	$13.50	$9.90	$13.50	$9.72	$13.50	$9.53	$13.50	$9.33	$13.50	$9.12	$13.50	$8.91	$13.50
Wyoming	$1.00	$1.00	$0.71	$1.50	$1.05	$2.25	$1.54	$3.38	$2.26	$5.06	$3.30	$7.59	$4.82	$10.47	$6.45	$10.47	$6.25	$10.47	$6.04	$10.47
Average	$8.70	$8.62	$4.62	$12.29	$6.39	$15.94	$7.87	$18.39	$8.58	$20.28	$9.14	$21.24	$9.35	$22.02	$9.49	$22.16	$9.14	$22.20	$8.72	$22.20
Median	$6.26	$6.26	$3.46	$8.64	$4.99	$10.04	$5.13	$11.01	$5.60	$11.49	$5.88	$11.49	$6.15	$11.92	$6.11	$12.27	$5.92	$12.27	$5.79	$12.27
Maximum	$52.53	$52.53	$26.99	$78.80	$39.85	$118.19	$54.30	$141.03	$53.33	$141.03	$52.31	$141.53	$51.24	$141.53	$60.33	$141.53	$60.62	$141.53	$59.95	$141.53
Minimum	$1.00	$1.00	$0.30	$1.50	$0.39	$2.25	$0.50	$3.38	$0.34	$5.06	$0.00	$6.23	$0.00	$6.23	$0.00	$6.23	$0.00	$6.23	$0.00	$6.23

VI. Alternatives Considered

Over the course of developing this deductible model, FEMA has considered many alternatives, and selected the attributes that FEMA believes could best achieve the intended outcomes of the program, adhere to the program's guiding principles, and minimize administrative burdens. The options that FEMA has considered included alternatives to specific aspects of the program, such as which credits could be offered or the value that FEMA could approve for those credits, but also included alternatives to the entire deductible concept itself. FEMA believes that the deductible program has the potential to improve the nation's resilience and reduce disaster risk and costs on a broad scale, but FEMA welcomes comment on alternative methodologies for achieving these results.

The following subsections detail a few of the alternatives and options that FEMA is considering in developing its potential deductible program concept. FEMA did not use these alternatives in the model described in this SANPRM, but believes that they demonstrated enough promise that including a brief discussion of each could facilitate improved engagement and transparency in this process.

FEMA has not made a final determination regarding the most appropriate approach moving forward. In addition to the potential deductible model described in this SANPRM, FEMA is still considering the alternatives described below and may consider and pursue other alternatives that may not necessarily be a logical outgrowth of this SANPRM.

A. Increasing the Per Capita Indicator

FEMA originally began consideration of the deductible concept in the context of repeated calls—by the GAO, DHS OIG, Congress, and others—to change the Public Assistance per capita indicator.[71] Instead, FEMA suggests that the Public Assistance deductible program may be a better option for reducing the costs of future disasters because it incentivizes State investments in risk reduction. FEMA believes simply increasing the per capita indicator, to the levels suggested by the GAO, would likely maintain the same level of disaster risk that exists today and transfer the future costs of disaster to impacted State and local governments. FEMA seeks comment on this assumption.

However, recognizing that the status quo is unsustainable in the long term, FEMA has seriously considered adjusting the per capita indicator and may still do so in the future. Increasing the per capita indicator, to include an additional consideration of State fiscal capacity, is the only viable alternative to a deductible that FEMA has identified at this time.

As was explained earlier in this SANPRM, the Public Assistance per capita indicator was initially set in 1986 at $1.00 based upon PCPI. At the time, that amount represented approximately one-hundredth of one percent (0.01% or 0.0001) of PCPI. Had FEMA adjusted the per capita indicator each year so that it maintained its ratio to rising PCPI, more than 70 percent of major disasters between 2005 and 2014 would not have been declared. Additionally, the per capita indicator would have risen to $4.81 for 2016.[72] For comparison, the current 2016 per capita indicator is just $1.41. Switching to this alternative methodology would result in a nearly a 250-percent increase to the average per capita indicator, which could be phased in over a number of years or decades through accelerated upward adjustment of the per capita indicator at rates higher than inflation.

Under this alternative FEMA has explored also adjusting the PCPI-adjusted per capita indicator value by the current TTR index for each State.[73] GAO recommended adjusting the per capita indicator values by the current TTR index.[74] Finally, for purposes of comparison, because the Public Assistance per capita indicator is applied on a disaster-by-disaster basis and FEMA envisions an annual deductible, under this alternative FEMA has multiplied the PCPI-adjusted per capita indicator by each State's 10-year average disaster frequency to provide a more comparable comparison. Table 13 indicates the amount of cumulative damage that a State would need to experience before FEMA would recommend that the President issue a major disaster declaration in 2016 if the per capita indicator were raised to $4.81 and adjusted by the TTR Index.

TABLE 13—CURRENT PER CAPITA INDICATOR COMPARED WITH NATIONAL PCPI GROWTH ADJUSTMENTS

Data by state			Current per capita indicator 2016 = $1.41	Indicator adjusted for national PCPI growth 2016 = $4.81	Annual average major disaster declarations	Annualized PCPI-Adjusted per capita indicator
State	2010 population	Current TTR index	Current indicator total	National PCPI adjusted total (with TTR adjustment)		
Alabama	4,779,736	75.9	$6,739,428	$17,449,812	1.6	$27,919,700
Alaska	710,231	126.8	1,001,426	4,331,756	1.6	6,930,809
Arizona	6,392,017	70.7	9,012,744	21,737,140	0.9	19,563,426
Arkansas	2,915,918	75.9	4,111,444	10,645,404	1.9	20,226,268
California	37,253,956	104.9	52,528,078	187,971,913	1.5	281,957,870
Colorado	5,029,196	107.9	7,091,166	26,101,477	0.7	18,271,034
Connecticut	3,574,097	138.2	5,039,477	23,758,524	1.2	28,510,229
Delaware	897,934	115.3	1,266,087	4,979,879	0.6	2,987,927
Florida	18,801,310	82.2	26,509,847	74,336,996	1.6	118,939,193
Georgia	9,687,653	90.7	13,659,591	42,264,033	0.8	33,811,226
Hawaii	1,360,301	84.8	1,918,024	5,548,505	0.9	4,993,654
Idaho	1,567,582	70.9	2,210,291	5,345,909	0.6	3,207,546
Illinois	12,830,632	107.1	18,091,191	66,097,129	1.5	99,145,694
Indiana	6,483,802	90.7	9,142,161	28,286,688	1.2	33,944,026
Iowa	3,046,355	98.8	4,295,361	14,477,132	2.3	33,297,403
Kansas	2,853,118	93.3	4,022,896	12,804,023	2.3	29,449,253

[71] *See* GAO, *supra* note 28; OIG *supra* note 29; *see also* 44 CFR 206.48.

[72] Per Capita Personal Income in 2015 was $48,112 × 0.0001 = $4.81.

[73] Per State PCPI Adjusted Total = $4.81 Per Capita Indicator × (State's TTR Index/100).

[74] *See* GAO, supra FN28, at 50.

TABLE 13—CURRENT PER CAPITA INDICATOR COMPARED WITH NATIONAL PCPI GROWTH ADJUSTMENTS—Continued

Data by state			Current per capita indicator 2016 = $1.41	Indicator adjusted for national PCPI growth 2016 = $4.81	Annual average major disaster declarations	Annualized PCPI-Adjusted per capita indicator
State	2010 population	Current TTR index	Current indicator total	National PCPI adjusted total (with TTR adjustment)		
Kentucky	4,339,367	78.6	6,118,507	16,405,671	1.5	24,608,507
Louisiana	4,533,372	97.6	6,392,055	21,282,187	1.2	25,538,624
Maine	1,328,361	77.6	1,872,989	4,958,187	2	9,916,374
Maryland	5,773,552	120.3	8,140,708	33,408,254	1	33,408,254
Massachusetts	6,547,629	133.3	9,232,157	41,981,629	1.7	71,368,770
Michigan	9,883,640	85.3	13,935,932	40,551,883	0.4	16,220,753
Minnesota	5,303,925	110.7	7,478,534	28,241,650	1.8	50,834,971
Mississippi	2,967,297	68.1	4,183,889	9,719,708	1.4	13,607,591
Missouri	5,988,927	89.6	8,444,387	25,810,838	2.4	61,946,011
Montana	989,415	75.8	1,395,075	3,607,387	0.8	2,885,910
Nebraska	1,826,341	105.5	2,575,141	9,267,859	2.3	21,316,075
Nevada	2,700,551	82.3	3,807,777	10,690,482	0.7	7,483,338
New Hampshire	1,316,470	106.9	1,856,223	6,769,144	2.2	14,892,117
New Jersey	8,791,894	129	12,396,571	54,552,823	1.4	76,373,952
New Mexico	2,059,179	75.8	2,903,442	7,507,725	1.3	9,760,043
New York	19,378,102	133.7	27,323,124	124,619,993	2.5	311,549,982
North Carolina	9,535,483	86.7	13,445,031	39,765,539	1.2	47,718,646
North Dakota	672,591	122.2	948,353	3,953,369	2	7,906,738
Ohio	11,536,504	92.3	16,266,471	51,217,809	1	51,217,809
Oklahoma	3,751,351	85.3	5,289,405	15,391,531	3	46,174,592
Oregon	3,831,074	95.2	5,401,814	17,542,948	1	17,542,948
Pennsylvania	12,702,379	98.1	17,910,354	59,937,573	1.1	65,931,330
Rhode Island	1,052,567	102.3	1,484,119	5,179,293	0.7	3,625,505
South Carolina	4,625,364	73.2	6,521,763	16,285,537	0.3	4,885,661
South Dakota	814,180	97.9	1,147,994	3,833,965	2.2	8,434,724
Tennessee	6,346,105	82.5	8,948,008	25,182,931	1.6	40,292,690
Texas	25,145,561	106.7	35,455,241	129,053,808	1.7	219,391,474
Utah	2,763,885	83.4	3,897,078	11,087,435	0.7	7,761,205
Vermont	625,741	87.1	882,295	2,621,548	1.6	4,194,477
Virginia	8,001,024	114.6	11,281,444	44,103,725	1.2	52,924,469
Washington	6,724,540	105.6	9,481,601	34,156,359	1.2	40,987,631
West Virginia	1,852,994	73.4	2,612,722	6,542,069	1.6	10,467,311
Wisconsin	5,686,986	95.1	8,018,650	26,014,037	0.9	23,412,633
Wyoming	563,626	128.9	794,713	3,494,532	0.2	698,906

FEMA believes that the deductible concept has the potential to result in a better outcome for the nation than increasing the per capita indicator as it promotes State investment in risk reduction that will ultimately reduce the financial impact of future disasters.

Compared with the alternative option of linking the Public Assistance per capita indicator to PCPI, the deductible model could deliver financial advantages to the States. These financial advantages could be even greater in the preliminary years over which the full deductible amount is phased in. Table 14 indicates the differences that FEMA expects might occur with each option.

TABLE 14—ESTIMATED COSTS OF THE NOTIONAL DEDUCTIBLE PROGRAM VERSUS ADJUSTING THE PER CAPITA INDICATOR FOR PCPI

All amounts in $M	Full starting deductible	Full estimated credits (current activities only)	Final deductible	National PCPI-Adjusted total (with TTR adjustment)	Annualized PCPI-Adjusted per capita indicator
Average State	$22.20	$9.74	$12.46	$29.37	$43.00
Median State	12.26	4.43	7.61	17.35	23.81
Minimum State	6.23	1.17	1.58	2.59	0.69 [75]
Maximum State	141.53	120.55	64.46	186.40	308.95

FEMA recognizes that increasing the Public Assistance per capita indictor will likely lower the amount the Federal government spends on disasters. It is also simple to communicate and uses processes that everyone is already familiar with. However, FEMA currently believes the decrease in spending that the Federal government may see with the GAO's suggested indicators would not result because future incidents are any less devastating, but rather because the responsibility for that damage would be transferred to State and local jurisdictions. It is true that there is likely a level at which a high enough per capita indicator would transfer enough risk to the States that they would be forced to internalize sufficient disaster costs that may incentivize them to increase mitigation. We do not

[75] Although the application of the annualization calculation suggests a per capita indicator below $1 million due to low major disaster frequency in some States, 44 CFR 206.48(a)(1) would still set the minimum per capita indicator at $1 million. *See* supra FN23.

believe that level of per capita indicator is viable at this time. Moreover, we believe that a deductible concept, which creates incentives for States both through a transfer of risk and through rewards provided by a credit system, will be more effective in driving risk reduction and will lower all disaster spending over time. FEMA will undertake more analysis over the course of this rulemaking and will make the ultimate decision based on the outcomes of this analysis, and not on the beliefs expressed in this section. Any direction commenters could provide to support that analysis would be appreciated.

B. Alternative Deductible Approaches

In developing this potential deductible concept, FEMA is considering many variations, including simpler ways to calculate the deductible amount, additional fiscal capacity indicators, alternative methodologies to determine relative risk among the States, altering the threshold, and additional possible activities that could be incentivized through the credit structure.

1. Calculation Alternatives

There are many different methods by which FEMA could determine a State's deductible amount, and FEMA has considered the advantages and disadvantages of many options as it developed the potential deductible program. One of the simplest approaches would be to tie each State's Public Assistance deductible amount to its current per capita Public Assistance indicator in some way. Many commenters to the ANPRM remarked that they appreciated the simplicity, understandability, stability, and predictability of the current per capita indicator.

While FEMA appreciates these values, the deductible concept, to be successful, must incentivize greater State resilience to future disasters. It is important, therefore, that the deductible amounts truly represent the States' individual characteristics that are relevant in the disaster context. Overall, FEMA believes that assessing fiscal capacity and relative risk is a better strategy for calculating deductibles than utilizing the current per capita indicator that lacks relevance to either of those gauges.

2. Fiscal Capacity Index

FEMA considered two additional financial indicators before selecting the four contained in the fiscal capacity index included in this model. Those additional indicators included Total Actual Revenue (TAR),[76] which FEMA defined as the amount of revenue a particular State actually raises in a typical year, and State Gross Domestic Product (GDP),[77] which FEMA defined as the total value of the goods and services produced within the State in a particular year. Upon closer inspection, however, FEMA found that both of these indicators were closely correlated to TTR by factors of 0.981 and 0.998 respectively.

FEMA believes that TTR, with its broad consideration of potential State revenue resources, was the best of these three indicators. FEMA also appreciated that TTR, as a measure of potential, does not suffer from complications of political choice in TAR or GDP that result from differences between States in State tax obligations and the services for which tax dollars are allocated. Since all three measures were so highly correlated, FEMA selected to include TTR as the preferred metric from this group. The other three fiscal capacity indicators used in the model were less correlated with one another and, consequently, represent a unique measure of State fiscal capacity that FEMA believes should be considered to inform that portion of the deductible calculation.

3. Risk Index

The model methodology for establishing the risk index utilizes AAL values produced from Hazus to evaluate each State's relative risk level. One feature of the AAL approach is that AAL reflects the total amount of the loss caused by the hazard. This includes losses by individuals, businesses, economic drivers, and insured losses. However, because of limitations in the types of assistance that FEMA provides through the Public Assistance program, there is inherent variability between Hazus-based AAL estimates of overall disaster losses and any impact that reducing these broader disaster losses would have on Public Assistance costs.

FEMA is willing to accept this attribute, however, because the intent of the deductible program is to reduce risk and build resilience to disasters overall. FEMA considers the non-Public Assistance cost reductions that would occur as a result of a deductible program to be ancillary benefits of the program. This is no less true if the indirect Public Assistance reduction benefits are just a fraction of the overall deductible improvements through reduced AALs. FEMA seeks comment on this approach.

One shortcoming of the AAL methodology, at least at present, is that Hazus does not currently produce loss estimates of any kind for severe storms or tornadoes. Overall, these types of incidents account for the most frequently declared major disasters and count for approximately 20 percent of Public Assistance obligations between 2005 and 2014. However, looking below the surface of the classification, FEMA has found that a significant amount of the damage that occurs in a major disaster declared for severe storms is actually caused by flooding. Consequently, just a small percentage of major disasters are actually issued for damage from storms that do not include some flooding. These would include damage resulting from wind (tornado, derecho, microburst, etc.), hail, or winter storms.

Nevertheless, it is likely that the AAL-based approach to calculating the risk index will somewhat undervalue the risk to locals that are particularly prone to these types of incidents, such as the Midwest for tornadoes and the Northeast for snow and ice storms. FEMA plans to continue seeking ways to improve the Hazus model and expand the modeling capabilities through AAL estimates, but it also acknowledges this particular limitation of the current approach. FEMA is soliciting comment on ways to potentially overcome these limitations in the Hazus model.

FEMA also considered a completely different approach to assessing a State's relative risk that looks specifically at the likelihood that a State will require Public Assistance and the amount of assistance that will likely be needed. FEMA engaged CREATE to assist in the statistical and economic aspects of designing the deductible concept. CREATE produced an alternative approach for modeling risk using historical Public Assistance obligations to estimate States' risk. Essentially, CREATE has developed a methodology for modeling the likely amounts of Public Assistance that every State will require by leveraging historical Public Assistance levels to forecast potential future need.

Specifically, the CREATE model utilizes Public Assistance data from 1999 to 2015 (the broadest range for which reliable data is available). CREATE's model assumes that both the magnitude and frequency of disasters are random variables while

[76] The United States Census Bureau produces an annual State Government Finances report that details the amount and sources of actual revenue captured by each State. Additional information can be found at: *https://www.census.gov/govs/state/.*

[77] The Bureau of Economic Analysis produces annual estimates of each State's Gross Domestic Product. These estimates are available at: *http://www.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri= 1&acrdn=2#reqid=70&step=1&isuri=1.*

simultaneously taking a State's characteristics into account, such as the amount of infrastructure. CREATE then developed statistical models, adjusting the modeling parameters so that the outputs best matched the frequency and magnitude of historical Public Assistance outlays. CREATE was then able to use those models to look forward and determine the likely frequency and amounts of Public Assistance that each State would require in the future, converting those amounts to an index of relative risk.

CREATE's approach advanced FEMA's ability to forecast Public Assistance requirements. However, FEMA is considering using the Hazus-based AAL methodology for establishing each State's score on the risk index instead for a number of reasons.

First, FEMA was concerned with the small quantity of data that it was able to offer to CREATE and upon which CREATE relied to build its model. FEMA could only provide reliable data for 17 years' worth of Public Assistance. FEMA was concerned that this dataset was of insufficient length to form the basis for establishing long-term forecast trends for the Public Assistance program. Some types of disasters, in some areas occur on 100-year, 500-year, 1,000-year, or even longer cycles. It is likely that FEMA's 17-year dataset is insufficient to capture these types of events. This is particularly true of rare but devastating hazards, such as major earthquakes. Conversely, States that have happened to experience a major disaster in the past 17 years may have their relative risk overstated by this dataset compared to what may be expected from a longer-term trend.

Likewise, it is also likely that the Public Assistance dataset will include incidents that are unlikely to occur again in the near future and that may be skewing the data. The costs associated with Hurricane Katrina is an example of this possibility. While the chances of the Gulf Coast being struck by a moderate to major hurricane in the coming years are reasonable, the likelihood that it will cause the level of destruction as Hurricane Katrina is much lower. This is because a significant portion of the costs from Katrina stemmed from the flooding that resulted from failure of the water management and levee systems in New Orleans, Louisiana. Following extensive improvements to those systems over the past decade, a hurricane of similar intensity to Katrina might not cause the same level of damage to public facilities and infrastructure today.

FEMA was also concerned that because the CREATE approach is novel, it might not engender the same level of public confidence as the AAL-based methodology. AAL estimates are used by many organizations within the risk management and insurance industries and are generally accepted and defensible approaches to modeling future hazard costs. Additionally, FEMA expects that many within the emergency management community will be familiar with Hazus and the capabilities of that platform. Hazus data is openly available and FEMA values the transparency and reproducibility that use of the existing Hazus platform offers to the deductible methodology.

Finally, FEMA believes that utilizing Hazus-based AALs will offer benefits to other programs as well by creating a significant use of the Hazus platform. FEMA will enjoy an efficiency by leveraging an existing platform instead of designing and constructing a new one. Additionally, because the deductible program has the potential to become a major consumer of Hazus outputs, it increases the value of the Hazus platform to FEMA and to the nation. This likely would lead to future updates and improvements to Hazus capabilities that would benefit not only the deductible program, but also all other users of Hazus products. However, FEMA certainly welcomes comment on the use of Hazus data, and AALs generally, and their application to formulating a risk-informed deductible calculation.

In deciding between the Hazus-based AAL approach and the CREATE historical Public Assistance approach, FEMA decided that the former was the better option to incorporate as the risk index into the broader potential deductible formula. FEMA believes that the advantages of using the Hazus-based AAL approach described above outweigh the disadvantages of slightly lessening the risk assessment portion of the deductible methodology's strict nexus to the Public Assistance program. In other words, FEMA believes that taking a more expansive view of risk through use of Hazus-based AALs, which include costs not typically associated with the Public Assistance program, is acceptable given the intent of the deductible concept is to reduce risk nationally.

4. Additional Credits

FEMA carefully considered the credits included in the model described in this SANPRM. FEMA attempted to offer a menu of credits that cover a range of activities and that would support a diversified approach to risk reduction and improved preparedness. FEMA intended each model credit to independently contribute to those outcomes, but also to work within the broader system to create a cohesive structure of achievable progress for all States.

When developing the model credit offerings, FEMA considered other credits as well. These credits were not ultimately selected for the model for a variety of reasons. In some cases, the credit was too complicated or could create an unreasonable burden upon the State or FEMA to administer. In other cases, the ability of the credit to actually reduce risk or improve resilience was dubious. Ultimately, FEMA believes it included in the model the best mix of credits available from what it considered.

One credit in particular that FEMA considered at length would have been tied to FEMA's Community Rating System (CRS). Many of the comments that FEMA received from stakeholders when it published the ANPRM suggested that FEMA should offer deductible credit for CRS participation. CRS is a program administered by FEMA's National Flood Insurance Program (NFIP). The NFIP provides federally-backed flood insurance within communities that enact and enforce floodplain regulations. FEMA recognizes that CRS is an important program that incentivizes important floodplain management activities, many of which mirror or support activities that FEMA is looking to incentivize through deductible credits, and that inclusion as a separate credit could further incentivize those activities. At this point, however, as discussed below, FEMA does not believe that inclusion of CRS as a credit is appropriate at this time.

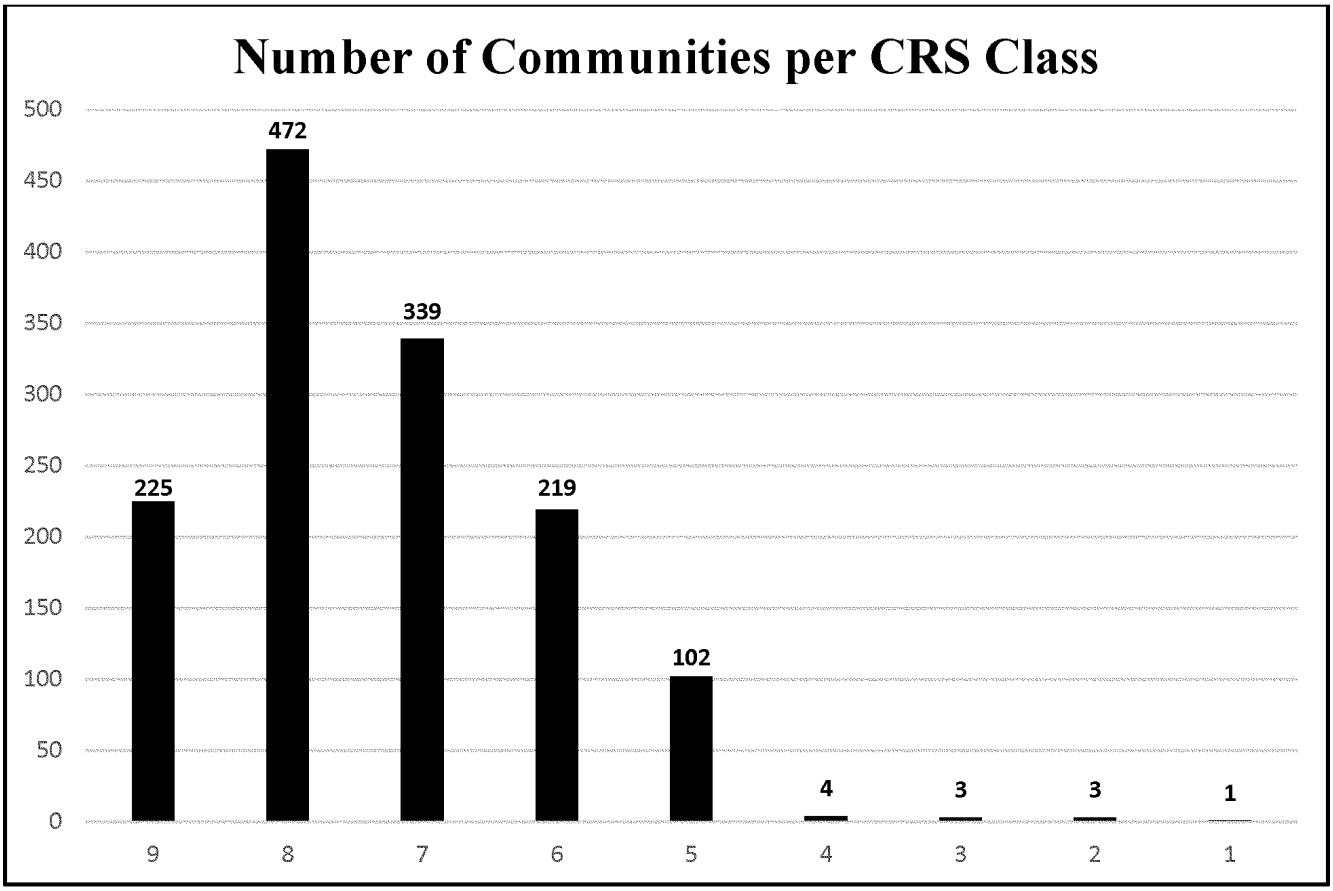
A structure must be located within an NFIP community to be eligible for federally-backed NFIP coverage. NFIP communities may also elect to participate in the CRS program to receive a percentile reduction to the premiums for every NFIP policy within the community. As of October 2015, 1,368 of the 21,600 NFIP communities have chosen to participate in the CRS program. This provides discounted flood insurance premiums to nearly 3.8 million policyholders.

The CRS classifies each participating community on a scale from 10 to 1 based on multiple scoring criteria relating to floodplain management, investments, and enforcement. Each CRS class receives a corresponding percentile reduction to the premiums of all of the NFIP flood insurance policies covering property within those communities. The lower the community's CRS class, the larger the

percentile premium reduction will be. For example, a CRS class 7 community would receive a 15 percent premium reduction on all policies covering property within the community's Special Flood Hazard Area, whereas a CRS class 1 community would receive a 45 percent reduction.

As of October 2015, more than 50 percent of CRS communities were assigned to either class 8 or 9. Less than 1 percent of CRS communities have reached beyond class 5. Figure 4 depicts the number of communities in each CRS class (as of October 2015).

Figure 4: Number of Communities per CRS Class



FEMA examined multiple ways by which it could potentially include such a credit in the deductible model. The major problem with creating a deductible credit in this instance is that the CRS program is administered exclusively at the community level, and FEMA has never produced statewide CRS scores. FEMA would need to be able to translate participating community classes into statewide scores for purposes of the deductible. In considering the credit, FEMA developed a basic framework for how this process might work.

FEMA has considered calculating statewide CRS scores by utilizing population-weighted averages of the participating communities' CRS classes compared to the statewide population. FEMA would multiply the population of each CRS community by its assigned CRS class. FEMA would then add all of those values together and divide by the population of the State. The resulting number would then be subtracted from 9, the lowest class for which credit would be offered, to derive the statewide CRS score.

Consider for example the State of Iowa. As of October 2015, Iowa had seven CRS communities. Those communities are as follows:

TABLE 15—EXAMPLE STATEWIDE CRS CREDIT SCORE—IOWA

CRS community	Population	CRS class	Pop. × CRS class
City of Cedar Falls	39,260	5	196,300
City of Cedar Rapids	126,326	6	757,956
City of Coralville	18,907	7	132,349
City of Davenport	99,685	8	797,480
City of Des Moines	203,433	7	1,424,031
City of Iowa City	67,862	7	475,034
Linn County [78]	84,900	8	679,200

TABLE 15—EXAMPLE STATEWIDE CRS CREDIT SCORE—IOWA—Continued

CRS community	Population	CRS class	Pop. × CRS class
Sum			4,462,350
State of Iowa	3,046,355	7.5	

FEMA has also considered multiplying the population of each community by the community's CRS class. For example, the City of Cedar Falls would contribute 196,300 to the calculation (population of 39,260 multiplied by CRS Class 5). FEMA would then add up all of those values from each CRS community. In this case, that would equal 4,462,350. This total would then be divided by the population of the entire State (4,462,350/3,046,355 = 1.5). The result is then subtracted from 9 to yield the statewide CRS score for purposes of the deductible. In this case, Iowa's CRS score would be 7.5 (9.00 − 1.5 = 7.5). This value could then be recognized with some level of credit based upon a standardized conversion schedule. At this time, FEMA has not developed a potential deductible credit schedule for the CRS.

Ultimately, FEMA decided not to include a model CRS deductible credit in this SANPRM for three reasons. First, FEMA believes that the flood insurance premium reductions should sufficiently incentivize NFIP communities to participate or better their standing within the CRS program. Second, FEMA would need to develop a new methodology for creating statewide CRS classes. This would be a novel undertaking for FEMA and the agency seeks comment from its State partners and the public regarding this endeavor. Furthermore, creating such a methodology is complicated because CRS communities are not necessarily the same as census-based communities, meaning that population numbers will need to be validated on a community-by-community basis for the calculation. Finally, even if FEMA does create a methodology for statewide CRS scores, FEMA is concerned that doing so would be confusing to stakeholders because FEMA would not be offering any NFIP insurance premium discounts for those scores. In other words, if a statewide score is better than a particular NFIP community's CRS class, there may be an expectation that FEMA would use the statewide score in place of the community's CRS Class. In fact, FEMA would not be willing to use the statewide score in lieu of the community score for purposes of granting NFIP premium discounts and FEMA believes that the creation of statewide CRS scores solely for the purposes of the deductible program would be confusing, and ultimately disappointing, to some CRS communities and NFIP policyholders.

VII. Legal Authority

FEMA administers the Public Assistance program pursuant to the President's statutory authority conferred in Section 406 of the Stafford Act to ''make contributions—(A) to a State or local government for the repair, restoration, reconstruction, or replacement of a public facility damaged or destroyed by a major disaster and for associated expenses incurred by the government.'' [79] These contributions are limited to ''. . . not less than 75 percent of the eligible costs of repair, restoration, reconstruction, or replacement carried out under this section''—known as the Federal share.[80] The President has delegated this authority to the Administrator of FEMA to authorize the Public Assistance program, *inter alia*.[81]

''Eligible'' is a term of qualification indicating that not all resultant costs are automatically reimbursable. Because the Stafford Act does not define ''eligible costs'' within the text of the law itself, it is within FEMA's discretion to define the term for purposes of its programs authorized pursuant to that provision. FEMA has, through regulation and policy, leveraged its discretion to determine which disaster costs are ''eligible.'' For purposes of the deductible program, FEMA is considering revising its regulations and policies to reflect a determination that disaster costs that cumulatively fall below the amount of the State's annual deductible, as adjusted by its earned credits, are not ''eligible costs'' as defined by the Stafford Act.

VIII. Conclusion

The concept for a deductible program responds to calls for FEMA to address the increasing frequency of disaster declarations, particularly smaller events that should be within the capacity of State and local governments, and to decrease Federal disaster costs. While increasing the per capita indicator is one way to accomplish this, solely through the transfer of costs from the Federal government to State and local jurisdictions, FEMA believes that doing so would miss a valuable opportunity to increase the nation's overall disaster resilience, thereby reducing costs for all stakeholders.

While FEMA seeks comment on all aspects of the deductible concept, in particular FEMA seeks detailed comment and supporting data on the methodology for calculating each State's deductible amount, including how FEMA should consider each State's individual risk and fiscal capacity; and on whether FEMA's estimates of projected credits for each State are accurate. Detailed stakeholder comment and supporting data are crucial to FEMA's development of a fair and transparent means to calculate deductible amounts and creation of an effective and efficient deductible program.

Dated: January 6, 2017.

W. Craig Fugate,

Administrator, Federal Emergency Management Agency.

[FR Doc. 2017–00467 Filed 1–11–17; 8:45 am]

BILLING CODE 9111–23–P

[78] The population of Linn County included in this example excludes the population of the City of Cedar Rapids because it is accounted for separately as an independent CRS community.

[79] 42 U.S.C. 5172(a)(1)(A).

[80] 42 U.S.C. 5172(b)(1).

[81] Executive Order 12148, 44 FR 43239 (July 24, 1979).

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Part V

Department of Health and Human Services

Office of Inspector General

42 CFR Parts 1000, 1001, 1002, et al.

Health Care Programs: Fraud and Abuse; Revisions to the Office of Inspector General's Exclusion Authorities; Final Rule

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Office of Inspector General

42 CFR Parts 1000, 1001, 1002, and 1006

Health Care Programs: Fraud and Abuse; Revisions to the Office of Inspector General's Exclusion Authorities

AGENCY: Office of Inspector General (OIG), HHS.

ACTION: Final rule.

SUMMARY: This final rule amends the regulations relating to exclusion authorities under the authority of the Office of Inspector General (OIG) of the Department of Health and Human Services (HHS or the Department). The final rule incorporates statutory changes, early reinstatement provisions, and policy changes, and clarifies existing regulatory provisions.

DATES: These regulations are effective on February 13, 2017.

FOR FURTHER INFORMATION CONTACT: Patrice Drew, Office of Regulatory Affairs, 202–619–1368; Susan Gillin, Office of Counsel to the Inspector General, 202–619–1306.

SUPPLEMENTARY INFORMATION:

I. Statutory Background

The Affordable Care Act of 2010 (the Patient Protection and Affordable Care Act, Public Law 111–148, 124 Stat. 119 (2010), as amended by the Health Care and Education Reconciliation Act of 2010, Public Law 111–152, 124 Stat. 1029 (2010)) (ACA) expanded the Secretary's authority to exclude various individuals and entities from participation in Federal health care programs under section 1128 of the Social Security Act (Act). The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) amended the Secretary's authority to waive certain exclusions under section 1128 of the Act. The Secretary's authority under section 1128 of the Act has been delegated to the Department's Office of Inspector General. The changes in this Final Rule were proposed at 79 **Federal Register** 26810 (May 9, 2014).

II. Legal Authority

The legal authority for this regulatory action is found in the Act, as amended by MMA and ACA. The legal authority for the proposed changes is listed by the parts of Title 42 of the Code of Federal Regulations (CFR) that we propose to modify:

1000: 42 U.S.C. 1302 and 1395hh.

1001: 42 U.S.C. 1302; 1320a–7; 1320a–7b; 1395u(j); 1395u(k); 1395w–104(e)(6); 1395y(d); 1395y(e); 1395cc(b)(2)(D), (E), and (F); 1395hh; 1842(j)(1)(D)(iv); 1842(k)(1), and sec. 2455, Public Law 103–355, 108 Stat. 3327 (31 U.S.C. 6101 note).

1002: 42 U.S.C. 1302, 1320a–3, 1320a–5, 1320a–7, 1396(a)(4)(A), 1396a(p), 1396a(a)(39), 1396a(a)(41), and 1396b(i)(2).

1006: 42 U.S.C. 405(d), 405(e), 1302, 1320a–7, and 1320a–7a.

III. Summary of the Proposed Rule

On May 9, 2014, we published a proposed rule (79 FR 26810) addressing new and revised exclusion authorities in accordance with ACA and MMA, as well as a number of proposed technical, policy, and clarifying changes to 42 CFR 1000, 1001, 1002, and 1006. We received 19 comments on the May 9, 2014, proposed rule. Commenters included industry associations and organizations, beneficiary and other advocacy groups, and health insurance plans. The commenters generally supported our proposals. Set forth below is a brief summary of the regulatory provisions contained in that proposed rule.

Part 1000

The proposed regulation made a number of technical changes to the definitions found in section 1000.10 of the regulations. These included changes to the definitions of ''Directly,'' ''Furnished,'' and ''Indirectly'' that would more clearly incorporate newer payment methodologies into these definitions. The proposed regulation also moved numerous definitions from parts 1001 and 1003 into part 1000 to make them applicable to the entire subchapter and to consolidate the definitions in the subchapter. Lastly, it removed definitions that were specific to Medicare and Medicaid from sections 1000.20 and 1000.30 because those definitions are not applicable to OIG's authorities.

Part 1001

The proposed regulation reflected the expansion of OIG's exclusion authority in MMA and ACA and also proposed numerous technical and policy changes. First, ACA expanded the permissive exclusion authority found in section 1128(b)(2) of the Act to reach all individuals and entities who were convicted for the interference with or obstruction of both investigations and audits related to the use of funds received from a Federal health care program. Next, the proposal reflected an expansion of the permissive exclusion authority found in section 1128(b)(11) of the Act. After ACA, section 1128(b)(11) of the Act provides for exclusion of any individual or entity furnishing, ordering, *referring for furnishing, or certifying the need for* items and services for which payment may be made under Medicare or Medicaid that fails to provide certain payment information to the Secretary (emphasis added). The change made by ACA to section 1128(b)(11) of the Act expanded the categories of individuals and entities that are subject to exclusion under this section to those who *refer* patients *or certify* the need for items or services they themselves do not provide.

Third, ACA added a permissive exclusion authority at section 1128(b)(16) of the Act for knowingly making or causing to be made any false statement, omission, or misrepresentation of material fact in any application, agreement, bid, or contract to participate or enroll as a provider of services or supplier under a Federal health care program. The proposed regulation corresponding to this authority, at § 1001.1751 (in the final rule as § 1001.1552), proposed to describe the sources OIG will consider in determining whether section 1128(b)(16) of the Act applies, including information from the Centers for Medicare and Medicaid Services, State Medicaid agencies, fiscal agents or contractors, private insurance companies, State or local licensing or certification authorities, and law enforcement agencies.

Lastly, in § 1001.1801 the proposal reflected the expansion of OIG's authority to grant waivers of certain exclusions in accordance with ACA and MMA. MMA amended the Act to allow waiver requests to come from administrators of Federal health care programs, rather than just State health care programs, and to apply OIG's waiver authority to sections 1128(a)(3) and (a)(4) of the Act as well as section 1128(a)(1) of the Act. ACA further amended section 1128 of the Act to allow an administrator to request a waiver if the administrator determines that the exclusion would impose a hardship on any beneficiary. The proposal reflected both MMA's and ACA's changes.

The proposed regulation also included numerous changes that reflect OIG's policies and practices. We proposed to narrow the scope of providers excluded under sections 1128(a)(4) and (b)(3) for convictions related to controlled substances to those who were convicted for offenses that occurred during the time they were employed in the health care industry.

We also proposed to update the dollar amounts in the aggravating and mitigating factors that take financial harm into account to $15,000 from $5,000 (and under § 1001.701(d)(2)(iv), $1,500). We proposed to remove: (1) The aggravating factor related to the receipt of overpayments from Medicare or Medicaid; (2) all of the aggravating and mitigating factors for loss of health care licenses and Federal health care program sanctions; and (3) the mitigating factor found throughout the regulations related to whether alternative sources of health care are not available.

We also proposed to add a process for early reinstatement where a health care license has been lost and has not been reinstated, which included numerous factors that OIG would consider under such a process. We proposed to include a provision at § 1001.901(c) stating that no period of limitations exists with respect to exclusions under section 1128(b)(7) of the Act. We proposed to add loan repayment programs as the bases for exclusions under section 1128(b)(14) of the Act. We proposed to expand the ''pay the first claim rule'' to Parts C and D of Medicare. We proposed to give individuals and entities excluded under new section 1128(b)(16) of the Act the right to an oral argument in front of an OIG official prior to exclusion, and we proposed to remove the requirement that OIG send a notice of intent to exclude in cases under section 1128(b)(7) of the Act.

The proposed regulation also made numerous technical and clarifying changes. We proposed reorganizing § 1001.1001 to clarify the authority and to move all the definitions in § 1001.1001 to § 1001.2. This proposal would also create a new definition of ''ownership or control interest,'' which mirrors existing regulatory language at § 1001.1001(a)(1)(ii). Next, we proposed separating the two concepts in the aggravating factor related to ''Other Offenses and Adverse Actions'' to clarify that the first portion relates to additional convictions, and the second portion relates to adverse actions by government agencies and boards.

We also proposed revising the language requiring that individuals convicted of previous offenses be excluded for a longer minimum period to reflect the statutory language, which considers ''previous'' convictions instead of ''other'' convictions. We proposed to revise the language related to immediate access requirements to include technical clarifications and access to electronically stored documents under the Inspector General Reform Act of 2008.

Lastly, we proposed a clarification to the regulation pertaining to exclusions under section 1128(b)(15) of the Act that would state that the length of an individual's exclusion under section 1128(b)(15) of the Act is the same length as the exclusion of an excluded entity on which the individual's exclusion is based.

Part 1002

The proposed rule included several clarifying and technical changes, including clarifying Medicaid agencies' right to refuse to enter into a provider agreement because of a criminal conviction related to any Federal health care program, renumbering certain sections, changing headings, adding clarifying language to the section describing payment prohibitions, and clarifying circumstances for exclusion of managed care entities that are related to sanctioned entities.

Part 1006

Consistent with ACA, the proposed regulation reflected OIG's new authority to issue testimonial subpoenas in investigations of potential cases involving the exclusions statute.

IV. Response to Comments and Summary of Revisions

In response to the Notice of Proposed Rulemaking, OIG received 19 filed public comments from various health care providers and organizations, professional medical societies and organizations, and other interested parties. In the next section below, we address the comments we received to particular proposals. The final rule makes certain non-substantive technical changes that were not included in the proposed rule. First, the final rule implements a reorganization of certain subparts of part 1001. Specifically, § 1001.1051, which corresponds to the exclusion authority found at section 1128(b)(15) of the Act, is moved to new § 1001.1551, after § 1001.1501. The new exclusion authority in section 1128(b)(16), which was proposed at § 1001.1751, is moved to new § 1001.1552. These changes were made to put the regulatory authorities in the same order as the underlying exclusion authorities in section 1128 of the Act. Because of the non-substantive nature of these changes, we believe it is appropriate to include them in this final rule.

Next, the final rule moves the definition of ''Federal health care program'' from § 1001.2 to § 1000.10. The final rule also modifies the definition slightly to mirror the statutory definition in section 1128B(f) of the Act. While these changes were not proposed, they are technical corrections only and do not change the meaning or effect of the regulations. The final rule's definition of Federal health care program mirrors the statutory definition of the phrase and varies only grammatically from the prior regulatory definition (we changed ''providing health care benefits'' to ''provides health benefits'' and, because we believe our regulatory definition unintentionally did not mirror the statutory definition, we changed it from ''whether directly through insurance or otherwise'' to ''whether directly, through insurance, or otherwise''). OIG has always interpreted this phrase according to the statutory definition at section 1128B(f) of the Act.

The reason we are moving the definition of Federal health care program from part 1001 to part 1000 is to reflect the statute and OIG's existing regulatory interpretation that this definition applies throughout Chapter V of Title 42, wherever the term may appear. The term ''Federal health care program'' appears only in parts 1001 and 1003. Part 1003 sometimes refers to the statutory definition (see § 1003.101), and sometimes does not (see § 1003.102(a)(3), (a)(15)). The move clarifies that one definition, mirroring the statute, applies to both part 1001 and part 1003, but does not change the meaning of any provision in Chapter V.

The final rule also spells out ''civil money penalties'' in § 1001.1001(a)(2), replacing an instance of the term ''CMPs.'' This change does not affect the substance of § 1001.1001.

General Comments

Section 1001.901 and 951: Period of Limitations on Affirmative Exclusions

Comments: Thirteen commenters objected to OIG's proposal to clarify that there is no time limitation to exclusions imposed under section 1128(b)(7) of the Act. Some objected on legal grounds, arguing that even if a statute is silent regarding a period of limitations, courts have often applied some period of limitations and not deferred to an agency's interpretation of the period of limitations.

Others highlighted that although the preamble discussed this proposal with respect to all exclusions under section 1128(b)(7) of the Act, the proposed regulatory text only included this language for exclusions pursued under 42 CFR 1001.901 and not for those pursued under 42 CFR 1001.951. Some commenters were concerned that the proposed clarification regarding the limitations period would create an administrative burden because they felt

that providers would be required to indefinitely retain all documentation that could be relevant to OIG's authorities. Other commenters suggested that OIG should toll the limitations period for exclusion in individual cases rather than finalize the language as proposed.

Response: The proposal stated that there is no time limitation on OIG's initiating an exclusion action under section 1128(b)(7) of the Act. As a result of the comments we received, OIG has decided not to finalize the rule as proposed and to instead codify a ten-year limitations period.

The proposal was based on the plain language and purpose of section 1128 of the Act and its interaction with the False Claims Act (FCA), the Federal Government's primary civil remedy for health care fraud. Section 1128, which includes no period of limitations, authorizes exclusions as prospective remedial actions to protect Federal health care programs and their beneficiaries from untrustworthy individuals and entities. Almost every Federal health care program fraud actionable under the FCA can also form the basis for exclusion under section 1128(b)(7) of the Act. Because of the volume of health care FCA cases, most of which are qui tam matters initiated by private parties on behalf of the Government, most section 1128(b)(7) matters considered by OIG are related to FCA cases. The FCA allows for complaints to be filed up to 10 years after the conduct. The filing of the qui tam complaint stops the running of the FCA statute of limitations and allows the Government to investigate the FCA allegations without the risk of losing any civil claims based on time. OIG closely coordinates with DOJ and generally considers and resolves exclusions in conjunction with FCA settlements. Because many FCA cases are not resolved until many years after the claims at issue, any limitations period on section 1128(b)(7) exclusions may force OIG to either initiate administrative proceedings while the FCA matter is proceeding or lose the ability to protect the programs and beneficiaries through an exclusion. Litigating FCA and exclusion actions on parallel tracks wastes Government (both administrative and judicial) and private resources.

We believe we should administer the section 1128(b)(7) exclusion authority in a way that protects the programs and beneficiaries while reducing the risk of wasting resources. We also recognize that older conduct is less relevant to current trustworthiness. We have balanced the commenters' concerns with our policy goal of protecting Federal health care programs and beneficiaries and OIG's experience administering the exclusion statute. We have chosen to adopt a 10-year limitations period for exclusions initiated under 42 CFR 1001.901 or 42 CFR 1001.951.

The 10-year limitations period addresses the commenters' concerns about administrative burden and courts' historical favoring of an enumerated limitations period. Providing for a 10-year limitations period for exclusion under section 1128(b)(7) of the Act will better align the resolution of FCA and section 1128(b)(7) remedies. The FCA allows the filing of an action up to 10 years after the conduct. Once an FCA action is filed by a qui tam relator or the Government, the FCA statute of limitations is tolled while the Government investigates the matter through any resulting litigation. Based on past experience, we expect to still confront situations in which FCA litigation is ongoing as we are forced to either initiate an exclusion or lose the ability to bring such an action; such situations will be less frequent with a 10-year period than with a shorter period. The 10-year period is grounded in the FCA period of limitations, provides certainty to the industry, and better protects OIG's ability to protect the programs and individuals from untrustworthy persons identified in FCA cases or otherwise.

When determining whether to seek exclusion of a defendant in an FCA case, OIG considers factors that cannot be determined until the case is resolved. In litigated FCA cases, OIG is in the best position to consider exclusion after there is a judgment, which will either provide a strong basis for exclusion (if the judgment is in favor of the Government) or make an exclusion case difficult or impossible (if the judgment is in favor of the defendant). When a case settles, OIG can consider all the relevant factors, including the defendant's willingness to agree to appropriate compliance terms, when determining whether to seek exclusion. A longer limitations period will better allow OIG to consider all of the relevant factors before making an exclusion decision and expand the number of cases in which resolution of an FCA matter will not occur after OIG's period of limitations has ended. The 10-year limitations period will also reduce the risk of OIG litigating an exclusion action while FCA litigation is pending. In OIG's experience, it is difficult for all parties when two sets of concurrent litigation are ongoing. A 10-year limitations period will allow for conservation of both Government and private resources in these instances.

We believe that recent acts are more indicative of trustworthiness than acts in the distant past. However, in our experience, exclusion can be necessary to protect the Federal health care programs even when the conduct is up to 10 years old. We intend to exercise this authority to preserve our ability to protect the programs when it is impracticable for OIG to pursue exclusion closer in time to the fraudulent conduct. A 10-year limitations period balances the need to provide the defendant certainty and also allow OIG to adequately evaluate exclusion in light of the fraudulent conduct.

As commenters noted, OIG provided notice of the relevant changes to exclusions under 1128(b)(7) of the Act but inadvertently provided only a text change for 42 CFR 1001.901. We have updated the final rule to add the relevant language to both 42 CFR 1001.901 and 42 CFR 1001.951. Commenters' concerns about the length of the limitations period in 42 CFR 1001.901 are equally applicable to 42 CFR 1001.951, and we have considered those concerns in the context of both sections.

Some commenters suggested that OIG toll its statute of limitations in situations where certain conduct would lead to exclusion but OIG has not learned of the conduct until years after the conduct. We have used tolling agreements in certain appropriate matters and will continue to do so where it is needed to preserve our ability to protect the Federal health care programs. However, we do not believe that OIG seeking a tolling agreement in specific cases is an efficient way to preserve OIG's authorities in these cases. As mentioned above, the Government's FCA remedies are tolled with the filing of a complaint. The complaint does not toll OIG's exclusion remedy. Given the volume of FCA complaints that are being investigated at any point in time, it would be inefficient for OIG to seek to negotiate a tolling agreement in each of these cases. In addition, a defendant who is litigating with the United States is unlikely to agree to toll OIG's authorities. A defendant's refusal to agree to toll the statute of limitations leaves OIG in the position of having to choose between (i) filing a concurrent action while the United States is in FCA litigation or (ii) losing the ability to protect the programs and beneficiaries through an exclusion. Therefore, we do not believe that seeking individual tolling agreements applicable to

exclusion authorities would be an effective or efficient way to address the protection of OIG's authorities in all cases.

Specific Comments

Section 1000.10: Definitions of ''Directly,'' ''Furnished,'' and ''Indirectly''

Comment: One commenter suggested that the proposed language would be confusing for providers. Specifically, the commenter noted that OIG's proposed change from ''submit claims to'' to ''request or receive payment from'' would confuse providers trying to avoid liability because of the uncertainty about what ''requesting'' or ''receiving'' payment means. As an example, the commenter cited capitation payment methodologies, which the commenter stated sometimes ''sever the direct link between the items/services that a payment is expected to cover and the items/services that the payment actually ends up covering.'' The commenter also stated that our reference to the False Claims Act was inappropriate.

Response: We continue to believe that the regulations should be updated to more clearly reflect that Federal health care programs make payments through methods other than the submission of fee-for-service claims, and that individuals and entities who request or receive such payment, directly or indirectly, are subject to exclusion. The prior regulations discussed these concepts in the context of claims for items and services being submitted to Federal health care programs. The proposed definitions more clearly include situations in which payment is made by a Federal health care program without a traditional fee-for-service claim, *i.e.,* where the program makes payments through some other mechanism.

We believe the plain meaning of the words ''request'' and ''receive'' can be applied in this context without undue confusion. Funds are requested and received in many different forms from Federal health care programs, and the breadth of these terms is necessary to include current and potential future payment methodologies.

The terms include payment methodologies that have been implemented in the years since the regulations were last amended. By way of example only, some new payment models involve Federal health care programs issuing shared savings payments or performance-based payments (*e.g.,* reflecting quality improvements) to individuals and entities. These individuals and entities therefore may receive payments from Federal health care programs that are not tied exclusively to claims for specific services that were provided. In another example, in managed care or other models, capitated payments may be received by individuals and entities from managed care organizations or the Federal health care programs to pay for health care provided to Federal health care program beneficiaries, but the individuals and entities may not be submitting claims directly to the Federal health care programs for particular items and services. As a final example, diagnosis resource groups that are used to determine payments for inpatient Medicare stays may assume the use of medical devices in certain procedures, but the provider does not submit a claim requesting payment for the particular item used in the procedure.

Over time, more Federal health care program payments for items and services furnished to its beneficiaries are not directly connected to submitted fee-for-service claims. The regulation should clearly encompass such circumstances within the reach of the exclusion remedy. In applying its authorities, OIG carefully considers all relevant facts and circumstances in each case before taking action.

We referenced the False Claims Act's broad definition of ''claim'' to illustrate that other sections of the United States Code recognize that payment from the Federal Government is requested in many different ways. The statutory intent of recent amendments to that act apply its penalties without limitations imposed by changing payment methodologies. The FCA now extends to a broader category of payment methodologies and fraud schemes than it did prior to its amendment. Because the underlying conduct triggering an exclusion action is comparable to that pursued under the FCA, it would be incongruous to limit the exclusion statute's reach to outdated payment methodologies and not extend it to newer fraud schemes.

Section 1001.101 and 1001.401: Application of Certain Exclusions to Health Care Providers

Comment: One commenter stressed that the temporal change proposed by OIG would not protect beneficiaries from individuals who left employment in the health care industry before committing an offense leading to conviction, and then re-entered the health care industry after their conviction.

Response: We agree with the commenter that the proposed change would not cover individuals who left the health care industry before they committed an offense. Accordingly, we are not including the proposed change in the final rule.

Sections 1001.102(b)(1), 201(b)(2), 301(b)(2)(viii), and 701(d)(2)(iv): Financial Loss Aggravating Factors

Comment: A commenter expressed concern that OIG's proposal to increase the financial loss aggravating factors used to determine the length of an exclusion from $5,000 and $1,500 to $15,000 does not sufficiently increase the loss amount. The commenter stated that this amount would encompass many, if not all, exclusions and, therefore, would not be useful in determining trustworthiness. The commenter suggested further increasing the financial loss amount to reflect that most health care fraud cases result in much greater losses than $15,000. Another commenter agreed with OIG that the financial loss aggravating factor should be increased to the proposed amount of $15,000.

Response: We partially agree with the commenters with respect to the increase in financial loss aggravating factor. In the final rule, we have increased the amount of the financial loss aggravating factors listed at §§ 1001.102(b)(1), 1001.201(b)(2)(i), 1001.301(b)(2)(viii) to $50,000. We believe that this increase better reflects the threshold amount when a period of exclusion should be increased on the basis of our experience resolving health care fraud matters. Because exclusions under section 1128(b)(6) are not derivative of convictions and are focused on unnecessary or substandard care, we disagree that $15,000 is an insufficient amount of loss to trigger the financial loss aggravating factor under § 1001.701(d)(2)(iv) and have finalized the proposal to increase that amount to $15,000.

Comment: One commenter suggested that OIG retain the financial loss aggravating factors used to determine the length of an exclusion at $5,000 and $1,500 based on a concern that an increase in the amount of the aggravating factor could reduce exclusion periods for untrustworthy providers.

Response: While we agree that any loss from health care fraud is troubling, the purpose of the aggravating factor is to provide for an additional period of exclusion for those cases that involve high losses relative to other cases. In order for it to be a meaningful tool, the financial loss aggravating factor used to determine the length of an exclusion must be a realistic marker for

differentiating conduct that is more serious because it involves a relatively significant amount of loss. In the current health care fraud environment, the $5,000 and $1,500 financial aggravating factor thresholds do not reflect unusual or relatively high losses. In order to best reflect the current trends in health care fraud cases, we believe that an increase in amount is appropriate.

Section 1001.102(c)(1): Mitigating Factor Relating to Misdemeanor Offenses and Loss to Government Programs

Comment: One commenter supported OIG's proposal to raise the loss amount in this factor to $5,000.

Response: We have finalized the rule as proposed.

Sections 1001.201, 301, 401, 501, 601, 701, 801, 951, 1101, 1201, 1601, and 1701: Alternative Sources Mitigating Factor

Comment: Two commenters suggested OIG retain the mitigating factor of whether alternative source of the type of health care items of services furnished by the individual or entity being excluded are unavailable. One commenter stated that removal of this factor would impair access to care. Another commenter was concerned that OIG's consideration of this factor prior to determining whether to impose an exclusion, rather than as a mitigating factor, could cause confusion.

Response: Exclusion of an individual or entity can have an impact on access to care as soon as an exclusion is effective. Therefore, it is more appropriate to consider whether exclusion will impact access to care in determining whether to impose a permissive exclusion rather than to determine the length of exclusion. In all permissive exclusions, OIG sends a notice of intent to exclude or a notice of proposal to exclude, giving the individual or entity the opportunity to present information about potential access to care issues. This opportunity to present information should clarify to individuals and entities that OIG will consider access to care issues before imposing an exclusion. OIG will continue to consider the issue of beneficiary access before excluding an individual or entity under OIG's permissive exclusion authorities.

Section 1001.301: Expanded Application of a Specific Permissive Exclusion Authority To Include Obstruction of Audits

Comment: One commenter urged OIG not to put audits, which the commenter characterized as informal, on a par with investigations, which the commenter characterized as formal. The commenter suggested that the addition of audits to this permissive exclusion authority could cause providers to devote excessive time and funds to substantiate their compliance in audit situations, which could restrict access to care. Another commenter was pleased that OIG is expanding its permissive exclusion authority to include obstruction of audits and pointed out that obstructing an audit is as dishonest and untrustworthy as obstructing an investigation.

Response: First, we note that the expansion of this authority is statutory and therefore OIG must expand the regulations to cover audits. Next, OIG continues to believe this regulation is necessary. Contrary to the commenter's characterizations, audits by governmental entities or contractors are formal in nature, similar to investigations. Compliance with audit processes and requests is integral to fraud prevention and detection by payors and by law enforcement. It is appropriate for providers to devote resources to compliance with such audits.

Comment: Several commenters noted that it would be helpful for OIG to define ''audit'' in the regulations reflecting this statutory change. For example, one commenter questioned whether the Medicare survey and certification process qualifies as an audit.

Response: The term ''audit'' has a general meaning that is clear based on dictionary definitions. Such definitions include the words ''official,'' ''inspection,'' ''verification,'' and ''examination.'' We believe it is appropriate to apply the general, commonsense meaning to the word ''audit'' for the purpose of section 1128(b)(2) of the Act, and that a definition is not necessary in the regulatory text. To address the commenter's example, the Medicare survey and certification process is implemented for the purpose of inspecting facilities for compliance with Medicare health and safety standards. Where Government entities or contractors conduct an official inspection for the purpose of verifying compliance with Government program standards, we believe the term ''audit'' would include such actions for purposes of the exclusion authority at section 1128(b)(2) of the Act. Government entities, including OIG, often conduct ''inspections'' in which information is requested from members of the public for the purpose of evaluating compliance with the law. An ''examination'' by the Internal Revenue Service is synonymous with an ''audit'' by that agency. In this way, official inspections and examinations are similar to Government audits. A conviction for obstruction of a Government inspection or examination is an indication of a lack of trustworthiness and should not result in a disparate application of the exclusions statute (if the Government action relates to Federal health care programs). Further, the permissive nature of the exclusion authority at section 1128(b)(2) of the Act allows OIG to exercise discretion and analyze the facts and circumstances of each relevant conviction before using the authority.

Sections 1001.501 and 1001.601: Aggravating and Mitigating Factors Relating to Exclusions Based on the Loss of a Health Care License or Suspension or Exclusion by a Federal or State Health Care Program

We did not receive comments on this proposal, which would have removed the aggravating and mitigating factors related to exclusions imposed under sections 1128(b)(4) and 1128(b)(5) of the Act. The reasoning for the proposal was that the lengths of these exclusions are consistent with the periods of suspension or exclusion by the licensing boards and health care programs. However, we have reconsidered this proposal and now believe that it is appropriate, in some cases, for OIG to impose longer or shorter periods of exclusion than the license suspension or revocation periods, or the health care program exclusions, based on aggravating and mitigating factors that may be present. For this reason, we are not including this proposal in the final rule.

Section 1001.501: Early Reinstatement

Comment: Several commenters supported OIG's proposed early reinstatement regulation, because it would facilitate beneficiary access and promote employment of individuals who obtain a new license or seek employment in non-licensed positions.

Response: We appreciate the comments.

Comment: Several commenters urged OIG not to subject individuals seeking employment in unlicensed positions to a 5-year presumption against reinstatement. The commenters suggested that unlicensed individuals have a less direct role, and less authority, in furnishing or billing for items and services than licensed individuals.

Response: We agree with the comments, and in the final rule we

change the presumption against reinstatement to 3 years for individuals without any health care licenses seeking reinstatement under § 1001.501. We apply one exception for cases in which the licensing board that took the action leading to the exclusion has assigned a term of years to the license revocation or suspension that is longer than 3 years. This is because the intent behind early reinstatement is to address situations in which an individual may not be precluded by the licensing board from trying to re-obtain the lost license but is choosing (because of practicality, financial resources, lack of interest, etc.) not to attempt to regain the license. If the licensing board has affirmatively assigned a term of years that is longer than 3 years, the individual will not be eligible for early reinstatement into the Federal health care programs until the term set by the licensing board has elapsed.

While unlicensed individuals employed in health care settings can have a significant impact on the programs and beneficiaries, we believe that, if all the other factors weigh in favor of reinstatement, 3 years is a sufficient presumption given the 3-year benchmark exclusion period for some other permissive exclusions, including those based on criminal convictions.

Comment: One commenter objected to OIG's inclusion of the proposed factor at 1001.501(c)(2)(viii) (the reason the individual is seeking reinstatement). The commenter stated that the factor is highly subjective and likely to lead to arbitrary application.

Response: We agree with the comment. We believe it is more appropriate to consider the potential impact on Federal health care programs and beneficiaries of reinstatement. For the same reason, we have also removed the factor we proposed related to whether the individual is seeking employment in an unlicensed health care position.

Comment: One commenter asked OIG to clarify the proposed factor at 1001.501(c)(1)(vii) and (c)(2)(vii) (any ongoing investigations of the individual). The commenter suggested that this factor should be limited to investigations that pertain to OIG or Federal health care programs.

Response: In order to best protect the Federal health care programs, OIG will consider a broad range of investigations even if those investigations do not directly impact the programs in order to properly assess the integrity and trustworthiness of individuals seeking reinstatement into the programs. Investigations by private insurers or third parties may have a direct bearing on OIG's assessment of trustworthiness even though they do not involve the Federal health care programs.

Comment: One commenter asked that OIG provide more information regarding the relative weight to be given to each factor.

Response: Consistent with other regulations in which OIG considers various factors, we believe it is appropriate for OIG to retain discretion in determining which factors are most relevant to any individual case, and to consider the relative weight of each factor. Similar to when OIG considers aggravating and mitigating factors to determine length of exclusion, OIG will look at the facts and circumstances individually to determine whether reinstatement is appropriate. In the proposed rule, we stated that we would consider ''alternative approaches, and solicit comments on these and any additional factors that should be considered.'' In the interest of providing additional transparency regarding our assessment of factors, we have added a factor at § 1001.501(c)(1)(ii) regarding whether the second licensure authority is in a State that is not the individual's primary place of practice. If a licensure board granting a license is not in the individual's primary place of practice, this would affect our assessment of the potential risks associated with reinstatement and the weight given to the second licensure. This factor is important in certain cases, based on our experience, in which a second licensing board may not take action simply because an individual does not practice in that State anymore. In such cases, reinstatement may not be appropriate based solely on the second licensing board's position.

We proposed numerous factors related to OIG's consideration of the facts surrounding the action or lack of action by a second licensing authority, and this additional factor is consistent with these proposed factors. Moreover, OIG already has the discretion to consider the primary place of practice of an applicant based on other factors in the regulation, such as the benefits and risks to the programs of early reinstatement, evidence that the second licensing authority was aware of the circumstances surrounding the basis for the exclusion, and the circumstances that formed the basis for the exclusion. Therefore, the addition of this factor does not change what OIG is already able to consider under the regulations, but instead provides transparency for members of the public who may want to apply for early reinstatement.

Comment: One commenter asked OIG to prevent early reinstatement of individuals who lost their licenses for reasons related to abuse or neglect.

Response: We agree that it is important to protect beneficiaries from individuals who have lost their licenses due to reasons related to patient abuse or neglect. Therefore, in the final rule, early reinstatement will not be available to these individuals. Instead, individuals who have lost their health care licenses for reasons related to patient abuse and neglect will be required to obtain the license that they lost, in the State where they lost it, before OIG will consider a reinstatement application. While consideration of abuse or neglect could have been considered by OIG under other proposed factors, the final rule eliminates discretion in these cases. We believe this change to eliminate discretion is consistent with the inclusion of proposed factors related to the facts and circumstances of the underlying exclusion, the risks to Federal health care programs, and the resolution of underlying problems that led to the exclusion.

Section 1001.1001: Exclusion of Entities Owned or Controlled by a Sanctioned Person

Comment: Section 1001.1001 allows OIG to exclude entities under certain circumstances, one of which is in a situation in which a person transfers his or her ownership or control interest to an immediate family member or a member of the person's household in anticipation of a conviction, civil monetary penalty (CMP), or exclusion. One commenter suggested that OIG allow for exceptions where (1) the excluded person was sanctioned on the basis of actions that did not involve the entity and where (2) the transfer was justified on the basis of business or legal considerations independent of exclusion.

Response: We do not believe it is necessary to add exceptions to this permissive exclusion authority, because of the permissive nature of the authority. The statute's language allows OIG to carefully consider all relevant facts and circumstances in each individual case before imposing exclusion under section 1128(b)(8) of the Act.

Section 1001.1051 (in the Final Rule as Section 1001.1551): Exclusion of Individuals With Ownership or Control Interest in Sanctioned Entities

Comment: Two commenters stated that the proposed language would have the effect of expanding the basis for exclusions under section 1128(b)(15) beyond the statutory authority.

Specifically, the commenters argued that adding the words ''or had'' with respect to the relationship between the excluded entity and the individual being excluded would allow OIG to exclude individuals who terminated their relationships with a sanctioned entity before being excluded. One commenter also noted that the individual should not remain excluded after termination of the relationship with the entity.

Response: The intent of this proposal was to clarify that an individual who has been excluded under section 1128(b)(15) of the Act will be excluded for the same period as the entity, regardless of whether the individual terminates his or her relationship with the entity after he or she has been excluded. We have modified the proposed language in the final rule to simply read ''[i]f the entity has been excluded, the length of the individual's exclusion will be for the same period as that of the sanctioned entity.'' OIG believes that the statute allows the length of an exclusion under section 1128(b)(15) to be for the same term as the exclusion of the sanctioned entity. The final regulatory language specifies that once an individual has been excluded under section 1128(b)(15), the exclusion will remain in effect for as long as the term of the entity's exclusion.

Comment: One commenter argued that OIG should not make the period of exclusion consistent between the entity and the individual because the individual may not have the knowledge or participation level in the wrongdoing to warrant an exclusion that is the same length as the entity's exclusion.

Response: We believe it is appropriate to determine the individual's exclusion length consistent with the entity's exclusion length. This is consistent with the statute, which creates this authority in order to protect the programs and beneficiaries from individuals that OIG deems to be untrustworthy. The determination of untrustworthiness is made based on the conduct of the entity and the individual's position with respect to the entity. The statute places responsibility for the conduct on the individuals in certain positions. OIG exercises its discretion under section 1128(b)(15) of the Act in accordance with factors we published in 2011 to ensure that the authority is used only when appropriate. As a result, when OIG has determined that an individual is untrustworthy based on the conduct of an entity, it is appropriate to exclude him or her for the same period for which the entity is excluded.

Comment: Several commenters argued that OIG should not exclude individuals under section 1128(b)(15) of the Act unless specific findings are made regarding the individual's wrongdoing or knowledge of wrongdoing.

Response: We believe that requiring specific findings outside of those listed in section 1128(b)(15) of the Act would be inconsistent with the clear language of the statute. The statute only requires evidence of knowledge to support the exclusion of individuals with an ownership or control interest in a sanctioned entity under section 1128(b)(15)(A)(i). There is no requirement to demonstrate knowledge of wrongdoing in order to exclude officers or managing employees under section 1128(b)(15)(ii). OIG published factors in 2011 that are used in determining whether to exercise discretion under this section. Those factors consider, among other things, the seriousness of the misconduct, the individual's role in the misconduct, and the individual's actions in response to the misconduct. Because the statute articulates a broad permissive exclusion authority to be implemented by OIG under section 1128(b)(15) of the Act, we continue to believe that our subregulatory guidance on this topic is the appropriate mechanism for applying OIG's authority under section 1128(b)(15), and that regulations limiting the statutory authority are not appropriate.

Section 1001.1201: Broadened Scope of a Permissive Exclusion Authority

Comment: Commenters suggested that the proposal to expand the authority to individuals who refer for furnishing or certify the need for services could result in providers being unfairly excluded. The commenters noted that as a referring provider an individual may not know whether a patient is a beneficiary of Federal health care programs.

Response: While we understand that referring physicians may not know whether a patient is a Federal health care program beneficiary, this regulatory change is consistent with the change made to the statutory exclusion authority by section 6406(c) of ACA. Further, the exclusion is for a failure to supply payment information when requested by Federal health care programs and does not require a physician's knowledge of how the referred or certified services might be paid.

Section 1001.1301: Exclusion for Failure To Grant Immediate Access

Comment: A commenter suggested that in order to protect those providing access to information, and their patients, OIG should implement privacy precautions that would apply to OIG and other agencies requesting electronic material under section 1128(b)(12) of the Act, and suggested that those precautions should mirror those found in the Health Insurance Portability and Accountability Act of 1996 (HIPAA) applicable to business associates. The commenter also suggested that OIG perform due diligence on other authorized entities that may be requesting information under section 1128(b)(12) of the Act, and that OIG require entities and agencies with access to the data to compensate individuals and entities who are harmed by any unauthorized access or use of the requested information.

Response: Although OIG is not subject to the HIPAA Privacy and Security Rules, existing Federal laws and directives provide similar protections for personally identifiable information (PII) in OIG's possession. OIG, like all Federal executive branch agencies, is required to protect PII from unauthorized disclosures by the Privacy Act and Office of Management and Budget (OMB) directives (for example, OMB Circular A–130 and OMB Memoranda M–06–15 and M–06–16 of June 23, 2006). Additionally, HHS has requirements for the protection of PII and for reporting security breaches that OIG must follow in addition to OIG's internal policies and procedures.

All Federal agencies, including OIG, are required by the Federal Information Security Management Act of 2002 (FISMA; 44 U.S.C. 3541 *et seq.*), and OMB Memoranda M–07–19 of May 22, 2007; M–07–19 of July 25, 2007; and M–06–19 of July 12, 2006, to report all security incidents (suspected or confirmed) involving PII to the U.S. Computer Emergency Readiness Team (US–CERT), located within the Department of Homeland Security.

Comment: A commenter asked OIG to clarify OIG's 24-hour deadline and what constitutes a compelling reason for failure to produce information within this deadline.

Response: We believe that the regulations regarding immediate access requests are sufficiently clear to put individuals and entities on notice that they must comply with requests within 24 hours. In addition, the statute gives OIG authority to determine whether a failure to produce requested information is the result of a compelling reason, and the regulations that are in place at section 1001.1301 reflect the broad intent of the statute.

Section 1001.1501: Default on Health Education Loans or Scholarship Obligations

Comment: Several commenters argued that OIG should not expand its exclusion authority to loan repayment programs given the spike in loan defaults since 2008, as documented by the Department of Education. One commenter stated that OIG should not include Indian Health Service (IHS) scholarship and loan repayment programs in the proposed expansion of the loan default regulations, because it will make it more difficult for IHS providers to retain qualified staff.

Response: Section 1128(b)(14) of the Act requires that IHS scholarships and loans be included in OIG's authority to exclude. Because IHS is a division of HHS, these are ''scholarship obligations or loans in connection with health professions education made or secured . . . by the Secretary.'' Exclusion has proven to be a successful remedy to incentivize individuals in loan default to repay the obligations owed to the Department. OIG's discretionary authority, including the change to include loan repayment programs, appropriately includes IHS scholarships and obligations.

Section 1001.1552 (Proposed as Section 1001.1751): Establishment of a New Permissive Exclusion Authority Pursuant to Section 1128(B)(16) of the Act

Comment: One commenter requested that we define ''material'' as ''having an actual influence on the decision to deny or approve applications for enrollment.''

Response: We continue to believe that our proposed definition of ''material,'' of ''having a natural tendency to influence or be capable of influencing the decision to approve or deny the request to participate or enroll as a provider of services or supplier under a Federal health care program,'' is reasonable. The broad statutory language does not limit the application of this authority to cases in which the false statement in fact influenced the decision to deny or approve enrollment. The proposed definition is also consistent with the statutory definition of ''material'' in the False Claims Act (31 U.S.C. 3729(b)), as applied with respect to the submission of false records and statements material to a false or fraudulent claim. In addition, the permissive nature of the authority allows OIG to consider all relevant facts and circumstances in each case before taking action.

Comment: One commenter asked OIG to restrict the sources it will consider to an enumerated list for transparency and clarity.

Response: The sources listed in the proposed regulation provide transparency for purposes of giving individuals and entities notice of the information OIG will consider. We believe it is also reasonable for OIG to retain the right to consider appropriate sources other than those listed, should they become relevant.

Comment: One commenter asked OIG to restrict prior wrongdoing considered in determining the length of exclusion to wrongdoing related to health care and to disregard wrongdoing that is in the distant past.

Response: The inclusion of this factor is consistent with OIG's considerations in other permissive exclusions (see §§ 1001.601, .701, .1601, and .1701). In applying this factor, OIG will weigh the relevance of conduct that is aged or is unrelated to health care as appropriate.

Comment: One commenter suggested that OIG require entities to develop safeguards to ensure quality, accuracy, and integrity, and to compensate individuals and entities harmed by the submission of inaccurate information.

Response: The addition of this statutory authority should deter entities and individuals from misstating or falsifying information on enrollment applications, and incentivize providers to create safeguards to prevent fraud, waste, and abuse. We do not believe it is within the scope of the statute for OIG to require entities to compensate individuals and entities harmed by the submission of inaccurate information.

Comment: One commenter stated that the terms ''knowingly'' and ''material'' are subjective and can be applied inconsistently. The commenter asked that OIG state an objective standard that won't penalize providers who are trying to accurately respond on enrollment documents but make ''simple documentation errors.''

Response: The words ''knowingly'' and ''material'' appear in the statute. We believe that the applicable definition adds clarity to the section. In addition, OIG will continue to evaluate the nature and circumstances of the conduct and exercise discretion in deciding whether to impose an exclusion. It is not OIG's intention to pursue exclusion under section 1128(b)(16) of the Act based on inadvertent errors and minor oversights.

Comment: One commenter asked OIG to eliminate its consideration of the actual or potential repercussions of the false statement from the list of factors used to determine the length of exclusion, and instead use that factor to determine whether to exclude. Another commenter suggested OIG should publish a more specific list of factors to be considered in determining the periods of exclusion and objected to the factor considering actual or potential repercussions of the false statement as too vague, potentially arbitrary, and failing to provide sufficient notice and guidance for physicians. The commenter suggested alternative factors: The nature of the false statement, omission, or misrepresentation; the provider type involved; the enrollment risk tier assigned to the provider; whether the Federal health care program would have accepted the enrollment if the false statement had not occurred; the amount of control the provider was able to exercise over a third party assisting in the enrollment process; and whether the provider furnished medically necessary services to Federal health care program beneficiaries.

Response: We continue to believe that the actual and potential impact of the false statement or omission is relevant to the length of the exclusion, and that the statutory language allows OIG to exclude under this permissive authority even where no repercussions resulted from a false statement. However, we agree that the proposed actual or potential repercussions factor is vague and that a more specific list of factors is appropriate. In the final rule, we replace the proposed factor ''[w]hat were the actual or potential repercussions of the false statement, omission, or misrepresentation of a material fact'' with two factors that more specifically describe what factors OIG will consider regarding the repercussions of the false statement. These factors in the final rule expand upon and clarify the proposed factor that the public commented upon. The factors are: The nature and circumstances of the false statement and whether and to what extent payments were requested or received from the Federal health care programs under the application, agreement, bid, or contract on which the false statement was made.

The nature and circumstances of the false statement are facts that OIG would necessarily consider in determining whether the conduct had actual or potential repercussions. Under this new factor, OIG will consider, among other things, how, when, why, to whom, and by whom the statement was made.

The second new factor, whether any payments were requested or received, similarly informs whether there were actual or potential repercussions of the conduct; if no payments were made, a shorter exclusion length may be appropriate.

However, we do not agree that the commenter's other suggested factors are

appropriate. We do not believe that the type of provider or the enrollment risk tier should be relevant to OIG's determination of untrustworthiness and, thus, length of exclusion. Instead, OIG may consider whether exclusion of the relevant type of provider would impact Federal health care program beneficiaries' access to care in determining whether an entity or individual should be excluded. The commenter also suggested that we add a factor considering whether the program would have enrolled the applicant if the false statement had not been made. This potential factor considers whether the false statement was material to the program's decision to accept the application; if the application had contained the truth (for example, that a person had a former name that was not reported on the application) and the program would have nonetheless granted enrollment, then the fact that was subject to the false statement was likely not material to the program's decision. Because section 1128(b)(16) of the Act contains a requirement of materiality to exclude, this factor is relevant to whether OIG should exclude under section 1128(b)(16), but not for how long.

We do not believe that the amount of control a provider had over a third party in the enrollment process is relevant to the length of the exclusion. Whether a provider had control over the actions of a third party engaged to assist in completing an enrollment application, agreement, bid, or contract to participate in a Federal health care program will inform the analysis of whether the false statement was made knowingly. OIG will carefully consider all the circumstances surrounding the false statement before taking action under section 1128(b)(16).

Lastly, we will not consider whether the provider furnished medically necessary services, because it is not relevant to the misconduct of making a false statement on an enrollment application. We instead focus on the egregiousness of the conduct, relevant past behavior, and the potential impact of the false statement.

We provide the following list of factors, which closely track and respond to comments we received.

(d) Length of exclusion. In determining the length of an exclusion imposed in accordance with this section, the OIG will consider the following factors:

(1) The nature and circumstances surrounding the false statement;

(2) Whether and to what extent payments were requested or received from the Federal health care program under the application, agreement, bid, or contract on which the false statement, omission, or misrepresentation was made; and

(3) Whether the individual or entity has a documented history of criminal, civil, or administrative wrongdoing.

Section 1001.1901(c): Scope and Effect of Exclusion

Comment: One commenter stated that OIG's proposal to allow Medicare to pay claims submitted by an enrollee for items or services furnished by an excluded person is inconsistent with 42 CFR 423.12(c)(5) and (6). Those regulations require Medicare Part D sponsors and pharmacy benefit managers to deny claims for items from a pharmacy when the prescribing physician does not have an active and valid individual prescriber NPI, including if the prescribing physician is excluded.

Response: The proposed change to section 1001.1901(c) was intended to update the regulations to conform with the current payment framework relevant to section 1862(e)(2) of the Act. We recognize that our proposal may not be operationally clear in light of the regulatory changes made under 42 CFR 423.12(c)(5) and (6). Therefore, we have not included the proposal in the final rule and intend to work with our partners in HHS to ensure that section 1862(e)(2) of the Act is implemented both on a regulatory and on an operational level.

Comment: One commenter urged OIG not to expand the exception in section 1001.1901(c) to parts C and D. It appears that the commenter opposed an expansion of OIG's exclusion authority to parts C and D, rather than the expansion of the ''pay the first claim'' rule to parts C and D. The commenter reasoned that the expansion would restrict access to care and expand exclusion authorities.

Response: The proposal was to expand a statutory *exception* to the general prohibition on payment for items or services ordered, prescribed, or provided by an excluded individual or entity, and would have expanded Part C and D beneficiary access to items and services where they had no reason to know that a provider had been excluded. Nevertheless, as described above, we have withdrawn the proposal because operation of the proposed changes would have been unclear given regulatory changes to part 423.

Comment: Several commenters suggested that excluded providers could assist program enrollees in submitting claims so that they could more easily submit claims either online or at the excluded provider's facility by adding the following language to section 1001.1901(c)(1): ''[i]n cases where the excluded individual or entity's submission of claims would invalidate payment for an emergency item or service or one that the enrollee cannot reasonably obtain from a non-excluded individual or entity, the provider may assist the enrollee in submitting the claim directly.''

Response: This comment is outside our proposal and is not responsive to our solicitation for comments on how to protect Part D enrollees who cannot fill a prescription due to the exclusion of a physician. We are concerned that allowing an excluded provider to assist in the submission of claims by an enrollee creates risk for the program, as the excluded provider is still involved in billing for its services. Additionally, we believe that an emergency situation would be better covered under section 1001.1901(c)(5)(i). The intent of section 1001.1901(c)(1) is to implement by regulation the statutory exception provided for in section 1862(e)(2) of the Act. There is already a statutory exception that covers emergency items and services in section 1862(e) of the Act and a regulatory framework for emergency situations under section 1001.1901(c)(5)(i). We have decided to withdraw our proposal at this time.

Comment: Several commenters suggested that the emergency exception to the prohibition on payment for items and services provided by an excluded individual be expanded outside emergency services and specifically that the payment prohibition exception apply to patients who have a geographic or financial inability to obtain medically necessary services from a non-excluded provider, or in other circumstances within the scope of a provider's professional judgment.

Response: This comment is outside our proposal and is not responsive to our solicitation for comments on how to protect Part D enrollees who cannot fill a prescription due to a prescriber's exclusion. We understand the commenters' point that there may be difficulties for certain individuals to obtain care from non-excluded providers, including geographic barriers. Section 1862(e) of the Act does not allow for additional exceptions to address such circumstances. OIG will continue to consider access to care when deciding whether to impose permissive exclusions and/or to grant waivers under sections 1128(c)(3)(B) of the Act and § 1001.1801, where appropriate.

Comment: One commenter suggested allowing the filling pharmacy to inform

the enrollee of the exclusion, fill the prescriptions presented, and bill Medicare Part D for those prescriptions on a one-time basis.

Response: Because the pharmacy would be the entity submitting the claim, we believe that this suggestion falls beyond the scope of OIG's regulatory authority and would be better suited for consideration in the relevant payment rules.

Comment: One commenter suggested requiring as a condition of participation that all providers and suppliers inform their patients of an exclusion and arrange for a transfer to a provider or supplier who is not excluded.

Response: OIG does not have the authority to regulate conditions of participation. Although we have withdrawn our proposal, we will continue to work with our partners in HHS to ensure that enrollees are protected in the event that they need to fill a prescription written by an excluded provider.

Section 1001.2001: Notice of Intent To Exclude—Opportunity To Present Oral Argument in Cases Under Section 1128(b)(16)

Comment: One commenter asked whether the Departmental Appeals Board (DAB) has capacity to hear appeals of exclusions under section 1128(b)(16) of the Act.

Response: The proposed opportunity is for an oral argument to an OIG official prior to exclusion, not an appeal before the DAB. OIG does have capacity to hear these oral arguments.

Comment: One commenter requested that OIG also provide an opportunity for oral argument if it proposes to exclude an individual or entity under section 1128(b)(7) of the Act. The commenter argued that OIG must make factual findings or determinations in section 1128(b)(7) cases that are similar to those under section 1128(b)(16) of the Act.

Response: While we agree that OIG must make factual determinations in cases under each of these sections, the processes under these sections are different. Under sections 1128(b)(6) and 1128(b)(16), the exclusion goes into effect 20 days after receipt of OIG's Notice of Exclusion, issued under section 1001.2002, and before a hearing before an administrative law judge (ALJ). In section 1128(b)(7) cases, if appealed, the exclusion does not go into effect until after a determination by an ALJ. In such cases, the respondent may present its arguments to OIG in writing after receiving the Notice of Intent to Exclude. We believe this, coupled with an ALJ hearing, gives sufficient opportunity for argument in section 1128(b)(7) cases. In practice, OIG also contacts potential subjects of section 1128(b)(7) exclusions, often through ''pre-demand letters'' or other means, to give defendants the opportunity to respond to OIG before formal proceedings are initiated.

Section 1001.2001: Notice of Intent To Exclude—Exception for Section 1128(b)(7) Cases

Comment: One commenter stated that the proposal to eliminate the notice of intent to exclude when OIG has determined to exclude an individual or entity under sections 1128(b)(7), 1842(j)(1)(D)(4), or 1842(k)(1) of the Act would deprive individuals of their right to receive notice and a meaningful opportunity to respond. The commenter also believed that this was particularly important considering OIG's reliance on U.S. mail to send these notices.

Response: We continue to believe that the notice of proposal to exclude provides a sufficient opportunity for individuals and entities to receive and respond to OIG's proposals to exclude under section 1128(b)(7) of the Act. In these cases, it is OIG's longstanding practice to contact and initiate discussions with potential subjects, often through a ''pre-demand letter,'' before initiating formal proceedings under part 1001. OIG's practices give potential respondents an opportunity to respond to OIG's concerns in advance of formal proceedings. The proposal also aligns OIG's processes under section 1128(b)(7) of the Act with those under the Civil Monetary Penalties Law (CMPL), which is referenced by section 1128(b)(7) of the Act. That law and its implementing regulations do not require a notice of intent before OIG initiates formal proceedings. The final rule is consistent with the process required under the CMPL.

We have made some clarifying changes in the final rule from the proposal. The regulations require that three notices be sent to potential defendants: a notice of intent to exclude under § 1001.2001, a notice of exclusion under § 1001.2002, and a notice of proposal to exclude under § 1001.2003. The final rule removes the requirements for both the notice of intent to exclude and the notice of exclusion.

This change eliminates an ambiguity as to when an exclusion goes into effect under these notice requirements. Specifically, § 1001.2003(a) states that an exclusion under section 1128(b)(7) of the Act goes into effect 60 days after the receipt of the notice of proposal to exclude unless appealed. Section 1001.2003(b)(1), however, also requires OIG to send a notice of exclusion as described in § 1001.2002 if the individual or entity does not request a hearing within 60 days. The regulations under § 1001.2002 indicate that an exclusion will go into effect 20 days from the date of the notice of exclusion. Although our longstanding policy has been to read these regulations together so that the exclusion, if it was not appealed, goes into effect on the earlier of the two dates, the final rule clarifies the language to state that a proposed exclusion under section 1128(b)(7) of the Act becomes effective, if not appealed, 60 days of the date of the Notice of Proposal to Exclude.

In addition, as we stated in the proposed rule, it has been and remains OIG's practice and policy to send notices under part 1001 by regular mail.

Section 1001.2006: Notice of Exclusion by HHS

Comment: One commenter noted that in the preamble OIG included a reference to a proposal to require indirect providers to notify their customers of their exclusion.

Response: This proposal was not contained in the proposed regulation text. The reference to the proposal was included in error. As a result, the proposed changes to the headings in sections 1001.2004, .2005, and .2006 are unnecessary. We withdraw the proposals to rename those headings.

Section 1001.3005: Withdrawal of Exclusion

Comment: One commenter approved of OIG's proposal to clarify that OIG will withdraw exclusions that are derivative of convictions that are reversed or vacated on appeal. Another commenter suggested that OIG should withhold exclusions until appeals are exhausted in order to protect individuals and entities from unjust financial, reputational, and career damage that the commenter believes would be caused by an exclusion that is later withdrawn after a conviction is reversed or vacated on appeal.

Response: Section 1128(a) of the Act requires OIG to exclude individuals and entities based on certain convictions, and section 1128(b) of the Act grants OIG the authority to exclude based on other convictions. Section 1128(i)(1) of the Act specifically includes in the definition of ''conviction'' situations in which an appeal of the conviction is pending. As a result of this definition of conviction, OIG does not have the authority to delay the imposition of exclusions until after appeals are exhausted. In addition, timely exclusions of convicted providers, regardless of pending appeals, best

protects Federal health care program beneficiaries from untrustworthy providers. Based on our experience of excluding thousands of individuals and entities based on criminal convictions, very few of these convictions are reversed or vacated on appeal. The existing and proposed regulation makes it clear that should a conviction be reversed or vacated on appeal, OIG will withdraw the exclusion. The effect of a withdrawal is that reinstatement will be retroactive to the effective date of the exclusion. If the individual or entity provided items or services to beneficiaries of Federal health care programs while the appeal was pending, payment may be made by Federal health care programs for items and services provided during that period of time in accordance with the payor's policies.

Comment: One commenter asked that HHS provide notice of withdrawn exclusions to State agencies, State licensing agencies, and the public.

Response: As a matter of policy, OIG provides notice of withdrawals and reinstatements to the same State agencies that were notified of the exclusion. We do not believe it is necessary, or required by the law, for us to include this policy in the regulations. OIG's notification to the public is by monthly update to OIG's List of Excluded Individuals and Entities, or LEIE. OIG also works with providers to communicate with payors when issues arise as the result of a reinstatement.

Section 1006.1: Testimonial Subpoena Authority in Section 1128 Cases

Comment: One commenter stated that OIG should only use the new testimonial subpoena authority where there is an objective, reasonable basis to believe that the conduct that has occurred warrants permissive exclusion.

Response: The proposed changes to section 1006.1 were made to reflect statutory changes made in section 6402(e) of ACA. As always, OIG intends to use its testimonial subpoena authority only when it has the authority to do so and when appropriate to gather facts relevant to a possible administrative action.

Comment: One commenter stated that OIG has sufficient subpoena authority and that there is no need to expand authority in this area.

Response: The change made to the regulations reflects a statutory change, so we have finalized the provision as proposed.

V. Regulatory Impact Statement

We have examined the impact of this final rule as required by Executive Order 12866, the Regulatory Flexibility Act (RFA) of 1980; the Unfunded Mandates Reform Act of 1995; and Executive Order 13132.

Executive Order Nos. 12866 and 13563

Executive Orders 12866 and 13563 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulations are necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects; distributive impacts; and equity). Executive Order 13563 is supplemental to and reaffirms the principles, structures, and definitions governing regulatory review as established in Executive Order 12866. A regulatory impact analysis must be prepared for major rules with economically significant effects, *i.e.,* $100 million or more in any given year. This is not a major rule as defined at 5 U.S.C. 804(2); it is not economically significant because it does not reach that economic threshold.

This final rule will implement new statutory provisions, including new exclusion authorities. It is also designed to clarify the intent of existing statutory requirements and promote transparency by publishing OIG policies. The vast majority of providers and Federal health care programs will be minimally impacted, if at all, by these revisions. The changes to the exclusion regulations will have little economic impact. On average, OIG excludes approximately 3,500 health care providers per year. Historically, fewer than 10 waivers of exclusion have been granted in any given year, and fewer than two formal proceedings for affirmative exclusion cases have been initiated. Thus, we believe that any aggregate economic effect of the exclusion regulatory provisions will be minimal. Additionally, over the past 3 fiscal years, OIG has on average returned approximately $16.6 million per year to the Medicare Trust Fund. This return falls under the $100 million threshold. Accordingly, we believe that the likely aggregate economic effect of these regulations will be significantly less than $100 million.

Regulatory Flexibility Act

The RFA and the Small Business Regulatory Enforcement and Fairness Act of 1996, which amended the RFA, require agencies to analyze options for regulatory relief of small businesses. For purposes of the RFA, small entities include small businesses, nonprofit organizations, and Government agencies. Most providers are considered small entities by having revenues of $5 million to $25 million or less in any 1 year. For purposes of the RFA, most physicians and suppliers are considered small entities.

The aggregate economic impact of the exclusion provisions on small entities will be minimal. The rule directly impacts small entities that may be excluded by clarifying how OIG determines exclusion lengths, waivers, reinstatement, and affirmative exclusion. It also codifies exclusion authorities added to section 1128 of the Act by MMA and ACA, adding clarity for members of the health care community regarding the scope of OIG's actions. Because the rule adds transparency to OIG's process and implements exclusion authorities designed to protect Federal health care programs and their beneficiaries from untrustworthy individuals and entities, we believe any resulting impact will be a positive one on the health care community. In summary, we have concluded that this final rule will not have a significant impact on the operations of a substantial number of small providers and that a regulatory flexibility analysis is not required for this rulemaking.

Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995, Public Law 104–4, requires that agencies assess anticipated costs and benefits before issuing any rule that may result in expenditures in any 1 year by State, local, or tribal governments, in the aggregate, or by the private sector, of $110 million or more. As indicated above, these proposed revisions comport with statutory amendments and clarify existing law. As a result, we believe that the regulations would not impose any mandates on State, local, or tribal governments or the private sector that will result in expenditures of $110 million or more (adjusted for inflation) per year and that a full analysis under the Unfunded Mandates Reform Act is not necessary.

Executive Order 13132

Executive Order 13132, Federalism, establishes certain requirements that an agency must meet when it promulgates a rule that imposes substantial direct requirements or costs on State and local governments, preempts State law, or otherwise has Federalism implications. In reviewing this rule under the threshold criteria of Executive Order 13132, we have determined that this final rule would not significantly affect the rights, roles, and responsibilities of State or local governments.

VI. Paperwork Reduction Act

These changes to parts 1000, 1001, 1002, and 1006 impose no new reporting requirements or collections of information. Therefore, a Paperwork Reduction Act review is not required.

List of Subjects

42 CFR Part 1000

Administrative practice and procedure, Grant programs—health, Health facilities, Health professions, Medicaid, Medicare.

42 CFR Part 1001

Administrative practice and procedure, Fraud, Grant programs—health, Health facilities, Health professions, Maternal and child health, Medicaid, Medicare.

42 CFR Part 1002

Fraud, Grant programs—health, Health facilities, Health professions, Medicaid, Reporting and recordkeeping.

42 CFR Part 1006

Administrative practice and procedure, Fraud, Investigations, Penalties.

Accordingly, 42 CFR parts 1000, 1001, 1002, and 1006 are amended as set forth below:

PART 1000—INTRODUCTION: GENERAL DEFINITIONS

■ 1. The authority citation for part 1000 continues to read as follows:

Authority: 42 U.S.C. 1320 and 1395hh.

■ 2. Section 1000.10 is amended by republishing the introductory text and by revising the definition of ''Directly'', ''Furnished'', ''Indirectly'', ''QIO'', and ''Secretary'' and by adding the definitions of ''ALJ'', ''Exclusion'', ''Federal health care program'', ''State'', and ''State health care program'' in alphabetical order to read as follows:

§ 1000.10 General definitions.

In this chapter, unless the context indicates otherwise—

* * * * *

ALJ means an Administrative Law Judge.

* * * * *

Directly, as used in the definition of ''furnished'' in this section, means the provision or supply of items and services by individuals or entities (including items and services provided or supplied by them but manufactured, ordered, or prescribed by another individual or entity) who request or receive payment from Medicare, Medicaid, or other Federal health care programs.

* * * * *

Exclusion means that items and services furnished, ordered, or prescribed by a specified individual or entity will not be reimbursed under Medicare, Medicaid, or any other Federal health care programs until the individual or entity is reinstated by OIG.

Federal health care program means any plan or program that provides health benefits, whether directly, through insurance, or otherwise, which is funded directly, in whole or in part, by the United States Government (other than the Federal Employees Health Benefits Program), or any State health care program as defined in this section.

* * * * *

Furnished refers to items or services provided or supplied, directly or indirectly, by any individual or entity.

* * * * *

Indirectly, as used in the definition of ''furnished'' in this section, means the provision or supply of items and services manufactured, distributed, supplied, or otherwise provided by individuals or entities that do not directly request or receive payment from Medicare, Medicaid, or other Federal health care programs, but that provide items and services to providers, practitioners, or suppliers who request or receive payment from these programs for such items or services.

* * * * *

QIO means a quality improvement organization as that term is used in section 1152 of the Act (42 U.S.C. 1320c–1) and its implementing regulations.

Secretary means the Secretary of the Department or his or her designees.

* * * * *

State includes the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands.

State health care program means:

(1) A State plan approved under Title XIX of the Act (Medicaid),

(2) Any program receiving funds under Title V of the Act or from an allotment to a State under such title (Maternal and Child Health Services Block Grant program),

(3) Any program receiving funds under subtitle A of Title XX of the Act or from any allotment to a State under such subtitle (Block Grants to States for Social Services), or

(4) A State child health plan approved under Title XXI (Children's Health Insurance Program).

* * * * *

§§ 1000.20 and 1000.30 [Removed]

■ 3. Sections 1000.20 and 1000.30 are removed.

PART 1001—PROGRAM INTEGRITY—MEDICARE AND STATE HEALTH CARE PROGRAMS

■ 4. The authority citation for part 1001 is revised to read as follows:

Authority: 42 U.S.C. 1302; 1320a–7; 1320a–7b; 1395u(j); 1395u(k); 1395w–104(e)(6), 1395y(d); 1395y(e); 1395cc(b)(2)(D), (E), and (F); 1395hh; 1842(j)(1)(D)(iv), 1842(k)(1), and sec. 2455, Pub. L. 103–355, 108 Stat. 3327 (31 U.S.C. 6101 note).

■ 5. Section 1001.2 is amended by removing the definitions of ''Exclusion'', ''Federal health care program'', ''OIG'', ''QIO'', and ''State health care program'', and by adding introductory text and the definitions of ''Agent'', ''Immediate family member'', ''Indirect ownership interest'', ''Managing employee'', ''Member of household'', ''Ownership interest'', and ''Ownership or control interest'' in alphabetical order to read as follows:

§ 1001.2 Definitions.

For purposes of this part:

Agent means any person who has express or implied authority to obligate or act on behalf of an entity.

* * * * *

Immediate family member means a person's husband or wife; natural or adoptive parent; child or sibling; stepparent, stepchild, stepbrother, or stepsister; father-, mother-, daughter-, son-, brother- or sister-in-law; grandparent or grandchild; or spouse of a grandparent or grandchild.

* * * * *

Indirect ownership interest includes an ownership interest through any other entities that ultimately have an ownership interest in the entity in issue. (For example, an individual has a 10-percent ownership interest in the entity at issue if he or she has a 20-percent ownership interest in a corporation that wholly owns a subsidiary that is a 50-percent owner of the entity in issue.)

Managing employee means an individual (including a general manager, business manager, administrator, or director) who exercises operational or managerial control over the entity or part thereof or directly or indirectly conducts the day-to-day operations of the entity or part thereof.

Member of household means, with respect to a person, any individual with whom the person is sharing a common abode as part of a single-family unit, including domestic employees and

others who live together as a family unit. A roomer or boarder is not considered a member of household.

Ownership interest means an interest in:

(1) The capital, the stock, or the profits of the entity, or

(2) Any mortgage, deed, trust or note, or other obligation secured in whole or in part by the property or assets of the entity.

Ownership or control interest means, with respect to an entity, a person who

(1) Has a direct or an indirect ownership interest (or any combination thereof) of 5 percent or more in the entity;

(2) Is the owner of a whole or part interest in any mortgage, deed of trust, note, or other obligation secured (in whole or in part) by the entity or any of the property assets thereof, if such interest is equal to or exceeds 5 percent of the total property and assets of the entity;

(3) Is an officer or a director of the entity;

(4) Is a partner in the entity if the entity is organized as a partnership;

(5) Is an agent of the entity; or

(6) Is a managing employee of the entity.

* * * * *

■ 6. Section 1001.101 is amended by revising paragraphs (d)(1) and (2) to read as follows:

§ 1001.101 Basis for liability.

* * * * *

(d) * * *

(1) Is, or has ever been, a health care practitioner, provider, or supplier or furnished or furnishes items or services;

(2) Holds, or has held, a direct or an indirect ownership or control interest in an entity that furnished or furnishes items or services or is, or has ever been, an officer, director, agent, or managing employee of such an entity; or

* * * * *

■ 7. Section 1001.102 is amended as follows:

■ a. Revise paragraph (b)(1);

■ b. Remove paragraph (b)(7);

■ c. Redesignate paragraphs (b)(8) and (9) as paragraphs (b)(7) and (8);

■ d. Revise newly designated paragraphs (b)(7) and (8);

■ e. Add new paragraph (b)(9);

■ f. Revise paragraph (c)(1); and

■ g. Revise paragraph (d).

The revisions to read as follows:

§ 1001.102 Length of exclusion.

* * * * *

(b) * * *

(1) The acts resulting in the conviction, or similar acts, caused, or were intended to cause, a financial loss to a government agency or program or to one or more other entities of $50,000 or more. (The entire amount of financial loss to such government agencies or programs or to other entities, including any amounts resulting from similar acts not adjudicated, will be considered regardless of whether full or partial restitution has been made);

* * * * *

(7) The individual or entity has previously been convicted of a criminal offense involving the same or similar circumstances;

(8) The individual or entity has been convicted of other offenses besides those that formed the basis for the exclusion; or

(9) The individual or entity has been the subject of any other adverse action by any Federal, State or local government agency or board if the adverse action is based on the same set of circumstances that serves as the basis for the imposition of the exclusion.

(c) * * *

(1) In the case of an exclusion under § 1001.101(a), whether the individual or entity was convicted of three or fewer misdemeanor offenses and the entire amount of financial loss (both actual loss and intended loss) to Medicare or any other Federal, State, or local governmental health care program due to the acts that resulted in the conviction, and similar acts, is less than $5,000;

* * * * *

(d) In the case of an exclusion under this subpart, based on a conviction occurring on or after August 5, 1997, an exclusion will be—

(1) For not less than 10 years if the individual has been convicted on one previous occasion of one or more offenses for which an exclusion may be effected under section 1128(a) of the Act. (The aggravating and mitigating factors in paragraphs (b) and (c) of this section can be used to impose a period of time in excess of the 10-year mandatory exclusion); or

(2) Permanent if the individual has been convicted on two or more previous occasions of one or more offenses for which an exclusion may be effected under section 1128(a) of the Act.

■ 8. Section 1001.201 is amended as follows:

■ a. Revise paragraphs (b)(2)(i) and (vi);

■ b. Add paragraph (b)(2)(vii); and

■ c. Revise paragraphs (b)(3)(i) and (ii).

The revisions and addition to read as follows:

§ 1001.201 Conviction relating to program or health care fraud.

* * * * *

(b) * * *

(2) * * *

(i) The acts resulting in the conviction, or similar acts, caused or reasonably could have been expected to cause, a financial loss of $50,000 or more to a government agency or program or to one or more other entities or had a significant financial impact on program beneficiaries or other individuals. (The entire amount of financial loss will be considered, including any amounts resulting from similar acts not adjudicated, regardless of whether full or partial restitution has been made);

* * * * *

(vi) Whether the individual or entity has been convicted of other offenses besides those that formed the basis for the exclusion; or

(vii) Whether the individual or entity has been the subject of any other adverse action by any Federal, State, or local government agency or board if the adverse action is based on the same set of circumstances that serves as the basis for the imposition of the exclusion.

(3) * * *

(i) The individual or entity was convicted of three or fewer offenses, and the entire amount of financial loss (both actual loss and reasonably expected loss) to a government agency or program or to other individuals or entities due to the acts that resulted in the conviction and similar acts is less than $5,000;

(ii) The record in the criminal proceedings, including sentencing documents, demonstrates that the court determined that the individual had a mental, emotional, or physical condition, before or during the commission of the offense, that reduced the individual's culpability; or

* * * * *

■ 9. Section 1001.301 is amended as follows:

■ a. Revise the section heading and paragraph (a);

■ b. Revise paragraphs (b)(1) and (b)(2)(i), (ii), and (vi);

■ c. Add paragraphs (b)(2)(vii) and (viii); and

■ d. Revise paragraph (b)(3)(i).

The revisions and additions to read as follows:

§ 1001.301 Conviction relating to obstruction of an investigation or audit.

(a) *Circumstance for exclusion.* The OIG may exclude an individual or entity that has been convicted, under Federal or State law, in connection with the interference with or obstruction of any investigation or audit related to—

(1) Any offense described in §§ 1001.101 or 1001.201; or

(2) The use of funds received, directly or indirectly, from any Federal health care program.

(b) *Length of exclusion.* (1) An exclusion imposed in accordance with this section will be for a period of three years, unless aggravating or mitigating factors listed in paragraphs (b)(2) and (3) of this section form the basis for lengthening or shortening that period.

(2) * * *

(i) The interference or obstruction caused the expenditure of significant additional time or resources;

(ii) The interference or obstruction had a significant adverse physical or mental impact on one or more program beneficiaries or other individuals;

* * * * *

(vi) Whether the individual or entity has been convicted of other offenses besides those that formed the basis for the exclusion;

(vii) Whether the individual or entity has been the subject of any other adverse action by any Federal, State or local government agency or board if the adverse action is based on the same set of circumstances that serves as the basis for the imposition of the exclusion; or

(viii) The acts resulting in the conviction, or similar acts, caused, or reasonably could have been expected to cause, a financial loss of $50,000 or more to a government agency or program or to one or more other entities or had a significant financial impact on program beneficiaries or other individuals. (The entire amount of financial loss or intended loss identified in the investigation or audit will be considered, including any amounts resulting from similar acts not adjudicated, regardless of whether full or partial restitution has been made).

(3) * * *

(i) The record of the criminal proceedings, including sentencing documents, demonstrates that the court determined that the individual had a mental, emotional, or physical condition, before or during the commission of the offense, that reduced the individual's culpability; or

* * * * *

■ 10. Section 1001.401 is amended as follows:

■ a. Revise paragraphs (a) introductory text, (a)(1) and (2);

■ b. Republish the heading of paragraph (c);

■ c. Revise paragraphs (c)(1), (c)(2) introductory text, (c)(2)(iv), and (v);

■ d. Add paragraph (c)(2)(vi); and

■ e. Revise paragraph (c)(3).

The revisions and addition to read as follows:

§ 1001.401 Conviction relating to controlled substances.

(a) *Circumstance for exclusion.* The OIG may exclude an individual or entity convicted under Federal or State law of a misdemeanor relating to the unlawful manufacture, distribution, prescription, or dispensing of a controlled substance, as defined under Federal or State law. This section applies to any individual or entity that—

(1) Is, or has ever been, a health care practitioner, provider, or supplier or furnished or furnishes items or services;

(2) Holds, or held, a direct or indirect ownership or control interest in an entity that furnished or furnishes items or services or is or has ever been an officer, director, agent, or managing employee of such an entity; or

* * * * *

(c) *Length of exclusion.* (1) An exclusion imposed in accordance with this section will be for a period of 3 years, unless aggravating or mitigating factors listed in paragraphs (c)(2) and (3) of this section form a basis for lengthening or shortening that period.

(2) Any of the following factors may be considered to be aggravating and to be a basis for lengthening the period of exclusion—

* * * * *

(iv) Whether the individual or entity has a documented history of criminal, civil, or administrative wrongdoing;

(v) Whether the individual or entity has been convicted of other offenses besides those that formed the basis for the exclusion; or

(vi) Whether the individual or entity has been the subject of any other adverse action by any Federal, State, or local government agency or board if the adverse action is based on the same set of circumstances that serves as the basis for the imposition of the exclusion.

(3) Only the following factor may be considered to be mitigating and to be a basis for shortening the period of exclusion: The individual's or entity's cooperation with Federal or State officials resulted in—

(i) Others being convicted or excluded from Medicare, Medicaid, and any other Federal health care program;

(ii) Additional cases being investigated or reports being issued by the appropriate law enforcement agency identifying program vulnerabilities or weaknesses; or

(iii) The imposition of a civil money penalty against others.

■ 11. Section 1001.501 is amended by revising paragraphs (b)(1), (3), and (4); and by adding paragraph (c) to read as follows:

§ 1001.501 License revocation or suspension.

* * * * *

(b) * * *

(1) Except as provided in paragraph (b)(2) of this section, an exclusion imposed in accordance with this section will not be for a period of time less than the period during which an individual's or entity's license is revoked, suspended, or otherwise not in effect as a result of, or in connection with, a State licensing agency action.

* * * * *

(3) Only if any of the aggravating factors listed in paragraph (b)(2) of this section justifies a longer exclusion may a mitigating factor be considered as a basis for reducing the period of exclusion to a period not less than that set forth in paragraph (b)(1) of this section. Only the following factor may be considered mitigating: The individual's or entity's cooperation with a State licensing authority resulted in—

(i) The sanctioning of other individuals or entities, or

(ii) Additional cases being investigated or reports being issued by the appropriate law enforcement agency identifying program vulnerabilities or weaknesses.

(4) When an individual or entity has been excluded under this section, the OIG will consider a request for reinstatement in accordance with § 1001.3001 if:

(i) The individual or entity obtains the license in the State where the license was originally revoked, suspended, surrendered, or otherwise lost or

(ii) The individual meets the conditions for early reinstatement set forth in paragraph (c) of this section.

(c) *Consideration of early reinstatement.* (1) If an individual or entity that is excluded in accordance with this section fully and accurately discloses the circumstances surrounding the action that formed the basis for the exclusion to a licensing authority of a different State or to a different licensing authority in the same State and that licensing authority grants the individual or entity a new health care license or has decided to take no adverse action as to a currently held health care license, the OIG will consider a request for early reinstatement. The OIG will consider the following factors in determining whether a request for early reinstatement under this paragraph (c)(1) will be granted:

(i) The circumstances that formed the basis for the exclusion;

(ii) Whether the second licensing authority is in a state that is not the individual's primary place of practice;

(iii) Evidence that the second licensing authority was aware of the circumstances surrounding the action that formed the basis for the exclusion;

(iv) Whether the individual has demonstrated that he or she has satisfactorily resolved any underlying problem that caused or contributed to the basis for the initial licensing action;

(v) The benefits to the Federal health care programs and program beneficiaries of early reinstatement;

(vi) The risks to the Federal health care programs and program beneficiaries of early reinstatement;

(vii) Any additional or pending license actions in any State;

(viii) Any ongoing investigations involving the individual; and

(ix) All the factors set forth in § 1001.3002(b).

(2) If an exclusion has been imposed under this section and the individual does not have a valid health care license of any kind in any State, that individual may request the OIG to consider whether he or she may be eligible for early reinstatement. The OIG will consider the following factors in determining whether a request for early reinstatement under this paragraph (c)(2) will be granted:

(i) The length of time the individual has been excluded. The OIG will apply a presumption against early reinstatement under paragraph (c)(2) of this section if the person has been excluded for less than 3 years; however, if the revocation or suspension on which the exclusion is based was for a set period longer than 3 years, the presumption against early reinstatement will be coterminous with the period set by the licensing board;

(ii) The circumstances that formed the basis for the exclusion;

(iii) Whether the individual has demonstrated that he or she has satisfactorily resolved any underlying problem that caused or contributed to the basis for the initial licensing action;

(iv) The benefits to the Federal health care programs and program beneficiaries of early reinstatement;

(v) The risks to the Federal health care programs and program beneficiaries of early reinstatement;

(vi) Any additional or pending license actions in any State;

(vii) Any ongoing investigations involving the individual; and

(viii) All the factors set forth in § 1001.3002(b).

(3) Notwithstanding paragraphs (c)(1) and (2) of this section, if an individual's license revocation or suspension was for reasons related to patient abuse or neglect, the OIG will not consider an application for early reinstatement.

(4) Except for § 1001.3002(a)(1)(i), all the provisions of Subpart F (§§ 1001.3001 through 1001.3005) apply to early reinstatements under this section.

■ 12. Section 1001.601 is amended by revising paragraphs (b)(3) and (4) to read as follows:

§ 1001.601 Exclusion or suspension under a Federal or State health care program.

* * * * *

(b) * * *

(3) Only if any of the aggravating factors listed in paragraph (b)(2) of this section justifies a longer exclusion may a mitigating factor be considered as a basis for reducing the period of exclusion to a period not less than that set forth in paragraph (b)(1) of this section. Only the following factor may be considered mitigating: The individual's or entity's cooperation with Federal or State officials resulted in—

(i) The sanctioning of other individuals or entities, or

(ii) Additional cases being investigated or reports being issued by the appropriate law enforcement agency identifying program vulnerabilities or weaknesses.

(4) If the individual or entity is eligible to apply for reinstatement in accordance with § 1001.3001 and the sole reason why the State or Federal health care program denied reinstatement to that program is the existing exclusion imposed by the OIG as a result of the original State or Federal health care program action, the OIG will consider a request for reinstatement.

■ 13. Section 1001.701 is amended by republishing the headings for paragraphs (a) and (c); and by revising paragraphs (d)(2)(iv), and (3) to read as follows:

§ 1001.701 Excessive claims or furnishing of unnecessary or substandard items and services.

(a) *Circumstance for exclusion.* * * *

* * * * *

(c) *Exceptions.*

* * * * *

(d) * * *

(2) * * *

(iv) The violation resulted in financial loss to Medicare, Medicaid, or any other Federal health care program of $15,000 or more; or

* * * * *

(3) Only the following factor may be considered mitigating and a basis for reducing the period of exclusion: Whether there were few violations and they occurred over a short period of time.

■ 14. Section 1001.801 is amended as follows:

■ a. Revise the paragraph (a) introductory text;

■ b. Remove paragraph (c)(3)(ii); and

■ c. Redesignate paragraph (c)(3)(iii) as new paragraph (c)(3)(ii).

The revision to read as follows:

§ 1001.801 Failure of HMOs and CMPs to furnish medically necessary items and services.

(a) *Circumstances for exclusion.* The OIG may exclude an entity—

* * * * *

■ 15. Section 1001.901 is amended by adding paragraph (c) to read as follows:

§ 1001.901 False or improper claims.

* * * * *

(c) *Limitations.* The OIG may not impose an exclusion under this section more than 10 years after the date when an act which is described in section 1128A of the Act occurred.

■ 16. Section 1001.951 is amended by revising paragraph (b)(2) and adding paragraph (c) to read as follows:

§ 1001.951 Fraud and kickback and other prohibited activities.

* * * * *

(b) * * *

(2) It will be considered a mitigating factor if—

(i) The individual had a documented mental, emotional, or physical condition before or during the commission of the prohibited act(s) that reduced the individual's culpability for the acts in question; or

(ii) The individual's or entity's cooperation with Federal or State officials resulted in the—

(A) Sanctioning of other individuals or entities, or

(B) Imposition of a civil money penalty against others.

(c) *Limitations.* The OIG may not impose an exclusion under this section more than 10 years after the date when an act which is described in section 1128B(b) of the Act occurred.

■ 17. Section 1001.1001 is amended by revising paragraph (a) to read as follows:

§ 1001.1001 Exclusion of entities owned or controlled by a sanctioned person.

(a) *Circumstance for exclusion.* The OIG may exclude an entity:

(1) If a person with a relationship with such entity—

(i) Has been convicted of a criminal offense as described in sections 1128(a) and 1128(b)(1), (2), or (3) of the Act;

(ii) Has had civil money penalties or assessments imposed under section 1128A of the Act; or

(iii) Has been excluded from participation in Medicare or any State health care program, and

(2) Such a person has a direct or indirect ownership or control interest in the entity, or formerly held an ownership or control interest in the entity but no longer holds an ownership or control interest because of a transfer of the interest to an immediate family member or a member of the person's household in anticipation of or following a conviction, imposition of a civil money penalty or assessment under section 1128A of the Act, or imposition of an exclusion.

* * * * *

§ 1001.1051 [Redesignated § 1001.1551]

■ 18. Section 1001.1051 is redesignated as § 1001.1551.

■ 19. Section 1001.1101 is amended as follows:

■ a. Revise paragraph (b)(4);

■ b. Remove paragraph (b)(5); and

■ c. Redesignate paragraph (b)(6) as new paragraph (b)(5).

The revisions read as follows:

§ 1001.1101 Failure to disclose certain information.

* * * * *

(b) * * *

(4) Any other facts that bear on the nature or seriousness of the conduct; and

* * * * *

■ 20. Section 1001.1201 is amended as follows:

■ a. Revise paragraph (a) introductory text;

■ b. Revise paragraphs (b)(3) and (4); and

■ c. Remove paragraph (b)(5).

The revisions to read as follows:

§ 1001.1201 Failure to provide payment information.

(a) *Circumstance for exclusion.* The OIG may exclude any individual or entity that furnishes, orders, refers for furnishing, or certifies the need for items or services for which payment may be made under Medicare or any of the State health care programs and that—

* * * * *

(b) * * *

(3) The amount of the payments at issue; and

(4) Whether the individual or entity has a documented history of criminal, civil, or administrative wrongdoing. (The lack of any prior record is to be considered neutral).

■ 21. Section 1001.1301 is amended by revising paragraphs (a)(1)(iii) and (a)(3) to read as follows:

§ 1001.1301 Failure to grant immediate access.

(a) * * *

(1) * * *

(iii) The OIG for reviewing records, documents, and other material or data in any medium (including electronically stored information and any tangible thing) necessary to the OIG's statutory functions; or

* * * * *

(3) For purposes of paragraphs (a)(1)(iii) and (a)(1)(iv) of this section, the term—

Failure to grant immediate access means—

(i) The failure to produce or make available for inspection and copying the requested material upon reasonable request, or to provide a compelling reason why they cannot be produced, within 24 hours of such request, except when the OIG or State Medicaid Fraud Control Unit (MFCU) reasonably believes that the requested material is about to be altered or destroyed, or

(ii) When the OIG or MFCU has reason to believe that the requested material is about to be altered or destroyed, the failure to provide access to the requested material at the time the request is made.

Reasonable request means a written request, signed by a designated representative of the OIG or MFCU and made by a properly identified agent of the OIG or an MFCU during reasonable business hours, where there is information to suggest that the person has violated statutory or regulatory requirements under Titles V, XI, XVIII, XIX, or XX of the Act. The request will include a statement of the authority for the request, the person's rights in responding to the request, the definition of ''reasonable request'' and ''failure to grant immediate access'' under part 1001, and the effective date, length, and scope and effect of the exclusion that would be imposed for failure to comply with the request, and the earliest date that a request for reinstatement would be considered.

* * * * *

■ 22. Section 1001.1501 is amended by revising paragraphs (a)(1), (a)(2), and (b) to read as follows:

§ 1001.1501 Default of health education loan or scholarship obligations.

(a) * * * (1) Except as provided in paragraph (a)(4) of this section, the OIG may exclude any individual that the administrator of the health education loan, scholarship, or loan repayment program determines is in default on repayments of scholarship obligations or loans, or the obligations of any loan repayment program, in connection with health professions education made or secured in whole or in part by the Secretary.

(2) Before imposing an exclusion in accordance with paragraph (a)(1) of this section, the OIG must determine that the administrator of the health education loan, scholarship, or loan repayment program has taken all reasonable administrative steps to secure repayment of the loans or obligations. When an individual has been offered a Medicare offset arrangement as required by section 1892 of the Act, the OIG will find that all reasonable steps have been taken.

* * * * *

(b) *Length of exclusion.* The individual will be excluded until the administrator of the health education loan, scholarship, or loan repayment program notifies the OIG that the default has been cured or that there is no longer an outstanding debt. Upon such notice, the OIG will inform the individual of his or her right to apply for reinstatement.

■ 23. Newly designated § 1001.1551 is amended by revising paragraph (c)(1) to read as follows:

§ 1001.1551 Exclusion of individuals with ownership or control interest in sanctioned entities.

* * * * *

(c) * * *

(1) If the entity has been excluded, the length of the individual's exclusion will be for the same period as that of the sanctioned entity.

* * * * *

■ 24. Section 1001.1552 is added to subpart C to read as follows:

§ 1001.1552 Making false statements or misrepresentation of material facts.

(a) *Circumstance for exclusion.* The OIG may exclude any individual or entity that it determines has knowingly made or caused to be made any false statement, omission, or misrepresentation of a material fact in any application, agreement, bid, or contract to participate or enroll as a provider of services or supplier under a Federal health care program, including Medicare Advantage organizations under Part C of Medicare, prescription drug plan sponsors under Part D of Medicare, Medicaid managed care organizations, and entities that apply to participate as providers of services or suppliers in such managed care organizations and such plans.

(b) *Definition of ''Material''.* For purposes of this section, the term ''material'' means having a natural tendency to influence or be capable of

influencing the decision to approve or deny the request to participate or enroll as a provider of services or supplier under a Federal health care program.

(c) *Sources.* The OIG's determination under paragraph (a) of this section will be made on the basis of information from the following sources:

(1) CMS;

(2) Medicaid State agencies;

(3) Fiscal agents or contractors or private insurance companies;

(4) Law enforcement agencies;

(5) State or local licensing or certification authorities;

(6) State or local professional societies; or

(7) Any other sources deemed appropriate by the OIG.

(d) *Length of exclusion.* In determining the length of an exclusion imposed in accordance with this section, the OIG will consider the following factors:

(1) The nature and circumstances surrounding the false statement;

(2) Whether and to what extent payments were requested or received from the Federal health care program under the application, agreement, bid, or contract on which the false statement, omission, or misrepresentation was made; and

(3) Whether the individual or entity has a documented history of criminal, civil, or administrative wrongdoing.

■ 25. Section 1001.1601 is amended as follows:

■ A. Republish paragraph (b)(1) introductory text;

■ B. Revise paragraphs (b)(1)(iii) and (iv); and

■ C. Remove paragraph (b)(1)(v).

The republications and revisions to read as follows:

§ 1001.1601 Violations of the limitations on physician charges.

* * * * *

(b) * * *

(1) In determining the length of an exclusion in accordance with this section, the OIG will consider the following factors:

* * * * *

(iii) The amount of the charges that were in excess of the maximum allowable charges; and

(iv) Whether the physician has a documented history of criminal, civil, or administrative wrongdoing (the lack of any prior record is to be considered neutral).

* * * * *

■ 26. Section 1001.1701 is amended as follows:

■ A. Republish paragraph (c)(1) introductory text;

■ B. Revise paragraphs (c)(1)(iv) and (v); and

■ C. Remove paragraph (c)(1)(vi).

The republications and revisions to read as follows:

§ 1001.1701 Billing for services of assistant at surgery during cataract operations.

* * * * *

(c) * * *

(1) In determining the length of an exclusion in accordance with this section, the OIG will consider the following factors:

* * * * *

(iv) Whether approval for the use of an assistant was requested from the QIO or carrier; and

(v) Whether the physician has a documented history of criminal, civil, or administrative wrongdoing (the lack of any prior record is to be considered neutral).

* * * * *

■ 27. Section 1001.1801 is amended by revising paragraphs (a) and (b) and removing paragraph (g) as follows:

§ 1001.1801 Waivers of exclusions.

(a) The OIG has the authority to grant or deny a request from the administrator of a Federal health care program (as defined in section 1128B(f) of the Act) that an exclusion from that program be waived with respect to an individual or entity, except that no waiver may be granted with respect to an exclusion under § 1001.101(b). The request must be in writing and from an individual directly responsible for administering the Federal health care program.

(b) With respect to exclusions under § 1001.101(a), (c), or (d), a request from a Federal health care program for a waiver of the exclusion will be considered only if the Federal health care program administrator determines that—

(1) The individual or entity is the sole community physician or the sole source of essential specialized services in a community; and

(2) The exclusion would impose a hardship on beneficiaries (as defined in section 1128A(i)(5) of the Act) of that program.

* * * * *

■ 28. Section 1001.1901 is amended by revising paragraph (b) to read as follows:

§ 1001.1901 Scope and effect of exclusion.

* * * * *

(b) *Effect of exclusion on excluded individuals and entities.* (1) Unless and until an individual or entity is reinstated into the Medicare, Medicaid, and other Federal health care programs in accordance with subpart F of this part, no payment will be made by Medicare, including Medicare Advantage and Prescription Drug Plans, Medicaid, or any other Federal health care program for any item or service furnished, on or after the effective date specified in the notice—

(i) By an excluded individual or entity; or

(ii) At the medical direction or on the prescription of a physician or an authorized individual who is excluded when the person furnishing such item or service knew, or had reason to know, of the exclusion.

(2) This section applies regardless of whether an individual or entity has obtained a program provider number or equivalent, either as an individual or as a member of a group, prior to being reinstated.

(3) An excluded individual or entity may not take assignment of an enrollee's claim on or after the effective date of exclusion.

(4) An excluded individual or entity that submits, or causes to be submitted, claims for items or services furnished during the exclusion period is subject to civil money penalty liability under section 1128A(a)(1)(D) of the Act and criminal liability under section 1128B(a)(3) of the Act and other provisions. In addition, submitting claims, or causing claims to be submitted or payments to be made, for items or services furnished, ordered, or prescribed, including administrative and management services or salary, may serve as the basis for denying reinstatement to the programs.

* * * * *

■ 29. Section 1001.2001 is amended by revising paragraphs (b) and (c) to read as follows:

§ 1001.2001 Notice of intent to exclude.

* * * * *

(b) If the OIG intends to exclude an individual or entity under the provisions of § 1001.701, § 1001.801, or § 1001.1552, in conjunction with the submission of documentary evidence and written argument, an individual or entity may request an opportunity to present oral argument to an OIG official.

(c) *Exception.* If the OIG intends to exclude an individual or entity under the provisions of § 1001.901, § 1001.951, § 1001.1301, § 1001.1401, § 1001.1601, or § 1001.1701, paragraph (a) of this section will not apply.

* * * * *

■ 30. Section 1001.2003 is amended by revising paragraphs (a) and (b) to read as follows:

§ 1001.2003 Notice of proposal to exclude.

(a) Except as provided in paragraph (c) of this section, if the OIG proposes to exclude an individual or entity in accordance with § 1001.901, § 1001.951, § 1001.1601, or § 1001.1701, it will send a written notice of proposal to exclude to the affected individual or entity. The written notice will provide the same information set forth in § 1001.2002(c). If an entity has a provider agreement under section 1866 of the Act, and the OIG also proposes to terminate that agreement in accordance with section 1866(b)(2)(C) of the Act, the notice will so indicate. The exclusion will be effective 60 days after the receipt of the notice (as defined in § 1005.2 of this chapter) unless, within that period, the individual or entity files a written request for a hearing in accordance with part 1005 of this chapter. Such request must set forth—

(1) The specific issues or statements in the notice with which the individual or entity disagrees;

(2) The basis for that disagreement;

(3) The defenses on which reliance is intended;

(4) Any reasons why the proposed length of exclusion should be modified; and

(5) Reasons why the health or safety of individuals receiving services under Medicare or any of the State health care programs does not warrant the exclusion going into effect prior to the completion of an administrative law judge (ALJ) proceeding in accordance with part 1005 of this chapter.

(b) If the individual or entity makes a timely written request for a hearing and the OIG has determined that the health or safety of individuals receiving services under Medicare or any of the State health care programs does not warrant immediate exclusion, an exclusion will only go into effect as of the date of the ALJ's decision, if the ALJ upholds the decision to exclude.

* * * * *

■ 31. Section 1001.3001 is amended by revising paragraphs (a)(1) and (2) and by redesignating paragraphs (a)(3), (4), and (b) as paragraphs (b), (c), and (d), respectively, to read as follows:

§ 1001.3001 Timing and method of request for reinstatement.

(a)(1) Except as provided in paragraph (a)(2) of this section or in § 1001.501(b)(2), § 1001.501(c), or § 1001.601(b)(4), an excluded individual or entity (other than those excluded in accordance with § 1001.1001 and § 1001.1501) may submit a written request for reinstatement to the OIG only after the date specified in the notice of exclusion. Obtaining a program provider number or equivalent does not reinstate eligibility.

(2) An entity excluded under § 1001.1001 may apply for reinstatement prior to the date specified in the notice of exclusion by submitting a written request for reinstatement that includes documentation demonstrating that the standards set forth in § 1001.3002(c) have been met.

* * * * *

■ 32. Section 1001.3002 is amended by revising paragraphs (a), (b), and (c) introductory text to read as follows:

§ 1001.3002 Basis for reinstatement.

(a) The OIG will authorize reinstatement if it determines that—

(1) The period of exclusion has expired;

(2) There are reasonable assurances that the types of actions that formed the basis for the original exclusion have not recurred and will not recur; and

(3) There is no additional basis under sections 1128(a) or (b) or 1128A of the Act for continuation of the exclusion.

(b) In making the reinstatement determination described in paragraph (a) of this section, the OIG will consider—

(1) Conduct of the individual or entity occurring prior to the date of the notice of exclusion, if not known to the OIG at the time of the exclusion;

(2) Conduct of the individual or entity after the date of the notice of exclusion;

(3) Whether all fines and all debts due and owing (including overpayments) to any Federal, State, or local government that relate to Medicare, Medicaid, and all other Federal health care programs have been paid or satisfactory arrangements have been made to fulfill obligations;

(4) Whether CMS has determined that the individual or entity complies with, or has made satisfactory arrangements to fulfill, all the applicable conditions of participation or supplier conditions for coverage under the statutes and regulations;

(5) Whether the individual or entity has, during the period of exclusion, submitted claims, or caused claims to be submitted or payment to be made by any Federal health care program, for items or services the excluded party furnished, ordered, or prescribed, including health care administrative services. This section applies regardless of whether an individual or entity has obtained a program provider number or equivalent, either as an individual or as a member of a group, prior to being reinstated; and

(c) If the OIG determines that the criteria in paragraphs (a)(2) and (3) of this section have been met, an entity excluded in accordance with § 1001.1001 will be reinstated upon a determination by the OIG that the individual whose conviction, exclusion, or civil money penalty was the basis for the entity's exclusion—

* * * * *

■ 33. Section 1001.3005 is amended by revising the section heading and paragraph (a) introductory text to read as follows:

§ 1001.3005 Withdrawal of exclusion for reversed or vacated decisions.

(a) An exclusion will be withdrawn and an individual or entity will be reinstated into Medicare, Medicaid, and other Federal health care programs retroactive to the effective date of the exclusion when such exclusion is based on—

* * * * *

PART 1002—PROGRAM INTEGRITY—STATE-INITIATED EXCLUSIONS FROM MEDICAID

■ 34. The authority citation for part 1002 is revised to read as follows:

Authority: 42 U.S.C. 1302, 1320a–3, 1320a–5, 1320a–7, 1396(a)(4)(A), 1396a(p), 1396a(a)(39), 1396a(a)(41), and 1396b(i)(2).

■ 35. Section 1002.1 is revised to read as follows:

§ 1002.1 Basis and scope.

(a) *Statutory basis.* This part implements sections 1902(a)(4), 1902(a)(39), 1902(a)(41), 1902(p), 1903(i)(2), 1124, 1126, and 1128 of the Act.

(1) Under authority of section 1902(a)(4) of the Act, this part sets forth methods of administration and procedures the State agency must follow to exclude a provider from participation in the State Medicaid program. State-initiated exclusion from Medicaid may lead to OIG exclusion from all Federal health care programs.

(2) Under authority of sections 1124 and 1126 of the Act, this part requires the Medicaid agency to obtain and disclose to the OIG certain provider ownership and control information, along with actions taken on a provider's application to participate in the program.

(3) Under authority of sections 1902(a)(41) and 1128 of the Act, this part requires the State agency to notify the OIG of sanctions and other actions the State takes to limit a provider's participation in Medicaid.

(4) Section 1902(p) of the Act permits the State to exclude an individual or entity from Medicaid for any reason the

Secretary can exclude and requires the State to exclude certain managed care entities that could be excluded by the OIG.

(5) Sections 1902(a)(39) and 1903(i)(2) of the Act prohibit State payments to providers and deny Federal financial participation (FFP) in State expenditures for items or services furnished by an individual or entity that has been excluded by the OIG from participation in Federal health care programs.

(b) *Scope.* This part specifies certain bases upon which the State may or, in some cases, must exclude an individual or entity from participation in the Medicaid program and the administrative procedures the State must follow to do so. These regulations specifically address the authority of State agencies to exclude on their own initiative, regardless of whether the OIG has excluded an individual or entity under part 1001 of this chapter. In addition, this part delineates the States' obligation to obtain certain information from Medicaid providers and to inform the OIG of information received and actions taken.

§§ 1002.2 and 1002.3 [Redesignated as §§ 1002.3 and 1002.4]

■ 36. Sections 1002.2 and 1002.3 are redesignated as § 1002.3 and 1002.4, respectively.

■ 37. A new § 1002.2 is added to read as follows:

§ 1002.2 Other applicable regulations.

(a) Part 455, subpart B, of this title sets forth requirements for disclosure of ownership and control information to the State Medicaid agency by providers and fiscal agents.

(b) Part 438, subpart J, of this title sets forth payment and exclusion requirements specific to Medicaid managed care organizations.

■ 38. Newly designated § 1002.3 is amended by revising paragraph (a) to read as follows:

§ 1002.3 General authority.

(a) In addition to any other authority it may have, a State may exclude an individual or entity from participation in the Medicaid program for any reason for which the Secretary could exclude that individual or entity from participation in Federal health care programs under sections 1128, 1128A, or 1866(b)(2) of the Act.

* * * * *

■ 39. Newly designated § 1002.4 is amended by revising paragraph (c)(1) to read as follows:

§ 1002.4 Disclosure by providers and State Medicaid agencies.

* * * * *

(c) * * *

(1) The Medicaid agency may refuse to enter into or renew an agreement with a provider if any person who has an ownership or control interest, or who is an agent or managing employee of the provider, in the provider has been convicted of a criminal offense related to that person's involvement in any program established under Medicare, Medicaid, Title V, Title XX, or Title XXI of the Act.

* * * * *

§ 1002.100 [Redesignated as § 1002.5]

■ 40. Section 1002.100 is redesignated as § 1002.5 in subpart A.

§ 1002.211 [Redesignated as § 1002.6]

■ 41. Section 1002.211 is redesignated as § 1002.6 and transferred from subpart C to subpart A.

■ 42. Newly designated § 1002.6 is revised to read as follows:

§ 1002.6 Payment prohibitions.

(a) *Denial of payment by State agencies.* Except as provided for in § 1001.1901(c)(3), (4) and (5)(i) of this chapter, no payment may be made by the State agency for any item or service furnished on or after the effective date specified in the notice:

(1) By an individual or entity excluded by the OIG or

(2) At the medical direction or on the prescription of a physician or other authorized individual who is excluded by the OIG when a person furnishing such item or service knew, or had reason to know, of the exclusion.

(b) *Denial of Federal financial participation (FFP).* FFP is not available for any item or service for which the State agency is required to deny payment under paragraph (a) of this section. FFP will be available for items and services furnished after the excluded individual or entity is reinstated in the Medicaid program.

■ 43. The subpart heading for subpart B is revised to read as follows:

Subpart B—State Exclusion of Certain Managed Care Entities

■ 44. Section 1002.203 is amended by revising the section heading and paragraph (a) to read as follows:

§ 1002.203 State exclusion of certain managed care entities.

(a) The State agency, in order to receive FFP, must provide that it will exclude from participation *any* managed care organization (as defined in section 1903(m) of the Act) or entity furnishing services under a waiver approved under section 1915(b)(1) of the Act, if such organization or entity—

(1) Has a prohibited ownership or control relationship with any individual or entity that could subject the managed care organization or entity to exclusion under § 1001.1001 or § 1001.1551 of this chapter or

(2) Has, directly or indirectly, a substantial contractual relationship with an individual or entity that could be excluded under § 1001.1001 or § 1001.1551 of this chapter.

* * * * *

■ 45. The subpart heading for subpart C is revised to read as follows:

Subpart C—Procedures for State-Initiated Exclusions

■ 46. Section 1002.210 is amended by revising the section heading to read as follows:

§ 1002.210 General authority.

* * * * *

§ 1002.211 [Removed and Reserved]

■ 47. Section 1002.211 is removed and reserved.

PART 1006—INVESTIGATIONAL INQUIRIES

■ 48. The authority citation for part 1006 is revised to read as follows:

Authority: 42 U.S.C. 405(d), 405(e), 1302, 1320a–7, and 1320a–7a.

■ 49. Section 1006.1 is amended by revising paragraphs (a) and (b) to read as follows:

§ 1006.1 Scope.

(a) The provisions in this part govern subpoenas issued by the Inspector General, or his or her delegates, in accordance with sections 205(d), 1128A(j), and 1128(f)(4) of the Act and require the attendance and testimony of witnesses and the production of any other evidence at an investigational inquiry.

(b) Such subpoenas may be issued in investigations under section 1128 or 1128A of the Act or under any other section of the Act that incorporates the provisions of sections 1128(f)(4) or 1128A(j).

* * * * *

Daniel R. Levinson,

Inspector General.

Approved: August 4, 2016.

Sylvia M. Burwell,

Secretary.

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Part VI

Department of State

22 CFR Part 62

Exchange Visitor Program—Summer Work Travel; Proposed Rule

DEPARTMENT OF STATE

22 CFR Part 62

[Public Notice: 9522]

RIN 1400–AD14

Exchange Visitor Program—Summer Work Travel

AGENCY: Department of State.

ACTION: Proposed rule.

SUMMARY: The U.S. Department of State (Department) proposes to amend existing regulations to provide new program requirements for the Summer Work Travel category of the Exchange Visitor Program. This rulemaking strategy is informed by the Department's comprehensive and ongoing review of the Summer Work Travel program that began in mid-2010.

With this proposed rulemaking, the Department proposes to: Specify general program administration requirements for sponsors and their third parties; enhance transparency in the recruitment of exchange visitors; limit exchange visitor repeat participation to a total of three visits; require all exchange visitors to be placed in advance of the exchange visitor's arrival in the United States; outline additional sponsor responsibilities for use and vetting of host entities; and specify host entity requirements for program participation.

In addition, the proposed rule limits the number of late night and early morning hours during which exchange visitors may work; adds a section regulating placements in door-to-door sales; explains new processes for exchange visitor housing; and introduces Form DS–7007 (Host Placement Certification). The proposed rule also specifies more exactly pre-departure orientation and documentation requirements, including with respect to bicycle safety; ensures that sponsors and host entities provide exchange visitors with cross-cultural activities; and outlines processes for sponsor use and vetting of domestic and foreign third parties.

DATES: The Department of State will accept comments on this proposed rule until February 27, 2017.

ADDRESSES: You may submit comments by any of the following methods:

- *Email: JExchanges@state.gov.* You must include the Regulatory Information Number (RIN) 1400–AD14 in the subject line of your message.
- Persons with access to the Internet also may view this notice and provide comments by going to the regulations.gov Web site at: *http://www.regulations.gov/*and search the RIN 1400–AD14 or docket number DOS–2016–0034.
- *Mail (paper or CD–ROM submissions):* U.S. Department of State, Office of Policy and Program Support, SA–5, Floor 5, 2200 C Street NW., Washington, DC 20522–0505.
- All comments should include the commenter's name, the organization the commenter represents, if applicable, and the commenter's address. If the Department is unable to receive or understand your comment for any reason, and cannot contact you for clarification, the Department may not be able to consider your comment. After the conclusion of the comment period, the Department will publish a final rule (in which it will address relevant comments) as expeditiously as possible.

FOR FURTHER INFORMATION CONTACT: Keri Lowry, Deputy Assistant Secretary of State, Office of Private Sector Exchange, Bureau of Educational and Cultural Affairs, U.S. Department of State, SA–5, Floor 5, 2200 C Street NW., Washington, DC 20522–0505; Email: *JExchanges@state.gov.*

SUPPLEMENTARY INFORMATION: For the past fifty years, the Summer Work Travel program has served as one of the most popular exchange opportunities for foreign post-secondary school students to visit and learn about the United States. It is also one of the Department's largest avenues to influence the opinion and attitudes of foreign post-secondary students toward the United States through people-to-people diplomacy. The program also helps these students improve their English language proficiency. In 2015, the Summer Work Travel Program provided students from approximately 125 countries the opportunity to earn money to help defray some expenses of a short stay in the United States by working in seasonal or temporary host placements that require minimal training.

The Summer Work Travel program links university students from every region of the world to the people of the United States. In the past decade alone, approximately one million foreign post-secondary school students have visited the United States, improved their English language skills, developed ties with U.S. persons, and experienced U.S. culture while sharing their own cultures with those they meet. They have returned to their home countries and, after graduation, have begun careers in nearly every field. They remain lifelong ambassadors between their home countries and the United States.

The Department views Summer Work Travel as an important and uniquely effective mechanism for establishing cross-cultural communication and contributing to English language proficiency globally. The program represents the largest Department exchange opportunity for young adults; most exchange visitors are between the ages of 18 and 30. The program reaches diverse exchange audiences, including those from non-traditional sending countries and cities and towns outside national capitals. Such characteristics make the program important to the United States because people-to-people exchanges, and especially exchanges for young adults, are one of the most effective ways the U.S. forges ties with other nations.

The decision for exchange visitors to participate in the Summer Work Travel program is a significant one involving an adventurous spirit, since exchange visitors must live and work in a potentially unfamiliar environment in the United States. The decision also involves a significant investment of time and money on the part of these exchange visitors. It is, therefore, essential that sponsors—and host entities and third parties working with sponsors—take all necessary steps to ensure that every exchange visitor enjoys a safe, rewarding, enjoyable, and memorable U.S. exchange experience.

Sponsors and host entities play vital roles in the success of the program. This proposed rulemaking is intended to promulgate new minimum standards, clearly articulate program requirements, and advance consistency throughout the program.

The Department's insight from its monitoring role, as well as from complaints, incidents, and lessons learned, informs the contents of this rulemaking. The Department has interviewed thousands of exchange visitors and host entities taking part in the SWT program and interacts regularly with program sponsors. The proposed rule's provisions are intended to improve the program as, first and foremost, a cultural exchange and public diplomacy program of the highest quality. As a private sector exchange model, the program's success is based on creating standards of practice common across all sponsors. In many cases, the proposed requirements are actions already being taken by some sponsors. In others, the Department views the requirement as essential to protect the program and/or the exchange visitor.

As a public diplomacy program, exchange visitors' successful experience with this program will create lifelong ambassadors of goodwill between the United States and other countries. As

such, the quality of the program for the exchange visitor is the essential goal. In addition, placement at a host entity permits exchange visitors of all means to know their host communities, engage in cross-cultural activities, and travel. Such exchange visitors also are provided the opportunity to gain work and English language skills and interact with Americans in the workplace.

Sponsors must ensure that all parties involved in this exchange commit to its success.

First, *sponsors* must provide exchange visitors with clear, easy-to-read orientation materials and transparent information on fees, costs, program requirements, and wages; place exchange visitors with only those host entities that commit to advance the foreign policy and cultural exchange goals of the program; orient host entities to inform them fully about the program; place exchange visitors only with suitable and permissible host entities that provide appropriate compensation; ensure that exchange visitors have easy and convenient access to necessary amenities such as grocery stores, post offices, and public transportation; monitor exchange visitors regularly as required; update exchange visitor site-of-activity information in the Student and Exchange Visitor Information System (SEVIS) promptly as required; and provide and facilitate cross-cultural activities for all exchange visitors. In addition, sponsors must carefully vet and monitor the activities of their domestic and third party organizations.

Second, sponsors must ensure that the *host entities* they select contribute to the program's stated goals and know about and agree to their role as part of a U.S. public diplomacy program. This includes requiring that host entities ensure the exchange visitor's quality of experience in the United States and protect the exchange visitor's health, safety, and welfare. Sponsors must place exchange visitors with those host entities that respect the benefits and obligations the program places on exchange visitors. In addition, sponsors must place exchange visitors at host entities that provide an experience where exchange visitors have significant contact with U.S. colleagues, supervisors, and customers, gain new skills, and increase their English language proficiency through regular use in their placements. Exchange visitor host placement schedules should accommodate reasonable time outside of working hours for exchange visitors to spend time with friends, tour the local area, and practice English.

And third, sponsors must set expectations for the *exchange visitors* they recruit so that they come to the United States already understanding the underlying cross-cultural purpose of the program; their responsibility to fulfill their program obligations as defined through the Exchange Visitor Program regulations by the Department and by the rules set by their sponsor; the necessity for them to abide by U.S. laws during their programs; and also their responsibilities toward their hosts, co-workers, and local U.S. community. Exchange visitors who have an enjoyable and productive experience through the program become ambassadors of goodwill and understanding between their countries and the United States.

In order to strengthen the Summer Work Travel program, the Department reviewed its implementation of the program beginning in mid-2010. Between 2010 and 2012, the Department identified a number of regulatory changes needed to better protect the health, safety, and welfare of exchange visitors, enhance the program's cross-cultural component, and strengthen overall program administration. The Department published an interim final rule (IFR) with a request for comment on April 26, 2011 (RIN 1400–AC79; see 76 FR 23177) (2011 IFR). Then, after further monitoring program implementation, the Department published an IFR with a request for comment on May 11, 2012 (RIN 1400–AD14); see 77 FR 27593) (2012 IFR). This rule addressed public comments submitted to the 2011 IFR and became effective immediately, with the exception of one provision regarding prohibited placements, which became effective on November 2, 2012 (see also 77 FR 31724).

In promulgating this and previous rulemakings, the Department continues to advance a comprehensive rulemaking strategy to: (i) Protect the health, safety, and welfare of exchange visitors on this important program; (ii) respond to issues identified during monitoring and ongoing oversight; (iii) articulate consistent and robust minimum standards for program administration; (iv) prioritize the quality of the exchange visitor experience; and (v) fortify the program's purpose as an important U.S. public diplomacy tool.

Analysis of Comments Received on the 2012 IFR

The Department reviewed, analyzed, and fully considered the comments submitted for both the 2011 and 2012 IFRs. Comments received in response to the 2011 IFR were analyzed and addressed in the 2012 IFR (see 77 FR 27598–27600, 27602–27604), which responded to emerging program issues requiring monitoring and enforcement. Comments received in response to the 2012 IFR are addressed below. The 2012 IFR strengthened protections for exchange visitors and reemphasized the cross-cultural component of the program, consistent with the requirements of the Mutual Educational and Cultural Exchange Act of 1961, as amended (Pub. L. 87–256) (22 U.S.C. 2451, *et seq.*) (Fulbright-Hays Act), and 22 CFR 62.8(d).

The Department received comments on the 2012 IFR from 171 parties, including: 102 former exchange visitors previously hosted in mobile concession businesses; 21 leaders of different local, county, and state fairs; ten organizations representing and/or advocating for trafficking victims, low- to-middle-income, migrant and guest workers, unions, and/or civil rights; nine mobile concession business owners that have employed exchange visitors; eight businesses associated with the mobile amusement industry; seven trade associations representing the mobile amusement industry and/or mobile concessionaires; one trade association representing seafood processors; a membership association of many of the largest international educational and cultural exchange organizations in the United States; eight Department-designated Summer Work Travel program sponsors; two private U.S. persons; one foreign entity working with sponsors; and a commercial printing business that has hosted exchange visitors.

The Department received public comment on the following 2012 IFR provisions, all in 22 CFR part 62:

Program dates. The 2012 IFR and its Supplementary section indicated that the Department determines the program dates for each country (see § 62.32(c)). The Department establishes country-specific program start and end dates according to the academic year calendar of each country's ministerially-recognized post-secondary institutions and may modify them as necessary. The Department received three comments, all of which proposed that the Department continue to be open to amendments to program start and end dates. One commenting party suggested that the Department establish bi-annual reviews of the calendar for summer and winter placements.

The Department currently conducts a regular review of country-specific program start- and end-dates and believes that this review addresses these comments by allowing sufficiently for amendment of program dates. The Department is always open to hearing

from sponsors, participants, and other members of the public about how country-specific program dates affect Summer Work Travel program participants.

Termination of programs of unresponsive exchange visitors. The 2012 IFR (see § 62.32(e)(9)) required sponsors to provide exchange visitors with information explaining that sponsors will terminate the programs of participants who fail to comply with enumerated program regulations (*e.g.,* reporting their arrivals, reporting changes of residence, not starting work at un-vetted jobs, responding to sponsor monthly outreach/monitoring efforts). The Department explained in the Supplementary section of that rulemaking that sponsors should terminate the programs of exchange visitors who do not report their arrival in the United States within ten days. The Department received six comments, five of which disagreed with this provision as overly punitive. They explained that most exchange visitors are at an age where it is common not to follow administrative rules carefully, that exchange visitors sometimes face difficulties in contacting sponsors upon arrival, and that port of entry information is unreliable if an exchange visitor arrives before his/her program start date, rendering consistent enforcement of this provision impossible. One sponsor suggested that exchange visitors should be terminated only after they demonstrate a pattern of uncommunicativeness.

The Department does not agree with these comments. In order for sponsors to ensure that an exchange visitor is physically located at the site of program placement, as is required by the Department of Homeland Security, and in order that sponsors may monitor the health, safety, and welfare of that exchange visitor at the placement site, sponsors must know that the exchange visitor is indeed present there. This requires the exchange visitor to report his or her arrival, as well as any subsequent sites of activity, for example, if the exchange visitor changes host entities.

Sponsors can enhance the timeliness of exchange visitor reporting by giving them an effective pre-arrival orientation about the necessity of and usable methods for reporting U.S arrival to their sponsor. Sponsors must explain to exchange visitors as part of their orientation that site of activity notification in SEVIS is a Department of Homeland Security requirement and that the sponsor is also authorized under § 62.40(a)(3) to terminate exchange visitors who violate the Exchange Visitor Program regulations and sponsors' rules governing the program. Exchange visitors are assigned by their sponsors to report to their initial assignment on the date they are expected to report and then have ten days to notify their sponsor that they have arrived. In addition, exchange visitors have this same period of time to notify their sponsor to update their contact information each time they undergo a host entity or housing change, which the Department believes is a sufficient time-period for such notification. This provision has not changed in this proposed rule.

Cross-cultural component. The 2012 IFR required that sponsors plan, initialize, and carry out events or other activities that provide exchange visitors exposure to U.S. culture (§ 62.32(f); see also § 62.8(d)). The Department received nine comments, four of which disagreed with this provision. Two commenting parties supported this new requirement, but recommended that the Department provide for a two-year unofficial pilot period of the cross-cultural component to test ways sponsors can most effectively provide and facilitate these cross-cultural experiences. Other commenters disagreed with or expressed reservations about the cross-cultural component requirement, stating that the Department failed to take into account the natural cross-cultural exchange of day-to-day work life and interactions provided by the Summer Work Travel program. In contrast, another party commented that this provision is critical to protecting the exchange visitors and the integrity of the Summer Work Travel program. Another commenter agreed with the addition of a cross-cultural component, but contended that the cross-cultural requirement is so vaguely defined as to be meaningless.

The Department maintains its strong belief that an organized cross-cultural component is necessary for the fulfillment of the Summer Work Travel category's purpose as a cultural and educational exchange and U.S. public diplomacy program. Following the publication of the 2012 IFR, the Department provided all sponsors with a guide to cross-cultural programming, and the Department has consistently sought and highlighted examples of successful cross-cultural programming to share with the sponsor community. The Department requires sponsors and their host entities to create opportunities to provide cross-cultural programming for exchange visitors. In the proposed rule, this requirement has been set at a minimum of once per month in order to more clearly define the requirement and respond to sponsor inquiries since publication of the 2012 IFR about what was an adequate amount of cross-cultural programming. The Department will continue to work with sponsors to facilitate successful implementation of cross-cultural programming requirements, including by issuing guidance outlining best practices.

Since the 2012 IFR went into effect, many sponsors (approximately 42 percent according to Department records) have already put policies in place to implement, either directly or through host entities, cross-cultural activities for exchange visitors. Organizing a cross-cultural activity for exchange visitors is not especially complex; there are many possible activities that can make use of local resources and community events and that are not especially costly. Some examples organized by either sponsors or host entities over the last year of the Summer Work Travel program are noted under point 16 of the proposed rule discussion below.

72-hour deadline for vetting host placements. The 2012 IFR required that sponsors confirm initial host placements and re-placements for all exchange visitors before exchange visitors could start work by verifying, at a minimum, the terms and conditions of such employment and fully vetting their host entities as set forth at § 62.32(g)(2). If an exchange visitor in in the United States finds his or her own host re-placement, sponsors must vet that host re-placement within 72-hours. The Department received nine comments, all in opposition to the 72-hour deadline, which they viewed as unrealistic. Commenters explained that host re-placement vetting is a time-consuming and multi-step process, and it is particularly challenging when the 72-hour timeframe falls over a weekend when host entities are difficult to contact and sponsor staff is not available to carry out all required steps of proper vetting; they proposed changing the deadline to three business days.

The Department agrees to propose a change to the vetting deadline to three business days, as provided in proposed paragraph § 62.32(h)(1). Sponsors have systems in place for vetting host entities, and the Department believes that three days are sufficient for the sponsor to check a host entity's location and suitability and conduct a background check on that entity, so that the exchange visitor can begin his or her new placement as soon as possible thereafter.

Housing and transportation. The 2012 IFR required that sponsors actively and

immediately assist exchange visitors with arranging appropriate housing and identifying appropriate local transportation when host entities do not offer housing and local transportation (see § 62.32(g)(9)(i)), or when exchange visitors decide to ask for assistance after initially declining host entity-provided housing. The Department received four comments from sponsors on the topic of housing. Some sought clarification on what specific measures the Department intends with regard to sponsors' assisting exchange visitors with their housing, while others questioned the feasibility of sponsors' providing an additional level of housing assistance.

One commenter expressed support for the requirement that sponsors assist exchange visitors to ensure appropriate housing and suitable local transportation. However, others disagreed. One commenting party explained that sponsor assistance should be limited in scope to informing exchange visitors of their rights, explaining types of housing and local transportation, reasonably investigating allegations of unsafe or inadequate housing, and offering additional assistance and guidance as appropriate. Other commenters worried about increased costs if sponsors are required to provide exchange visitors with suitable housing. Some noted that sponsors may have to put down deposits to secure housing even before knowing whether exchange visitors have received visas. Still other commenters stated that exchange visitors are not minors and may willingly choose substandard housing to save money unless the Department imposes penalties on exchange visitors who choose to do so.

The Department continues to respond to serious concerns about housing and local transportation. The Department maintains that a placement is appropriate only if it includes safe and affordable housing accommodation, as well as readily available local transportation. Host entities are a resource for identifying both housing and local transportation options. Due to the reality that poor housing and lack of local transportation may prove disastrous to an exchange visitor's experience or well-being, sponsors must only approve placements for exchange visitors that include an identification of safe and affordable housing that is within reasonable distance from the exchange visitor's host entity(ies), in a location that is neither isolated nor difficult to access, and in reasonable proximity to commercial infrastructure and necessities. Sponsors or their host entities must identify, but are not obligated to fund, such housing and local transportation as part of the placement selection. Sponsors placing exchange visitors in remote national park, summer camp, or resort locations must document the host entity's written arrangement for transportation for those exchange visitors during their off hours and in case of emergency. At times, exchange visitors will identify housing themselves. Sponsors must verify that any housing option selected is safe, affordable, and otherwise appropriate, including from a local transportation perspective.

The Department proposes a number of changes to better ensure access to appropriate housing and local transportation, as set forth in proposed paragraph 62.32(l) and discussed later in this section.

Expansion of excluded host placements. The 2012 IFR expanded the program exclusion list of host placements (see § 62.32(h)) by adding to that list host placements that raise concerns for the health, safety, and welfare of exchange visitors and the integrity of the Summer Work Travel program, and that generally cannot meet the cross-cultural exchange requirement (see, for example, proposed paragraph 62.32(o)). Comments on specific prohibitions follow:

Exclusion of host placements requiring driver's licenses. The 2012 IFR excluded positions that require driving or operating vehicles for which driver's licenses are required (§ 62.32(h)(5)). The Department received 11 comments, seven of which disagreed with this prohibition. Some commenters understood the prohibition of driving-intensive host placements, but did not believe it necessary to exclude host placements that require occasional driving on non-public roads or host placements that incidentally require exchange visitors to drive, such as positions as bellhops and valet parking attendants.

In the Department's view, prohibiting exchange visitors, on behalf of their host entity, from driving or operating vehicles on public roads for which a driver's license is required, however incidental this driving activity may be, helps mitigate the risk to the health, safety and welfare of the exchange visitors. Moreover, should an exchange visitor collide with another driver or a pedestrian while driving or be hit by another vehicle on a public road, the exchange visitor may become involved with insurance companies and/or law enforcement, leading to potentially serious consequences for the exchange visitor. (See proposed paragraph 62.32(k)(10)).

Exclusion of host placements deemed hazardous to youth. The 2012 IFR prohibited positions and activities declared hazardous to youth by the U.S. Secretary of Labor (§ 62.32(h)(9)). The Department received five comments, two of which disagreed with this prohibition. One commenter disagreed with the prohibition of such host placements because the Secretary of Labor's list is intended for minors, while the majority of exchange visitors on the Summer Work Travel program are not minors. While a second commenter generally disagreed with these exclusions, three other commenters stated that the Secretary's list provides a useful guide for sponsors in making appropriate placements. A commenter also noted that the Department should not bar host placements in which exchange visitors conduct hair braiding and henna tattooing, activities generally not seen as dangerous but that are incidental to some summer host placements.

One of the primary goals of the 2012 IFR was to mitigate risks to the health, safety and welfare of exchange visitors. The Department believes that, regardless of the fact that most exchange visitors are not minors, the Secretary of Labor's list provides a sensible, easy-to-use directory of host placements that are potentially dangerous and are thus inappropriate for post-secondary students working in the United States on a cultural and educational exchange program. Proposed paragraph 62.32(k)(13) continues to refer to the Secretary of Labor's list at 29 CFR part 570 (*http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title29/29cfr570_main_02.tpl),* and puts in place additional prohibited positions to those specified in the 2012 Summer Work Travel program interim final rule.

Exclusion of placements with traveling fairs and itinerant concessionaires. The 2012 IFR prohibited placements in positions with traveling fairs and itinerant concessionaires (§ 62.32(w)(14)). Host placements in the mobile amusement and mobile concession industries are overly burdensome to monitor, and have, in specific instances, created unacceptably high risks to the health, safety, and welfare of exchange visitors, largely as a consequence of the mobile nature of the worksite. The Department received 151 comments, 147 of which disagreed with this prohibition. Comments in opposition were submitted by: 102 former exchange visitors employed by mobile concessionaires; 21 heads of different local, county and state fairs; eight businesses associated with the mobile

amusement industry; seven organizations representing the mobile amusement industry and/or mobile concessionaires; and nine mobile concession business owners.

Commenters argued that the prohibition of host placements in an entire industry because of the actions of a few businesses within that industry is unfair; that the traveling nature of such host placements provides excellent cross-cultural experiences; that modern technology and the submittal of the businesses' itineraries make it possible for exchange visitors to be accurately tracked in SEVIS; that fairs' charitable, technological and agricultural contributions depend on mobile concessionaires and that this relationship could be damaged by the provisions of the 2012 IFR; and that the timing of the 2012 IFR's effective date was unnecessarily and unacceptably disruptive. Commenters also argued that every host placement comes with risks, and that the 2012 IFR's prohibitions were overreactions to negative press.

The Department respectfully disagrees with these comments. The purpose of the Exchange Visitor Program, including the Summer Work Travel category, is not to satisfy the labor needs of any industry. The Department also has received and cannot ignore serious complaints about substandard housing and other related inadequacies associated with almost all host placements in the mobile amusement and mobile concession industries. In addition, placement in these industries entails frequent address changes that require exchange visitors and their sponsors to update SEVIS records frequently to ensure accuracy and maintain compliance with both Department of State and Department of Homeland Security regulations. Many sponsors' demonstrated lack of compliance with these SEVIS reporting requirements added to the Department's determination that these placements pose a sufficiently high risk to the health, safety, and welfare of exchange visitors. Finally, if a sponsor does not know where an exchange visitor is residing, security risks arise for both the exchange visitor and the general public. A prohibition is, therefore, appropriate (see proposed paragraph 62.32(k)(17)). The Department does not propose substantial changes to this section in response to comments. It proposes only to change the term to identify this industry as ''traveling fairs and itinerant concessionaires,'' rather than ''mobile amusement or mobile concessionaire industries.''

Exchange visitor compensation. The 2012 IFR reinserted language inadvertently omitted in the 2011 IFR that mandates exchange visitor compensation at the highest of the applicable federal, state, or local minimum wage (see § 62.32(i)(1) and proposed paragraph 62.32(f)(6)(i)). The Department received five comments urging further protections to ensure adequate exchange visitor compensation. Three commenters expressed concern that the language as written does not explicitly guarantee compensation equal to federal, state, or local wages in host placements exempt from minimum wage requirements in the Fair Labor Standards Act (FLSA) of 1938. Two commenting parties stated that, unless sponsors are actually penalized for placing exchange visitors with host entities that fail to provide exchange visitors with sufficient pay, no additional compensation rules will be effective. In addition, the Department received two comments suggesting that exchange visitor wage levels be set at the same level that U.S. persons receive for doing the same work.

The Department wishes to ensure that exchange visitors on the Summer Work Travel program will be able to meet the financial obligations they incur as part of their exchange experience. The Department proposes to retain the requirement from the 2012 IFR, with slight editorial changes. Proposed paragraph 62.32(m)(1)(i) requires that sponsors must inform exchange visitors of federal, state, and local minimum wage requirements, and proposed paragraph 62.32(f)(6)(i)-(ii) requires that, in their host placement(s), exchange visitors receive pay and benefits commensurate with those offered to their U.S. counterparts and/or those on another class of nonimmigrant visa, as applicable, doing the same or similar work in the same work setting, and not less than the federal, state, or local minimum wage, whichever is highest, for all hours worked (including overtime) in conformance with federal, state, and local laws, including the Fair Labor Standards Act. Host entities may reasonably offer an exchange visitor wages commensurate with those of a qualified, experienced, or fully competent U.S. worker or worker on another visa class, only after considering the experience, education, and skill requirements of the position.

Additional protections for U.S. workers. The 2012 IFR introduced new protections for U.S. workers by requiring sponsors to confirm that host entities of exchange visitors: (1) Do not displace U.S. workers at the worksite in which exchange visitors are placed (§ 62.32(n)(3)(ii)); (2) have not experienced layoffs in the past 120 days (§ 62.32(n)(3)(iii)); and (3) do not have workers on lockout or on strike (§ 62.32(n)(3)(iii)). The Department received eight comments, all of which agree with the new provisions or call for further protections for U.S. workers. One commenting party proposed requiring a Department of Labor-certified prevailing wage that protects U.S. workers from the depressive effects of foreign labor.

The Department agrees with the need to have exchange visitors' compensation and benefits be commensurate with those offered to their U.S. counterparts doing the same or similar work in the same work setting and having similar qualifications and experience (and that exchange visitors should receive the same compensation and benefits as those on another class of nonimmigrant visa if they are doing the same or similar work in the same work setting and have similar qualifications and experience), as well as providing for greater transparency in wages and work-related costs. See changes set forth in proposed paragraph 62.32(f)(6)(i) and (ii).

Proposed Changes

The Department has worked to engage Summer Work Travel stakeholders, listening to their views about program improvement and considering their comments in drafting this proposed rule. The Department was represented at annual international conferences attended by a large number of sponsors and foreign partners throughout the 2012–2016 period. It hosted sponsor conference calls in June and August 2012, and again in January 2013 and May 2014, for all Summer Work Travel program sponsors to discuss program administration improvements, best practices, host and housing placement concerns, and the Department's notional timeline of this proposed rulemaking. The Department held two dialogue meetings for Summer Work Travel sponsors in late summer and in early fall 2013, and another dialogue session in fall 2015.

Furthermore, the Department has observed a great variety of Summer Work Travel placements through a monitoring program that it instituted in 2012. Throughout summer 2012, the Department conducted 650 Summer Work Travel site visits in 31 U.S. states. In summer 2013, the Department visited 667 sites in 32 states. In summer 2014, the Department visited 676 sites in 33 states. In 2015, the Department visited 985 sites in 42 states and the District of Columbia. In summer 2016, the Department visited sites of activity hosting 1,246 Summer Work Travel participants in 36 states. Program

monitoring through site visits includes interviewing exchange visitors and visiting their host placement sites and housing. In addition, in August 2013, the Department sent surveys directly to some 15,000 exchange visitors in the Summer Work Travel program in order to learn about exchange visitor perspectives on their program and received nearly 4,000 responses, for a 25 percent response rate. The Department has made a determined effort to catalogue program successes, and in 2014 and 2015 publicly highlighted these success stories. Observations from site visits, the study of best practices, and the Department's robust interaction with sponsors contributed directly to the content of this proposed rulemaking.

The Department invites public comment on the proposed regulatory changes set forth below. Provisions of the proposed regulation have been organized to follow the general sequence of administering the Summer Work Travel program. In your response, please number comments to coincide with the following topics:

1. *Definitions.* The Department includes in proposed paragraph 62.32(b) definitions of ''host entity,'' ''host placement,'' ''seasonal nature,'' and ''temporary nature.'' These definitions provide clarity in areas important to the Summer Work Travel program that are in common use by the Department and the sponsor community, but which, up until now, have not been defined. The Department in this rulemaking seeks to define these terms narrowly in terms of their application only to the Summer Work Travel category of exchange.

2. *General sponsor responsibilities.* Due to the variations in sponsor program administration, particularly with respect to relationships with third parties, the Department delineates in proposed paragraph 62.32(d) a sponsor's general program responsibilities and those responsibilities it is permitted to delegate to its foreign and domestic third parties. Sponsors are directly responsible for screening; making the final selection of exchange visitors; placing and re-placing exchange visitors; issuing Forms DS–7007 and DS–2019; orienting host entities; finding, approving and verifying exchange visitor housing; and conducting monitoring of exchange visitors and their host placements within the United States. These activities must be done by employees of the sponsor. In addition, the sponsor must make provision for pre-departure and post-arrival orientations in accordance with § 62.10(b) and (c). A sponsor may conduct a pre-arrival orientation directly and/or through a foreign third party. A sponsor may conduct a post-arrival orientation directly and/or through the host entity. Sponsors should encourage their host entities to provide exchange visitors with a post-arrival local orientation in order to acquaint exchange visitors with resources, financial institutions, possible cross-cultural activities, evacuation and other safety procedures, and so forth, in their specific host community.

The use of third parties may serve as an important benefit to a program; however, it represents some risk to sponsors, who are responsible for the actions of their third parties. A sponsor may use foreign third parties for recruitment, initial identification of host entities, and overseas orientation of exchange visitors. A sponsor may use domestic third parties for initial identification of host entities, implementation of cross-cultural activities for exchange visitors, providing a local point of contact or local orientation for exchange visitors, providing housing assistance, and offering transportation options for exchange visitors.

A host entity (*i.e.,* where exchange visitors are placed) is not considered to be a domestic third party. There are separate regulatory requirements that apply to a sponsor's selection of and relationship with host entities.

The Department reminds sponsors that third parties that work with sponsors in administering the program are always deemed to be acting on that sponsor's behalf when conducting aspects of the sponsor's exchange visitor program, and their actions are imputed to the sponsor as set forth in § 62.2 (Definitions; *Third party*) and as provided in proposed paragraph 62.32(d)(5). Sponsors must ensure that any fees they or their third parties charge are legal. For example, fees that sponsors charge to provide program services to participants, such as application fees or related document translation fees to prove program eligibility as a student or a very recent student, would be permitted. But any fees that require an exchange visitor to remit a portion of his or her earnings in the United States to overseas private entities are not permitted. Sponsors must ensure that fees be clearly disclosed and that they and their third parties document all aspects of their administration of the exchange visitor program, retaining this documentation on file for three years.

3. *Exchange visitor recruitment.* Because the Department of State authorizes this program for the purposes of public diplomacy and global engagement with young adults, the Department is particularly mindful of sponsor or foreign third party marketing and promotional efforts that inaccurately characterize the program as solely one with a work component. This program is an international cultural and educational exchange program, not a program to recruit aliens to work in U.S. businesses. The success of this program derives from exchange visitors' acquiring cross-cultural knowledge, gaining English language skills, and making ties that benefit the United States and the countries to which they return after their exchange. In order to create consistency and appropriate industry practice, the Department has included a requirement in proposed paragraph 62.32(d)(8) that would ensure sponsors promote the Summer Work Travel program as a cultural and educational program and recruit applicants and host entities appropriately. Sponsors must cooperate only with foreign third parties that abide by this requirement through both their communications with, and the marketing materials they distribute to, potential exchange visitors abroad.

In addition, in the proposed rule, the Department addresses recurring issues regarding the lack of transparency in program costs, including fees charged to exchange visitors by sponsors, foreign and domestic third parties, and host entities, deductions from wages, and other program-related costs. The General Provisions (Subpart A) of 22 CFR part 62 create an initial requirement regarding fee transparency for the Exchange Visitor Program in general (as set forth in § 62.9(d)), and the Department proposes to create additional administrative requirements for the Summer Work Travel category. Exchange visitors recruited into the program must be made aware, at the time of their recruitment, what fees are charged by sponsors and any third party organizations with which sponsors work and estimated other costs the exchange visitor will likely incur. Proposed paragraph 62.32(d)(9), therefore, would require each sponsor to include in its recruiting material, and post on its main Web site (*e.g.,* with a visible link to such a page on the sponsor's homepage), examples of the typical monthly budgets of exchange visitors placed in various regions of the United States to illustrate wages (based on the required weekly minimum of 32-hours of work at a typical host placement) balanced against itemized fees and estimated costs. Providing exchange visitors with such information better ensures that they fully understand the financial

obligations they assume when choosing to participate in the program. This is especially important since the earnings of exchange visitors are likely to defray only some of the costs they will incur during their exchange opportunity.

4. *Exchange visitor screening and selection.* The Summer Work Travel Program requires exchange visitors to exercise great responsibility while in the United States. Exchange visitors must adjust to life in a new culture, accustom themselves to a new work environment, and understand all their rights and responsibilities as exchange visitors in a workplace setting. The Department, therefore, has included in proposed paragraph 62.32(e)(1), the following eligibility requirements: Exchange visitors must be at least 18 years old by their Summer Work Travel program start date. In addition, at the time they file their program applications, prospective exchange visitors must be foreign nationals enrolled in and actively pursuing a full-time course of study toward a degree at a classroom-based post-secondary academic institution that is physically located outside the United States and ministerially-recognized within the national education system where the student is enrolled (including final year students).

Repeat participation has both benefits and drawbacks. In seeking to create the appropriate balance, the Department proposes at § 62.32(e)(1)(iii) to limit to three the total number of times an exchange visitor is permitted to participate in the Summer Work Travel program during his or her post-secondary education career. The Department has observed the value of repeat participation, including solidifying a relationship between a host and exchange visitor, and enabling an exchange visitor to continue building skills while gaining exposure to an even greater diversity of U.S. culture, society and tourism. The Department also has observed the drawbacks of repeat participation, where some exchange visitors with more knowledge of the United States and the Summer Work Travel program have been encouraged to repeat their program participation in order to organize for host entities or other entities activities forbidden by regulation. In limiting participation in the program to three visits, the Department notes that the working holiday programs of 20 other countries, the programs that are most comparable to the Summer Work Travel program, restrict participation to a single work and travel visit. In several other countries, working holiday programs are restricted to two visits. The Department is interested in maximizing the number of individuals who gain exposure to the Summer Work Travel program, given its nature as an exchange program. Moreover, previous participation in the program will not limit exchange visitors from participating in other applicable categories of the Exchange Visitor Program.

The Summer Work Travel program permits exchange visitors to practice and enhance their English language skills; effectuates both the Department's public diplomacy goals and the legislative intent of the Fulbright-Hays Act, which enables the U.S. government to establish programs that promote mutual understanding between the people of the United States and people of other countries by means of educational and cultural exchange (22 U.S.C. 2451). The Department requires sponsors to review the applications of, interview, and select those applicants who have a level of English language proficiency that would enable them to be understood by co-workers and community members, discuss their personal backgrounds, and comprehend safety, work, housing, and transportation-related instructions. In addition, because participation in cross-cultural activities is a main purpose for the Summer Work Travel program, proposed paragraph 62.32(e)(1)(v) requires sponsors to select exchange visitors who evidence an intention, for example, in their written application or interview, to participate in such activities while in the United States. This requirement is important toward ensuring that exchange visitors participate in the program for the correct reasons, and will have the interest and prior learning experience necessary to succeed in the program to which they applied.

Proposed paragraph 62.32(e)(2) specifies that, prior to selecting exchange visitors, sponsors must conduct interviews with them in person or by video-conference and, upon request, facilitate videoconferences between exchange visitors and host entities in order that these parties can learn about one another prior to the exchange.

5. *Exchange visitor placement.* Finding an appropriate host placement for each exchange visitor is one of the most important decisions a sponsor must make. In proposed paragraph 62.32(f), the Department summarizes the responsibilities of sponsors in securing a host placement for each exchange visitor. Among these requirements are that host placements be seasonal and temporary in nature, require minimal training, and be interactive. Interaction and use of English language during the regular course of the day can help achieve the central goals of the Summer Work Travel program: Relationship-building, cultural exchange, and English language proficiency. Thus, as provided in proposed paragraph 62.32(f)(iii), sponsors must ensure that all placements permit daily personal interaction with customers and/or American co-workers as an integral part of the placement. The Department seeks to avoid, as part of this program, positions that provide little to no language exposure or skill acquisition, and that are inappropriate for a cultural and educational exchange program. Such positions do not fulfill the stated goals of the program. Sponsors must be able to ensure that host entities make appropriate accommodation to meet this objective.

For example, one observed best practice was a host entity that, rather than retain one individual solely on dishwashing, a task the host felt offered little interpersonal interaction, rotated restaurant staff and exchange visitors through this task in order to offer each person a variety of assignments. Additionally, the Department has no objection to exchange visitors working alongside foreign nationals in other visa categories, as long as the exchange visitors with similar qualifications and experience receive the same compensation and exchange visitor employment does not have an adverse effect on U.S. workers. The Summer Work Travel program serves to create long-term relationships between Americans and program participants, and working alongside U.S. workers is essential to the achievement of that goal.

Pre-placement. The Department engages with host communities where exchange visitors are housed. It has learned that overcrowding in some communities can become a major problem where exchange visitors who are not pre-placed arrive unannounced and unexpected. Seasonal communities struggle to identify affordable and appropriate housing for those who are pre-placed. In the worst cases, exchange visitors live in overcrowded accommodations, and some even have been left homeless. These situations defeat the purposes of the exchange visitor program, bring notoriety, and can generate tensions within communities. Accordingly, the Department proposes in paragraph 62.32(f)(1) to extend the applicability of existing pre-placement requirements so that they pertain to exchange visitors from all countries, rather than only exchange visitors from non-Visa Waiver Program countries, as is currently so under § 62.32(g)(10).

Prior to July 15, 2011 (the effective date of the 2011 IFR), sponsors were required to allow no more than half of their Summer Work Travel exchange visitors to enter the United States without pre-arranged host placements. Since July 15, 2011, sponsors have been required to pre-place all exchange visitors except those from Visa Waiver Program countries. Requiring uniform pre-placement in positions with a vetted host placement prior to exchange visitor receipt of a Form DS–2019 will permit host entities and local communities to prepare for exchange visitor arrival, allow sponsors to ensure that each placement is with a host who has been oriented in advance and is committed to the goals of the program, and reduce the potential for temporary housing or overcrowding. Finally, requiring pre-placement will reduce the number of exchange visitors from Visa Waiver Program countries who never get host placements during their stay in the United States, estimated according to Department records to be around 10 percent of exchange visitors from all Visa Waiver Program countries. The Department also believes that a 100 percent pre-placement requirement will better ensure that proposed expanded host placement requirements are met.

Host entity orientation. A sponsor's engaging the host entity in welcoming the exchange visitor, providing the exchange visitor with a positive experience while in the United States, and connecting with that exchange visitor to provide cross-cultural activities are all fundamental elements of the Summer Work Travel program's mission as one of exchange. Many sponsors have created orientations for host entities. The Department sees this as a positive trend, and proposes in paragraph 62.32(f)(1)(x) that all sponsors be required to orient host entities (*e.g.,* in person, online, through CD or DVD, through teleconference), clearly explaining to them the public diplomacy purpose and requirements of the program and the host entity's duties during the program and toward the exchange visitor. Sponsors must explain program regulations and policy to host entities so that they may be well-informed at all times about the program.

Remote placements. The Department receives reports of emergencies and urgent situations from sponsors, exchange visitors, host entities, and members of the public. If serious incidents occur regarding the host placement, host entities are responsible for supervision of and immediate assistance to their exchange visitors in such circumstances. However, sponsors with a presence near and/or that have arrived immediately to the location of an emergency have had the most success in assisting all parties, including host entities, in such situations, during which major programmatic decisions may need to be made. The Department proposes in paragraph 62.32(f)(1)(xii) that each exchange visitor be placed in a location that the sponsor's employee or representative is able to reach in-person within eight hours (*i.e.,* within one business day), through any reliable transportation means. Each sponsor should plan how its staff or representatives would reach exchange visitors placed in more isolated locations where there is limited transportation, and who in the sponsor organization is to be responsible for reaching the exchange visitor in such circumstances.

The Department has monitored placements that are isolated, with little to no infrastructure nearby, and where a sponsor has not visited prior to the placement. The Department has concluded that sponsors should take great care when placing exchange visitors in locations that are far from commercial infrastructure and transportation options, and in those instances, host entities should assume responsibility for ensuring sufficient local transportation for the exchange visitor to meaningfully experience U.S. culture and cross-cultural activities.

The Department has seen successful placement of exchange visitors at summer camps and national parks, which may be a distance from commercial infrastructure. In those instances, the host entities made arrangements for cross-cultural outings, shopping excursions, emergency evacuation if needed, and so forth.

Sponsor ownership by host entity. Host entities that either partially or wholly own the sponsor, and sponsors that wholly or partly own the host entity, must under proposed paragraph 62.32(f)(2) divulge that relationship to the Department and retain or make available an independent and neutral entity, such as an ombudsperson, to act as an advocate for the exchange visitor should the Department determine there is a need. This is important because a sponsor that is owned by the host entity at which the exchange visitor is placed may not be able to act impartially or advocate for the exchange visitor in a dispute between the exchange visitor and the host entity. For example, if an exchange visitor were to complain of alleged legally non-compliant conduct on the part of the host entity (such as requiring the exchange visitor to conduct unauthorized activities in the host placement) and seek redress from the sponsor, the host entity that owns the sponsor could exert pressure on that sponsor not to respond to the exchange visitor's request. In this and other cases, an independent or neutral entity could serve as an advocate for the exchange visitor, as the sponsor and host entity are not well placed to adopt this role since, by definition, the sponsor and the host entity have an inseparable business relationship with each other.

Strikes at the host entity. At proposed paragraph 62.32(f)(3), during the pre-placement phase, sponsors must not match exchange visitors with host entities at which there is a strike (or other labor dispute that the sponsor reasonably believes would have a negative impact on the exchange visitor's program) at the placement site. If a strike (or other similar labor dispute) occurs at the host entity in the location where an exchange visitor's host placement has been finalized pending the arrival of the exchange visitor or where an exchange visitor is currently carrying out the program, sponsors must re-place the exchange visitor at a different host entity immediately, to the extent possible, but in any event, within five business days. Exchange visitors placed where there is a strike or other such labor dispute will likely be subjected daily to a tense work environment that requires them either to cross picket lines and work in the place of striking employees or choose to join a strike, which could lead to conflict with management. Such work environments at a host entity are not conducive to the cross-cultural program experience the Department wishes to provide for its exchange visitors.

Hours. The Department has learned that gaining sufficient work hours is a significant concern to exchange visitors on the Summer Work Travel program. Many exchange visitors participate with the intention of maximizing their days and experiences, and become despondent if they have too few hours of work. Too few hours also may lead exchange visitors to experience difficulties with their financial obligations. On the other hand, too many hours may exhaust the exchange visitor and leave little time for any other activities.

The ideal situation would be for exchange visitors to work 40-hour work weeks, as is common in the United States for full-time employees, but the Department also understands that seasonal employment ebbs and flows. In order to create appropriate standards and transparency, as well as protect exchange visitors who expend significant personal investment to

participate, the Department proposes at paragraph 62.32(f)(4) that sponsors place exchange visitors only with host entities that commit to provide exchange visitors with no less than 32-hours and no more than 65-hours of permissible work per calendar week, averaged over a two-week period, for all work weeks of their placement. The Department will allow a calculation of hours averaged over a two-week period to accommodate a measure of potential irregularity in working hours from week to week. Exchange visitors must be paid overtime for hours completed, calculated on a weekly basis, in accordance with applicable federal, state, and local laws. Because exchange visitors have various motivations, the Department will permit an opt-out provision for the lower limit of hours (32), if requested in writing by the exchange visitor and acknowledged by the sponsor. Recognizing that certain host entities may not be able to guarantee 32-hours consistently, the Department would find appropriate placement at two authorized host entities simultaneously in order to meet the 32-hour minimum. Each placement must follow all regulatory requirements.

Over the years, the Department has been made aware that an exchange visitor's hours may decline over the course of the placement, causing exchange visitors to seek other unauthorized host placements. Should an exchange visitor's hours, averaged over a two-week period, fall below the 32-hour weekly minimum for longer than two weeks, the sponsor must assist the exchange visitor to increase his or her hours at the current host placement or find a re-placement or an additional placement to meet the required hour minimum. If the exchange visitor's hours averaged over a two-week period fall below the 32-hour weekly minimum, the exchange visitor also has the option to accept the below-minimum hours by indicating such to the sponsor in writing; the sponsor must acknowledge the communication.

Although the Department proposes at paragraph 62.32(f)(4) to require a minimum of 32-hours and a maximum of 65-hours per calendar week for authorized placements in the program, the Department does allow for some flexibility within that range in order to accommodate the special needs of seasonal placements. An exchange visitor's written consent is essential for work below or beyond previously agreed-upon hours. The importance of mutual agreement and clarity in hours and placement conditions is the motivation for an amended Form DS–7007.

Both the host entity and the exchange visitor will be subject to the requirement of two weeks' notice as set forth in proposed paragraph 62.32(f)(4)(iii)) and (iv) before changing central terms of the host placement agreement. The Department has learned that exchange visitor no-shows or abandonment of jobs are a major risk to the program, as host entities are counting on and have prepared for exchange visitor arrival. Likewise, the Department has too often been made aware of exchange visitors who arrive at the agreed placement only to be told that they have no job, or the job they are provided upon arrival is not the job to which they agreed. In order to instill greater commitment and, thus, higher quality exchange experiences, consequences for failure to fulfill requirements must exist on both sides.

An exchange visitor who abandons the placement, has a delayed arrival, or fails to arrive at the placement without first notifying the sponsor and gaining sponsor permission may be terminated from the program. Similarly, a sponsor may terminate from hosting exchange visitors any host entity that fails to provide the exchange visitor and sponsor two-weeks of notice before ending the placement, decreasing hours below the 32-hour weekly minimum, averaged over a two-week period, or otherwise significantly changing agreed-upon terms of the placement. The two-week notice provision does not apply to host entities in cases where the exchange visitor fails to report to work on a sustained basis (*i.e.,* for longer than ten days and without contacting the sponsor and host entity supervisor and receiving permission to be absent). The above requirements are intended to respond to sponsor concerns of no-shows, and exchange visitor concerns of significant changes to their placements without their knowledge or advance consent. (Proposed paragraph(f)(4)(iv) states that the two-week requirement does not apply to credible allegations of conduct that could result in sanctions.)

In addition, once notified, the exchange visitor must be given at a minimum 72-hours to consider any significant additional requirements or changes that host entities wish to make to the exchange visitor's host placement, such as new duties, departmental relocation, or geographic relocation. An exchange visitor cannot be required to accept major program changes without consent. As set forth in proposed paragraph 62.32(m)(3), the sponsor must inform host entities and exchange visitors that, if an exchange visitor does not agree to such requirements or changes, he or she may continue with his or her previous host placement duties or, if this is not possible, request a re-placement by the sponsor. In the Department's experience, most sponsors are able to complete the re-placement vetting process for exchange visitors (*i.e.,* verifying the terms and conditions of such employment and fully vetting host entities) within the three day period required by this proposed rulemaking, so that the exchange visitor may begin the re-placement position as soon as possible thereafter. Sponsors should expedite re-placements of exchange visitors who refuse to take on additional work requirements and wish, as a consequence, to be re-placed, so that exchange visitors are not required by circumstances to stay in host placements where they cannot or do not wish to conduct additional or alternative work requirements to those listed on their Form DS–7007.

6. *Compensation.* The 2012 IFR required sponsors to ensure that all exchange visitors are compensated at ''the applicable Federal, State, or Local Minimum Wage (including overtime)'' (77 FR 27610; § 62.32(i)). The Department reiterates that sponsors must ensure that host entities pay exchange visitors an hourly wage not less than the federal, state, or local minimum wage, whichever is higher, for all hours worked (including overtime) in conformance with applicable federal, state, and local laws, including the Fair Labor Standards Act. This requirement is retained in proposed paragraph 62.32(f)(6)(i), which will, in addition, require sponsors to place exchange visitors with host entities that agree to provide exchange visitors with pay, benefits, and working conditions commensurate with those offered to their U.S. counterparts and/or those on another class of nonimmigrant visa doing the same or similar work in the same work setting if they have similar qualifications and experience (see proposed paragraph 62.32(f)(6)(ii)). The Department does not wish host entities to use exchange visitors as a way of undercutting the wages of U.S. workers or the wages of those workers who have come to the United States after having been accepted into non-immigrant labor programs. Any host entity employing exchange visitors should be advancing the public diplomacy goal of the program and willing to offer exchange visitors an experience that is in keeping with this program purpose. The sponsor also must ensure that each exchange visitor has advance knowledge of his or her expected hourly earnings, enabling the exchange visitor to plan accordingly for living expenses (see proposed paragraph 62.32(d)(9)). The hourly wage

requirement is particularly important for sponsors to monitor in certain placements, such as summer camps, where the exchange visitor's room and board are covered by the camp and where hours of work may become extended due to the setting.

Sponsors or host entities must compensate eligible exchange visitors for time spent in required training, including applicable overtime (if the exchange visitor is working more than 40-hours in a single work week), in accordance with all applicable federal, state, and local laws (see proposed paragraph 62.32(f)(6)(i) and (ii)). For trainings held in a city that is farther than 60 miles away from the exchange visitor's site of activity (see proposed paragraph 62.32(f)(11)), or where exchange visitors are required by the sponsor or host entity to stay overnight at the training site, the sponsor or host entity must compensate (either themselves pay or reimburse the exchange visitor) for related lodging during the training.

In addition, as set forth in proposed paragraph 62.32(f)(8), sponsors, in accordance with the Fair Labor Standards Act, must ensure that host entities provide exchange visitors, without charge or deposit, all uniforms, tools, supplies, and equipment needed to perform placement-required activities. Finally, because the Summer Work Travel Program is cultural and educational, and not a work program, and because exchange visitors are not in the United States for sufficient time to make use of union services, sponsors must reimburse exchange visitors any union dues that are required as part of their host placement.

7. *Door-to-door sales positions.* The Department is concerned that door-to-door sales positions may create unsuitable risks for exchange visitors because such positions involve living in different housing from time to time and visiting homes unannounced and unrequested to sell products. Because door-to-door sales have become highly infrequent in this age of online sales, household reaction to the exchange visitor's outreach may be uncertain. The Department is aware that these positions are highly interactive, offer professional skills some exchange visitors are seeking, and offer daily English language usage. However, they tend to require some travel of the exchange visitor, usually within a pre-defined area, and may require long and/or irregular hours.

The Department thus requires in proposed paragraph 62.32(g) that sponsors placing exchange visitors in door-to-door sales positions execute an agreement with each exchange visitor in advance of the exchange visitor's acceptance of the host placement. This agreement must explain host placement duties and expectations, the geographical area the placement will encompass, how the purchase of any necessary state or local permits will be handled, how exchange visitors may access pre-arranged housing while traveling, and how, in accordance with the Fair Labor Standards Act, exchange visitors will be paid an hourly wage for time spent in their arrival orientation and be timely reimbursed for housing and other necessary business costs incurred while traveling on behalf of their host entity. Sponsors also must provide exchange visitors with an orientation containing information on safety considerations while selling door-to-door, how they will be supervised, how to react when faced with possible adverse situations (*e.g.,* if potential customers do not wish to buy offered products), and how products that customers do purchase will be delivered, especially in light of the fact that, in accordance with proposed paragraph 62.32(k)(10), exchange visitors are not permitted to drive.

Sponsors of exchange visitors working in door-to-door sales must ensure, as set forth in proposed paragraph 62.32(g)(2)(ii), that these exchange visitors earn in each calendar week of their program, averaged over a two-week period, the equivalent of the applicable federal, state, or local minimum wage per hour through hourly pay or sales profits, and receive pay and benefits commensurate with those offered to their U.S. counterparts and/or those on another class of nonimmigrant visa with similar qualifications and experience doing the same or similar work in the same work setting. The Department will allow a calculation over a two-week period to accommodate some fluctuation in sales profits week-by-week. Exchange visitors engaged in door-to-door sales must begin their sales calls no earlier than 9:00 a.m. and end their last sales call no later than 8:00 p.m. in their respective time zones.

In order to protect exchange visitors from a situation where they may be mistakenly taxed on funds collected for a host entity's business purposes, sponsors must ensure, as set forth in proposed paragraph 62.32(g)(2)(iii), that customers make all checks and other forms of payment directly payable to the host entity, not to the exchange visitor. In addition, proposed paragraph 62.32(g)(3) requires that sponsors honor an exchange visitor's reasonable request for re-placement at a non-door-to-door assignment.

8. *Exchange visitor host re-placement.* In paragraph 62.32(h), the Department proposes to change the deadline for sponsors to complete, at a minimum, the vetting of host re-placements (*i.e.,* verifying the terms and conditions of such employment and fully vetting the host entity) from 72-hours to three business days. Sponsors also are required to complete and secure the requisite signatures on a new Form DS–7007 prior to an exchange visitor's beginning work at a host re-placement. The Department is of the view that because exchange visitors have already paid their sponsor to find them a viable Summer Work Travel placement, sponsors may not charge exchange visitors additional fees at the time of re-placement.

9. *Sponsor vetting of host entities.* The private sector exchange model succeeds only if sponsors respect their role as an objective party seeking the best interests of the program and commit to advancing U.S. public diplomacy goals. Sponsors must become knowledgeable about host entity third parties through the vetting process. Annual host entity vetting, as currently required under the 2012 IFR (§ 62.32(n)(2)) and as retained in proposed paragraph 62.32(i)(1), works to ensure that all placements are with legitimate and reputable entities that have reputable managers and supervisors working with the exchange visitor. As set forth in proposed paragraph 62.32(j)(3), the Department will impute to the sponsor the actions of the host entity and any third parties hired by a host entity to carry out the exchange visitor's program, whether or not the host entity has disclosed that third party to the sponsor.

10. *Host entity cooperation.* Because the conditions of an exchange visitor's placement at his or her host entity may have a significant impact upon the opinion that exchange visitor develops of the Summer Work Travel program and of the United States, the Department sees it as vital to create consistent minimum standards to which sponsors must adhere in their authorization of host entities. The Department proposes in paragraph 62.32(j)(1) and (2) that sponsors be required to ensure that host entities understand program regulations and arrange or permit time for sponsor- or host-entity-organized cross-cultural activities for exchange visitors designed to meet the Department's cross-cultural activity requirements. If hosts understand their role in this public diplomacy initiative, they are likely to be more successful in hosting exchange visitors.

11. *Protections for exchange visitors.* The Department is of the view, as reflected in proposed paragraph 62.32(j)(6) that, in order for the exchange visitor to be secure in his or her possessions and have freedom of movement, it is never appropriate for a host entity to hold or withhold an exchange visitor's personal documents without the exchange visitor's advance written permission. The Department, through its program monitoring, has seen instances where the host entity seeks to retain exchange visitor documents or forbid exchange visitor communication until the exchange visitor meets certain work requirements. The Department believes that such host entity conduct has largely ended as a result of its monitoring, but wishes to make clear that no sponsor or host entity may retain the exchange visitor's Forms DS–2019 and DS–7007, money, identification (including passport and social security card), cellphone, flight tickets, or any other personal property, unless specifically requested in writing (to include an itemized list), by the exchange visitor. Such exchange visitor authorization may be withdrawn at any time in writing, at which time, the sponsor or host entity must release the documents and other items within 48-hours. In addition, under proposed paragraph 62.32(j)(5), a host entity must never stand in the way of communication between the exchange visitor and his or her sponsor, or prevent communication between the exchange visitor and his or her family and friends, or prevent communication with any other person, while the exchange visitor is not on duty. Finally, sponsors or employees of a sponsor must continue to follow the requirements set forth in § 62.10(d) regarding non-retaliation against an exchange visitor.

12. *Program exclusions.* The Department has witnessed improvement in sponsor administration of the program since its 2012 IFR, and the quality of placements has improved since the Department provided greater clarity regarding appropriate working conditions and inappropriate placements. This regulation proposes to expand the list of ''program exclusions'' as set forth in paragraph 62.32(k). In both the 2011 and 2012 IFRs, the Department increased the types of host placements in which sponsors were no longer permitted to place exchange visitors. The Department deemed such host placements as either being fundamentally unsuitable for a cultural and educational exchange program or posing an unacceptably high risk to the health, safety or welfare of exchange visitors. The Department proposes in this rulemaking to expand this list to include the following host placements:

Locations without possibility for regular contact. The Department expects sponsors to remain in contact with their exchange visitors. Therefore, sponsors, in accordance with proposed paragraph 62.32(k)(4), must not place exchange visitors where regular and convenient telephone and Internet communication is not accessible. This is especially important with regard to placements in national parks and summer camps.

Staffing agencies. As set forth in proposed paragraph 62.32(k)(7), a sponsor must ensure that staffing/employment agencies or similar entities do not become inactive intermediaries between the exchange visitor and the host entity. In accordance with proposed paragraph (k)(7), when such an agency places exchange visitors, it must provide daily supervision and primary and onsite monitoring of the exchange visitor's work environment at his or her host entity, and it must pay the exchange visitor directly. If such an agency is involved in the exchange visitor's program, it, along with the host entity, must be vetted in accordance with proposed paragraph 62.32(i).

Mobile amusement. Since publication of the 2012 IFR, the Department has become aware that the term ''mobile amusement'' is used more widely and is clearer than existing regulatory language prohibiting positions in ''traveling fairs.'' The Department accordingly proposes in paragraph 62.32(k)(17) to replace the term ''traveling fairs'' with ''mobile amusement.'' This regulation retains the prohibition on placements in the above industries due to a failure of host entities in these industries in the past to regularly update the exchange visitors' sites of activity, which is a basic requirement of the program, and to the fact that such exchange visitors, through heavy travel in these industries, never become established in a U.S. host community where they may make U.S. friends and engage in cultural activities on a sustained basis.

Movers. The Department in paragraph 62.32(k)(20) proposes to prohibit host placements in positions where exchange visitors' primary activity is the movement of household or office goods. Such positions can place exchange visitors at risk of serious injury.

Repetitive motion jobs. The Department in paragraph 62.32(k)(21) proposes to prohibit host placements in positions requiring repetitive motion, including on an assembly line or in certain factory-like settings. Host placements that require exchange visitors to engage in repetitive motion activities generally do not offer exchange visitors the required opportunity to interact frequently and substantially with American co-workers or customers. In addition, some repetitive motion jobs, including certain jobs on an assembly line or in certain factory-like conditions, require working with heavy machinery or dangerous chemicals. These positions require a great deal of focus on the task at hand to avoid injury, which also takes away from the opportunity for interaction with American co-workers.

Waste management and custodian/janitorial positions. The Department proposes in paragraph 62.32(k)(22) to prohibit host placements in any waste management, janitorial, or custodial positions or in any position that involves more than a small percentage (five percent of the hours or less) of waste management duties or keeping the premises of a building clean, tending to the heating, plumbing or air-conditioning system, or making building repairs. Such positions are not suitable for a cultural and educational exchange program. The above types of duties may be acceptable only if they are incidental to other types of service placements and comprise no more than the noted small percentage of duties performed by the exchange visitor.

Placements in non-seasonal or non-temporary positions: The Summer Work Travel program permits sponsors to place exchange visitors in seasonal or temporary positions. The nature of the position is determined by such factors as whether a host entity has a supplemental need for assistance; whether it has an increase in financial revenue, tourist, or seasonal customer numbers; the number of months such a peak includes within one calendar year; the nature of recreational or cross-cultural activities in the area or other factors that might cause the peak need; and whether the host entity has conducted outreach to local residents for employment.

Sole responsibility for safety of others. In situations where an exchange visitor would be solely responsible for the safety of others, such as working as lifeguards at single lifeguard pools, exchange visitors may not be placed at such host entities where the host entity does not provide regular on-site or on-call supervision and reasonable time off for exchange visitor breaks and meals. (See proposed paragraph 62.32(k)(24)).

13. Exchange visitor housing and local transportation. Issues involving housing and local transportation (between place of residence and place of work) raise constant concerns both for

the Department and for exchange visitors, who file housing-related complaints each year. In 2015, 16 percent of exchange visitors on the Summer Work Travel program, according to Department monitoring surveys, said they were dissatisfied with their housing and described their housing as dirty, run-down, too crowded, and unsuitable, and often without cooking facilities. In some instances, the Department received complaints that exchange visitors arrived in the United States to find that the housing listed on their pre-departure documents was unavailable or at capacity. The Department also received complaints about landlords who engaged in rent-gouging, withheld security deposits, and charged exchange visitors outrageous amounts for normal wear and tear at the end of the exchange period before they left for home so that they did not have to return exchange visitor security deposits. Unavailable and unsuitable housing appears to have been the top issue of concern for exchange visitors in both the 2014 and 2015 Summer Work Travel program years.

The Department proposes to require in paragraph 62.32(l)(1) that sponsors may only authorize placements that include options for safe and affordable housing accommodation and accessible modes of local transportation. Housing options must have reasonable proximity to the host entity and regular, safe, and affordable local transportation options leading to commercial infrastructure and to the host entity, unless the sponsor or host entity provides such transportation. Possible housing and local transportation options must be identified before the placement is approved as part of the sponsor's program. The specific conditions of the housing option selected for the exchange visitor by either the sponsor or sponsor's host entity, as applicable, must be reflected on the Housing Addendum to Form DS–7007 in accordance with proposed paragraph 62.32(m).

The Department proposes to retain the option for exchange visitors to self-identify housing, but both the sponsor and the exchange visitor must document such a selection in writing (proposed paragraph 62.32(l)(5)), and the sponsor may deny the housing if it does not include the characteristics set forth in proposed paragraph 62.32(l)(2). All housing, whether provided or found by the exchange visitor, must meet all applicable housing codes and ordinances. It also must be affordable for the exchange visitor; in a safe location; within reasonable distance from the exchange visitor's site of activity at the host entity(ies); in an area with regular, safe, and affordable transportation options; in a location that is neither isolated nor difficult to access; and in reasonable proximity to commercial infrastructure. Likewise, sponsors may not approve a placement if the associated housing option does not include those same characteristics.

Recent summers have seen an increased number of severe exchange visitor bicycle accidents. If an exchange visitor bicycles to and from the host entity or to reach commercial infrastructure, sponsors, in accordance with proposed paragraph 62.32(l)(7) must ensure that the exchange visitor is informed that he or she must wear a helmet and other appropriate protective gear and that he or she must check that the bicycle is in working order (*e.g.,* brakes functional, frame not bent, all tires inflated properly, bicycle chain and gears functional). All sponsors must provide bicycle safety information in pre-arrival materials and during orientation, including the Department-generated bicycle safety flyer, and place a bicycle safety video on their Web site. No exchange visitor should be expected by sponsors or host entities to ride a bicycle to work on a highway or other major road without bicycle lanes. Likewise, no exchange visitor should be expected to ride a bicycle over distances of longer than a total of eight miles per day in order to travel to and from the host entity or reach commercial infrastructure.

Sponsors placing exchange visitors in national parks, ski resorts, and summer camps must have on file, in accordance with paragraph 62.32(l)(3), the host entity's written arrangement for transportation for those exchange visitors in their off-duty hours or in case of emergency.

14. *Form DS–7007 (Host Placement Certification).* Proposed paragraph 62.32(m) contains the requirement of the Summer Work Travel Host Placement Certification Form (Form DS–7007). The Department believes certain host placement information must be agreed upon by the three primary parties—the exchange visitor, host entity, and sponsor—before issuance of a visa.

Provision of Forms DS–7007 to exchange visitors will ensure that they are fully aware, before traveling to the United States, of the details of their individual Summer Work Travel program. As set forth in proposed paragraph 62.32(m)(1)(i), these details must include information about location and description of the host placement; number of employees and other exchange visitors on location; hours of work each week that will be offered the exchange visitor; duties, wages, and expectations of overtime; expected training period, if any; physical demands of the host placement; benefits each exchange visitor will receive from the host placement; total itemized fees and costs of the program charged by sponsors, host entities, and third parties (noting clearly which of those that are mandatory and those that are optional) that the exchange visitor will incur; itemized costs to each exchange visitor for benefits and mandatory and optional deductions (such deductions must be noted on the form); and any meals included at the host entity. Deductions taken from wages must be disclosed in advance to the exchange visitor.

The Department further proposes, in paragraph 62.32(m)(1)(i), to require sponsors to complete Form DS–7007 for every initial and subsequent host placement the exchange visitor accepts, and to update the form if the terms of the host placement(s) changes significantly. Sponsors must provide each signatory an executed copy of the Form DS–7007 (excluding the Housing Addendum) before the sponsor issues the exchange visitor a Form DS–2019 and the exchange visitor makes his or her visa application; and inform the exchange visitor that he or she must have his or her fully executed Form DS–7007 (excluding the Housing Addendum) available (along with his or her Form DS–2019) should it be requested during the visa interview.

In accordance with proposed paragraph 62.32 (m)(2), sponsors also must provide details about any sponsor- or host entity-arranged housing on the Housing Addendum to Form DS–7007, including the type of housing (house, apartment, dormitory, or other); distance to the exchange visitor's site of activity, and local transportation type and cost; cost of housing either weekly or monthly; need for an exchange visitor housing deposit; utilities covered in rent and those that the exchange visitor must pay separately; number of other tenants; housing features and description (including numbers of bedrooms and bathrooms); and type of housing contract, if any, that the exchange visitor must sign.

For protection of exchange visitors under proposed paragraph 62.32(m)(3), sponsors must give exchange visitors 72-hours to consider any significant additional requirements or changes proposed by the host entity to their host placement or housing after the DS–7007 or Housing Addendum is initially executed. If the exchange visitor disagrees in writing with the proposed

changes to his or her placement or does not respond at all about suggested changes, he or she must be permitted to continue with the duties in the original placement, unless the host entity requests that the sponsor re-place the exchange visitor. An exception to the 72-hour rule may be made if such a change must be implemented before 48-hours to protect the health, safety, and welfare of the exchange visitor.

If the sponsor or host entity arranges housing for the exchange visitor, the Housing Addendum to Form DS–7007 must be completed and sent to the exchange visitor prior to the visitor's departure for the United States in accordance with proposed paragraph 62.32(m)(2). Sponsors must update the DS–7007 and/or Housing Addendum if exchange visitors move to other sponsor-provided (including host entity-provided) housing. If exchange visitors find their own housing or opt out of sponsor-provided housing (including host entity-provided), which they must do in writing, the sponsor need not complete the Housing Addendum, but must vet the housing address and its suitability before the exchange visitor can move in. Sponsors must keep the DS–7007 on file for three years, as set forth in proposed paragraph 62.32(m)(4).

15. *Exchange visitor pre-departure orientation.* The Department believes that an orientation for each exchange visitor is of the utmost importance in order to inform the exchange visitor about the role of the sponsor and the host entity, exchange visitor requirements during the program, and benefits and protections offered. Sponsors must fulfill the pre-arrival information and orientation requirements as set forth at § 62.10(b)–(c). In addition, pursuant to proposed paragraph 62.32(n), sponsors would be required to provide, prior to each exchange visitor's departure from his or her home country, an orientation, either in person or online, or a combination of both, that includes the following: An explanation of the sponsor's role during the program, including monitoring, and of host entity responsibilities; the Department of State's Summer Work Travel Exchange Visitor Welcome Letter and Diversity Flyer; the sponsor's 24/7 immediate (*i.e.,* non-answering machine) contact telephone number; a description of exchange visitor and host entity obligations and responsibilities, including a list of program obligations and responsibilities; information explaining the cross-cultural component of the Summer Work Travel program, including the exchange visitor's obligation to participate in sponsor- and/or host entity-arranged cross-cultural activities, and how best to experience local or national U.S. culture; information on how to identify and report workplace abuse, sexual abuse, sexual harassment, bullying, and exploitation; information on how to identify and report wage violations, housing violations, poor housing conditions, and instances of host entity retaliation against the exchange visitor for reporting problems; information on general personal, pedestrian, transportation, including bicycle safety information (*i.e.,* providing the Department-generated bicycle safety flyer and placing a bicycle safety video on the sponsor's Web site); an identification card with a photo of the exchange visitor listing the exchange visitor's name, the sponsor's name, and main office and emergency telephone numbers, 911, the telephone number of the Department's J–1 visa toll-free emergency help line, the J–1 visa email address, and the name and policy number of the sponsor's health insurance provider, if applicable; and information on how to seek medical care in the United States (*e.g.,* information on insurance deductibles, the differences between emergency room visits and regular hospital visits), and locations of the nearest medical facilities (*e.g.* hospitals, clinics, for general medicine).

The orientation must additionally include information to exchange visitors on the process of monitoring and on their obligation to notify their sponsor within ten days of arrival in the United States and of any changes to the terms agreed to in Form DS–7007. Sponsors must describe the circumstances that may lead to termination of an exchange visitor's program under rules governing the program.

All of the proposed requirements for the pre-departure orientation are those that cover major aspects of the program, including the responsibilities of each party involved in the exchange; what reporting is required; necessary communications among the sponsor, host entity, and exchange visitor; workplace violations to which the exchange visitor should be alert; and what to do in case of emergencies. The Department is also aware that many parents of exchange visitors attend pre-departure orientation, although this is not a requirement, and believes that such information is also helpful for exchange visitors' families to know.

16. *Cross-cultural activities.* The Department proposes at paragraph 62.32(o)(1) to require all sponsors to ensure that exchange visitors in the Summer Work Travel Program work with U.S. persons and actually engage in cross-cultural activities, as opposed to merely having, as the 2012 IFR required, the opportunity to do so. This proposed requirement more properly reflects the Department's intent, *i.e.,* that exchange visitors are on an exchange program, the goals of which are to have them both work alongside U.S. persons and learn about U.S. culture through and outside of work. The Department proposes at paragraph 62.32(o)(2)–(3) that sponsors must themselves plan, initiate action, and/or assist host entities, domestic third parties, or local community groups, to provide each of their exchange visitors with at least one cross-cultural activity per calendar month in addition to their work activities, thereby giving him or her exposure to U.S. culture and/or the opportunity for interaction with U.S. persons. Sponsors may include in their agreements with host entities a provision that the host entity plan and implement cross-cultural activities each calendar month during which it has exchange visitors under its supervision.

Cross-cultural programming opportunities should provide exchange visitors on the Summer Work Travel program at least one of the following benefits. They should enable exchange visitors to: (1) Learn about U.S. society, higher education, and culture outside of their placement; (2) share their own culture, traditions, and views with U.S. residents; (3) experience the United States and its geographical diversity; (4) see the world or the United States from another perspective; (5) better understand the history and heritage of a diverse U.S. population; and/or (6) appreciate similarities that bring people of different nationalities and backgrounds together.

Cross-cultural activities can range from small and informal to large-scale and organized activities. A cultural activity does not need to be a trip to another city or a large or expensive event that takes weeks of planning. It can be something small and relatively spontaneous, making use of local resources. Some examples that occurred over the last program year were: Having the exchange visitor come to an already-planned staff picnic; organizing a potluck dinner at the supervisor's house with colleagues; going to a state fair; organizing a building-a-bonfire-on-the-beach event; having a group visit a natural resource, such as a cave or a federal, state, or local park nearby; playing softball with fellow employees; going with the exchange visitor to a local sporting event such as baseball (including having a contest about who can best describe the rules of baseball);

bowling; or a trip to a downtown area, museum, library, or outdoor concert that is either free of charge or has a nominal charge. Around 42 percent of sponsors and their host entities already arrange such cultural activities for exchange visitors. Sponsors should be prepared to provide guidance to host entities not yet offering cultural activities on how to fulfill this requirement.

17. *Exchange visitor monitoring and assistance.* The Department will continue to require, as set forth in proposed paragraph 62.32(p), that sponsors maintain, at a minimum, monthly personal contact with exchange visitors. The Department wishes to clarify that sponsors should make actual contact with each exchange visitor and ascertain how his or her program is progressing. The sponsor must communicate in a way that elicits an exchange visitor response (in writing through email or by telephone or telephone message) that provides clarity as to the exchange visitor's well-being. In addition, the Department intends for sponsors to be proactive during their monitoring in assessing exchange visitors' overall health, safety, and welfare and address appropriately and in a timely manner issues identified through their monitoring; provide assistance to exchange visitors as requested; and serve as information resources, facilitators, and counselors upon an exchange visitor's request. (See proposed paragraph 62.32(p)(2)–(6)).

Sponsors must document all efforts to resolve problematic placements and efforts to contact non-responsive exchange visitors before termination. Sponsors must conduct monitoring of their exchange visitors and facilitate Department oversight and visits to placement locations. In addition, sponsors should inform host entities about the Department's monitoring process. Sponsors must be prepared to incorporate additional monitoring steps at the suggestion of the Department in order to resolve efficiently any problems that come to the Department's attention regarding the Summer Work Travel program.

18. *Sponsor use and vetting of foreign third parties.* The Department expects that sponsor use of foreign third parties be as transparent as possible and that sponsors be substantially knowledgeable of and closely oversee the actions of any foreign third parties with which they work. The Department has seen instances of sponsors delegating most of the responsibility for their Summer Work Travel program to third parties, many of which are domiciled abroad. Because many third parties recruit exchange visitors in an exchange visitor's home country, these third parties are known first to the exchange visitor. But this should not remain the case throughout the exchange. Sponsors, which are designated by the Department to facilitate the Exchange Visitor Program, are expected to develop and have the primary relationship with host entities in the United States, even though host placement leads may have been initially recommended to the sponsor by a foreign third party. In addition, sponsors should develop their own forms and other information-gathering documents when they work with host entities in the United States; these should not be provided by third party entities.

Because the Summer Work Travel program is first and foremost a public diplomacy and cultural exchange program, if utilizing the services of foreign third parties, sponsors must, under proposed paragraph 62.32(q)(1), select only those that market the Summer Work Travel program as a cultural and educational program with a 32- to 65-hour per week work component rather than a labor program.

As proposed in paragraph 62.32(q)(1)(ii), sponsors must use only foreign third parties that have a fixed office address, employees with professional experience in the service(s) the foreign third party provides, an organizational mission applicable to cultural and educational exchange, and a secure system to collect, protect, and dispose of the personal data of potential and actual program exchange visitors (*e.g.,* a digital security system for intrusions if the data is maintained electronically, a securely locked file cabinet if collected in paper format). Of great importance is that third parties have a secure system in place to dispose of exchange visitor applications and other documents that have personal data on them (*e.g.,* through shredding).

As proposed in paragraph 62.32(q)(1)(iv), sponsors must ensure that their foreign third parties charge exchange visitors only fees and costs that are permissible under regulation, transparent, justifiable in terms of services provided, and legal. In accordance with proposed paragraph 62.32(d)(9), it is not permissible to require an exchange visitor to remit a portion of his or her income earned in the United States to an overseas business entity.

Sponsors must adequately orient their foreign third parties on the purpose and intent of the Exchange Visitor Program, as set forth in proposed paragraph 62.32(q)(3), as well as provide regulatory updates about the Exchange Visitor Program when these are announced by the Department. In addition, as proposed in paragraph 62.32(q)(4), sponsors must require, review and approve annually the marketing materials for exchange visitor programs marketed on the sponsor's behalf by each of their foreign third parties. These marketing materials must include updated itemized price lists that adhere to any Department-initiated template.

In order to promote transparency for potential exchange visitors, the Department proposes in paragraph 62.32(q)(6) that a sponsor place information about each of its foreign third parties on the sponsor's main Web site (*i.e.,* with a visible link to this page on the sponsor's homepage). The Web site entry must include the foreign third party's official name, headquarters address, and specific program functions performed (*e.g.,* recruitment and overseas orientation of exchange visitors, initial identification of host entities). This will give potential applicants to the program a way to check that any third party or outside entity that approaches them plays a legitimate role in the sponsor's program administration.

In accordance with § 62.2 and as provided in proposed paragraph 62.32(q)(8), failure by any foreign third party to comply with the regulations or with any additional terms and conditions governing administration of the Exchange Visitor Program will be imputed to the sponsor by the Department. And, pursuant to proposed paragraph 62.32(q)(8), sponsors are required to ensure that foreign third parties know and comply with all applicable Departmental regulations and guidance.

The Department proposes in paragraph 62.32(r) that sponsors thoroughly vet their foreign third parties. At a minimum, a sponsor must annually review current documentation for each of its foreign third parties as part of the vetting process to ensure that the third party is legally authorized to conduct business where it operates; is solvent, as determined through an examination of its recent financial statements; is reputable, as evidenced by references from business associates or partner organizations; does not have legal judgments against it or pending legal actions or complaints; and has staff all of whom have undergone criminal background checks. These are very important aspects for sponsors to consider as they select and vet foreign third parties. Such foreign third parties come into direct contact with exchange visitor program applicants and

participants, and the reputation of the Summer Work Travel program is dependent upon the financial and operational stability of those third parties. As proposed in paragraph 62.32(q)(9), a sponsor may not use a foreign third party if the Department has determined and informed the sponsor that the third party does not meet the requirements of proposed paragraph 62.32(q)(1).

19. *Sponsor use and vetting of domestic third parties.* In proposed paragraphs 62.32(d)(4) and 62.32(s)(2), domestic third parties providing initial identification of host entities, implementing cross-cultural activities for exchange visitors, serving as a local point of contact and orientation for exchange visitors, or providing housing assistance and transportation for the program now must be covered under written agreement with the sponsor. In proposed paragraph 62.32(s)(4), these third parties also must be listed on the sponsor's main Web site, noting each party's official name, headquarters address, and the specific program functions performed. As proposed in paragraph 62.32(s)(1), sponsors must use only domestic third parties that have a fixed office address; employees with professional experience in the service(s) the domestic third party provides; a willingness to learn about and contribute through provided services to the public diplomacy mission of the Summer Work Travel program; and, if the organization collects applications or other materials with the personal data of prospective or actual exchange visitors, a secure system to collect, protect, and properly dispose of such data.

Sponsors will be required to supervise and monitor carefully their third parties' program-related activities to ensure that the third party is in compliance with the Exchange Visitor Program regulations. Sponsors must not refer any potential exchange visitor applicants to a domestic third party that is not covered by a written agreement. Sponsors that engage another designated sponsor as a third party do not need to vet that sponsor, but must require that the third party sponsor provide proof of current Department designation.

Sponsors must vet domestic third parties in accordance with the requirements set forth in proposed paragraph 62.32(t). These are very important aspects for sponsors to consider as they select and vet domestic third parties. Such domestic third parties may initially identify host entities where exchange visitors are placed, which placement will materially impact the exchange visitor's experience in the United States; implement cross-cultural activities for the exchange visitor, which is a central aspect of such a public diplomacy program; orient the exchange visitor on what is permitted and not permitted on the program; serve as a point of contact throughout that exchange visitor's time in the United States; or provide transportation for the exchange visitor. The experience of the exchange visitor and the reputation of the Summer Work Travel program are protected by assessing whether the third party, at a minimum, legally operates in the United States; has disclosed any bankruptcy, complaints, pending legal actions, or adverse judgments; and has liability insurance sufficient to cover the activities it provides in connection to the Summer Work Travel program.

Requiring sponsors to enter into a fully executed written agreement with both foreign and domestic third party entities (proposed paragraphs 62.32(q)(2) and (s)(2)) will provide more oversight than the previously informal agreements sponsors may have relied upon for such services, and will better protect the health, safety, and welfare of exchange visitors. It will also ensure that the sponsor acknowledges in writing that the third party is in a legal relationship with that sponsor in regard to that third party's contribution to the Exchange Visitor Program and what specific services that sponsor expects the third party to provide to exchange visitors.

20. *Reporting requirements.* As proposed in paragraph 62.32(u)(1), sponsors must report to the Department, within 30 days of conclusion, any new written agreement they have made with a foreign third party and the name of and contact information for that foreign third party. A sponsor also must notify the Department within 30 days after ceasing to work with a foreign third party previously reported. Each sponsor must keep the list of foreign third parties up-to-date with the Department so that the Department can ensure program office and consular office worldwide awareness of whether or not foreign third parties are operating on behalf of the Summer Work Travel program, both within the United States and abroad. It also will require sponsors to submit each year by December 1 a report of itemized exchange visitor price lists with breakdowns of the costs that exchange visitors must pay each sponsor and foreign third party by country in order to participate in the program.

21. *Re-evaluation of exchange visitor cap and moratorium on sponsors.* On November 7, 2011, the Office of Private Sector Exchange published a notice in the **Federal Register** (Public Notice 7677) stating that, until further notice, Summer Work Travel program sponsors in business for the full 2011 calendar year would not be permitted to expand their number of program participants beyond their actual total 2011 participant program size (a cap) and that no new applications from prospective sponsors for Summer Work Travel program designation would be accepted (a moratorium). The cap has meant that designated sponsors may not increase the number of exchange visitors participating in their Summer Work Travel programs beyond their current allotment of Forms DS–2019 (*i.e.,* they cannot request program expansion under § 62.12(d)(2)). The Department intends to re-evaluate the cap and the moratorium upon completion of this rulemaking and invites public comment.

Regulatory Analysis

Administrative Procedure Act

The Department of State is of the opinion that administration of the Exchange Visitor Program, including the Summer Work Travel program category, is a foreign affairs function of the U.S. Government and that rules implementing this function are exempt from Section 553 (Rulemaking) and Section 554 (Adjudications) of the Administrative Procedure Act (APA). As reflected in the Fulbright-Hays Act, the purpose of such programs is to increase ''mutual understanding'' between the people of the United States and those of other countries, ''unite us with other nations,'' and ''promote international cooperation.'' Pursuant to law, policy, and longstanding practice, the Department of State has supervised, either directly or through private sector program sponsors or grantee organizations, those foreign nationals who come to the United States as exchange visitors in exchange visitor programs, one of which is the Summer Work Travel Program. Exchange visitors in the Summer Work Travel Program come to the United States currently from approximately 125 countries. When problems occur in a program such as this, foreign governments often directly engage the Department of State regarding the treatment of their nationals, regardless of who is responsible for the problems.

A major purpose of this rulemaking is to put in place extra measures to protect the health, safety, and welfare of foreign nationals entering the United States to participate in the Summer Work Travel Program then returning to their countries of nationality or last legal permanent residence upon completion

of their programs. A number of foreign governments have informed the Department that they regard this program as important to their bilateral relationship with the United States and to their nationals who seek to participate. Participating countries look to the Department to protect their nationals. The Department is of the view that failure to protect the health and welfare of these foreign nationals can have direct and substantial adverse effects on the foreign affairs of the United States.

The Department emphasizes that many provisions of this proposed rule—indeed, the majority—reflect careful consideration of public comments received on two previous Interim Final Rules issued on May 11, 2012, and April 26, 2011 (see the citations in the ''Supplemental Information'' section of this Notice, above). Members of the public submitted detailed comments, and this proposed rule has benefited from those comments. A number of provisions within this proposed rule are new, based on additional monitoring of the program that the Department has conducted and meetings with sponsors about their current experience in conducting this program.

Although the Department is of the opinion that this rule is exempt from the rulemaking provisions of the APA, the Department is publishing this rule as a proposed rule, with a 45-day provision for public comment and without prejudice to its determination that the Exchange Visitor Program is a foreign affairs function.

Small Business Regulatory Enforcement Fairness Act of 1996

This proposed rule is not a major rule as defined by 5 U.S.C. 804 for the purposes of Congressional review of agency rulemaking under the Small Business Regulatory Enforcement Fairness Act of 1996 (5 U.S.C. 801 *et seq.*).

Unfunded Mandates Reform Act of 1995

This proposed rule will not result in the expenditure by State, local and tribal governments, in the aggregate, or by the private sector, of $100 million in any year and it will not significantly or uniquely affect small governments. Therefore, no actions were deemed necessary under the provisions of the Unfunded Mandates Reform Act of 1995.

Executive Order 13175—Consultation and Coordination with Indian Tribal Governments

The Department has determined that this rulemaking will not have tribal implications, will not impose substantial direct compliance costs on Indian tribal governments, and will not preempt tribal law. Accordingly, the requirements of Executive Order 13175 do not apply to this rulemaking.

Regulatory Flexibility Act/Executive Order 13272: Small Business Impacts

Since the Department is of the opinion that this rule is exempt from 5 U.S.C. 553, the Department is also of the view that this rule is not subject to the Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*) and Executive Order 13272. However, to inform the public as to the costs and burdens of the this rule upon designated program sponsors, the Department notes that, if adopted in full, the changes proposed herein will affect the operations of 41 corporate, academic, and tax-exempt program sponsors designated by the Department to conduct the Summer Work Travel Program. Further information follows.

Numbers of Small Businesses

Of the 41 current designated sponsors in the Summer Work Travel category, 29 sponsors or 70 percent of the total had annual revenues of less than $7 million in 2015. These 29 small program sponsors accounted for approximately 26,000 exchange visitors on the Summer Work Travel program in 2015, or 28.8% of the average total number (90,000) of exchange visitors on the Summer Work Travel program (averaged over the past three calendar years (2013–2015)).

- *Transparency:* Proposed fee and wage transparency requirements include the requirement to provide sample budgets and a breakdown of all fees that an exchange visitor pays. The Department estimates cost for 29 small sponsors multiplied by 1 burden hour at $26 weighted wage (*i.e.,* including staff benefits), in accordance with Bureau of Labor Statistics (National Compensation Survey, *Monthly Labor Review,* January 2016) and the salary figures for entry-to-junior-level or ''other services'' staff at non-profit or for profit organizations (also junior contractors) working on administering daily program activities, or $754. This is a new cost to sponsors.
- *Sponsor screening of candidates for eligibility and selection.* The Department estimates the cost at 0.5 hours per exchange visitor (26,000 exchange visitors under the purview of small sponsors) multiplied by $26 per weighted wage, or $338,000. This is not a new cost for sponsors. However, the cost, now set forth in proposed paragraph (e)(1) of the proposed rule, was previously calculated as part of placement (paragraph (g) of the 2012 IFR) and has now been separated out.
- *Exchange visitor pre-placement at host entities.* The Department estimates that there will be no new costs and that the cost will be $260,000 (26,000 exchange visitors under the purview of small sponsors multiplied by 1 hour multiplied by $10 per exchange visitor). Placement includes finding a host entity at which the exchange visitor may conduct the work component of the exchange and identifying information about the work component, such as hourly wage, activities of the job, whether any heavy lifting or other physical labor is involved, whether there are any training requirements, whether there are any meals that may be taken onsite, whether there are costs to the exchange visitors for the host entity placement, and so forth.
- *Exchange visitor host re-placement.* It is estimated that there may be as many as 725 re-placements or additional placements by small sponsors and the cost to small sponsors will be 0.5 hours of sponsor administrative staff time multiplied by $10 (Bureau of Labor Statistics estimated hourly wages for seasonal administrative workers) multiplied by 725 or a total of $3,625. This is not a new cost to sponsors. However, the cost was previously calculated as part of placement and has now been separated out.
- *Sponsor vetting of host entities.* The Department estimates that the cost for vetting host entities will be $91,000 for all sponsors collectively (7,000 host entities associated with small sponsors multiplied by 0.5 man hours multiplied by $26). This is not a new cost.
- *Facilitating the placement of exchange visitors in appropriate and affordable housing.* The Department estimates the cost at $260,000 (26,000 exchange visitors multiplied by 1 hour multiplied by $10 per hour for administrative staff wage). This is not a new cost.
- *Preparing and disseminating Form DS–7007.* The Department estimates that it will take sponsors a total of 1.25 hours to complete both parts of the form at a cost of $868,563 (26,725 exchange visitors (including re-placements) multiplied by 1.25 hours multiplied by $26 weighted wage per hour). This cost includes completion of both the main form and the housing addendum. This is a new cost for sponsors.
- *Orientation documentation for exchange visitors:* The Department estimates the cost of sponsors' providing orientation-related materials to 26,000 exchange visitors under the purview of small sponsors at 0.5 hours multiplied by $26 weighted wage per hour, or $338,000. This is not a new cost.

• *Cross-cultural activities.* Small sponsors (or their host entities) must plan cross-cultural activities for exchange visitors, with one cross-cultural activity being planned each calendar month during which exchange visitors are on program. Exchange visitors are, on average, in the program for a period of four months. Planning and carrying out the cross-cultural activities is calculated at 7,000 small business host entities of exchange visitors multiplied by six hours (four for planning and two for implementation of one activity) over the course of the summer (one per calendar month of the summer work travel program period equals four total) at $10 per hour administrative staff wage; this equals $1,680,000. The time commitment to plan an activity for exchange visitors could be less for many host entities, given that the entity is not required to plan a complex cultural activity. This is a new cost.

• *Exchange visitor monitoring and assistance:* It is estimated that small sponsors will spend 30 minutes per exchange visitor to monitor exchange visitor activities throughout the program cycle, including checking on exchange visitor health, safety and welfare, resolving placement problems, and contacting less responsive participants, at an annual cost of $130,000 for sponsors collectively (26,000 exchange visitors multiplied by 0.5 multiplied by $10 per hour administrative staff wage). This is not a new cost to sponsors.

• *Sponsor use and vetting of foreign and domestic third parties.* The Department estimates that small sponsors will use and vet around 252 foreign and 280 domestic third parties. The Department estimates that it will cost small sponsors two hours to conclude an agreement and vet each third party at a cost of $26 weighted wage per hour, or $27,664. This is not a new cost.

• *Reporting requirement.* Sponsors will only need to submit the foreign third party (formerly foreign entity) names and contact information and their price lists. The twice-yearly placement report is no longer required, as the Department can retrieve this information from existing SEVIS files. It is estimated that the 29 small sponsors will spend one hour on each of two reporting requirements multiplied by $26 per man hour, or $1,508. This is not a new cost.

The total cost of all regulatory provisions per small sponsor exchange visitor is $154; total cost of all new regulatory provisions per small sponsor exchange visitor is $98. Last calendar year, there were 13 small sponsors having fewer than 500 exchange visitors in the Summer Work Travel category. The largest of this number had permission from the Department to host 477 exchange visitors and would under the proposed regulation incur total costs of $73,458, and new costs of $46,746, or four percent of revenue. The smallest of this number had permission to host five exchange visitors and would under the proposed regulation incur total new costs of $490, or less than one percent of revenue.

Last calendar year, there were twelve sponsors with permission to host between 500 and 2,000 exchange visitors in the Summer Work Travel category. Of these, the largest had permission to host 1,934 exchange visitors and would under the proposed regulation incur a total cost of $297,836, and total new costs of $189,532, or around nine percent of revenue. The smallest sponsor in this group had permission to host 555 exchange visitors and under the proposed regulation would incur a total cost of $85,470 or around eight percent of revenue and new costs of $54,390, or around six percent of revenue.

Last calendar year, there were five sponsors with permission to host more than 2,000 exchange visitors. The largest of these were able to host 5,569 exchange visitors and would under the proposed regulation incur a total cost of $857,626, or eight percent of revenue and total new costs of $545,762, or six percent of revenue. The smallest of these were permitted to host 2,311 and would incur under the proposed regulation total costs of $355,894 and total new costs of $226,478.

The Department considered whether alternative approaches for small businesses could adequately protect the safety and welfare of exchange visitors while reducing costs to small entities. For example, the Department considered requiring cross-cultural activities less frequently for small sponsors and/or host entities. However, the Department has a mandate to ensure cross-cultural engagement for all visitors, and a monthly requirement provides a minimum level of cross-cultural engagement to meet the objectives of the Fulbright-Hays Act. The Department also considered the requirement to complete a DS–7007 on housing and host entity placement for small businesses and considered whether small entities could be given additional time for compliance. The Department decided against this proposal due to the need to provide adequate information about the host entity and housing available to all visitors to the United States. The requirements for the Summer Work Travel category, as well as all Exchange Visitor Program categories, are driven almost exclusively by considerations of the health and safety of the exchange visitor, and any impact on foreign relations with the visitor's home country. These considerations constrain the number of feasible alternatives to the requirements proposed in this Notice of Proposed Rulemaking. That said, the Department requests comment on other possible alternatives that would meet the objectives of this rulemaking in a less costly manner for small entities.

Executive Order 12866 and Executive Order 13563

As discussed above, the Department is of the opinion that the subject of this rulemaking constitutes a foreign affairs function of the United States, and thus is exempt from the provisions of Executive Order 12866. The Department has nevertheless reviewed this rulemaking to ensure its consistency with the regulatory philosophy and principles set forth in Executive Orders 12866 and 13563. This rulemaking has been reviewed by the Office of Information and Regulatory Affairs, which has designated it a significant rule pursuant to Executive Order 12866.

In order to inform the public as to the costs and benefits of this rule, the Department presents the following information.

Affected Population. The Department estimates that this rule will affect 41 current designated sponsors hosting approximately 90,000 exchange visitors annually and working with an estimated 26,000 host entities and 1,900 foreign and domestic third parties. Sponsors facilitate the Exchange Visitor Program and provide the necessary information, support, and guidance for exchange visitors.

Costs. Implementation of certain provisions set forth in this proposed rule may result in costs for sponsors. A cost breakdown of old and new costs is noted below:

• *Transparency:* Proposed fee and wage transparency requirements, including the requirement to provide sample budgets and a breakdown of all fees and estimated costs that an exchange visitor pays. The Department estimates cost at 41 sponsors multiplied by 1 hour at $26 weighted wage, in accordance with Bureau of Labor Statistics salary figures for entry-to-junior-level non-profit organization staff or contractors working on administering daily program activities, or $1,066. This is a new cost to sponsors.

• *Sponsor screening for candidate eligibility and selection:* The Department estimates the cost at 0.5 hours per exchange visitor (90,000) multiplied by $26 per weighted wage or $1,170,000. This is not a new cost for sponsors; it was previously calculated as part of placement, and has now been separated out.

• *Exchange visitors for providing required eligibility and screening information:* The Department estimates the cost at 1 hour per exchange visitor (90,000) multiplied by $1 or $90,000. This is not a new cost, but has been added to cost calculations for the first time and is thus calculated as a new cost. The exchange visitors submitting eligibility information to the program are students in their home countries and are unlikely to be paid an hourly wage.

• *Exchange visitor pre-placement at host entities:* The Department estimates that there will be no new costs and that the cost will be $900,000 (90,000 exchange visitors multiplied by 1 hour multiplied by $10 per exchange visitor). Sponsors generally place exchange visitors from a contact list that is used year-to-year and updated through public notice or current contacts.

• *Door-to-door sales placements:* The Department estimates that the cost to the one sponsor making such placements to execute an agreement explaining in detail 1,325 exchange visitor's duties will be 0.5 hours multiplied by $5 per exchange visitor, or $3,313. This is a new cost to one current sponsor.

• *Exchange visitor host re-placement:* It is estimated that there may be as many as 2,500 re-placements or additional placements and the cost to sponsors will be 0.5 hours of sponsor administrative staff time multiplied by $10 Bureau of Labor Statistics estimated hourly wages for seasonal administrative workers multiplied by 2,500 or a total of $12,500. This is not a new cost to sponsors; it was previously calculated as part of placement and has now been separated out.

• *Sponsor vetting of host entities:* The Department estimates that the cost for vetting host entities will remain at $338,000 for all sponsors collectively (26,000 host entities multiplied by 0.5 man hours multiplied by $26). This is not a new cost.

• *Facilitating the placement of exchange visitors in appropriate and affordable housing:* The Department estimates the cost at $900,000 (90,000 exchange visitors multiplied by 1 hour multiplied by $10 per hour). This is not a new cost.

• *Preparing and disseminating Form DS–7007:* The Department estimates that it will take sponsors (or their host entities) a total of 1.25 hours to complete both parts of the form at a cost of $3,006,250 (92,500 exchange visitors (including re-placements) multiplied by 1.25 multiplied by $26 weighted wage per hour). This cost includes completion of both the main form and the housing addendum by the sponsor (or the host entity). This is a new cost for sponsors.

• *Orientation documentation:* The Department estimates the cost of sponsors' providing orientation-related materials to 90,000 exchange visitors at 0.5 hours multiplied by $26 weighted wage per hour, or $1,170,000. This is not a new cost.

• *Cross-Cultural activities:* Sponsors (or their host entities) must plan cross-cultural activities for exchange visitors, with one cross-cultural activity being planned each calendar month during which exchange visitors are on program. Exchange visitors are, on average, on program for a period of four months. Planning and carrying out the cross-cultural activities is calculated at 26,000 host entities for exchange visitors multiplied by six hours (four for planning and two for implementation of one activity) over the course of the summer (one event per calendar month of the summer work travel program period equals four total) at $10 per hour administrative staff wage equals $6,240,000. This is a new cost.

• *Exchange visitor monitoring and assistance:* It is estimated that sponsors will spend 30 minutes per exchange visitor to monitor exchange visitor activities throughout the program cycle, including checking on exchange visitor health, safety and welfare, resolving placement problems, and contacting less responsive participants, at an annual cost of $450,000 for sponsors collectively (90,000 exchange visitors multiplied by 0.5 multiplied by $10 per hour administrative staff wage). This is not a new cost to sponsors.

• *Sponsor use and vetting of foreign and domestic third parties:* The Department estimates that sponsors will make agreements with and vet around 900 foreign and 1000 domestic third parties. The Department estimates that it will cost sponsors two hours to conclude an agreement and vet each third party at a cost of $26 weighted wage per hour, or $98,800. This is not a new cost.

• *Reporting requirements:* There will be a decrease in reporting requirements. Sponsors will only need to submit the foreign third party (formerly foreign entity) names and contact information as sponsors make agreements with such third parties, and also submit third party price lists. The twice-yearly placement report is no longer required, as the Department can retrieve this information from existing SEVIS files. It is estimated that sponsors will spend one hour on each of two reporting requirements multiplied by $26 per man hour, or $2,132. This is not a new cost.

Total Costs. The Department estimates the total cost of this proposed rule to all designated sponsors in the Summer Work Travel program category at $14,382,061 each year, of which up to $9,340,629 would be new costs, mainly having to do with better documenting the host placement and ensuring that cross-cultural activities are part of the program for all exchange visitors. Total costs of the proposed regulation per exchange visitor would be $160 and total new costs per exchange visitor would be $104.

Benefits. This proposed rule is a continuation of Department efforts based on a comprehensive review of the current Summer Work Travel program category of the Exchange Visitor Program. The rule predominantly enhances sponsor requirements for programmatic, partnership, and fee/cost transparency and vetting of domestic entities. These enhancements are necessary to continue the reform efforts of the Summer Work Travel category that began with the 2011 and 2012 IFRs.

Events that occurred prior to 2011 led the Department to enhance its scrutiny of the Summer Work Travel category and amend regulations to protect exchange visitors. Additionally, in recent years, the work component of the Summer Work Travel category has too often overshadowed the cultural component required by the Fulbright-Hays Act.

Accordingly, the Department issued the 2012 IFR to address issues most directly affecting the health, safety, and welfare of the exchange visitors and to reinforce the cultural exchange aspects of the program to promote mutual understanding in accordance with the purpose of the Fulbright-Hays Act. Changes made by 2012 IFR were intended to protect the health, safety, and welfare of exchange visitors by reducing the number of improper or unsafe job placements, fraudulent job offers, post-arrival job cancellations, inappropriate work hours, and problems regarding housing and transportation.

However, as the Department has increased its monitoring of the program and received additional sponsor input, it also has seen the need to make the proposed rule more specific than the 2012 IFR in certain sections, so that

exchange visitors are provided assurance that sponsors have a formal agreement with each of the domestic and foreign entities that work with exchange visitors; certainty in what their host placement will entail and in what housing will be provided; and transparency about the total cost of the program balanced against wages they can expect to earn while in the United States.

For the reasons outlined above, the Department considers that the costs of this proposed rulemaking are outweighed by: (1) The benefits of increased protection and transparency for exchange visitors, enhancing both their experiences and U.S. foreign policy; and (2) closer adherence to the purpose of the Fulbright-Hays Act.

Executive Order 12988

The Department of State has reviewed this proposed rule in light of Sections 3(a) and 3(b)(2) of Executive Order 12988 to eliminate ambiguity, minimize litigation, establish clear legal standards, and reduce burden.

Executive Orders 12372 and 13132

This proposed regulation will not have substantial direct effect on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this proposed rule does not have sufficient federalism implications to require consultations or warrant the preparation of a federalism summary impact statement. Executive Order 12372, regarding intergovernmental consultation on federal programs and activities, does not apply to this regulation.

Paperwork Reduction Act—DS–7000

The information collection requirements contained in this proposed rule are pursuant to the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.,* and OMB Control Number 1405–0147, Form DS–7000. As part of this rulemaking, the Department is seeking comment regarding the additional administrative burden placed on sponsors due to the corresponding requirements for the sponsors to disclose, collect, and maintain information in the administration of their programs (*see* 22 CFR 62.10(f)). You should include the DS form number (if applicable), information collection title, and/or OMB control number in any correspondence about burden.

Form DS–7000

Title: Recording, Reporting, and Data Collection Requirements—Student and Exchange Visitor Information System (SEVIS), Form DS–7000.

FOR FURTHER INFORMATION CONTACT: Direct requests for additional information regarding the collection listed in this notice, including copies of the proposed collection instrument and supporting documents, to the U.S. Department of State, Office of Policy and Program Support, SA–5, 2200 C Street NW., Floor 5, Washington, DC 20522.

SUPPLEMENTARY INFORMATION:

- *Title of Information Collection:* 45-Day Notice of Recording, Reporting, and Data Collection Requirements—Student and Exchange Visitor Information System (SEVIS), DS–7000.
- *OMB Control Number:* 1405–0147.
- *Type of Request:* Revision of a Currently Approved Collection.
- *Originating Office:* Bureau of Educational and Cultural Affairs, ECA/EC.
- *Form Number:* Form DS–7000.
- *Respondents:* Exchange Visitors, host entities, and entities designated by the Department of State as Exchange Visitor Program sponsors in the Summer Work Travel category.
- *Estimated Total Number of Respondents for the Exchange Visitor Program:* 191,675 (DS–3036—60; DS–3037—1,415; DS–7000—190,200). The total respondent summary for Summer Work Travel requirements is as follows:

Respondent	Estimate
Exchange visitor	90,000
Sponsor	41
Host entities	26,000
Total	116,041

- *Estimated Number of Responses for the Exchange Visitor Program: 1,952,655 (DS–3036—60; DS–3037—2,830; DS–7000—1,949,765 (SEVIS = 20,977 and non-SEVIS = 1,928,788 responses)). Number of responses for the Summer Work Travel Program: 690,307.* For a complete analysis of the number of responses for Exchange Visitor Program requirements, please refer to the Supporting Statement titled Form DS–7000—Recording, Reporting and Data Collection Requirements—Student and Exchange Visitor Information System (SEVIS) (OMB No. 1405–014) and ''SEVIS'' and ''Non-SEVIS'' spreadsheets included in docket number DOS–2016–0038.
- *Average Hours per Response for the Exchange Visitor Program:* 68 minutes.
- *Average Hours per Response for the Summer Work Travel Program:* 92 minutes.
- *Total Estimated Burden Time for the Exchange Visitor Program:* 2,182,518 hours (DS–3036—480 hours; DS–3037—943 hours; DS–7000—2,181,095 hours (SEVIS = 9,144 and Non-SEVIS = 2,171,951 hours).
- *Total Estimated Burden Time for the Summer Work Travel Program:* 1,061,062. For a complete analysis of the estimated burden for Exchange Visitor Program requirements, please refer to the Supporting Statement titled *Form DS–7000—Recording, Reporting and Data Collection Requirements—Student and Exchange Visitor Information System (SEVIS) (OMB No. 1405–014) and ''SEVIS'' and ''Non-SEVIS'' spreadsheets* included in docket number DOS–2016–0038.
- *Frequency:* On occasion.
- *Obligation to Respond:* Required for participation in the program.

We are soliciting public comments to permit the Department to:

- Evaluate whether the proposed information collection is necessary for the proper functions of the Department;
- Evaluate the accuracy of our estimates of the time and cost burden for this proposed collection;
- Enhance the quality, utility, and clarity of the information to be collected; and
- Minimize the reporting burden on those who are to respond, including the use of automated collection techniques or other forms of information technology.

Please note that the comments submitted in response to this rule are public record. Before including any detailed personal information, you should be aware that your comments as submitted, including your personal information, will be available for public review.

Abstract of proposed collection: The collection is the continuation of information collected and needed by the Bureau of Educational and Cultural Affairs in administering the Exchange Visitor Program. The changes proposed are only to Form DS–7000.

Methodology: The collection will be submitted to the Department by mail or fax as requested by the Department during the review of program sponsor files, re-designations, incidents, etc.

Form DS–7007

Title: 45-Day Notice of Proposed Information Collection: Form DS–7007, Summer Work Travel—Host Placement Certification, OMB Control Number 1405–xxxx.

ACTION: Notice of request for public comments.

SUMMARY: The Department of State is seeking Office of Management and Budget (OMB) approval for the information collection described below. In accordance with the Paperwork Reduction Act of 1995, we are requesting comments from all interested individuals and organizations on this collection as it relates to proposed changes to 22 CFR 62.32. The purpose of this notice is to allow 45 days for public comment in the **Federal Register** preceding submission to OMB.

DATE(S): The Department will accept comments from the public up to 45 days from February 27, 2017.

ADDRESSES: You may submit comments identified by any of the following methods:

- *Web:* Persons with access to the Internet may view and comment on this notice by going to *www.regulations.gov.*You can search for the document by entering ''Docket Number: DOS–2016–0005'' in the Search Field. Then click the ''Comment Now'' button and complete the comment form.
- *Email: JExchanges@state.gov.*
- *Mail* (paper, disk, or CD–ROM submissions): U.S. Department of State, Office of Policy and Program Support, SA–5, 2200 C Street NW., Floor 5, Washington, DC 20522.

You must include the form number (DS–7007 or 7000), information collection title, and OMB control number (if any) in any correspondence.

FOR FURTHER INFORMATION CONTACT: Direct requests for additional information regarding the collections listed in this notice, including copies of the proposed collection instruments and supporting documents, to the U.S. Department of State, Office of Policy and Program Support, SA–5, 2200 C Street NW., Floor 5, Washington, DC 20522.

SUPPLEMENTARY INFORMATION:

- *Title of Information Collection:* Exchange Visitor Program—Summer Work Travel Host Placement Certification.
- *OMB Control Number:* 1405–xxxx.
- *Type of Request:* New Collection.
- *Originating Office:* Bureau of Educational and Cultural Affairs, ECA/EC.
- *Form Number:* Form DS–7007.
- *Respondents:* Entities designated by the Department of State as Exchange Visitor Program sponsors in the Summer Work Travel category.
- *Estimated Number of Respondents:* 41.
- *Estimated Number of Responses:* 92,500.
- *Average Hours per Response:* 1.25 hours.
- *Total Estimated Burden Time:* 115,625 hours.
- *Frequency:* On occasion.
- *Obligation to Respond:* Mandatory.

We are soliciting public comments to permit the Department to:

- Evaluate whether the proposed information collection is necessary for the proper functions of the Department;
- Evaluate the accuracy of our estimates of the time and cost burden for this proposed collection;
- Enhance the quality, utility, and clarity of the information to be collected;
- Minimize the reporting burden on those who are to respond, including the use of automated collection techniques or other forms of information technology.

Please note that the comments submitted in response to this Notice are public record. Before including any detailed personal information, you should be aware that your comments as submitted, including your personal information, will be available for public review.

Abstract of proposed collection: This collection of information is needed by the Bureau of Educational and Cultural Affairs in administering the Exchange Visitor Program (J-Visa) under the provisions of the Mutual Educational and Cultural Exchange Act of 1961, as amended. Summer Work Travel Host Placement Certification Forms are to be completed by designated program sponsors (with reference to some information provided by host entities).

A Host Placement Certification (Form DS–7007) is required for each Summer Work Travel participant. It will set forth: Location and description of the host placement; number of employees and other exchange visitors on location; hours of work each week that will be offered the exchange visitor; duties, wages, expected training period, if any; physical demands of the host placement; any placement-related benefits or amenities; total itemized fees and estimated costs of the program charged by sponsors, host entities, and third parties (noting those that are mandatory and optional), that that exchange visitor will incur; explanation of costs and deductions for benefits and mandatory and optional deductions (noting those that are mandatory and optional); and meals included at host entity. Form DS–7007 must be signed by the sponsor, the sponsor's host entity, and the exchange visitor.

The Housing Addendum will describe the housing and local transportation and cost (either weekly or monthly), distance to the site of activity at the host entity, need for an exchange visitor housing deposit; utilities covered in rent and those that the exchange visitor must pay separately; whether deductions for housing or local transportation will be taken from exchange visitors' wages, number of other tenants; housing features and description (including numbers of bedrooms and bathrooms); and whether there is a firm contract for the housing that the exchange visitor must sign for a fixed period of time. The Housing Addendum page must state the market value of housing and/or local transportation.

Upon request, Summer Work Travel applicants must present a fully executed Summer Work Travel Host Placement Certification (Form DS–7007) to any Consular Official interviewing them in connection with the issuance of a J–1 visa.

Methodology: The collection will be submitted to the Department by mail or fax as requested by the Department during the review of program sponsor files, re-designations, incidents, etc.

List of Subjects in 22 CFR Part 62

Cultural exchange programs, Reporting and recordkeeping requirements.

Accordingly, 22 CFR part 62 is proposed to be amended as follows:

PART 62—EXCHANGE VISITOR PROGRAM

■ 1. The authority citation for Part 62 is revised to read as follows:

Authority: 8 U.S.C. 1101(a)(15)(J), 1182, 1184, 1258; 22 U.S.C. 1431 *et seq.;* 22 U.S.C. 2451 *et seq.;* 22 U.S.C. 2651a; Pub. L. 105–277, Div. G, 112 Stat. 2681 *et seq.;* Reorganization Plan No. 2 of 1977, 42 FR 62461, 3 CFR, 1977 Comp. p. 200; E.O. 12048 of March 27, 1978; Pub. L. 104–208, Div. C, 110 Stat. 3009–546, as amended; section 416 of Pub. L. 107–56, 115 Stat. 354; and Pub. L. 107–173, 116 Stat. 543.

■ 2. Section 62.32 is revised to read as follows:

§ 62.32 Summer Work Travel.

(a) *Purpose.* Together with other applicable provisions of 22 CFR part 62, the regulations in this section govern participation in the Summer Work Travel program category conducted by U.S. Department of State-designated sponsors. The purpose of this program is to provide foreign college or university students (or those recently graduated) the opportunity, during their breaks between or immediately following academic years, to:

(1) interact with U.S. persons and experience the culture and customs of the United States through authorized placements and cross-cultural activities;

(2) share their individual cultural experiences and background with U.S. friends, colleagues and communities;

(3) improve their command of the English language;

(4) earn funds to help defray a portion of their expenses by working in seasonal or temporary host placements that require minimal training; and

(5) travel in the United States.

(b) *Definitions.* In addition to those definitions set forth in § 62.2, the following definitions apply to the Summer Work Travel category of the Exchange Visitor Program:

(1) *Host entity.* A person or organization that employs an exchange visitor. Host entities are not considered ''third parties'' as that term is used in this Part.

(2) *Host placement.* The location of an exchange visitor at a host entity and any related sponsor-or host entity-arranged housing of such exchange visitor.

(3) *Seasonal nature.* A host placement is of a seasonal nature when the required service is utilized only at a certain time of the year (*e.g.,* summer or winter) when the host entity increases labor levels to accommodate its seasonal increase in business.

(4) *Temporary nature.* A host placement is of a temporary nature when a host entity's need for the duties to be performed is a one-time occurrence, a peak load need (*e.g.,* the need for workers is tied to one or more seasons or other short-term demand), or an intermittent need. It is the nature of a host entity's need, not the nature of the duties, which is controlling.

(c) *Duration of participation.* Exchange visitors on the Summer Work Travel Program may participate for no more than four months. The program must coincide with the official break between the exchange visitor's academic years or the break immediately following his or her final academic term. In permitting exchange visitor participation, a sponsor must adhere to the earliest allowable program start date and the latest allowable program end date for each country for its exchange visitors, as communicated to sponsors by the Department. Extensions beyond Department-approved program dates are not permitted.

(d) *General sponsor responsibilities.*

(1) A sponsor is responsible for screening prospective exchange visitors as set forth in § 62.32(e); making the final selection of exchange visitors; placing (and re-placing, as necessary) exchange visitors; issuing Forms DS–7007 and DS–2019; providing an orientation for host entities; finding, approving, and verifying (as applicable) exchange visitor housing; and conducting monitoring of exchange visitors and their host placements within the United States. These activities must be conducted by employees of the sponsor.

(2) A sponsor must provide for a pre- and post-arrival orientation for exchange visitors. The pre-arrival orientation may be conducted by sponsor employees or through a foreign third party with which the sponsor has a written agreement (pursuant to § 62.32(q)(2)), or both. The post-arrival orientation may be conducted by sponsor employees or by the host entity, or both.

(3) A sponsor may use foreign third parties, in accordance with § 62.32(q), for recruitment and overseas orientation of exchange visitors, and initial identification of host entities.

(4) A sponsor may use domestic third parties, in accordance with § 62.32(s), to provide for initial identification of host entities, implementation of cross-cultural activities for exchange visitors, a local point of contact for exchange visitors, orientation of exchange visitors, housing assistance, and exchange visitor transportation.

(5) A sponsor's third party or host entity acts on a sponsor's behalf in the conduct of the sponsor's exchange visitor program, and failure by any third party or host entity to comply with the regulations set forth in this part will be imputed to the sponsor.

(6) A sponsor and its third parties shall not pay or otherwise provide financial incentive to host entities to accept exchange visitors for host placements.

(7) A sponsor must ensure that any fees it or its third parties charge are legal, justifiable, and permitted under this Part.

(8) Sponsor promotional materials must characterize the Summer Work Travel Program as a cultural and educational program with a work component.

(9) A sponsor must include in its recruiting material, and post on its main Web site, examples of the typical monthly budgets of exchange visitors placed in various regions of the United States to illustrate wages (based on the minimum-required 32 hours of work at a typical host placement) balanced against fees and estimated costs. A sponsor must itemize fees that it and its third parties will charge, or provide within the sponsor's fee list a specific link to a third party's fee list on the third party's Web site, and estimate other typical exchange visitor costs, including estimated housing costs and estimated costs for cultural activities, in its posting. Actual fees that should be itemized include the following, as applicable: Program fee (with an explanation of what this includes); fees for recruitment, interview and screening, placement, arrival/orientation services; vetting of re-placement or additional jobs; health insurance; expedited application review; document translation; and fees related to program administration and the Form DS–2019 (such as expedited form changes, program extensions within allowable program windows, health insurance extension during grace period, reinstatement, re-placement of lost Form DS–2019, SEVIS adjustments, and travel validation). No sponsor or third party may require an exchange visitor to remit a portion of his or her earnings in the United States to an overseas private entity.

(10) A sponsor must ensure that any host entity at which it places an exchange visitor hires, remunerates, and provides supervision for that exchange visitor and is willing and able to assist the exchange visitor in the absence of the sponsor in cases of emergency.

(11) A sponsor must ensure that an exchange visitor does not change his or her site of activity at the host entity, type of position within the current host placement, or residence without first notifying the sponsor.

(e) *Exchange visitor screening and selection.*

(1) A sponsor must verify and document, prior to each exchange visitor's selection, that each exchange visitor:

(i) Will be at least 18 years of age by the program start date;

(ii) Is, at the time of application, a foreign national post-secondary student (including a student in his/her final year) who is enrolled in and actively pursuing a full-time course of study toward a degree at a classroom-based post-secondary academic institution that is physically located outside the United States and is ministerially-recognized within the national education system where the student is enrolled; applicants must have successfully completed at least one term, or equivalent, of post-secondary academic study at the time of application.

(iii) Has not participated in more than two previous Summer Work Travel program exchanges to the United States;

(iv) Has at a minimum a level of English language proficiency, verified in accordance with § 62.10(a)(2), that allows him or her to communicate

effectively when speaking with co-workers and community members, to understand work requirements, to discuss autobiographical information, and to comprehend both written and oral instructions related to work, housing, and transportation; and

(v) Intends to participate in sponsor, host-entity, and/or self-initiated cross-cultural activities while in the United States.

(2) Prior to selecting an exchange visitor, a sponsor must conduct an interview with each prospective exchange visitor either in-person or by video-conference and, where requested by the host entity or exchange visitor, facilitate a video-conference between the host entity and the exchange visitor.

(3) A sponsor must communicate to prospective exchange visitors that they may not be accompanied by spouses and dependents unless these spouses and dependents secure the requisite immigration status. Spouses and dependents of an exchange visitor in the Summer Work Travel program category are not eligible for J–2 (derivative) status.

(f) *Exchange visitor placement.*

(1) Before issuing a Form DS–2019, a sponsor must secure for each prospective exchange visitor a host placement(s):

(i) That is seasonal or temporary in nature;

(ii) Requiring only minimal training;

(iii) Entailing daily interaction with, and work alongside, American guests, customers, co-workers, and supervisors, as an integral part of the host placement;

(iv) Providing the exchange visitor with hours of work numbering between the allowable minimum and maximum, in no more than two host placements in accordance with § 62.32(f)(4);

(v) Meeting the requirements for compensation in accordance with § 62.32(f)(6);

(vi) Provided by a host entity that has been vetted in accordance with § 62.32(i);

(vii) Provided by a host entity informed of its responsibilities pursuant to § 62.32(j);

(viii) Not on the program exclusions list set forth in § 62.32(k);

(ix) Satisfying the standard for exchange visitor housing and local transportation as set forth in § 62.32(l);

(x) Provided by a host entity that has been fully oriented by the sponsor about the public diplomacy purpose of the Exchange Visitor Program, federal regulations (including updates), and other requirements of the Exchange Visitor Program;

(xi) Provided by a host entity that accepts responsibility for the exchange visitor as necessary in case of emergency; and

(xii) Located where an employee of the sponsor can reach the exchange visitor in-person within eight hours through any reliable means of transportation.

(2) A sponsor must divulge to the Department where a partial or full ownership relationship exists between the sponsor and the host entity. In these instances, the sponsor must identify an individual who will act as an independent advocate for the exchange visitor, such as an ombudsperson.

(3) A sponsor must not place exchange visitors with host entities if there is a strike or lockout, at the placement site, or other labor dispute at the placement site that the sponsor reasonably believes would have a negative impact on the exchange visitor's program. If a strike, lockout, or other such labor dispute occurs at the host entity in the location where an exchange visitor's host placement has been finalized pending the arrival of the exchange visitor, or where an exchange visitor is currently carrying out the program, a sponsor must place the exchange visitor at a different host entity as soon as possible and no later than five business days after the occurrence of such dispute.

(4) *Hours.*

(i) A sponsor must place the exchange visitor only with one or two host entities that, taken together, commit to provide a total minimum of 32-hours and a total maximum of 65-hours of permissible work per exchange visitor per calendar week averaged over a two-week period, as accepted by the exchange visitor on Form DS–7007. Should the exchange visitor's hours fall below the required 32-hour minimum per week for longer than two weeks (except in cases where the exchange visitor is ill or otherwise has been authorized an absence), the sponsor must assist that exchange visitor within three business days to raise his/her placement hours at the host entity or be re-placed, or, if the exchange visitor does not already have two placements, an additional placement. Should the exchange visitor's hours increase beyond the 65-hour maximum for more than two weeks, the sponsor, in consultation with the host entity, must require the exchange visitor to reduce his or her hours. The exchange visitor may opt out of the 32-hour weekly minimum work requirement if requested in writing by the exchange visitor and acknowledged by the sponsor after consultation with the host entity.

(ii) A sponsor may place an exchange visitor with no more than two host entities at the same time to meet the 32-hour minimum and 65-hour maximum requirements; the two host placements must be located in close proximity to each other. An exchange visitor may, if he or she so desires, take on additional sponsor-authorized work placements above the 32-hour minimum and below the 65-hour maximum per week work requirement, that conform to all applicable requirements of this Part.

(iii) A sponsor must ensure that a host entity provides the exchange visitor two-weeks' notice if the exchange visitor's job placement will (A) conclude earlier than the end-date indicated on Form DS–7007 or (B) fall below a total of 32-hours per week averaged over a two-week period. The two-week notice provision does not apply to host entities in cases where the exchange visitor fails to report to work for a sustained period (*i.e.,* more than 10 consecutive workdays and without contacting the sponsor or host entity supervisor and receiving permission to be absent). In such cases, the sponsor must fully document the issue that caused the exchange visitor's hours to be reduced or the exchange visitor to be dismissed; the sponsor must assess information provided by the exchange visitor and host entity objectively. A sponsor must inform the Department of such incident within 24-hours of its notification.

(iv) A sponsor must ensure that the exchange visitor gives the host entity two weeks' notice if the exchange visitor's host placement will (A) conclude earlier than the end-date indicated on Form DS–7007 or (B) fall below the 32-hour weekly minimum averaged over a two-week period (if the exchange visitor has not formally opted out of the 32-hour requirement). The two-week notice provision does not apply to exchange visitors in cases where the exchange visitor can credibly allege workplace abuse, sexual abuse, sexual harassment, bullying, exploitation, wage violations, criminal activity, and instances of retaliation against the exchange visitor for reporting problems in the workplace; a sponsor must inform the Department of such incident within 24-hours of its being notified.

(5) *Notification.* A sponsor must ensure that host entities notify the exchange visitor and sponsor within 24-hours of exigent circumstances affecting the exchange visitor's placement.

(6) *Compensation.* A sponsor must only place the exchange visitor in a host placement that compensates the exchange visitor:

(i) At not less than the federal, state, or local minimum wage, whichever is higher, for all hours worked (including overtime hours worked and applicable overtime wage), in conformance with applicable federal, state, and local laws, including the Fair Labor Standards Act; and

(ii) With pay and benefits commensurate with those offered to their U.S. counterparts and/or those on another class of nonimmigrant visa, as applicable, doing the same or similar work in the same work setting. Host entities may reasonably offer different wages to an employee commensurate with a qualified, experienced, or fully competent worker only after considering the experience, education, and skill requirements of the position.

(7) A sponsor must inform its host entities that, when hosting an exchange visitor, they are required by law to follow applicable employer recordkeeping requirements under federal, state, and local law, including the Fair Labor Standards Act and Department of Labor regulations (*e.g.,* 29 CFR part 516);

(8) A sponsor must ensure that host entities provide exchange visitors, without charge or deposit, all uniforms, tools, supplies, and equipment needed to perform placement-required activities.

(9) Prior to placing an exchange visitor at a host entity, the sponsor must inquire whether the host entity has displaced or intends to displace a U.S. worker with an exchange visitor. Sponsors must ensure that host entities have not rejected qualified U.S. applicants for the same position within 90 days of the date on which the sponsor has confirmed the host entity's formal acceptance of that exchange visitor for the host placement as indicated on Form DS–7007.

(10) A sponsor must reimburse exchange visitors for any union dues required by their host placement.

(11) A sponsor must ensure that exchange visitors are not charged for any host entity promotional material used by the exchange visitor on the job, and must compensate, or ensure that the exchange visitor's host entity compensates, the exchange visitor for travel time from the site of activity to any training site, and for the time spent in training; if the sponsor or host entity holds the training in a city that is farther than 60 miles away from the exchange visitor's site of activity, or the sponsor or host entity requires the exchange visitor to stay overnight at the training site, then the sponsor or host entity must pay the exchange visitor for the cost of lodging.

(g) *Door-to-door sales placements:* A sponsor placing an exchange visitor in a door-to-door sales position must, in addition to the requirements set forth in § 62.32(f):

(1) Fully execute an agreement that explains in detail the exchange visitor's placement duties and expectations, who will obtain and pay or reimburse the exchange visitor for any necessary state or local permits, the geographic area the host placement encompasses, and how exchange visitors, while traveling, may access housing that has been pre-arranged by the sponsor or host entity. The agreement must be included as an appendix to Form DS–7007 and must be accepted in writing by the exchange visitor before he or she receives a Form DS–2019.

(2) Ensure that:

(i) The host entity provides the exchange visitor with a post-arrival orientation that, at a minimum, includes information on safety considerations while selling door-to-door; how to contact a supervisor while traveling on duty; how to react when faced with possible adverse situations; how exchange visitors will be reimbursed for housing costs incurred while traveling on behalf of their host entity; and how products will be delivered to customers;

(ii) The exchange visitor in each calendar week of his or her program, averaged over a two-week period, earns not less than the equivalent of the applicable federal, state, or local minimum wage per hour through hourly pay or sales profits, in conformance with applicable federal, state, and local laws, including the Fair Labor Standards Act, and receives pay and benefits commensurate with those offered to his or her U.S. counterparts and/or those on another class of nonimmigrant visa doing the same or similar work in the same work setting and having similar qualifications and experience. Hours that an exchange visitor spends in orientation constitute hours worked;

(iii) Customers make all checks and other forms of payment directly payable to the host entity, not to the exchange visitor, for sponsor or host entity products; and

(iv) The exchange visitor begins selling door-to-door no earlier than 9:00 a.m. and finishes his/her last sales call no later than 8:00 p.m. in the time zone covering his or her location.

(3) Permit an exchange visitor's reasonable request for re-placement at a non-door-to-door assignment and issue the exchange visitor a new Form DS–7007.

(4) Pre-authorize and document on the appendix to the DS–7007 any additional types of exchange visitor sales activities.

(h) *Exchange visitor host re-placement.* A sponsor must:

(1) Find and fully vet a new host entity for the exchange visitor (*i.e.,* verify, at a minimum, the terms and conditions of the exchange visitor's employment at that host entity) within three business days in response to an exchange visitor's reasonable request to change host placements, provided the request is made before the final four weeks of the exchange visitor's program. Considerations in determining the reasonableness of a request may include whether the new placement would be consistent with the exchange visitor's abilities, is located in the same city or a nearby city to the previous placement, and is within an economic sector where host entities are hiring. Sponsors may not charge the exchange visitor a fee for re-placement.

(2) Ensure that a host re-placement meets the requirements applicable to the original placement(s).

(3) Complete and secure the requisite signatures on a new Form DS–7007 prior to the exchange visitor's beginning work at a host re-placement.

(i) *Sponsor vetting of host entities.* A sponsor must:

(1) Exercise due diligence in vetting a host entity, its owners, and its managers and supervisors who work with exchange visitors. In conducting such vetting, a sponsor must confirm that a host entity is a legitimate and reputable business by taking, at a minimum, the following steps annually:

(i) Check, through direct contact in person or by telephone, the names of the entity's owner(s), and manager(s), names of the supervisor(s) for the exchange visitor, business telephone numbers, email addresses, street addresses, and professional activities;

(ii) Use publicly available information (*e.g.,* state registries, advertisements, brochures, Web sites, court registries, state sex-offender registries) and available information from prior exchange visitor placements to confirm that all host entities and their owners are of good reputation and financially viable, and that all managers and supervisors of the exchange visitor are reputable and have each undergone a criminal background check that the sponsor may review;

(iii) Record a potential host entity's Employer Identification Number (EIN) and obtain copies of its current business or professional license or permit, or certificate issued by the jurisdiction where the business operates, granting the host entity the right to operate in that jurisdiction;

(iv) Check whether the host entity will use any third parties (including staffing agencies) to conduct the exchange visitor program and verify using publicly available information (*e.g.,* the kind of information noted in subparagraph (i)(1)(i)) to check whether such third parties are legitimate and reputable and that their managers and supervisors working with exchange visitors have each had a criminal background check that the sponsor may review. Failure of a third party engaged by a sponsor's host entity to comply with the regulations governing administration of the Exchange Visitor Program will be imputed to the sponsor, whether or not such third party has been disclosed by the host entity to the sponsor.

(v) Verify that each potential host entity will have Workers' Compensation Insurance coverage or its equivalent, as applicable, in the appropriate U.S. state during the time when the exchange visitor will be placed there, or, if applicable, evidence of that state's exemption from requirement of such coverage;

(vi) Obtain verification at the beginning of each season that a host entity with which an exchange visitor is planned to be placed will not displace U.S. workers, has not experienced layoffs in the past 120 days, and does not have workers on lockout or strike; and

(vii) Review the U.S. Department of Labor Web site and state resources for judgments and debarments and revocations pertaining to the host entity or business owner.

(2) Discontinue cooperation with a host entity that fails to disclose information that may affect exchange visitor health, safety, or welfare, or bring the Exchange Visitor Program into notoriety or disrepute.

(j) *Host entity cooperation.*

(1) A sponsor must inform a host entity and its relevant managers and supervisors of program regulations, regularly monitor the host entity's compliance with such regulations, and take action if it becomes aware of a violation.

(2) A sponsor must inform a host entity that it may be required to arrange cross-cultural activities for its exchange visitor, or that it must permit time for the exchange visitor to engage in sponsor-arranged cross-cultural activities, as defined in § 62.2.

(3) Failure by any host entity (or any disclosed or undisclosed third party) to follow the requirements governing administration of the Exchange Visitor Program will be imputed to the sponsor.

(4) A sponsor must require a host entity to notify it within 24-hours of the following events:

(i) The exchange visitor arrives at his/her site of activity to begin his/her program;

(ii) There are significant deviations in the host placement during an exchange visitor's program;

(iii) The exchange visitor is not meeting the requirements of his/her host placement as detailed on Form DS–7007;

(iv) The exchange visitor leaves his/her position ahead of the planned departure;

(v) There are serious incidents involving an exchange visitor, including any situations that have or could have the effect of endangering his or her health, safety, or welfare.

(5) No sponsor or host entity may prevent communication between an exchange visitor and his or her sponsor, family or friends, or any other person while the exchange visitor is not on duty;

(6) A sponsor shall terminate the participation of a host entity that is found to have, without the exchange visitor's advance written permission, held or withheld the exchange visitor's money, identification (including passport and social security card), cell-phone, flight tickets, or other personal property during his or her program; or held or withheld an exchange visitor's Forms DS–2019 or DS–7007. Any exchange visitor who wishes the sponsor or sponsor's host entity to retain important documents must make this request in writing, including an itemized list of the documents. The exchange visitor may revoke this authorization in writing at any time, whereupon such documents or property must be returned within 48-hours of the written revocation's documented submission to the sponsor.

(k) *Program exclusions.* A sponsor must not place an exchange visitor in a host placement that is:

(1) Inconsistent with U.S. law or that could bring notoriety or disrepute to the Department or to the Exchange Visitor Program, as determined by the Department;

(2) Lacking acceptable housing and local transportation, (as set forth in § 62.32(l)), including safe local transportation that is accessible during late night or early morning hours if the exchange visitor will work during such hours;

(3) Requiring more than four hours of work between 10:00 p.m. and 6:00 a.m.;

(4) In locations where telephone and Internet communication is not accessible;

(5) Requiring licensing of the exchange visitor;

(6) Compensating the exchange visitor on a ''piece work basis'' (*i.e.,* based on the number of objects produced or rooms cleaned);

(7) Resulting in the exchange visitor being supervised by a staffing agency, unless the sponsor vets the staffing agency as well as the host entity where that agency places exchange visitors, and the staffing agency's role meets the following criteria:

(i) The staffing agency provides daily supervision and primary onsite monitoring of the exchange visitor's work environment at his or her host entity;

(ii) The exchange visitor is an employee of, and paid by, the staffing agency; and

(iii) The staffing agency effectively controls the host placement (*i.e.,* has hands-on management responsibility for the exchange visitor at his or her site of activity);

(8) Entailing domestic help in private homes (*e.g.,* child care provider, elder care provider, housekeeper, gardener, chauffeur);

(9) Requiring the exchange visitor to operate or drive a pedicab, rolling chair, or other vehicle powered by physical exercise;

(10) Requiring the exchange visitor to operate or drive a vehicle or vessel for which a driver's license is required, regardless of whether the vehicle carries passengers;

(11) Related to clinical care that involves physical contact with patients;

(12) In the adult entertainment industry or the commercial sex trade (*e.g.,* placements at escort services, adult book or video stores, strip or exotic dance clubs);

(13) Requiring the exchange visitor to engage in work that is declared hazardous to youth by the Secretary of Labor at Subpart E of 29 CFR part 570;

(14) Requiring sustained physical contact with other people (*e.g.,* hair care, manicure, henna tattooing) and/or adherence to the Centers for Disease Control and Prevention's Universal Blood and Body Fluid Precautions guidelines;

(15) Requiring the exchange visitor to operate gaming, gambling, wagering, or betting activities;

(16) In chemical pest control, warehousing, or a catalogue/online order distribution center;

(17) In the mobile amusement and itinerant concessionaires industries;

(18) Meeting the criteria of another Exchange Visitor Program category (*e.g.,* camp counselor, intern, trainee);

(19) In the North American Industry Classification System's (NAICS) Goods-

Producing Industries occupational categories industry sectors 11, 21, 23, 31–33 numbers (set forth at *http://www.bls.gov/bls/naics.htm*); see *http://siccode.com/en/naicscode/list/directory* for code look-up;

(20) Employing the exchange visitor as a mover or in any position where the primary work duty is the movement of household or office goods;

(21) Employing the exchange visitor in a position requiring repetitive motion such as that found on an assembly line or in certain factory-like settings;

(22) Employing the exchange visitor in waste management, janitorial, or custodial positions, or in any position where more than five percent of the duties as defined by time spent involve waste management or keeping the premises of a building and supplementary machinery (*e.g.,* heating, air-conditioning) clean and in working order, or involve making building repairs;

(23) In a position with a host entity that participates in the Summer Work Travel Program on a basis other than seasonal or temporary (*e.g.,* for more than two seasons during the year, or that covers a total period of employment longer than eight months in a single calendar year);

(24) In a position where an exchange visitor is solely responsible for the safety of others (*e.g.,* as a lifeguard); does not have regular on-site or timely on-call supervision by the host entity and/or would be without reasonable time off for breaks and meals; or

(25) In a position with a host entity that does not inform the exchange visitor about, and enforce the use of, applicable workplace health and safety laws (*e.g.,* regulations issued by the Occupational Safety and Health Administration), does not provide equipment that meets relevant safety standards, or otherwise fails to take reasonable precautions to safeguard the health, safety or welfare of an exchange visitor.

(l) *Exchange visitor housing and local transportation.*

(1) Every sponsor-approved placement must include identification of acceptable housing and local transportation before that sponsor approves the placement and issues a Form DS–2019. Housing must be fully and accurately described on the Housing Addendum of Form DS–7007 in accordance with § 62.32(m).

(2) Acceptable housing must meet all applicable housing codes and ordinances and be:

(i) Affordable for the exchange visitor;

(ii) provided in compliance with applicable federal, state, and local laws, including 29 CFR part 531 (if the host entity plans to deduct housing costs from the exchange visitor's wages);

(iii) in a safe location;

(iv) within a reasonable distance of the exchange visitor's site of activity at the host entity(ies);

(v) in an area with regular, safe and affordable local transportation options to commercial infrastructure and to his or her site of activity at the host entity; and

(vi) in a location that is neither isolated, nor difficult to access.

(3) The requirements in subparagraphs (iv), (v) and (vi) above are waived if the sponsor or host entity provides reliable, safe, and affordable local transportation to the exchange visitor during his/her on- and off-hours, and has a transportation plan in case of emergency. A sponsor placing an exchange visitor in a remote national park, ski or mountain resort, or summer camp must document the host entity's written arrangement for transportation for that exchange visitor during his/her off hours and in case of emergency.

(4) Neither a sponsor nor its host entity is permitted to require an exchange visitor to pay a separate fee to identify housing in excess of any fee charged for the exchange visitor's placement at the host entity.

(5) In the event that the exchange visitor chooses to secure his or her own housing, both the sponsor and the exchange visitor must document such choice in writing and the sponsor must verify compliance with the requirements of paragraph (2) prior to the exchange visitor's arrival in the United States, or the sponsor may deny the housing or the entire host placement.

(6) If either the sponsor or the Department determines that an exchange visitor's housing situation is unacceptable or otherwise problematic (*e.g.,* excessive noise, serious conflict among housemates), the sponsor must identify new acceptable housing and notify the exchange visitor of that alternative within one week of this determination; if the exchange visitor opts not to accept the new housing, the sponsor may determine that the placement is in violation of this regulation.

(7) If an exchange visitor bicycles to and from the host entity or to reach commercial infrastructure, his or her sponsor must ensure that the exchange visitor is informed that he or she must wear a helmet and other appropriate protective gear and that he or she must check that the bicycle is in working order (*e.g.,* brakes functional, frame not bent, all tires inflated properly, bicycle chain and gears functional). All sponsors must provide exchange visitors in pre-arrival materials and during orientation with bicycle safety information, including the Department-generated bicycle safety flyer, and place the Department-generated bicycle safety video on their Web site. No exchange visitor should be expected by his or her sponsor or host entity to ride a bicycle to his or her site of activity at the host entity if he or she chooses not to do so, or be expected to ride a bicycle to his or her site of activity on a highway or other major road without bicycle lanes; likewise, no exchange visitor should be expected to ride a bicycle over distances of longer than a total of eight miles per day in order to travel to and from the host entity or reach commercial infrastructure.

(m) *Form DS–7007 (Host Placement Certification).* The purpose of this form is to ensure a common understanding among all parties (through required signature of the sponsor, exchange visitor, and host entity) about the terms of the host placement and arranged housing before the exchange visitor begins work at his or her host entity.

(1) A sponsor must:

(i) Fully complete a Form DS–7007 for each exchange visitor placement, which must include: Location and description of the host entity; number of employees and other exchange visitors on location; hours of work each week that will be offered the exchange visitor; duties, wages (including expectations for overtime), expected training period, if any; physical demands of the host placement; any placement-related benefits or amenities; total itemized fees charged by sponsors, host entities, and third parties, that the exchange visitor will incur, identifying clearly which are mandatory and which are optional; other estimated costs to the exchange visitor of the placement at the host entity or for other aspects of the program (*e.g.,* costs and deductions for benefits, mandatory and optional deductions, meals included at host entity). Deductions taken from wages must be disclosed in advance to the exchange visitor. A DS–7007 must be executed for each placement the exchange visitor accepts and be updated according to Department guidance if the terms of a placement change significantly;

(ii) Fully execute a Form DS–7007 (excluding Housing Addendum) before completing and signing a Form DS–2019 for each exchange visitor;

(iii) Provide each signatory an executed copy of the Form DS–7007 (excluding Housing Addendum) before

the exchange visitor makes his or her visa application; and

(iv) Inform the exchange visitor that he or she must have his or her fully-executed Form DS–7007 (excluding Housing Addendum) available (along with his or her Form DS–2019) for the visa interview.

(2) A sponsor must ensure that the Housing Addendum of the Form DS–7007 is completed (including by the host entity), if relevant, and that a copy is sent to the exchange visitor prior to the exchange visitor's departure to the United States and if the exchange visitor changes housing. A sponsor must include a description of the housing; information about local transportation type and cost, and distance to the host entity; cost of housing (either weekly or monthly); need for an exchange visitor housing deposit; utilities covered in rent and those that the exchange visitor must pay separately; whether deductions for housing or local transportation will be taken from exchange visitors' wages; number of other tenants; housing features and description (including numbers of bedrooms and bathrooms); and whether there is a firm contract for the housing that the exchange visitor must sign for a fixed period of time. The Housing Addendum page must state the market value of housing and/or local transportation. Deductions from wages may only be made in accordance with Fair Labor Standards Act regulations set forth at 29 CFR part 531.

(3) A sponsor must give each exchange visitor 72-hours to consider any substantive additional requirements or changes made by his or her host entity to the host placement after the DS–7007 or Housing Addendum is initially executed; a sponsor must require the exchange visitor and host entity to sign a new Form DS–7007 if the exchange visitor agrees to the changes. If an exchange visitor determines that he or she does not wish to add requirements or make changes, or is unresponsive, he or she must be allowed to continue to do those tasks at the host entity specified on his or her most recent DS–7007, unless the host entity makes a request to the sponsor that the exchange visitor be placed elsewhere, in which case, the exchange visitor must be given two-weeks' notice of program termination. An exception to the 72-hour rule may be made if such changes must be implemented before 72-hours to protect the health, safety, and welfare of the exchange visitor.

(4) A sponsor must keep each DS–7007 on file for three years.

(n) *Exchange visitor pre-departure orientation and documentation.*

(1) In addition to satisfying the requirements set forth at § 62.10(b)–(c), a sponsor must provide to each exchange visitor prior to departure from his or her home country, an orientation in-person, online, or a combination of both that includes the following information and documentation:

(i) An explanation of the sponsor's role during the program, including monitoring, and of host entity responsibilities;

(ii) The Department of State's Summer Work Travel Exchange Visitor Welcome Letter and Diversity Flyer;

(iii) The sponsor's 24/7 immediate (*i.e.,* non-answering machine) contact telephone number;

(iv) A description of exchange visitor and host entity obligations and responsibilities, including a list of program obligations and responsibilities as set forth in subparagraph (2) below;

(v) Information explaining the cross-cultural component of the Summer Work Travel program, including the exchange visitor's obligation to participate in sponsor- and host entity-arranged cross-cultural activities, and how best to experience local or national U.S. culture;

(vi) Information on how to identify and report workplace abuse, sexual abuse, sexual harassment, bullying, exploitation, wage violations, housing violations, poor housing conditions, and instances of retaliation against the exchange visitor for reporting problems, including how to access whistleblower protection. The orientation also must include information for exchange visitors on the sponsor monitoring process, and inform exchange visitors that they must notify their sponsor within ten days of arrival in the United States and of any changes to the terms agreed to in Form DS–7007;

(vii) Information on general personal, pedestrian, and transportation safety, including bicycle safety information (*i.e.,* providing the Department-generated bicycle safety flyer and placing a bicycle safety video on the sponsor's Web site);

(viii) An identification card with a photo of the exchange visitor listing the exchange visitor's name, the sponsor's name, and main office and emergency telephone numbers, 911, the telephone number of the Department's J–1 visa toll-free emergency help line, the J–1 visa email address, and the name and policy number of the sponsor's health insurance provider, if applicable; and

(ix) Information on medical care in the United States (*e.g.,* information on insurance deductibles, differences between emergency room visits and regular hospital visits, how generally to seek medical care in the United States) and locations of the nearest medical facilities.

(2) Information on exchange visitor and host entity obligations and responsibilities must include the following:

(i) The exchange visitor must notify his or her sponsor within ten days of arrival in the United States, as set forth in § 62.10(c)(9);

(ii) The exchange visitor must notify his or her sponsor of any changes to the terms agreed to in Form DS–7007, as set forth in § 62.32(m)(1)(i);

(iii) An exchange visitor must not change his or her host site of activity at the host entity, type of position within his or her current host placement, or residence without first notifying the sponsor, as set forth in § 62.32(d)(11);

(iv) The host entity must not permit an exchange visitor to begin working for an additional host entity, or at a different host entity, until the sponsor has vetted such host entity, as set forth at § 62.32(i), and provided the exchange visitor and host entity a fully executed Form DS–7007 for such a placement in accordance with paragraph (m);

(v) A description of the circumstances that may lead to termination of the exchange visitor's program under rules governing the program, including, but not limited to, the following: Engaging in more than three Summer Work Travel programs during the exchange visitor's academic career; failure of an exchange visitor to report to his or her sponsor within ten days of arrival in the United States; failure to appear timely at the initial host placement without notifying the sponsor in advance of any inability to appear on time; beginning employment at a non-vetted host entity or at a host placement on the program exclusions list set forth at paragraph (k); engaging in illegal activities (*e.g.,* fraud, distribution of illegal substances); failure to give two-weeks' notice of departure to the current host entity, except in cases where health, safety, or welfare of the exchange visitor is endangered; failure to report change of position or change of title within the current host placement or change of residence; a pattern of unresponsiveness to sponsor communications; and violation of sponsor-specific rules regarding the exchange visitor program;

(vi) The circumstances that may lead to program termination of the host entity; and

(vii) The exchange visitor is prohibited from engaging in any activities that could bring the Exchange Visitor Program into notoriety or disrepute.

(o) *Cross-cultural activities.* A sponsor must:

(1) Ensure that the exchange visitor's placement at the host entity requires regular interaction with co-workers and customers and that the exchange visitor's host entity also facilitates the regular interaction of the exchange visitor with U.S. persons during the workday portion of their program;

(2) Plan and initiate cross-cultural activities, and/or act as a resource for host entities, domestic third parties, or local community groups in arranging cross-cultural activities that provide the exchange visitor exposure to U.S. culture and/or interaction with U.S. persons throughout his or her program;

(3) Ensure that, at a minimum, it or its host entity or entities arrange one cross-cultural activity within each calendar month for the exchange visitor; and

(4) Facilitate additional cross-cultural activities throughout the duration of the exchange visitor's program, and document such activities.

(p) *Exchange visitor monitoring and assistance.* A sponsor must:

(1) Maintain, at a minimum, monthly personal contacts with the exchange visitor. Such sponsor contact is permitted to be in-person, by telephone, or via exchanges of email (communications via email and voicemail messages must elicit a response from the exchange visitor that provides information on the exchange visitor's well-being);

(2) Gauge the exchange visitor's overall health, safety, and welfare and appropriately address issues identified through monitoring that involve the suitability of employment, housing and transportation, and any other issues affecting, or that could affect, the exchange visitor's health, safety, and welfare;

(3) Be available to the exchange visitor as a facilitator, counselor, and information resource and provide appropriate assistance on an as-needed basis;

(4) Document all efforts to resolve any issue that could result in program termination, including problematic placements and inability to contact a non-responsive exchange visitor, before pursuing program termination;

(5) Prepare any host entity to facilitate Department oversight and visits to placement locations; and

(6) Incorporate additional monitoring steps at the suggestion of the Department in the case of Department-noted problems in the sponsor's Summer Work Travel program.

(q) *Sponsor use of foreign third parties.* A sponsor must, in addition to the description set forth in § 62.2 in the definition of *Third party,* satisfy the following requirements if it elects to use a foreign third party:

(1) Select only a foreign third party that:

(i) The sponsor has vetted in accordance with § 62.32(r);

(ii) has a fixed office address, employees with professional experience in the service(s) the foreign third party provides, an organizational mission applicable to cultural and educational exchange, and a secure system to collect, protect, and dispose of the personal data of potential and actual exchange visitors;

(iii) markets the Summer Work Travel program as a cultural and educational program with a work component;

(iv) has fees and other charges that are permissible under this Part, transparent, justifiable in terms of services provided, and legal;

and

(v) would not bring the Exchange Visitor Program into notoriety or dispute, or engage in actions that would endanger the health, safety or welfare of an exchange visitor;

(2) Fully execute a written agreement, with documented review every three years, with the foreign third party and work only with foreign third parties with which the sponsor has concluded such written agreements; agreements must specifically authorize the foreign third party to carry out certain program functions;

(3) Adequately orient any foreign third party it engages on the purpose of the Exchange Visitor Program and all applicable regulations in this Part and updates and related guidance;

(4) Require, review, and approve annually the third party's marketing materials, including updated price lists based on any Department-required template, for programs marketed on the sponsor's behalf. The price lists must include itemization of all fees charged to the exchange visitor and estimated costs the exchange visitor might incur, as set forth in § 62.9(d)(3);

(5) Ensure that the foreign third party does not permit the use of any other third party (including staffing or employment agencies or subcontractors) to work directly with any prospective or current exchange visitor for the purpose of programmatic planning, or otherwise cooperate or contract with any such other third party;

(6) Place information about each of its foreign third parties on the sponsor's main Web site, including the official name, headquarters address, and specific program functions performed;

(7) Establish and implement internal controls to ensure that each foreign third party complies with the terms of its agreement with the sponsor;

(8) Ensure the foreign third party knows and complies with all applicable provisions of these regulations. Failure by any foreign third party to comply with the regulations will be imputed to the sponsor; and

(9) Not use a foreign third party if the Department has determined and informed that sponsor that the third party does not meet the requirements of subparagraph (1).

(r) *Sponsor vetting of foreign third parties.* A sponsor must:

(1) Ensure that any foreign third party it utilizes or intends to utilize is legitimate and employs only reputable individuals or organizations qualified to perform agreed program functions;

(2) At a minimum, review annually current documentation for each of its foreign third parties, including:

(i) Proof that it is legally authorized to conduct business in every location in which it operates;

(ii) Any bankruptcy filing, adverse legal judgment, or pending legal action or complaint against such foreign third party relevant to its conduct of the exchange visitor program;

(iii) Written references from three current business associates or partner organizations;

(iv) A criminal background-check report (including originals and English translations, as applicable) for each owner and officer of the foreign third party; and

(v) A copy of the foreign third party's recent financial statements certified by an independent public accountant.

(s) *Sponsor use of domestic third parties.*

A sponsor must, in addition to the description set forth in § 62.2 (definition of *Third party*), satisfy the following requirements if it elects to use a domestic third party:

(1) Select only a domestic third party that:

(i) The sponsor has vetted in accordance with § 62.32(t), unless the selected entity serving as a domestic third party is another designated sponsor; in that case, the sponsor must require that the domestic third party sponsor provide proof of current Department designation;

(ii) has a fixed office address, employees with professional experience in the service(s) the domestic third party provides, an organizational mission applicable to cultural and educational exchange, and a secure system to collect, protect, and dispose of the personal data of potential and actual exchange visitors;

(iii) has fees and other charges that are permissible under this Part, transparent,

justifiable in terms of services provided, and legal; and

(iv) would not bring the Exchange Visitor Program into notoriety or dispute, or engage in actions that would endanger the health, safety, or welfare of exchange visitors.

(2) Fully execute a written agreement, with documented review every three years, with the domestic third party and work only with domestic third parties with which the sponsor has concluded such written agreements;

(3) Orient adequately any domestic third party it engages on the purpose of the Exchange Visitor Program and all applicable regulations in this Part and updates and related guidance;

(4) Place information about each domestic third party it engages on the sponsor's main Web site, including its official name, headquarters address, and specific program functions performed;

(5) Establish and implement controls to ensure that the domestic third party complies with the terms of its agreement with the sponsor;

(6) Ensure the domestic third party knows and complies with all applicable provisions of these regulations. Failure by any domestic third party to comply with the regulations will be imputed to the sponsor; and

(7) Not use a domestic third party if the Department has determined and informed that sponsor that the third party does not meet the requirements of subparagraph(1).

(t) *Sponsor vetting of domestic third parties.* A sponsor must:

(1) Ensure that any domestic third party it utilizes or intends to utilize is legitimate and employs only reputable individuals or organizations qualified to perform agreed program functions; and

(2) At a minimum, review annually current documentation for each of its domestic third parties:

(i) Proof that it is legally authorized to conduct business in every location in which it operates;

(ii) Any bankruptcy filing, adverse legal judgment, or pending legal action or complaint against such domestic third party relevant to its conduct of the exchange visitor program; and

(iii) Proof of sufficient liability insurance to cover the activities provided to the sponsor.

(u) *Reporting requirements.*

(1) *Foreign third party reporting:* Within 30 days of its conclusion of a new written agreement with a foreign third party, a sponsor must provide the Department with that third party's name and contact information (*i.e.,* telephone number, email address, street address, city address, point of contact, and Web site address). The sponsor also must provide the Department with updated contact information for its foreign third party within 30 days after receiving notice of any change in that party's contact information. A sponsor also must notify the Department no later than 30 days after ceasing to work with a foreign third party previously reported.

(2) *Price lists:* A sponsor must submit to the Department each year, no later than December 1, itemized exchange visitor price lists (in accordance with any Department template) which identify the costs that exchange visitors must pay each sponsor and foreign third party on a country-specific basis in order to participate in the program.

Keri Lowry,

Deputy Assistant Secretary of State, Office of Private Sector Exchange, Bureau of Educational and Cultural Affairs.

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Federal Register

Vol. 82, No. 8

Thursday, January 12, 2017

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Other Services	
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FEDERAL REGISTER PAGES AND DATE, JANUARY

1–710 3
711–1138 4
1139–1592 5
1593–2192 6
2193–2848 9
2849–3130 10
3131–3600 11
3601–4148 12

CFR PARTS AFFECTED DURING JANUARY

At the end of each month the Office of the Federal Register publishes separately a List of CFR Sections Affected (LSA), which lists parts and sections affected by documents published since the revision date of each title.

3 CFR

Proclamations:
9558 1139
9559 1149
9560 1157
9561 1159
9562 1161

Executive Orders:
13694 (amended by 13757) 1
13757 1

5 CFR

2411 2849
9301 711

Proposed Rules:
532 3677
9401 2921

7 CFR

210 2193
220 2193
271 2010
272 2010
273 2010
274 2010
275 2010
276 2010
277 2010
278 2010
279 2010
280 2010
281 2010
282 2010
283 2010
285 2010

Proposed Rules:
250 1231

8 CFR

Proposed Rules:
204 3211
216 3211

9 CFR

201 2193

10 CFR

429 ..... 1052, 1426
430 ..... 1426, 1786
431 1052
435 2857

Proposed Rules:
430 1608

12 CFR

1083 3601

Proposed Rules:
1805 2251

13 CFR

312 3131

14 CFR

Ch. I 3606
1 2193
23 ..... 1163, 2193
25 2193
27 2193
29 2193
39 ... 5, 7, 10, 12, 712, 716, 718, 1170, 1172, 1175, 1179, 1593, 1595, 3137, 3140, 3143, 3146
61 ..... 2193, 3149
68 3149
71 ..... 720, 1181, 2868, 2870, 2871, 2873, 3167
91 ..... 2193, 3149
97 ..... 3603, 3605
121 2193
125 2193
135 2193

Proposed Rules:
39 ..... 48, 50, 52, 54, 734, 737, 1252, 1254, 1258, 1260, 1262, 1265, 1267, 1269, 1621, 1623, 1627, 3217
71 ..... 1276, 1279

15 CFR

740 2875
742 2875
744 ..... 722, 2883
750 2875
774 2875

Proposed Rules:
4 56
922 ..... 2254, 2269

16 CFR

1500 2193

Proposed Rules:
1015 59

18 CFR

375 1183
388 1183

19 CFR

360 1183

20 CFR

Proposed Rules:
725 739

21 CFR

201 2193
801 2193
866 3609
884 1598
888 2217
1100 2193
1308 2218

Proposed Rules:
1308 2280

22 CFR

35....3168
103....3168
120....15
121....2889
123....15
126....15
127....3168
138....3168
241....2218
305....1185

Proposed Rules:

62....4120

23 CFR

Proposed Rules:

655....770

24 CFR

15....3619
891....3623

26 CFR

1....2046, 2124
31....2046
301....2046, 2124

Proposed Rules:

1....1629, 1645

27 CFR

16....2892
18....1108
19....1108
24....1108
25....1108
26....1108
27....1108
28....1108
30....1108

Proposed Rules:

18....780
19....780
24....780
25....780
26....780
27....780
28....780
30....780

28 CFR

16....725

29 CFR

1....2221
3....2221
4....2221
5....2221
6....2221
500....2221
505....2221
516....2221
519....2221
520....2221
525....2221
530....2221
547....2221
549....2221
553....2221
570....2221
575....2221
578....2221
580....2221
801....2221
825....2221
1614....654, 3170
1910....2470
1915....2470
1926....2470

30 CFR

Proposed Rules:

57....2284
70....2284
72....2284
75....2284, 2285
250....1284

31 CFR

Proposed Rules:

40....67

32 CFR

154....1192
286....1192
706....3623

Proposed Rules:

2004....3219

33 CFR

110....2893
165....20, 3625
Ch. II....1860

Proposed Rules:

100....2291, 2930
117....787
165....789
401....1285
402....1287

36 CFR

13....3626
1195....2810

Proposed Rules:

1....1647

38 CFR

Proposed Rules:

17....1288

39 CFR

20....1206
265....2896

Proposed Rules:

111....2293
501....1294

40 CFR

19....3633
22....2230
51....3078
52....22, 792, 912, 1206, 1603, 2237, 2239, 3078, 3171, 3637, 3639
81....1603, 2239, 3172
124....2230
171....952
180....1208, 2897, 2900
300....2760
704....3641
1700....3173

Proposed Rules:

Ch. I....3518
7....2294
9....2294
35....2933
52....792, 1296, 2295, 2305, 2308, 3233, 3234
62....3554
81....792, 2308, 3234
320....3388, 3512
372....1651
721....80

42 CFR

10....1210
414....24
416....24
419....24
431....24, 37
433....24, 37
438....24, 37
440....24, 37
457....24, 37
482....24
486....24
488....24
495....24, 37
510....180
512....180
1000....4100
1001....4100
1002....4100
1006....4100

Proposed Rules:

424....3678

43 CFR

3160....2906

44 CFR

204....40
206....40
207....40

Proposed Rules:

206....4064

45 CFR

98....3185
1171....44
1230....1606
2554....1606

46 CFR

502....46
503....2248

Proposed Rules:

393....3250

47 CFR

Proposed Rules:

1....3258
2....3258
15....3258
25....3258
30....3258
73....3279
101....3258

48 CFR

504....46
516....2249
552....2249

49 CFR

383....2915
384....2915

Proposed Rules:

1300....805
571....3853

50 CFR

17....3186
635....3209
229....3655
648....3676

Proposed Rules:

17....1296, 1657, 1665, 1677
217....684
223....3694
622....810, 1308
660....812
679....2916

LIST OF PUBLIC LAWS

Note: No public bills which have become law were received by the Office of the Federal Register for inclusion in today's **List of Public Laws**.

Last List January 11, 2017

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