DEPARTMENT OF TRANSPORTATION

Federal Transit Administration

49 CFR Part 665

[Docket No. FTA–2015–0019]

RIN 2132–AB11

Bus Testing: Establishment of Performance Standards, a Bus Model Scoring System, a Pass/Fail Standard and Other Program Updates

AGENCY: Federal Transit Administration (FTA), DOT.

ACTION: Final rule.

SUMMARY: The Federal Transit Administration (FTA) is issuing a new pass/fail standard and new aggregated scoring system for buses and modified vans (hereafter referred to as ''bus'' or ''buses'') that are subject to FTA's bus testing program, as mandated by Section 20014 of the Moving Ahead for Progress in the 21st Century Act (MAP–21). The pass/fail standard and scoring system address the following categories as required by MAP–21: Structural integrity, safety, maintainability, reliability, fuel economy, emissions, noise, and performance. Recipients of FTA grants are prohibited from using FTA financial assistance to procure new buses that have not met the minimum performance standards established by today's final rule. Finally, FTA is requiring bus manufacturers to provide country-of-origin information for test unit bus components, in lieu of applying Buy America U.S. content requirements to all buses submitted for testing.

DATES: The effective date of this rule is October 31, 2016.

FOR FURTHER INFORMATION CONTACT: For technical information, Michael Baltes, Director, Office of Infrastructure and Asset Innovation, Office of Research, Demonstration and Innovation (TRI), (202) 366–2182, *michael.baltes@dot.gov*. For legal information, Richard Wong, Office of the Chief Counsel (TCC), (202) 366–4011, *richard.wong@dot.gov.*

SUPPLEMENTARY INFORMATION:

Table of Contents

A. Executive Summary

Purpose

The purpose of this final rule is to implement minimum performance standards, a scoring system, and a pass/fail threshold for new model transit buses procured with FTA financial assistance authorized under 49 U.S.C. Chapter 53. Consistent with 49 U.S.C. 5318(e), FTA recipients are prohibited from using FTA financial assistance to procure new buses that have not met the minimum performance standards established by this rule. The standards and scoring system address the following categories: Structural integrity, safety, maintainability, reliability, fuel economy, emissions, noise, and performance. Buses must meet a minimum performance standard in each of these categories in order to receive an overall passing score and be eligible for purchase using FTA financial assistance. Buses can achieve higher scores with higher performance in each category, and today's rule establishes a numerical scoring system based on a 100-point scale so that buyers can more effectively compare vehicles.

To minimize disruption to transit vehicle manufacturers, consistent with the proposal, today's rule adopts many of the existing testing procedures and standards used under the current bus testing program. The rule, however, imposes some changes including: (1) New inspections at bus check-in to verify the bus configuration is within its weight capacity rating at its rated passenger load and an inspection to determine if the major components of the test bus match those identified in the Buy America pre-audit report; (2) elimination of the on-road fuel economy testing and substituting the fuel economy results obtained during the emissions test; and (3) revision to the payloading procedure to recognize the manufacturer's ''standee'' passenger rating. The final rule does not add any new tests to the existing bus testing program—in fact, FTA is eliminating two tests, the on-road fuel economy test, as equivalent data could be derived from the more accurate dynamometer testing, and the shakedown test, which is considered redundant to the structural durability test and no bus models have historically failed this test.

Because FTA provides financial assistance to State and local agencies operating public transportation systems, covering up to eighty-five percent (85%) of a vehicle's capital cost, while the State or local government provides at least fifteen percent (15%) matching share, there is a strong incentive by FTA and local agencies to ensure that those funds are used effectively and efficiently. As part of its stewardship of those funds, Congress directed FTA in 1987 to establish a bus testing program whereby new model buses would first be tested to ensure their ability to withstand the rigors of regular transit service before FTA funds would be spent on those vehicles. In the following years, FTA accumulated comprehensive test data on the scores of buses that had undergone testing, but the program did not assign a comparative ranking to the vehicles. Further, because the program was intended to provide information on a vehicle's performance and Congress did not authorize FTA to use the test data to disqualify a vehicle from participating in FTA-assisted procurements, FTA did not establish a pass/fail performance baseline. Since that time, several tested buses did not meet their expected service lives at the cost of millions of dollars to transit agencies and significant inconvenience to transit riders. In MAP–21, Congress directed FTA to establish a new pass/fail standard for tested buses, including a weighted scoring system that would assist transit bus buyers in selecting an appropriate vehicle. FTA issued the Notice of Proposed Rulemaking (NPRM) for this action on June 23, 2015. Today's final rule establishes a new scoring system and a pass/fail standard for buses tested under FTA's existing bus testing program, as well as making other administrative changes.

Legal Authority

Although Section 20014 of the Moving Ahead for Progress in the 21st Century Act (MAP–21) (Pub. L. 121–141) retained the existing bus testing categories of maintainability, reliability, safety, performance, structural integrity, fuel economy, emissions, and noise in the existing 49 U.S.C. 5318(a), Section 20014 also expanded 49 U.S.C. 5318(e) by adding three new requirements on the use of Chapter 53 funding to acquire new bus models. The first is that new bus models must meet performance standards for maintainability, reliability, performance (including braking performance), structural integrity, fuel economy, emissions, and noise. The second is that new bus models acquired with Chapter 53 funds must meet the minimum safety performance standards established pursuant to section 5329(b). The third is that the new bus model must satisfy an overall pass/fail standard based on the weighted aggregate score derived from each of the existing test categories (maintainability, reliability, safety, performance (including braking performance), structural integrity, fuel economy, emissions, and noise).

Today's rule does not address the minimum safety performance standards for public transportation vehicles required under 49 U.S.C.

5318(e)(1)(B)(ii). FTA proposed a National Public Transportation Safety Plan (81 FR 6372, February 5, 2016), pursuant to 49 U.S.C. 5329(b), which stated that the minimum safety performance standards may eventually be the subject of rulemaking, proposed voluntary vehicle performance standards in the interim, and sought comment on four questions posed in the proposed Plan.

Summary of Key Provisions

Today's rule is taking the following actions, the first of which is required by MAP–21 as part of the new ''pass/fail'' requirement, and the remainder of which are discretionary actions to strengthen the program:

- Establish testing procedures and establish minimum performance standards, which are generally based upon the pre-MAP–21 tests, and a pass/fail scoring system for new bus models, with a minimum passing score of 60 points. A bus model could receive up to an additional 40 points based on its performance above the proposed minimum performance standard in particular test categories. Buses would need to achieve at least a minimum score in each category in order to pass the overall test and be eligible for procurement using FTA financial assistances.
- Establish check-in procedures, including FTA approval, for new bus models proposed for testing.
- Require transit vehicle manufacturers to submit Disadvantaged Business Enterprise (DBE) goals to FTA prior to scheduling a test.
- Determine a new bus model's total passenger load based on the manufacturer's maximum passenger rating, including accommodations for standees.
- Establish a simulated passenger weight of 150 lbs. for seated and standing (standee) passengers, and a weight of 600 lbs. for passengers who use wheelchairs.
- Require test model buses to identify the country-of-origin for the components of the test vehicle to facilitate a transit agency's ability to compare it with the actual production model.
- The replacement of the on-road fuel economy test with the fuel economy testing already conducted during the emissions test on the chassis dynamometer.

Generally, FTA is adopting the test procedures that were proposed in the NPRM, although FTA, is making a small number of changes to some test procedures as a result of comments received in response to the NPRM. FTA is adding a set of brake stops at gross passenger load as part of the Braking Test; measuring noise levels while traversing road irregularities as part of the Noise Test; and eliminating the Shakedown Test and moving its single point score value into the Structural Durability Test. Further, FTA is not adopting the proposal that the test unit bus must be Buy America-compliant. Instead, FTA only is requiring that the manufacturer provide the country of origin for the test vehicle's major components, which FTA believes will help transit agencies ensure that the tested bus is similar to the bus the will be completed in production. In addition, FTA is making a few non-substantive amendments, replacing the term ''grantee'' with ''recipient'' to bring it into conformity with standard FTA usage, and cross-referencing FTA Circular 5010's categorization of a vehicle's useful service life instead of repeating it in the regulatory text.

The NPRM sought comment on establishing testing procedures, performance standards, and a scoring system for remanufactured vehicles sold by third-party vendors and procured using FTA financial assistance. Based on the comments received, FTA has concluded that further consideration is warranted, and therefore, is not extending the bus testing requirement to remanufactured buses through today's final rule. Given the growing investment in Federal and local dollars in remanufactured buses, however, and the emphasis on public transit safety in MAP–21, FTA believes that it is responsible Federal stewardship to ensure that remanufactured buses meet expectations for reliability and durability and will address remanufactured buses in a subsequent rulemaking action.

Summary of Benefits and Costs

Table 1 below summarizes the potential benefits and costs of this rule that FTA was able to quantify over 10 years and using a 3 and 7 percent discount rate. Quantified costs stem from shipping buses to the testing facility, manufacturer testing fees, having repair personnel for bus manufacturers available at the testing site, new paperwork requirements, and increases to the resources needed to operate the bus testing program (which represents most of the quantified costs). Unquantified costs include remedial actions to buses that do not pass the proposed test (which may extend to all the buses in a model represented by the tested bus) and potential improvements to buses to obtain a higher testing score. However, given that 41 of 49 buses tested between January 2010 and February 2013 would have satisfied the proposed performance standards without any design changes, FTA believes that the proposed requirements would not drive systemic changes to all transit bus models. Quantified benefits are from a reduction in unscheduled maintenance costs. The total annual program cost impact of this rule is estimated to be $159,369. The total annual program benefit is estimated to be $531,990. The resulting cost and benefits are presented in Table 1.

TABLE 1—SUMMARY OF QUANTIFIED COSTS AND BENEFITS

Year	Costs	Benefits	Net cash flow	Discounted net benefits @	
				3%	7%
1	$159,369	$531,990	$372,621	$361,768	$348,244
2	159,369	531,990	372,621	351,231	325,462
3	159,369	531,990	372,621	341,001	304,170
4	159,369	531,990	372,621	331,069	284,271
5	159,369	531,990	372,621	321,426	265,674
6	159,369	531,990	372,621	312,064	248,293
7	159,369	531,990	372,621	302,975	232,050
8	159,369	531,990	372,621	294,150	216,869
9	159,369	531,990	372,621	285,583	202,681
10	159,369	531,990	372,621	277,265	189,422

TABLE 1—SUMMARY OF QUANTIFIED COSTS AND BENEFITS—Continued

Year	Costs	Benefits	Net cash flow	Discounted net benefits @	
				3%	7%
Net Present Value				3,178,533	2,617,134

B. Background

FTA's grant programs, including those at 49 U.S.C. 5307, 5310, 5311 and 5339, assist transit agencies with procuring buses. The Federal transit program allows FTA to provide up to 85% funding for each bus. In 2013, for example, FTA funds assisted in the procurement of 8,934 new vehicles, of which approximately 5,600 buses and modified vans were covered under the existing testing program. The testing program has its origins in Section 317 of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA, Pub. L. 100–17), which provided that no funds appropriated or made available under the Urban Mass Transportation Act of 1964, as amended, were to be obligated or expended for the acquisition of a new model bus after September 30, 1989, unless a bus of such model had been tested to ensure that the vehicle ''will be able to withstand the rigors of transit service'' (H. Rept. 100–27, p. 230). In subsection 317(b), Congress mandated seven specific test categories—maintainability, reliability, safety, performance, structural integrity, fuel economy, and noise—augmenting those tests with the addition of braking performance and emissions testing through section 6021 of the Intermodal Surface Transportation Efficiency Act of 1991 (Pub. L. 102–240). These requirements were subsequently codified at 49 U.S.C. 5318.

FTA issued its initial NPRM in May 1989 (54 FR 22716, May 25, 1989) and an interim Final Rule three months later (54 FR 35158, August 23, 1989), establishing a bus testing program that submitted vehicles to seven statutorily-mandated tests resulting in a test report and requiring transit bus manufacturers to submit that completed test report to transit agencies before FTA funds could be expended to purchase those vehicles. Although Congress did not authorize FTA to withhold financial assistance for a vehicle based on the data contained in a test report, FTA expected that the test report would provide accurate and reliable bus performance information to transit authorities that could be used in their purchasing and operational decisions.

This system remained in place for over twenty years. During the intervening period, however, a handful of bus models that had documented problems in their test reports were able to enter transit service, most notably, a fleet of 226 articulated buses that one of the Nation's largest transit agencies ordered in 2001. After paying $87.7M of the $102.1M contract, the transit agency stopped payments in 2005 due to unresolved problems concerning the suspension systems and structural cracks around the articulation joint, near the axles, and in the rear door header, triggering years of litigation. In addition, in 2009, the transit agency abruptly pulled all of these models from service for safety concerns following a structural failure related to the articulation joint, resulting in lengthier and more crowded commutes for thousands of transit riders. In May 2012, a local court ruled that the transit agency could sell the buses for scrap metal, a move that generated only $1.2M for vehicles that had served barely half of their FTA-funded service lives.

In 2012, MAP–21 amended 49 U.S.C. 5318 by adding new requirements to subsection 5318(e), *Acquiring New Bus Models.* Importantly, it shifted the program to one where recipients could only use FTA funding to procure buses that passed FTA's testing program, which now included a bus model scoring system and a pass/fail standard based on the weighted aggregate score for each of the existing performance standards (maintainability, reliability, performance (including braking performance), structural integrity, fuel economy, emissions, and noise).

MAP–21 also amended section 5318(e) to require that new bus models meet the minimum safety performance standards to be established by the Secretary of Transportation pursuant to 49 U.S.C. 5329(b). In the recently-proposed National Public Transportation Safety Plan (81 FR 6372, February 5, 2016), FTA proposed to establish voluntary vehicle performance standards as an interim measure, acknowledging that minimum safety performance standards eventually may be the subject of rulemaking, and sought comment on four questions posed in the proposed Plan.

The primary purpose of today's rule is to establish minimum performance standards, a new bus model scoring system, and a pass/fail standard. In developing the proposals contained in the NPRM, FTA engaged in extensive discussions with transit industry stakeholders through the use of public webinars, teleconferences, and presentations at industry conferences. Participants in these public outreach efforts included transit vehicle manufacturers, component suppliers, public transit agencies, State departments of transportation, and Bus Testing Facility personnel, and their contributions were reflected in the aggregate scoring system and pass/fail criteria contained in the NPRM.

In addition to implementing the statutory mandates, FTA proposed other administrative changes that would adjust the passenger payloading process to better reflect industry practice and ensure that buses tested at the facility comply with FTA Civil Rights and Buy America requirements regarding disadvantaged business enterprises and domestic content, respectively.

Finally, FTA sought comment on establishing a bus testing requirement and scoring system for remanufactured buses sold by third parties and procured using FTA funds.

C. Summary of Comments and Section-by-Section Analysis

FTA received a total of 22 comments in response to the NPRM, including comments from transit bus manufacturers, remanufacturers of transit buses, national and state transit associations, and transit agencies procuring transit buses. FTA also received several comments from fire safety advocates and component manufacturers, who urged FTA to adopt fire safety standards for materials used in bus interiors, including bus seats, which exceed Federal Motor Vehicle Safety Standard (FMVSS) 302. As noted above, although Congress directed FTA to establish minimum safety performance standards for vehicles used in public transportation in 49 U.S.C. 5329(b), FTA has not yet initiated such a rulemaking and those comments, however well-intentioned, are beyond the scope of today's regulatory action.

Although today's final rule contains much of what was proposed in the NPRM, FTA is making some changes to the test procedures as a result of comments received in response to the NPRM. FTA is adding a set of brake stops at gross passenger load as part of the Braking Test; measuring noise levels while traversing road irregularities as part of the Noise Test; and eliminating the Shakedown Test and moving its single point score value into the Structural Durability Test. Further, FTA is removing the proposal that the test unit bus be Buy America-compliant, and instead, is only requiring the manufacturer to provide the country of origin for the test vehicle's major components, which FTA believes will help transit agencies ensure that the tested bus is similar to the bus that will be produced and delivered. In addition, FTA is making a few non-substantive technical amendments, replacing the term ''grantee'' with ''recipient'' to bring it into conformity with standard FTA usage, and cross-referencing FTA Circular 5010's categorization of a vehicle's useful service life instead of repeating it in the regulatory text.

Section 665.1 Purpose

FTA proposed to amend the purpose of the regulation to reflect a new pass/fail test and scoring system.

Comments Received: FTA did not receive any comments on this section.

Agency Response: FTA is including this section in the final rule without change.

Section 665.3 Scope

FTA proposed no changes, as the requirements of this part continue to apply to recipients of Federal financial assistance under 49 U.S.C. Chapter 53.

Comments Received: FTA did not receive any comments on this section.

Agency Response: FTA is including this section in the final rule without change.

Section 665.5 Definitions

FTA proposed changing the definition of *Curb Weight* from ''Curb weight means the weight of the empty, ready-to-operate bus plus driver and fuel.'' to ''*Curb weight* means the weight of the bus including maximum fuel, oil, and coolant; but without passengers or driver.''

FTA proposed changing the definition of *Gross Weight* from ''Gross weight, also gross vehicle weight, means the curb weight of the bus plus passengers simulated by adding 150 pounds of ballast to each seating position and 150 pounds for each standing position (assumed to be each 1.5 square feet of free floor space).'' to ''the seated load weight of the bus plus 150 pounds of ballast for each rated standee passenger, up to and including, the maximum rated standee passenger capacity identified on the bus interior bulkhead''.

FTA proposed changing the definition of *Seated Load Weight* from ''Seated load weight means the weight of the bus plus driver, fuel, and seated passengers simulated by adding 150 pounds of ballast to each seating position.'' to ''the curb weight of the bus plus seated passengers simulated by adding 150 pounds of ballast to each seating position and 600 pounds per wheelchair position.'' This 600 pound figure is based on the minimum load-bearing capacity for wheelchair lifts and ramps in the USDOT's accessible bus specifications at 49 CFR 38.23(b)(1) and (c)(1).

Comments Received: FTA received two comments on this section. One commenter suggested that buses be tested at their maximum Gross Vehicle Weight Rating (GVWR) and Gross Axle Weight Rating (GAWR), and that loading a bus based on the number of seated and standing passengers (using a simulated weight of 150 pounds for each passenger and 600 pounds for each wheelchair location) would not accurately reflect a fully loaded bus or actual operating conditions. The other commenter sought clarification about the simulated passenger payload of 150 pounds per person, believing that FTA had raised it to 175 pounds in a previous regulatory action.

Agency Response: FTA does not support testing a bus at its maximum GVWR and GAWR for several reasons. First, unlike trucks that transport cargo and axle loads that must be monitored, buses transport people and are loaded based on the number of available seat/wheelchair positions and the amount of open floor space where standees are allowed by the bus operator, regardless of the vehicle's weight ratings. Second, in actual transit use, the capacity of a transit bus is not based on the vehicle's GVWR or GAWR limit, but rather, on the vehicle's actual passenger capacity. FTA will allow bus manufacturers to request that the bus be loaded up to its maximum weight rating when the resulting gross vehicle weight at the manufacturer's rated passenger load is less than the GVWR to allow the manufacturer the flexibility to adjust the seating layouts up to the full weight capacity of the bus model. If a bus's advertised passenger capacity is well below its weight ratings, a manufacturer may not increase the length of the vehicle to accommodate additional passengers because an increase in the length of a tested bus model is considered a major change in configuration and could result in additional testing.

With regard to the commenter who sought clarification on the simulated passenger weight, FTA had proposed raising the weight from 150 pounds to 175 pounds in a 2011 **Federal Register** Notice (76 FR 13580, March 14, 2011), but that proposal was subsequently withdrawn (77 FR 76597, December 14, 2012).

Therefore, FTA is adopting this section in the final rule without change.

Remanufactured Buses

FTA also posed a series of questions seeking comment on whether remanufactured buses (*i.e.,* previously owned buses that have undergone substantial structural, mechanical, electrical, and/or cosmetic rebuilding and are sold to a transit agency other than the vehicle's original owner) should be subject to the bus testing requirement. As FTA explained in the NPRM, FTA had not previously extended the testing requirements to these types of buses because, until recently, transit agencies were only rebuilding their existing buses as part of their fleet maintenance. However, FTA is aware that remanufactured buses are now being offered by third-parties to transit agencies as a less expensive alternative to acquiring new buses. FTA therefore is concerned that these models could be introduced as de facto new buses or purchased in lieu of new buses, without having to go through the same testing requirements as a new bus model. However, because FTA had various questions about how to apply the bus testing program to this category of vehicles, FTA sought comment through the NPRM.

One manufacturer of new transit buses, one transit agency, one trade association, and two bus remanufacturers submitted comments, all of whom agreed that remanufactured buses need to meet safety and durability requirements, but disagreeing on the preferred method. The manufacturer of new buses supported the standardized testing of remanufactured buses, believing that ''remanufactured buses should undergo the same rigorous testing that new buses and coaches must meet in order to ensure their safety and reliability,'' recommending that the final rule include provisions that ensure that the original bus manufacturer is not referenced in a test report to limit confusion and to prevent a company from selling remanufactured vehicles using the original bus manufacturer's name for marketing purposes. In

contrast, the remanufacturers said their vehicles already undergo extensive testing and analysis before, during, and after the remanufacturing process to ensure the vehicles' safety and durability, and that additional testing at Altoona would be ineffective and redundant.

FTA is also aware that procuring remanufactured buses is being advertised in trade magazines and at trade shows as a less expensive alternative to procuring a newly built bus, and submitting both new and remanufactured vehicles to the same testing program could place both on an equal footing and ensure the safety and reliability of each. Furthermore, the national trade association's comments noted some issues within the trucking industry related to remanufactured equipment that could compromise safety and reliability of vehicles. Given Congressional direction in MAP–21 to augment FTA's safety responsibilities and to strengthen the bus testing program through today's regulatory changes, FTA believes the subject of remanufactured buses should undergo further review and consideration and will address the subject in a later rulemaking.

Section 665.7 Certification of Compliance

FTA proposed to amend this section to reflect that the recipient must certify that a bus has received a passing test score, but acknowledging that parties may seek assistance from FTA, consistent with FTA's role in reviewing partial testing requests as described in section 665.11(d). FTA is also removing the term ''Grantee'' from the section heading and throughout this part, as FTA now uses the term ''recipient.''

Comments Received: FTA did not receive any comments on this section.

Agency Response: FTA is including this section in the final rule without change.

Section 665.11 Testing Requirements

FTA proposed new entrance requirements for a bus to enter the bus testing program. Before submitting a new bus model for testing, the transit vehicle manufacturer (TVM) would have to submit its disadvantaged business enterprise (DBE) goals to FTA consistent with the Department's DBE regulations in 49 CFR part 26. Test model buses would also need to comply with applicable FMVSS requirements in 49 CFR part 566, *Manufacturer Identification;* 49 CFR part 567, *Certification;* and 49 CFR part 568, *Vehicle Manufactured in Two or More Stages—All Incomplete, Intermediate and Final-Stage Manufacturers of Vehicle Manufactured in Two or More Stages.* Bus models would also need to identify the maximum rated quantity of standee passengers identified on the interior bulkhead in 2 inch tall or greater characters; be capable of negotiating the Durability Test course at the requisite test speed under all conditions of loading (curb weight, SLW, and GVW); and be capable of following the test duty cycles used for Fuel Economy and Emissions Tests within the test procedure for allowable speed deviation. Lastly, FTA proposed that bus models submitted would need to satisfy the domestic content requirements for rolling stock in 49 CFR part 661, *Buy America Requirements.*

FTA also proposed a technical amendment to section 665.11(g) reflecting the addition of Appendix B to this part, resulting in the relabeling of the former appendix as the new ''Appendix A.''

Comments Received: FTA received multiple comments on this section. One commenter supported applying the Disadvantaged Business Enterprise (DBE) and Buy America requirement to bus models submitted for testing, stating that an inspection of a vehicle's domestic content prior to introducing a new foreign bus model is vital to preserve the integrity and reliability of the testing program and provides a level playing field among competitors, noting the importance of the test unit matching the composition of subsequent production units. Another commenter indicated that documentation of the vehicle's domestic content will assist future purchasers to assess the impact that changes in components could have on a vehicle's Buy America compliance. In contrast, several commenters opposed the Buy America content proposal—two noted that the buses submitted for testing are typically the private property of the bus manufacturer and are not being procured with FTA funds, with FTA funding serving as a determinant of Buy America applicability. Another commenter indicated that the requirement will discourage innovation by locking buses into a particular configuration and leaving no leeway for the introduction of new technologies. Another commenter requested that FTA consider alternative bus service life categories that account for the risk to grantees that procure new technology vehicles.

Agency Response: FTA is eliminating the proposed Buy America content requirement from section 665.11(a)(5) in the final rule. Instead, FTA will require that the manufacturing country of origin for the test vehicle's major components be documented by the TVM during the test scheduling process—these would include the vehicle shell, axles, brakes, propulsion power system and auxiliary power systems (engine, transmission, traction batteries, electric motor(s), fuel cell(s)), and the primary energy storage and delivery systems (fuel tanks, fuel injectors & manifolds, and the fuel injection electronic control unit).

This is a modification from the NPRM, which proposed that all buses submitted for testing meet the domestic content requirements of the FTA Buy America regulation. The primary focus of the proposal was to ensure that the design configuration of the test unit bus matched subsequent production units. However, commenters made FTA aware that the test unit bus may not be fully representative of all production units, and that grantees have the ability to specify changes in a production unit's components and configuration. These changes may subject the bus to additional testing, but that is a decision that the purchaser must knowingly make. In addition, bus models delivered for testing do not always include all of the ancillary systems (seats, wheelchair tie-downs, passenger information systems, etc.) that may well be part of the domestic content calculation of a particular bus procurement but these systems are not evaluated by the bus testing program, nor are they required in order for the vehicle to under testing. Finally, changes in, or the inclusion of, components may also alter a production vehicle's domestic content, and documenting the test unit vehicle's domestic content in a permanent test report may give a false indication of a vehicle's Buy America content. FTA acknowledges that the pre-award and post-delivery audits required by 49 U.S.C. 5323(m) and 49 CFR part 663 are the only acceptable confirmation of a vehicle's Buy America compliance and for that reason, TVMs will not be required to document a vehicle's compliance with Buy America during the check-in process.

However, because the primary objective of the proposed requirement was to ensure that the design configuration of the test unit bus (structure design and materials, axles and brakes, and propulsion system and fuel systems) was representative of the production unit buses that would be delivered to FTA grantees, FTA is requiring TVMs to provide information concerning the source of essential vehicle components so that purchasers will have an effective means of comparing the test unit bus against the specific vehicle they intend to procure.

Lastly, to acknowledge the broader applicability of FTA's service life categories other than simply as a means of determining a vehicle's testing procedure, FTA is removing the list of vehicle service life categories in section 665.11(e) and will instead incorporate the service life categories contained in FTA's Circular 5010.1.

Section 665.13 Test Report and Manufacturer Certification

FTA proposed adding language to this section that would require the Bus Testing Facility operator to score the test results using the performance standards and scoring system outlined in Appendix A of this part. FTA also proposed that the Bus Testing Facility operator obtain approval of the Bus Testing Report by the bus manufacturer and by FTA prior to its release and publication. Finally, FTA proposed that the Bus Testing Facility operator make the test results available electronically to supplement the printed copies.

Comments Received: FTA did not receive any comments on this section.

Agency Response: FTA is including this section in the final rule without change.

Section 665.21 Scheduling

FTA proposed that all requests for testing, including requests for full or partial testing, be submitted to the FTA Bus Testing Program Manager prior to scheduling with the Bus Testing Facility operator. All test requests would provide: a detailed description of the new bus model to be tested, the service life category of the bus, engineering level documentation characterizing all major changes to the bus model, and documentation that demonstrates satisfaction of each one of the testing requirements outlined in section 665.11(a). FTA would review the test request and determine if the bus model is eligible for testing and which tests need to be performed. FTA would prepare a written response to the requester for use in scheduling the required testing with the Bus Testing Facility operator.

Comments Received: FTA received two comments on this section. Both comments asked FTA to commit to a maximum amount of time to review the test requests and provide a response to the requester.

Agency Response: FTA will commit to reviewing the test request and providing an initial response within five business days. Some requests, particularly requests for partial testing of a bus model that has undergone the testing process but is subsequently produced with a change in configuration or component, may require additional time to review the specific design and engineering changes proposed and provide a final response.

Section 665.23 Fees

FTA proposed that the manufacturer's share of the test fee would be expended first during the testing procedure and that the Bus Testing Facility operator would obtain approval from FTA prior to committing FTA program funds.

Comments Received: FTA did not receive any comments on this section.

Agency Response: FTA is including this section in the final rule without change.

Section 665.25 Transportation of Vehicle

FTA did not propose any changes.

Comments Received: FTA did not receive any comments on this section.

Agency Response: FTA is including this section in the final rule without change.

Section 665.27 Procedures During Testing

FTA proposed additional language for this section to require the Bus Testing Facility operator to inspect the bus model configuration upon arrival to compare it to that submitted in the test request; to compare the gross vehicle weight and gross axle weights to the ratings on the bus; to determine if the bus model can negotiate the test track and maintain proper test speed over the durability, fuel economy and emission drive cycles; and to provide these results to the bus manufacturer and FTA prior to conducting testing using FTA program funds.

FTA also proposed additional language to require the Bus Testing Facility operator to investigate each occurrence of unsupervised maintenance and assess the impact on the validity of the test results and to repeat any impacted test results at the manufacturer's expense. FTA also proposed language to address modifications to bus models undergoing testing. Specifically, FTA proposed that the Bus Testing Facility operator perform or supervise and document the performance of bus modifications only after the modifications have been reviewed and approved by FTA. The language also stated that testing would be halted after the occurrence of unsupervised bus modifications and the Bus Testing Facility operator would not resume testing until FTA has issued a determination regarding the modifications.

In addition, FTA proposed moving the listing of test categories from Appendix A into section 665.27 and assigning performance standards to each of the test categories as MAP–21 requires. FTA proposed amending the Performance Test category by removing the language regarding the Braking Performance Test and moving it into the Safety Test category. FTA also proposed adding the requirement for a review of the Class 1 failures documented in the Reliability Test category to the Safety Test category.

Comments Received and Agency Response: FTA received numerous comments on this section. One commenter asked how many days FTA would need to perform the test readiness review and issue a decision regarding the start of testing. The other comments on this section were pertaining to the specific tests and the proposed performance standards, which are summarized as follows:

Structural Integrity

There were nine comments on the *Structural Integrity* test category and the associated performance standards. In response to comments, several refinements were applied to the final rule.

FTA received two comments concerning the *Shakedown* test and performance standard, with one recommending a maximum deflection of 0.100 inch to account for the floor load of a passenger on a wheeled mobility device, the second challenging the relevance of the test and considering it to be redundant with the test track durability test. The *Shakedown* test in section 665.27(h)(5)(i)(1) has been eliminated as FTA believes that this test is a legacy test procedure that pre-dates the bus testing program and provided a means to verify a level of structural integrity at a transit agency facility in lieu of performing a test track durability test. Any incremental value provided by the *Shakedown* test in light of the *Structural Durability* test performed on the test track is not apparent.

One commenter inquired whether the *Dynamic Towing* test would capture any structural or other types of failures throughout the bus and if the test was performed in a stop-and-go manner including the negotiation of turns. FTA is not making any changes to section 665.27(h)(5)(i)(4) regarding the *Dynamic Towing* test and performance standard. The *Dynamic Towing* test is a demonstration that the bus can be safely and effectively towed by a common heavy duty vehicle tow truck, without regard to operational usage or negotiation of turns. The test, however, does induce unique loads into the bus structure and on the rear axle of the bus,

as the five-mile towing distance performed during the test is continuous around the paved test loop.

One commenter questioned the relevance of the *Jacking* test and recommend that FTA seek the input of transit operators. FTA is not revising section 665.27(h)(5)(i)(5), the *Jacking* test. FTA believes that this test remains relevant, that a bus model that fails to meet the performance standard could be a significant operational problem for transit operators, and that the time and cost burdens of conducting the test are minimal.

Another commenter suggested that FTA consider evaluating the corrosion resistance of bus models during the structural durability test. One commenter offered a proposal to evaluate the corrosion resistance of new bus models. FTA considered this proposal and believes that this non-testing based evaluation does not provide sufficient technical analysis on which to base a score, in addition to being outside the scope of this rulemaking.

One commenter proposed that FTA to make bus models available to component suppliers to use for partial testing programs to enable the development of robust aftermarket components and new technology subsystems. While this is an interesting proposal, this is also outside the scope of today's rulemaking and FTA would need a significant increase in funding in order to acquire and maintain a fleet of buses to serve as platforms for the testing of new components and technologies.

Structural Integrity—Durability

There were several comments requesting clarification on the implications of the proposed durability performance standards and suggestions for alternatives methods for evaluating both structural and powertrain durability of new bus models, components, and subsystems.

First, FTA was asked to clarify the types of failures that invoke a failure to meet the durability performance standard and the process for resolving those failures. The commenter wanted to know if there were certain types of failures that would automatically trigger a test restart, if FTA could commit to a response time to provide feedback about the proposed design remedy to resolve a durability failure. The commenter proposed that FTA consider not requiring a mile-for-mile validation of structural durability failures that are not Class 1 or Class 2 level reliability failures through the use of stress and strain measurements and common structure modeling techniques, and suggested that FTA allow the durability test to continue after a durability performance standard failure so that testing can progress while the bus manufacturer prepares the design remedy.

To clarify, then, for the structural durability performance standard, any discontinuity (*e.g.,* cracking, deformation, or separation) that develops during the test in any of the bus material elements that are permanently affixed, through welding or other bonding methods including non-serviceable fasteners such as rivets, whose function is to bear the weight of the vehicle or the weight of the passengers, or maintain the physical geometry of other load bearing elements and openings in the bus body, or that secure and retain other non-bonded bus body components will be considered a failure to meet this performance standard. Material discontinuities that develop during the test in the main frame rails and the frame cross-members on body-on-frame bus models will also be considered a failure of the structural durability performance standard. For the powertrain durability performance standard, all malfunctions of bus powertrain system will be classified as a failure of the powertrain durability performance standard until remedied and validated. Structural failures of the powertrain components, including any associated bracketry, mounts, cradles, and fasteners used to physically attach the components to the bus body or frame are also considered a failure of the powertrain durability performance standard.

If the *Durability* test reveals a durability performance standard failure, the structural durability test will be paused awaiting a proposed design remedy from the bus manufacturer. FTA will review the proposed remedy and provide a response to the proposed design remedy within five business days. The intent of the FTA review is to evaluate that the proposed design modification is relevant to the failure mode and that it is suitable for production.

FTA will employ the existing partial testing policy for powertrain changes or updates to new bus models that are subject to the Pass/Fail rule. Currently, FTA focuses on the engine, transmission fuel system, and drive axle to assess if partial testing is needed. Once each of these new components has been tested in a bus, FTA allows their use in subsequent bus models without additional testing based on FTA's experience that the replacement of these components is not likely to significantly alter existing test data in the Bus Testing Report. While the scope of the powertrain durability performance standard casts a wider net than the partial testing policy for powertrain changes, bus manufacturers will be allowed to substitute minor powertrain components not currently tracked by the current partial testing policy if a credible analysis is provided that demonstrates the component substitution is durable in a transit service environment and that secondary failures of the primary powertrain components are not induced if the substituted component fails. FTA does not believe that the supply of aftermarket parts available to transit operator for maintaining their buses will be negatively affected by the powertrain durability performance standard. FTA only requires that the buses remain in service for at least their designated service life. Grantees do not have to maintain the original design configuration throughout a vehicle's service life and may replace components and major subsystems over the vehicle's lifespan.

Commenters also sought clarification regarding the inclusion of electric bus model off-board charging equipment in the powertrain durability performance standard. Currently, all battery bus chargers are unique to the bus models. If the charging system fails to perform, the bus can only operate on the remaining charge. For bus fleets that employ bus models designed for overnight charging, FTA assumes that more than one battery charger will be available at the bus depot, providing a charging system redundancy that can be leveraged to maintain bus operations. These battery chargers would not be considered as part of the vehicle's powertrain. For bus models designed specifically for on-route charging, the off-board charging system and the on-board charging system interfaces are considered part of the bus powertrain. Additionally, since all bus charging systems are unique, all electric bus models are subject to the testing requirement. The Bus Testing Facility operator provides access to a high voltage source for the battery charger, while the TVM or component vendor is expected to provide the battery charger with the bus model to be tested. Once battery charging systems for buses become standardized, FTA will pursue their installation at the test site.

Various commenters also proposed alternative durability tests. First, one commenter proposed the use of a risk assessment and field monitoring process for the introduction of new bus technologies on an existing bus model

as a substitute for performing partial testing. While this concept has some merit, it would not satisfy the current legislative mandate to conduct actual testing and additional program resources would need to be made available in order to execute this type of program. Another commenter requested that FTA reduce the amount of additional test mileage required to validate a design modification in the event of a failure to meet the durability performance standard. This commenter suggested a combination of stress and strain measurements and analytical models to be used to validate that the probability of the stress induced structural discontinuities in the bus have been reduced or eliminated with the new design. FTA considered the merits of this proposal and has decided that in cases where there is not enough remaining mileage in a test procedure to validate the design change on an actual mileage basis, FTA will consider the manufacturer's efforts to characterize the material stresses through measurements, analyses, and other engineering work to determine an adequate test distance to validate the analysis and the proposed design remedy.

Safety

There were multiple comments related to the *Safety* test category. Seven commenters recommended that FTA consider heightened standards with respect to the flammability of interior materials to address the inadequacies of Federal Motor Vehicle Safety Standard (FMVSS) 302. Although establishing fire safety standards for bus testing program is outside the scope of the NPRM, FTA reviewed the large number of vehicle interior fire safety information submitted by various commenters. FTA notes that updating FMVSS 302 is not within FTA's regulatory authority and suggests that commenters direct their comments to the National Highway Traffic Safety Administration, the U.S. DOT mode responsible for maintaining the FMVSS.

Another commenter suggested that FTA establish a requirement for the use of collision avoidance systems in transit buses, while another recommended that FTA establish crashworthiness test standards for buses. The commenter's recommendation to establish safety performance standards to require collision avoidance systems and crumple zone or other crashworthiness standards on transit buses are not within the scope of the NPRM, as is the proposal to establish braking standards for emergency stops on a grade and the recommendation to adopt performance standards for wheeled mobility device securement devices.

One recommended that the acceleration test be inserted into the *Safety* test category and that FTA adopt performance standards for mobility aid securement devices. The suggestion to move the acceleration test into the *Safety* test category is not being adopted because FTA believes this test is more pertinent to the vehicle's performance, rather than affecting the vehicle's safety.

Additional commenters sought clarification on the definition of Class 1 failures. With regard to the commenter who sought clarification on whether structural failures should be addressed as hazards, FTA considers the following types of test incidents as Class 1 reliability failures resulting in a failure to satisfy the *hazards* performance standard: (1) the loss or degradation of the obstacle avoidance capability (braking, steering, & acceleration/speed control) of the bus due to a component malfunction. For example, a loss of power steering is considered a Class 1 reliability failure due to the expected increase in the force required to turn the steering wheel, reducing the rate of directional change a driver can effect into the bus and compromising its ability to avoid an obstacle; (2) the occurrence of a fire or the potential for a fire (*e.g.* fuel leak in the presence of an ignition source, electrical short circuit, leaks of other flammable fluids near an ignition or heat source); (3) major structural failures that can induce conditions (1) or (2) above, or lead to a physical compromise of the passenger compartment (an unintended exposure to the outside environment or physical trauma to a passenger) or degrades the ability of a passenger to exit the bus.

Regarding the proposed testing and performance standards for *Braking,* one commenter recommended the elimination of the brake stopping distance test and the use of FMVSS certification testing results. Another commenter recommended that the buses be weighted to the maximum gross passenger load for the braking test, and another asked FTA to establish additional brake performance requirements for stopping on a grade. The commenter's suggestion to eliminate the stopping distance test was not accommodated, as a braking performance test is required by statute, and FMVSS compliance is based on self-certification, whereas FTA's is based on actual test data. FTA is adopting the suggestion to conduct the stopping distance test at a full passenger load by conducting an additional set of brake stops at gross passenger load. However, the stopping distance performance standard will be assessed using the test results with the bus loaded to seated load weight as was proposed in the NPRM.

Reliability

One comment to the *Reliability* test category and proposed performance standard recommended that flat tire incidents not be counted as a test failure, as flat tires are commonly caused by road debris and not by bus design.

FTA does not agree with the commenter's suggestion to ignore the occurrence of flat tires during the test and not count them against the *Reliability* performance standard. Flat tires that are the result of a physical interference or structural problem will need to be addressed and resolved prior to test completion, but flat tires due to the presence of debris on the test track will not be documented in the test report.

Noise

Two comments to the *Noise* test category and proposed performance standards were offered. The first requested clarification as to how the performance applied to electric bus charging systems. The second suggested that the noise levels, while traversing a fixed object, such as a speed bump, be measured during the noise test.

FTA will accommodate the request to measure noise levels while the bus traverses road irregularities, as the current audible vibration test is conducted over the road while travelling from the test track to the main maintenance shop area in Altoona. In addition to the over the road segment this general interior noise test will be conducted on the test track. However, there is no minimum performance standard or scoring associated with this test, and noise testing of an electric bus will not be conducted while it is being charged, as it is not directly related to the vehicle's durability or performance.

Performance

Two similar comments on the *Performance* test category and performance standard suggested that FTA conduct the tests in this test category at a fully-weighted or gross passenger load.

With regard to the suggestion to conduct acceleration and gradeability tests at the maximum gross passenger load, current tests are conducted at a seated passenger load and there is no technical basis to conduct additional test runs. However, expected performance standards for acceleration and gradeability can be extrapolated

using the results from the seated passenger load test runs.

For the check-in procedures outlined in section 665.27(b), FTA has revised the language to provide FTA five business days to review the results from the procedure outlined in 665.27(a) and provide a decision to either start the test or to request clarification about the results of that review. To prevent administrative test delays, the Bus Testing Facility operator has the authority to commence specific tests where FTA does not provide a response within five business days and the performance of those tests is not dependent on FTA's determination.

Appendix A to Part 665—Bus Model Scoring System and the Pass/Fail Standard

FTA proposed adding tables as Appendix A to graphically illustrate the new Bus Model Scoring System and the Pass/Fail Standard.

Comments Received

Four commenters expressed a concern that the aggregate score will encourage grantees to use the score blindly and not read the actual content of the test reports. They also expressed a concern that a procurement protest could be filed if they selected a bus model that did not have the highest score of those submitted for bid. In addition, one commenter wanted to know if they would be allowed to apply a different weighting to the scoring system than the weights assigned by FTA.

FTA also received several comments regarding the fuel economy test and the fuel economy scoring system. Two commenters were concerned that the new dynamometer based fuel economy test method will not differentiate the efficiency differences between heating, ventilation, and air conditioning (HVAC) systems installed on the test buses and that the new test methodology does not fully reveal the potential of the new hybrid bus technologies. Two commenters strongly recommended that FTA employ a universal fuel economy scoring system for use with all fuel types, to illustrate the higher fuel economy of electric and hybrid-electric vehicles. Another commenter recommended that the fuel economy scores for 60-foot bus models be adjusted higher by 150 percent to reflect the additional weight of the vehicle.

Agency Response: In regards to the concerns about the use of the scoring system as a primary determinant in procurement decisions, FTA will insert a disclaimer in test reports explaining that the using the test scores as the determinative factor in a competitive procurement is not required. Grantees may use their own specified selection criteria, so long as the selected bus model received a passing test score. Grantees are allowed to establish evaluation criteria more stringent than those used in FTA's testing program or to use an alternative weighting for the scoring of the test results, provided that those criteria do not violate FTA's requirement for full and open competition (See 49 U.S.C. 5323(a)).

Based on comments that the *Shakedown* test is redundant in light of the broader *Structural Durability* test, FTA is eliminating the *Shakedown* test and moving the base points (1.0) associated with the test into the S*tructural Durability* test category, increasing the value of the later test from 12.0 to 13.0 points. Regarding the comments requesting modification of the *Fuel Economy* test procedure to reflect the effect of HVAC operation on fuel consumption, neither the existing test track test procedure nor the dynamometer procedures are capable to testing the effects of various HVAC systems on the measured fuel economy. While the testing is conducted with the ventilation fan engaged, the air conditioning and the heating system controls are set to the equivalent of an ''off'' state. Although evaluating the effect of HVAC systems on fuel economy is technically possible, it would require that the dynamometer facility be capable of maintaining extreme temperatures to accurately stress the HVAC systems and the overall thermal performance of the bus body. Performing this type of testing would require a significant capital investment in the test facility and also would require a significant increase in testing fees.

Both the test track and dynamometer-based fuel economy tests do not expressly inhibit engine-off hybrid buses from turning their engines off during the test procedure. Two of the three dynamometer-based test cycles are actual transit duty cycles. Because buses are designed to operate in an efficient manner, a bus should end with the battery state of charge (SOC) at the same level or higher than at the start of the test cycle. This may require the vehicle to idle for an additional time period to restore the battery's SOC.

Several commenters on the proposed fuel economy scoring scale recommended using a single scoring for all fuel types instead of the individual fuel-specific scales proposed in the NPRM. A scale such as Miles per Gallon diesel equivalent (MPGde), conceptually based on the current Miles Per Gallon equivalent (MPGe) scale developed by the Environmental Protection Agency (EPA) for light duty vehicles [1] and adjusted to the diesel fuel energy equivalent, was considered. The MPGe scale expresses the fuel economy of all other vehicle fuel types in terms of the energy equivalent of a gallon of gasoline. This methodology examines the efficiency of each vehicle's energy to power conversion from the fuel tank to the wheels but does not account for the efficiency of producing and delivering the fuel to the vehicle.

FTA strongly believes that given the wide range of fuel types available in the transit bus marketplace, the best and most commonly cited scoring metric for fuel economy is fuel cost per operating mile. However, due to the volatility of fuel prices, regional fuel price variances, and the variance in the availability of various fuels, establishing a standardized baseline for fuel economy test results based on fuel cost per operating mile is inherently problematic for inclusion in the rule.

FTA examined the use of MPGde for the scoring of the fuel economy test results but declines to adopt such an approach for several reasons. First, MPGde does not factor the energy cost efficiency of each fuel type into the calculation. High values of MPGde do not always indicate low overall fuel operating costs which is a top bus performance priority for most agencies. For example, hydrogen fuel cell buses would be expected to have an MPGde rating more than twice as high as a diesel bus but the fuel currently costs more than three times that of diesel fuel on a gallon equivalent basis resulting in higher overall fuel operating costs. Similarly, CNG buses would be expected to have an MPGde rating about 20% lower than that of a diesel bus but the fuel itself costs less than half that of diesel making it a popular choice in many locales even when the capital and operating costs of the fueling stations are considered.

Second, MPGde does not account for the significant fueling infrastructure costs of most alternative fuels introduced into transit fleets, nor does MPGde account for the significant differences in maintenance facilities, maintenance practices and tools, and maintainer skill sets required for each fuel type. While the choice between gasoline and diesel is not an issue for private owners of passenger vehicles, who can take the vehicle to any number of car dealers or maintenance garages, switching or adding a new bus fuel type

[1] *https://www3.epa.gov/otaq/carlabel/electriclabelreadmore.htm.*

can be a significant undertaking for most agencies with respect to bus maintenance. Although MPGde could be considered relevant to an overarching Federal interest in minimizing transportation energy consumption, FTA believes that MPGde is not used by transit agencies as it is not a clear indicator of fuel operating costs.

Third, MPGde only assesses the fuel efficiency of the vehicle from the vehicle's fuel tank to the wheels and not the true ''well-to-wheels'' efficiency of the complete fuel chain. This methodology generates an artificially high MPGde value for electric vehicles as most of the costs of generating and delivering electric ''fuel'' take place off-board the vehicle at the electric powerplant and along the power transmission lines. For instance, a bus can consume compressed natural gas (CNG) and achieve one MPGde value, versus burning CNG to fuel an electric powerplant and delivering the electricity over wires to charge an electric bus, with a resultant MPGde rating approximately five to six times greater than that of the CNG bus due primarily to the efficiency accounting methodology and not the actual well-to-wheels fuel efficiency. Therefore, FTA believes that adopting MPGde is not a suitable scoring mechanism to indicate the Federal priorities for energy sustainability to the transit industry.

Lastly, if FTA scored the fuel economy results using MPGde, the resulting inflated electric vehicle MPGde values will require expanding the range of the scoring scale significantly. Due to the current scale having a fixed number of points, the resolution of the scale will be reduced, making all bus models of the same size class and fuel type look identical with respect to the score. This defeats the primary purpose of the program which is to provide agencies objective information for the selection of bus models during the bus procurement process.

By maintaining the separate proposed fuel economy scoring scales, the well-to-wheels efficiency differences of different fuel types are neutralized as each fuel type has its own scale. This approach highlights the efficiency differences between bus models of the same fuel type which is very useful for transit agencies while still supporting the Federal interest in reducing transportation fuel consumption.

D. Regulatory Analyses and Notices

Executive Orders 13563 and 12866 and DOT Regulatory Policies and Procedures

This rulemaking is a significant regulatory action within the meaning of Executive Orders 13563 and 12866, and FTA has determined that it is also significant under DOT regulatory policies and procedures because of substantial State, local government, congressional, and public interest. However, this rule is not ''economically significant,'' as defined in Executive Order 12866.

This section explains the purpose of the bus testing program, why FTA is establishing a pass/fail requirement with a point-based system and how that fits within FTA's mission, the alternative scoring systems FTA considered, the logic that FTA employed in determining the weights assigned to the different test categories, FTA's rationale for prioritizing use of the manufacturer's portion of the testing fee, and FTA's analysis of the costs and benefits.

Alternative Scoring Systems Considered

While reviewing and developing scoring systems to meet the MAP–21 requirements, FTA considered a number of alternatives. To begin, FTA considered the importance of the entirety of the safety tests within the existing Bus Testing Program. Noting how integral to the bus testing program each of the testing categories were, FTA wanted to ensure that the buses that were tested, at the very least, met all of the minimum performance standards, regardless of the scoring system that FTA adopted. Stated differently, FTA resolved that the scoring system would have to preclude a bus model from passing the test solely by attaining additional points in other categories (while failing in one or more key categories), resulting in points greater than the threshold that FTA set for the pass/fail standard. FTA also wanted to ensure that whatever system FTA adopted would be relatively simple, straightforward, and easy to understand, and provide meaningful information to both transit agencies and manufacturers. Using these principles, FTA assessed various systems that FTA could adopt or implement to meet the requirements of MAP–21.

FTA first considered various qualitative systems. FTA reviewed a ''five-tier'' based system, as used by other organizations. FTA liked the simplicity of the five-star system for grading buses that met the minimum requirement of passing all of the tests. While FTA's review of various systems indicated that such qualitative systems are simple to implement, they can be very subjective. Moreover, the five-tier system did not capture the level of detail and differential information that FTA desired to convey to the transit industry and manufacturers. FTA also reviewed and considered an ''A to D'' based grading system. Again, while this would have resulted in a fairly simple and straightforward system, it did not convey the level of information or the level of detail to inform transit agencies who are purchasing the vehicles. Thus, FTA rejected these two qualitative systems. While they were simple, straightforward, and easy to understand, they did not meet FTA's goal of providing meaningful information to transit agencies and manufacturers.

Next, FTA considered quantitative point-based systems with the minimum threshold requirement of passing all of the tests. FTA considered various scales. FTA rejected a 50-point based scale for lack of simplicity. FTA considered an 80-point scale (10 points for each test category) and rejected it because it did not capture the relative importance or weighting of the categories. FTA also considered various levels for the pass/fail threshold for each of the scales. Finally, FTA settled on a 100-point scale due to its universality. FTA initially considered a minimum passing score of 40 points, believing the 60 discretionary points would provide purchasers with a greater range with which to evaluate different vehicles, but given the grading systems used in academia and other applications, FTA established a minimum passing threshold of 60 points with 40 discretionary points. This quantitative scale with the minimum threshold of passing all of the tests met all of FTA's goals that the scoring system is relatively simple, straightforward, and easy to understand, and will provide meaningful information to transit agencies and manufacturers.

Logic Used To Determine Weighting for Tests and Sub-Tests

After deciding to propose a 100-point scale for the Bus testing program, FTA had to weigh the importance of each of the test categories within the Bus testing program. FTA determined that the Structural Integrity and Safety Tests were the most important components of the bus testing program, as both were critical to the operation of the vehicle while on the road. Therefore, FTA allotted 50 of the total 100 points to these two tests. Between the two tests, FTA determined that while both were

important, the Structural Integrity Test was more important than the Safety Test, based on its greater importance in evaluating a vehicle's construction, design, and ability to meet service life requirements. Hence, FTA assigned 60 percent of the points for these tests to the Structural Integrity Test and the remaining 40 percent to the Safety Test.

Within the Structural Integrity Test are six sub-test categories, of which five are pass/fail tests. Thus, FTA allotted one point each for the Distortion, Static Towing, Dynamic Towing, Hydraulic Jacking, and Hoisting Tests. The Durability Test, as the most important component of the Structural Integrity Test, received the remaining 25 points. Within these Durability Tests, FTA allocated 13 points to structural durability and 12 points to powertrain durability due to importance to meeting service life requirements.

For the Safety sub-tests, FTA determined that the Hazards Test was as important as the other two sub-tests within this category and allotted it one-half of the total 20 points. The Stability and Braking Tests have three component tests that require a pass/fail grading and one that is a performance based allocation. FTA valued each of these tests equally, based on their relative importance when evaluating a vehicle. Hence, FTA apportioned 25 percent of the remaining points to each test.

For the Maintainability and Reliability Tests, FTA assessed the Maintainability Test to be twice as important as the Reliability Test, but both tests to be as important as the remaining tests, as both directly affect a transit agency's operating costs. Maintainability reflects how much time and resources the transit agency should expect to budget over the course of a vehicle's service life to perform routine maintenance, and reliability reflects a vehicle's ability to meet its service life requirements without significant service disruptions caused by unscheduled maintenance. For ease of assigning points within the weightings, FTA allocated 24 points (or just less than one-half of the 50 points for the remaining tests) to these two tests. Hence, within FTA's weighting scheme, the Maintainability Test received 16 percent of the total points and the Reliability Test received eight percent of the total points.

Assessing the remaining four tests, Fuel Economy, Emissions, Noise, and Performance Tests, FTA determined that each was about the same level of importance based on comments from transit agencies, but that two, Fuel Economy and Emissions Tests, were slightly more important in terms of helping a transit agency to budget for a vehicle's fuel consumption over its lifetime and in calculating the vehicle's incremental benefit towards meeting Clean Air Act requirements. Therefore, as opposed to assigning equal weighting to each of the remaining tests, FTA allocated slightly more weight to the Fuel Economy and Emissions Tests than the Noise and Performance Tests. This resulted in a point allocation of seven points or 27 percent of the remaining points for to the Fuel Economy and Emissions Tests and an average of six points or 23 percent of the remaining points for the Noise and Performance Tests.

The Fuel Economy Test allocates points on a performance basis determined by the output of the type of fuel. For the Emissions Tests, FTA apportioned one-half point for each of the five Emissions Tests that are already regulated by other Federal agencies and the remaining points for the Carbon Dioxide Test. This weighting for carbon dioxide captures the importance of alternative fuels with respect to greenhouse gases.

The Noise Test allocates points on a performance basis determined by the level of decibels produced. FTA weighted the Interior Noise and Exterior Noise Test equally (3.5 points each). As for the Performance Test, FTA weighted the bus model performance on a 2.5 percent grade and the performance during the acceleration test as being equally important and together being worth 60 percent of the five points available. The performance on a 10 percent grade was valued at 40 percent of the Performance test category.

Testing Fee Prioritization

In order to preclude buses that are not ready to complete the bus testing program, the NPRM proposed to exhaust the manufacturer's 20 percent contribution for the total testing fee prior to employing funds from FTA's 80 percent contribution. This prioritizing of the manufacturers' portion of the test fee will incentivize transit vehicle manufacturers to ensure that the bus model submitted will, at a minimum, clear the initial check-in inspections, passenger loading, and initial testing operations. FTA estimates that, depending on the bus model, the first 20 percent of the testing fee should encompass the check-in process and threshold tests.

Based on previous testing experience, FTA determined that bus models that fail these preliminary activities will not perform well during subsequent tests. This policy minimizes the cost to FTA from bus models submitted before they are ready for testing, thereby conserving Federal resources and ensuring that the proper incentive structures are in place. This will encourage manufacturers to ensure their product can withstand the rigors of bus testing. FTA would continue to pay the 80 percent Federal match for one retest and would contribute no Federal funds for a third test or subsequent tests required to achieve a passing test score.

Cost-Benefit Analysis

This section contains FTA's analysis of the benefits and costs of the rule. FTA estimated the rule's benefits and costs through two steps: First, FTA identified and analyzed the costs of the existing Bus testing program (baseline). Second, FTA identified and analyzed the expected costs of the rule relative to the baseline. To determine the benefits and costs of the rule, FTA reviewed the test data for all bus models that had been tested at the Bus Testing Facility between January 2010, when the Environmental Protection Agency's (EPA's) current Diesel Engine Emission Standards took effect (40 CFR part 86, as amended, 66 FR 5002, January 18, 2001), and February 2013, when this rulemaking commenced. The resulting diesel engine exhaust after-treatment systems used to satisfy the 2010 requirements potentially impacted the reliability, maintainability, fuel economy, emissions, and noise test results for a portion of the 49 buses. Additionally, there were OEM product updates to many of the medium-duty chassis used by the five, seven, and ten year service life buses that would affect test results in several test categories.

A total of 49 buses had been tested over this period. FTA believes that the test results for these 49 bus models tested since 2010 provide the best available source of information for determining the cost of the rule on future buses that would be tested (and the models they represent). All bus types and sizes are included in the group of 49, from accessible vans to 60-foot articulated bus models. Buses fueled by compressed natural gas (CNG), electricity, diesel, gasoline, and liquefied petroleum gas (LPG) are included within this group. To determine qualitative benefits, FTA also examined the test results and the transit experience with two bus models tested (prior to 2010) that failed to meet their service life requirements in transit service. FTA has placed the test results of the buses that it analyzed in the docket for this rulemaking.

Costs

A summary of the results of FTA's cost analysis is presented in Table H–1. Eight categories of costs were identified, analyzed, and annualized:

1. *Cost of Required Bus Design Changes:* This category is the estimated annual cost of applying the design changes and components necessary to comply with all of the proposed performance standards to all affected bus models produced in one year.

2. *Lost Value of Test Buses:* This category estimates the depreciation cost of a bus subjected to the testing process. For each of the 49 buses models tested from 2010 through 2012, the full retail value was estimated by identifying a recent purchase value from the 2013 APTA Fleet Report and applying a depreciation factor of 50% to bus models that underwent a durability test and a factor of 20% for bus models that only underwent performance and other non-durability related tests.

3. *Shipping of Test Buses:* This category estimates the cost of shipping the test buses to the Bus Testing and Research Center and back to the manufacturer. The actual/estimated distance that each of the 49 bus models traveled was determined and was used for FTA's calculations. Table H–0 presents this data. For 10-, 7-, 5-, and 4-year buses, a cost of $2.00 per mile was used to estimate the shipping cost. This cost is based on a recent shipment of a mid-sized bus on a truck. For heavy-duty 12-year diesel fueled buses, a cost of $1.61 per mile was used to cover the costs of driving the bus to the test center and back. The estimated fuel costs were calculated using the bus model's measured highway fuel economy and a fuel price of $3.00 per gallon was added. For heavy-duty buses powered by natural gas or electricity, a shipping cost of $4.00 per mile was applied. This cost represents the cost to ship these bus models on a truck.

TABLE H–0—DISTANCE TRAVELED TO AND FROM TEST CENTER

Report No.	Service life	Actual/Estimated shipping distance to and from test center	Shipped via truck to and from test center
1001	7	490	
1002	7	490	
1003	12	549	
1004	7	490	
1005	7	1014	
1006	10	490	
1007	12	310	
1008	7	490	
1009	7	490	
1010	10	975	
1011	12	780	
1012	7	490	
1014	7	490	
1015	12	1400	
1016	12	1400	X
1017	4	490	
1101	12	1400	
1102	7	490	
1103	7	1112	
1104	10	490	
1105	7	1112	
1106	7	490	
1107	12	574	X
1108	12	482	
1109	12	2676	X
1110	10	490	
1111	7	490	
1112	7	490	
1113	7	430	
1114	7	490	
1115	4	1112	
1116	7	1112	
1117	12	310	
1118	12	1400	X
1120	7	490	
1201	7	490	
1202	12	310	
1203	7	430	
1204	7	1112	
1205	12	1400	
1206	12	2676	X
1207	7	1112	
1208	7	430	
1210	7	1112	
1211	12	1400	
1212	7	955	
1213	12	482	
1214	7	1112	X
1215	4	490	

4. *Parts Consumed:* This cost category is for the cost of parts consumed during the test.

5. *On-Site Personnel:* This cost category is for the cost of maintaining manufacturer personnel on-site at the test center. For each test of a heavy-duty bus, the cost of a mechanic's labor ($20.35 an hour), lodging, and per diem at State College, PA for three full months. Manufacturer personnel are often on-site during the testing of heavy-duty bus models.

6. *Paperwork Burden:* This cost category covers the costs to manufacturers of providing mandatory information to the bus testing program.

7. *Manufacturer Testing Fees:* This cost category covers the 20 percent testing fees that the manufacturers pay to have testing conducted.

8. *FTA Program Cost:* This cost category covers the funding provided by FTA to cover 80 percent of the costs associated with testing a bus model.

FTA estimates the costs of the existing bus testing program are as follows: The maximum total annual program cost is $3,750,000 with 80 percent ($3,000,000) covered by FTA and 20 percent ($750,000) paid by transit vehicle manufacturers who submit a bus for testing. The current Paperwork Reduction Act reportable costs are $9,016. The estimated annual cost of on-site manufacturer personnel is estimated to be $76,673. The value of the parts consumed in the testing process is unknown. The annual estimated bus shipping costs for the current program is $63,743. The estimated annual test bus depreciation cost is $1,591,714. The annual cost of bus design improvements as a result of the current program is assumed zero as there are no minimum performance standards requirements. The estimated annual cost of the current bus testing program is $5,491,146.

TABLE H–1—SUMMARY OF COST ANALYSIS RESULTS

[All values in $]

	Cost of req'd bus design changes	Lost value of test buses	Shipping of test buses	Parts consumed	Manufacturer on-site personnel	Paperwork burden	Testing fees	FTA Program cost
Baseline-current program	0	1,591,714	63,743	unknown	76,673	9,016	750,000	3,000,000
Proposed MAP–21 Minimum Proposed Performance Standards and Scoring System.	unknown	0	2,209	unknown	5,103	767	33,362	133,448
Proposed Discretionary Program Changes	58,308	0	0	0	0	2,810	−15,328	−61,310
Revised Bus Payloading Procedures	58,308	0	0	0	0	1,488	−74	−294
Elimination of On-Road Fuel Economy Test	0	0	0	0	0	0	−16,000	−64,000
Revised Bus Passenger Load for Emissions Testing.	0	0	0	0	0	0	−118	−470
Bus Testing Entrance Requirements	0	0	0	0	0	0	664	2,654
Revisions to the Test Scheduling Requirements.	0	0	0	0	0	1,322	0	0
Test Requirements Review Milestone	0	0	0	0	0	0	0	0
Penalty for Unauthorized Maintenance & Modification.	0	0	0	0	0	0	200	800
Estimated Program Costs (Baseline & New Proposals).	58,308	1,591,714	65,952	unknown	81,776	12,593	768,034	3,072,138
Total								5,650,515
Baseline Total								5,491,146
Incremental Program Cost								159,369

To estimate the costs of the rule, FTA first identified all of the bus models in the study group of 49 that would fail to meet the standards.

The most significant cost caused by this rule will be the cost of retesting to validate a vehicle that has failed one or more tests. Eight of the 49 buses FTA examined failed one or more tests. The below table identifies each test these buses would have failed, thus triggering the retesting requirement. FTA also estimated the costs for retesting, and in two cases, the cost of a potential remedy.

TABLE H–2—SUMMARY OF THE COSTS FOR RETESTING FAILED BUS MODELS

[Cost of remedying and retesting bus models (2010–2013) that would fail a proposed performance standard ($)]

Bus (report No.)	Failed test category	Cost of required bus design changes	Lost value of test buses	Shipping of test bus back to manufacturer for modifications and return to Altoona	Additional parts consumed	On-site personnel	Paperwork burden	Testing fees (20%)	FTA program cost
PTI–BY–1214	Structural durability.	Unknown—upper body structure failing.	0	0	Unknown	4,374	215	11,152	44,608
PTI–BT–1208	Structural durability.	Unknown—body structure cracks.	0	0	Unknown	4,374	215	11,152	44,608
PTI–BT–1110	Structural durability.	Unknown—body to frame interface is cracking. Potentially need a new bus body mount design.	0	0	Unknown	4,374	215	17,054	68,216

TABLE H–2—SUMMARY OF THE COSTS FOR RETESTING FAILED BUS MODELS—Continued
[Cost of remedying and retesting bus models (2010–2013) that would fail a proposed performance standard ($)]

Bus (report No.)	Failed test category	Cost of required bus design changes	Lost value of test buses	Shipping of test bus back to manufacturer for modifications and return to Altoona	Additional parts consumed	On-site personnel	Paperwork burden	Testing fees (20%)	FTA program cost
PTI–BT–1108	Powertrain durability.	Unknown—multiple different powertrain failure modes need to be remedied.	0	2,034	Unknown	.....	710	23,578	94,312
	Maintainability	If powertrain durability failures are corrected this standard would be met as well.	0	0	Unknown	.....	0	0	0
PTI–BT–1108	Performance ...	Unknown—the maximum propulsion power delivered to the wheels needs to be increased.	0	0	Unknown	.....	0	600	2,400
PTI–BT–1009	Powertrain durability.	Unknown—multiple different powertrain failure modes need to be remedied.	0	0	Unknown	2,187	215	11,152	44,608
PTI–BT–1107	Structural durability.	$130—radius rod mount was re-welded to correct manufacturing defect.	0	0	.....	.....	42	0	0
	Powertrain durability.	Unknown—multiple different powertrain failure modes need to be remedied. Transmission cradle was the primary issue.	0	4,592	Unknown	.....	380	23,578	94,312
PTI–BT–1107	Performance ...	Unknown—the maximum propulsion power delivered to the wheels needs to be increased.	0	.....	Unknown	.....	42	600	2,400
	Safety-braking	Additional test trials needed to achieve greater brake lining contact with brake rotors.	0	0	0	0	0	620	2,480
	Maintainability	0—if the powertrain durability failures are corrected this standard would be met as well.	0	0	Unknown	.....	0	0	0
PTI–BT–1006	Interior Noise ..	$211—this trolley bus exceeded the proposed interior noise standard by 4 dB at the driver's seating position. Commercially available sound dampening material applied to the floor and engine cover area would reduce the average noise level by 5 dBs 20 square feet of this material costs $170.00 retail and a two hours of mechanic labor (2 − 20.35 = 40.70) to install.	0	0	0	0	133	300	1200

TABLE H–2—SUMMARY OF THE COSTS FOR RETESTING FAILED BUS MODELS—Continued
[Cost of remedying and retesting bus models (2010–2013) that would fail a proposed performance standard ($)]

Bus (report No.)	Failed test category	Cost of required bus design changes	Lost value of test buses	Shipping of test bus back to manufacturer for modifications and return to Altoona	Additional parts consumed	On-site personnel	Paperwork burden	Testing fees (20%)	FTA program cost
PTI–BT–1010	Interior Noise ..	$211—this trolley bus exceeded the proposed interior noise standard by 4 dB at the driver's seating position. Commercially available sound dampening material applied to the floor and engine cover area would reduce the average noise level by 5 dBs 20 square feet of this material costs $170.00 retail and a two hours of mechanic labor (2 − 20.35 = 40.70) to install.	0	0	0	0	133	300	1200
	Total Cost ($)	Unknown	0	6,626	0	15,309	2,300	100,086	400,344
	Annual Cost ($)	Unknown	0	2,209	0	5,103	767	33,362	133,448

In addition, the testing fees for the program are broken down by test and sub-test categories, with manufacturers charged fees only for the tests that must be conducted. The fee schedule for the current program is shown in Table H–3.

TABLE H–3—ADJUSTED BUS TESTING PROGRAM COSTS AND FEES

Test	500,000 mi—12 year service life	350,000 mi—10 year service life	200,000 mi — 7 year service life	150,000 mi — 5 year service life	100,000 mi — 4 year service life
Check-In	3,000	3,000	3,000	3,000	3,000
Inspect for Accessibility	1,500	1,500	1,500	1,500	1,500
Maintainability (scheduled and unscheduled)	Included in the durability test cost				
Selected Maintainability	4,500	4,500	4,500	4,500	4,500
Reliability	Included in the durability test cost				
Safety	3,000	3,000	3,000	3,000	3,000
Performance	6,000	6,000	6,000	6,000	6,000
Brake	6,100	6,100	6,100	6,100	6,100
Distortion	3,000	3,000	3,000	3,000	3,000
Static Towing	1,500	1,500	1,500	1,500	1,500
Dynamic Towing	1,500	1,500	1,500	1,500	1,500
Jacking	1,500	1,500	1,500	1,500	1,500
Hoisting	1,500	1,500	1,500	1,500	1,500
Structural Durability	117,890	85,270	55,760	40,060	25,970
Fuel Economy	6,000	6,000	6,000	6,000	6,000
Interior Noise	1,500	1,500	1,500	1,500	1,500
Exterior Noise	1,500	1,500	1,500	1,500	1,500
Emissions	44,000	44,000	44,000	44,000	44,000
Total for Full Testing (100%)	203,990	171,370	141,860	77,660	60,570
Manufacturer's Portion Fee (20%)	40,798	34,274	28,372	15,532	12,114

The results from this analysis indicate that annual costs would increase in several areas. The impact of the performance standards to the FTA program cost is estimated to be $133,448. A total of $33,362 in additional manufacturer's fees would be collected from the additional tests. An additional paperwork burden of $767

would be incurred from the required failure analysis and remedy proposal process. An additional $5,103 would be expended for on-site personnel expenses incurred performing test bus modifications at the test site. An unknown amount of additional parts and components would be consumed during the retesting. FTA estimates that one of the eight failed buses would be returned to the manufacturer for systemic modifications incurring additional round-trip shipping expenses of $2,034. FTA believes that the retesting process will not depreciate the test bus an additional amount beyond the first test. However, FTA believes there are no additional costs to the program from implementing the Bus Model Scoring System, as the scores will be calculated automatically once the test results are finalized.

FTA also analyzed the costs of the discretionary program changes in the final rule. The rule will modify two test procedures (payloading and emissions test payload) but will not impose any completely new testing procedures, and will eliminate the On-Road Fuel Economy Test procedure, thereby reducing the aggregate costs currently associated with the bus testing program. For the revised bus payloading procedures, FTA estimates an annual decrease in the program cost of $294 and a decrease in testing fees of $74. These are a result of labor cost savings from loading the mid-sized buses with fewer or no simulated standee passengers. FTA estimates an increase in the annual paperwork burden of $1,488 from the increased manufacturer labor required to determine and report to FTA the total passenger capacity of new bus models submitted to the program. The only other cost introduced by the revised bus payloading procedures is the requirement to add a placard on the interior bulkhead of the bus identifying the maximum standee passenger rating in 2 inch or taller letters. FTA estimates the annual cost impact to new bus models is $58,038. This cost analysis is presented in Table H–3.

TABLE H–4—COST OF STANDEE PASSENGER RATING PLACARD ($)

Standee Rating Placard	Estimated cost per decal (using a quantity of 500)	Labor rate (hr)	Labor amount to install (hr)	Estimated cost per bus	Total annual cost
Annual cost for new production transit buses (5600 units a year)	8.99	13.74	0.10	10.36	58,038

(Source: www.edecals.com using a 2.5 inch tall lettering stating "XX Standees Maximum").
Labor rate assumes a category of "assembler and fabricator" *from bls.gov.*

The annual cost savings of eliminating the on-road fuel economy test is $64,000 for the FTA program and $16,000 in manufacturer test fees. FTA estimates that 15 on-road fuel economy tests would be eliminated annually and the cost of the dynamometer based fuel economy test is already captured in the cost for the emissions test. One full electric bus is expected to be tested annually. Although electric bus models do not need to undergo emissions testing, the cost for conducting one electric bus fuel economy test was retained.

FTA is also changing the bus passenger load for the emissions test from 2/3 seated load weight to full seated load weight. FTA estimates a cost reduction of $470 for the FTA program portion and $118 in reduced fees to the manufacturers. The cost savings is derived from eliminating the labor of unloading and reloading 1/3 of the seated passenger load as all of the other non-durability performance tests are conducted at full seated load.

The program entrance requirements are expected to increase the annual FTA program costs by $2,654 and require $664 in additional manufacturer costs. The additional costs are a result of the bus configuration inspections conducted at bus check-in. The details of this cost analysis are outlined in Table H–5.

TABLE H–5—BUS CONFIGURATION INSPECTION COST

Labor category	Hourly rate	Source	Total hours per bus	Cost
Diesel auto service tech	20.35	*bls.gov*	4	81.40
Technical writer	31.49	*bls.gov*	4	125.96
			Cost per bus	207.36
			Total annual cost (16 buses)	$3,318

The revisions to the test scheduling process are expected to increase the annual paperwork burden to bus manufacturers by $1,322. The test entrance requirements review milestone is not expected to add any costs to the program as only FTA will be reviewing the results of the check-in process and determining the outcome of the milestone review.

Lastly, the annual cost of the penalty for unauthorized maintenance and modification is estimated to be $800 for the FTA program cost portion and $200 in fees to the manufacturers. The costs were determined by amortizing the cost of test track upgrades for physical security and surveillance over a 10-year period.

The total annual cost of the Bus Test Program is estimated to be $5,650,515 given the changes made under this rule. The current Bus Test Program incurs annual costs of $5,494,146. The incremental cost of the rule is anticipated to be $159,369 per year for the new bus models.

Benefits

A summary of the estimated annual benefits of the Bus testing program is presented in Table H–6. FTA has identified and analyzed seven categories of program benefits:

1. *Greater probability of meeting service life and reduced unscheduled maintenance:* This category estimates the annual benefits achieved by adopting these procedures will improve the likelihood that new model bus models entering revenue service will satisfy their service life requirement and the benefits obtained through a reduction of unscheduled maintenance

in actual service. While FTA provides a potential estimate of this benefit, FTA does not include it in its quantitative analysis, but notes that this will most likely be a cost reduction (qualitative benefit) to the industry.

2. *Reduced safety risk:* This category estimates the annual benefits that reduce the safety risk of new bus models entering transit service.

3. *Improved recipient awareness and accuracy of total bus passenger capacity:* This category of benefits examines the benefits obtained from determining and communicating the rated standee passenger capacity of a bus to recipients to inform their procurement process and their bus operations.

4. *Improved recipient knowledge of a bus model production configuration:* This category improves the knowledge of the tested bus model configuration and any deviations from the original planned configuration herein.

5. *Increased confidence the delivered production buses will perform the same as the test bus:* This category examines the benefits of the proposals in increasing the understanding and confidence that the bus model a recipient procures and is delivered, and matches the bus tested with respect to its design configuration and major components.

6. *Faster comprehension of test results/scores and motivation for improved bus performance:* This category examines the benefits derived from the proposals to increase the speed and depth of comprehension of the bus testing results.

7. *Simplified test scheduling process and elimination of unnecessary testing:* This category examines the benefits of maintaining one point and process of program entry and the benefits of eliminating unnecessary testing.

FTA was unable to provide monetized benefits for many of the benefit categories. For many of the categories where FTA believes there are benefits but was unable to quantify, the result is identified as ''unknown''. For categories where FTA believes there is no benefit, the result was identified as ''0''. The benefits of a greater probability of bus models meeting their service life was quantified, but only to inform FTA's qualitative assumptions.

Overall, FTA believes that the current program provides potential benefits in all of the seven categories identified when the information generated by the program is used in the procurement decision process. FTA did not receive comments to the docket challenging or questioning these benefits, but FTA believes that adopting these minimum performance standards will reduce safety risks, reduce unscheduled maintenance, and ensure a greater probability of a bus model meeting its expected service life.

TABLE H–6—SUMMARY OF THE ESTIMATED ANNUAL BENEFITS FOR ALL PROPOSALS

Item	Greater probability of meeting service life and reduced unscheduled maintenance	Reduced safety risk	Grantee awareness and accuracy of total bus passenger capacity	Improved grantee Knowledge of Buy America and bus testing production configuration	Increased confidence the delivered production buses will perform the same as the test bus	Faster comprehension of test scores and motivation for improved bus performance	Simplified test scheduling and process & elimination of unnecessary testing
Baseline—Current Program	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown.
Proposed MAP—21 Minimum Performance Standards.	Cost reduction	Unknown	0	0	0	0	0.
Proposed Scoring System	Unknown	Unknown	0	0	0	Unknown	0.
Proposed Discretionary Program Changes.							
Revised Bus Payloading Procedures	Unknown	Unknown	Unknown	0	0	0	0.
Elimination of On-Road Fuel Economy Test.	0	0	0	0	Unknown	0	Cost reduction.
Revised Bus Passenger Load for Emissions Testing.	0	0	0	0	0	0	Cost reduction.
Bus Testing Entrance Requirement	0	Unknown	Unknown	Unknown	Unknown	0	Unknown.
Revisions to the Scheduling of Testing Requirements.	0	0	0	0	0	0	Unknown.
Test Requirements Review Milestone	0	0	0	0	0	0	Unknown.
Penalty for Unauthorized Maintenance and Modification.	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	0.
Estimated Program Benefit (Baseline and all Proposals).	Cost Reduction	Unknown	Unknown	Unknown	Unknown	Unknown	Cost reduction.

TABLE H–7—BENEFITS ACHIEVED FROM THE MINIMUM PERFORMANCE STANDARDS

[Projected benefit from the service life loss prevention resulting from the proposed durability requirements]

Bus Size	Service life category (yrs)	# of units sold in 2013 [1]	# of models tested 2010–2012	# of tested models that failed durability (structural or powertrain)	Estimated quantity of buses sold in 2013 that have failed the proposed durability standard	Average new bus value [2] ($)	Estimated annual service life value loss (assumes bus retirement at 50% life) ($)	Total cost of new transit buses procured in 2013
> 55 foot articulated.	12	172	2	0	0	760,766	0	130,851,752
45 foot	12	18	2	0	0	449,712	0	8,094,816
40 foot	12	1906	10	1	38	439,954	8,385,523	838,552,324
35 foot	12	373	2	1	37	286,972	5,352,028	107,040,556
30 foot	10	283	4	1	14	207,528	1,468,261	58,730,424
< 27 foot	4, 5, 7	2892	29	3	60	62,410	1,867,135	180,489,720
Total		5644	49	6	149		17,072,947	1,323,759,592

[1] Table 9A, FY2013: *http://www.fta.dot.gov/about_FTA_16073.html.*

[2] See APTA Public Transportation Vehicle Database. *http://www.apta.com/resources/statistics/Pages/OtherAPTAStatistics.aspx.*

FTA is not able to provide a monetized value for the safety risk reduction. Further, FTA estimated benefits of bus models meeting their service life requirements, but FTA used this to inform FTA's qualitative assumption that there would be aggregate benefits to the industry. FTA did not include this in FTA's quantitative calculations because FTA was uncertain of the potential aggregate savings on a year-to-year basis into the future as the industry adapts to today's rulemaking. The results of this analysis are presented in Table H–7.

The analysis presented in Table H–7 used the 2013 transit bus procurement data outlined in Table 9A in the FY 2013 FTA statistical summaries by bus size category and quantity. This analysis also estimated the average cost of a bus model in each size category using the cost information in Table 9A. FTA then determined the quantity of bus models tested in each of the size categories from 2010–2012 (49 buses total) and the number of those that failed the proposed durability performance standard (6). FTA estimated the quantity of bus models sold in 2013 that would have been restricted from FTA recipients in each bus size category. This estimate assumes that 20 percent of the bus models sold in 2013 were bus models tested between 2010 and 2012. The other 80 percent of the sales were assumed to consist of existing bus models tested prior to 2010. FTA then estimated the projected quantity of failing buses by applying a ratio of the number of tested buses that would fail the proposed durability standard by the number of bus models tested in that size category to 20 percent of the 2013 bus sales figures. This resulting quantity of buses was multiplied by the average monetary value of that bus size category and divided by two to obtain the average amount of service life value lost assuming that each of the failed buses only satisfied 50 percent of their service life requirement. FTA notes that this analysis assumes that all six models were not modified by the manufacturer prior to procurement, as the agency has no information concerning whether or not any modifications did in fact occur. If modifications did occur, then the potential benefits discussed here may be overstated.

FTA notes here that although FTA conducted this analysis, FTA did not include these values in its quantitative calculation of benefits. FTA conducted this analysis to inform FTA's qualitative assumption of potential benefits. FTA found, as shown above in Table H–6, that the potential for a major cost reduction for the industry is great, but FTA is uncertain of the potential aggregate savings on a year-to-year basis into the future as the industry adapts to the new requirements.

As another baseline, the lost service life value of two tested bus models known to have failed in service but outside the study window from 2010–2012 was also estimated. The results of this analysis are presented in Table H–8. Again, while FTA performed this analysis, FTA did not include these values in FTA's quantitative calculation of benefits. FTA used this analysis to inform FTA's qualitative assumption of potential benefits. FTA found again, as shown in Table H–8, that the potential for a major cost reduction for the industry is great, but FTA is uncertain of the potential aggregate savings on a year-to-year basis into the future as the industry adapts to the new requirements.

TABLE H–8—ESTIMATED SERVICE LIFE VALUE LOSS OF TWO FAILED BUS MODELS

[Estimated benefits from service life loss prevention of proposed durability requirements with known bus models that failed in service from 2003 to 2013]

Bus size	Quantity	Initial bus value ($)	Estimated annual service life value loss (assumes bus retirement at 50% life) ($)
60 foot articulated	226	451,328	51,000,064
23 foot hybrid electric	70	150,000	5,250,000
Total Service Value Loss			56,250,064
Estimated Annual Loss over 2003–2013			5,625,006

FTA, though, was able to quantify benefits provided by the durability performance standards in the form of reduced unscheduled maintenance, which FTA estimates to be $531,990 per year. FTA was only able to estimate the reduction in labor costs and not the associated reduction in the costs of replacement components. The basis for the reduction in labor costs was the estimated reduction in unscheduled maintenance hours after the design remedies for structural and powertrain durability were applied to the failing bus models identified in the study group. The results of this analysis are presented in Table H–9.

TABLE H–9—BENEFITS FROM REDUCED UNSCHEDULED MAINTENANCE

[Benefit derived from reduced bus maintenance requirements as a result of proposed durability standards]

Bus size	Service Life Category (yrs)	# of tested models that failed durability (structural or powertrain)	Average unscheduled maintenance hours per bus eliminated by durability standard during test (25% service life)	Average unscheduled maintenance hours per bus avoided over 50% service life (until early retirement)	Estimated quantity of buses sold in 2013 that have failed the proposed durability standard	Benefit from the reduction in maintenance hours @20.35/hr (diesel service technician) ($)	Benefit from the reduction in the amount of components replaced
>55 foot articulated	12	0	0	0	0	0	unknown.

TABLE H–9—BENEFITS FROM REDUCED UNSCHEDULED MAINTENANCE—Continued

[Benefit derived from reduced bus maintenance requirements as a result of proposed durability standards]

Bus size	Service Life Category (yrs)	# of tested models that failed durability (structural or powertrain)	Average unscheduled maintenance hours per bus eliminated by durability standard during test (25% service life)	Average unscheduled maintenance hours per bus avoided over 50% service life (until early retirement)	Estimated quantity of buses sold in 2013 that have failed the proposed durability standard	Benefit from the reduction in maintenance hours @20.35/hr (diesel service technician) ($)	Benefit from the reduction in the amount of components replaced
45 foot	12	0	0	0	0	0	unknown.
40 foot	12	1	103	206	38	159,300	unknown.
35 ft	12	1	113	226	37	170,167	unknown.
30 ft	10	1	4	8	14	2,279	unknown.
<27 foot	4, 5, 7	3	82	164	60	200,244	unknown.
Total		6			149	531,990	

FTA believes the scoring system will provide benefits in the areas of reduced unscheduled maintenance, reduced safety risk, with the faster comprehension of test results, and provide industry motivation to seek bus models with higher test scores.

FTA is confident the revisions to the bus pay loading procedures that require the posting of the maximum rated standee passenger load on the interior bus bulkhead will provide benefits in the areas of greater probability of a bus meeting its service life requirements, reduced amounts of unscheduled maintenance, reduced safety risk, and greater understanding of the total rated bus passenger capacity.

FTA believes that eliminating the current on-road fuel economy test and only publishing the fuel economy test results from the dynamometer based test will provide recipients more realistic and reliable test results than the current on-road fuel economy test. Having only one set of fuel economy test results will also eliminate the potential confusion to recipients and manufacturers with respect to the scoring of the test results. FTA was unable to quantify the benefits, beyond the program cost reduction, of eliminating the on-road fuel economy test.

Regarding the revision to the bus passenger load for the emissions testing to seated load weight instead of the 2/3 seated load weight that was unique in the emission test, the benefit of this change is a minor cost reduction from the reduced labor of unloading and loading 1/3 of the seated load weight just for this test. FTA does not expect any other benefits from this approach.

The entrance requirements are expected to provide benefits with reduced safety risk, greater awareness and accuracy of the bus passenger capacity, greater understanding of Buy America implications on bus configurations with respect to major components, and prevention of unnecessary retesting due to bus production configuration anomalies discovered during or after the test is completed.

The primary benefit of the revisions to the scheduling of testing requirements is that the process will be the same whether it is a request for full testing or partial testing. By establishing a single point of entry for the program there will be less confusion about the program requirements and the process and consistency in the resulting determinations.

The benefit of the test requirements review milestone is a program event that will deliver the benefits of the bus entrance requirements. This milestone will provide all testing stakeholders (manufacturer, Bus Testing Facility operator, FTA, and potential purchasers) a clear understanding of a new bus model's program eligibility and readiness for testing.

The penalty for unauthorized maintenance and modification is the repeat of all potentially affected tests. This rule provides benefits in all the categories identified except with the ''simplified test scheduling and elimination of unnecessary testing'' category.

Summary of Costs and Benefits for Bus Model Testing

The annual incremental cost of the rule is $159,369 and the quantified annual benefit of future bus tests is expected to be $531,990, giving an annual net benefit of $372,621. The costs and benefits of the rule are expected to be the same each year into the future.

Summary of Overall Costs and Benefits

Using a 3 and 7 percent discount rate over a ten-year analysis period for the annual costs and benefits developed above, the Net Present Value of the changes encompassed within this rule would yield a net benefit of $3,178,533 at 3 percent discount rate and $2,617,134 at 7 percent discount rate, as shown in Table H–14.

TABLE H–10—SUMMARY OF QUANTIFIED COSTS AND BENEFITS

Year	Costs	Benefits	Net Cash Flow	Discounted Net Benefits @	
				3%	7%
1	$159,369	$531,990	$372,621	$361,768	$348,244
2	159,369	531,990	372,621	351,231	325,462
3	159,369	531,990	372,621	341,001	304,170
4	159,369	531,990	372,621	331,069	284,271
5	159,369	531,990	372,621	321,426	265,674
6	159,369	531,990	372,621	312,064	248,293
7	159,369	531,990	372,621	302,975	232,050
8	159,369	531,990	372,621	294,150	216,869

TABLE H–10—SUMMARY OF QUANTIFIED COSTS AND BENEFITS—Continued

Year	Costs	Benefits	Net Cash Flow	Discounted Net Benefits @	
				3%	7%
9	159,369	531,990	372,621	285,583	202,681
10	159,369	531,990	372,621	277,265	189,422
Net Present Value				3,178,533	2,617,134

Executive Order 13132 (Federalism)

This rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 (''Federalism'''). This rule does not include any regulation that has substantial direct effects on the States, the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government. Therefore, the consultation and funding requirements of Executive Order 13132 do not apply.

Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments)

This rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13175 and because this rule does not have tribal implications and does not impose direct compliance costs, the funding and consultation requirements of Executive Order 13175 do not apply.

Executive Order 13272 (Intergovernmental Review)

The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities do not apply to this rulemaking.

Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601–611) requires each agency to analyze regulations and proposals to assess their impact on small businesses and other small entities to determine whether the rule or proposal will have a significant economic impact on a substantial number of small entities. Although the testing requirement imposes compliance costs on the regulated industry, including bus manufacturers who meet the definition of ''small businesses,'' Congress has authorized FTA to pay 80% of the bus manufacturer's testing fee, defraying the direct financial impact on these entities. FTA has estimated the additional costs and the projected benefits of this rule and certifies that this rule would not have a significant economic impact on a substantial number of small entities.

Unfunded Mandates Reform Act of 1995

The Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1532, *et seq.*) requires agencies to evaluate whether an agency action would result in the expenditure by State, local and tribal governments, in the aggregate, or by the private sector, of $155 million or more (as adjusted for inflation) in any one year, and if so, to take steps to minimize these unfunded mandates. FTA does not believe the rulemaking would result in expenditures exceeding this level.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501–3520), a Federal agency must obtain approval from OMB before conducting or sponsoring a collection of information as defined by the PRA. Because today's regulation contains a new provision that would require manufacturers to provide technical specifications regarding their vehicles to FTA in order to receive approval to proceed with testing, FTA submitted a revised information collection estimate to OMB and invited comment on the information collection burden estimate published in the NPRM.

Regulation Identifier Number (RIN)

A regulation identifier number (RIN) is assigned 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. The RIN number contained in the heading of this document may be used to cross-reference this action with the Unified Agenda.

National Environmental Policy Act

The National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321–4347), requires Federal agencies to consider the consequences of major federal actions and prepare a detailed statement on actions significantly affecting the quality of the human environment. FTA has determined that this rulemaking is categorically excluded pursuant to 23 CFR 771.118(c)(4).

Privacy Act

Anyone is able to search the electronic form for all comments received into any of FTA's dockets by the name of the individual submitting the comments (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 (Volume 65, Number 70; Pages 19477–78) or you may visit *www.regulations.gov.*

Executive Order 12898 (Environmental Justice)

Executive Order 12898, ''Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,'' and DOT Order 5610.2(a), ''Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (see, *www.fhwa.dot.gov/environment/environmental_justice/ej_at_dot/order_56102a/index.cfm*), require DOT agencies to achieve environmental justice (EJ) as part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects, including interrelated social and economic effects, of their programs, policies, and activities on minority populations and low-income populations in the United States. The DOT Order requires DOT agencies to address compliance with the Executive Order and the DOT Order in all rulemaking activities. To meet this goal, FTA has issued additional final guidance in the form of a circular (Circular 4703.1, ''*FTA Policy Guidance for Federal Transit Recipients,''* July 17, 2012; *http://www.fta.dot.gov/legislation_law/12349_14740.html*), to implement Executive Order 12898 and DOT Order 5610.2(a).

FTA evaluated this rule under the Executive Order, the DOT Order, and the FTA Circular. Environmental justice principles, in the context of establishing a quantitative scoring system for public transit vehicles, fall outside the scope of applicability.

Nothing inherent in today's regulation would disproportionately impact minority or low income populations, as the primary parties affected by this rule are those transit vehicle manufactures who would be subject to the bus testing procedures and the new quantitative scoring system. FTA has determined that the regulation would not cause disproportionately high and adverse human health and environmental effects on minority or low income populations.

List of Subjects in 49 CFR Part 665

Buses, Grant programs—transportation, Public transportation, Motor vehicle safety, Reporting and recordkeeping requirements.

For the reasons stated in the preamble, the Federal Transit Administration revises 49 CFR Part 665 as set forth below:

Title 49—Transportation

PART 665—BUS TESTING

Subpart A—General

Subpart B—Bus Testing Procedures

Subpart C—Operations

Authority: 49 U.S.C. 5318 and 49 CFR 1.91.

Subpart A—General

§ 665.1 Purpose.

An applicant for Federal financial assistance for the purchase or lease of buses with funds obligated by the FTA shall certify to the FTA that any new bus model acquired with such assistance has been tested and has received a passing test score in accordance with this part. This part contains the information necessary for a recipient to ensure compliance with this provision.

§ 665.3 Scope.

This part shall apply to an entity receiving Federal financial assistance under 49 U.S.C. Chapter 53.

§ 665.5 Definitions.

As used in this part—

Administrator means the Administrator of the Federal Transit Administration or the Administrator's designee.

Automotive means that the bus is not continuously dependent on external power or guidance for normal operation. Intermittent use of external power shall not automatically exclude a bus of its automotive character or the testing requirement.

Bus means a rubber-tired automotive vehicle used for the provision of public transportation service by or for a recipient of FTA financial assistance.

Bus model means a bus design or variation of a bus design usually designated by the manufacturer by a specific name and/or model number.

Bus Testing Facility means the facility used by the entity selected by FTA to conduct the bus testing program, including test track facilities operated in connection with the program.

Bus Testing Report means the complete test report for a bus model, documenting the results of performing the complete set of bus tests on a bus model.

Curb weight means the weight of the bus including maximum fuel, oil, and coolant; but without passengers or driver.

Emissions means the components of the engine tailpipe exhaust that are regulated by the United States Environmental Protection Agency (EPA), plus carbon dioxide (CO2) and methane (CH4).

Emissions control system means the components on a bus whose primary purpose is to minimize regulated emissions before they exit the tailpipe. This definition does not include components that contribute to low emissions as a side effect of the manner in which they perform their primary function (*e.g.,* fuel injectors or combustion chambers).

Final acceptance means the formal approval by the recipient that the vehicle has met all of its bid specifications and the recipient has received proper title.

Gross weight (Gross Vehicle Weight, or GVW) means the seated load weight of the bus plus 150 pounds of ballast for each standee passenger, up to and including, the maximum rated standee passenger capacity identified on the bus interior bulkhead.

Hybrid means a propulsion system that combines two power sources, at least one of which is capable of capturing, storing, and re-using energy.

Major change in chassis design means, for vehicles manufactured on a third-party chassis, a change in frame structure, material or configuration, or a change in chassis suspension type.

Major change in components means:

(1) For those vehicles that are not manufactured on a third-party chassis, a change in a vehicle's engine, axle, transmission, suspension, or steering components;

(2) For those that are manufactured on a third-party chassis, a change in the vehicle's chassis from one major design to another.

Major change in configuration means a change that is expected to have a significant impact on vehicle handling and stability or structural integrity.

Modified third-party chassis or van means a vehicle that is manufactured from an incomplete, partially assembled third-party chassis or van as provided by an OEM to a small bus manufacturer. This includes vehicles whose chassis structure has been modified to include: A tandem or tag axle; a drop or lowered floor; changes to the GVWR from the OEM rating; or other modifications that are not made in strict conformance with the OEM's modifications guidelines where they exist.

New bus model means a bus model that—

(1) Has not been used in public transportation service in the United States before October 1, 1988; or

(2) Has been used in such service but which after September 30, 1988, is being produced with a major change in configuration or a major change in components.

Operator means the operator of the Bus Testing Facility.

Original equipment manufacturer (OEM) means the original manufacturer of a chassis or van supplied as a complete or incomplete vehicle to a bus manufacturer.

Parking brake means a system that prevents the bus from moving when parked by preventing the wheels from rotating.

Partial testing means the performance of only that subset of the complete set of bus tests in which significantly different data would reasonably be expected compared to the data obtained in previous full testing of the baseline bus model at the Bus Testing Facility.

Partial testing report, also *partial test report,* means a report documenting, for a previously-tested bus model that is produced with major changes, the results of performing only that subset of the complete set of bus tests in which significantly different data would reasonably be expected as a result of the changes made to the bus from the configuration documented in the original full Bus Testing Report. A partial testing report is not valid unless

accompanied by the corresponding full Bus Testing Report for the corresponding baseline bus configuration.

Public transportation service means the operation of a vehicle that provides general or special service to the public on a regular and continuing basis consistent with 49 U.S.C. Chapter 53.

Recipient means an entity that receives funds under 49 U.S.C. Chapter 53, either directly from FTA or through a direct recipient.

Regenerative braking system means a system that decelerates a bus by recovering its kinetic energy for on-board storage and subsequent use.

Retarder means a system other than the service brakes that slows a bus by dissipating kinetic energy.

Seated load weight means the curb weight of the bus plus the seated passenger load simulated by adding 150 pounds of ballast to each seating position and 600 pounds per wheelchair position.

Service brake(s) means the primary system used by the driver during normal operation to reduce the speed of a moving bus and to allow the driver to bring the bus to a controlled stop and hold it there. Service brakes may be supplemented by retarders or by regenerative braking systems.

Small bus manufacturer means a secondary market assembler that acquires a chassis or van from an OEM for subsequent modification or assembly and sale as 5-year/150,000-mile or 4-year/100,000-mile minimum service life vehicle.

Tailpipe emissions means the exhaust constituents actually emitted to the atmosphere at the exit of the vehicle tailpipe or corresponding system.

Third party chassis means a commercially available chassis whose design, manufacturing, and quality control are performed by an entity independent of the bus manufacturer.

Unmodified mass-produced van means a van that is mass-produced, complete and fully assembled as provided by an OEM. This shall include vans with raised roofs, and/or wheelchair lifts, or ramps that are installed by the OEM or by a party other than the OEM provided that the installation of these components is completed in strict conformance with the OEM modification guidelines.

Unmodified third-party chassis means a third-party chassis that either has not been modified, or has been modified in strict conformance with the OEM's modification guidelines.

§ 665.7 Certification of compliance.

(a) In each application to FTA for the purchase or lease of any new bus model, or any bus model with a major change in configuration or components to be acquired or leased with funds obligated by the FTA, the recipient shall certify that the bus was tested at the Bus Testing Facility and that the bus received a passing test score as required in this part. The recipient shall receive the appropriate full Bus Testing Report and any applicable partial testing report(s) before final acceptance of the first vehicle.

(b) In dealing with a bus manufacturer or dealer, the recipient shall be responsible for determining whether a vehicle to be acquired requires full testing or partial testing or has already satisfied the requirements of this part. A bus manufacturer or recipient may request guidance from FTA.

Subpart B—Bus Testing Procedures

§ 665.11 Testing requirements.

(a) In order to be tested at the Bus Testing Facility, a new model bus shall—

(1) Be a single model that complies with NHTSA requirements at 49 CFR part 565 *Vehicle Identification Number Requirements;* 49 CFR part 566 *Manufacturer Identification;* 49 CFR part 567 *Certification;* and where applicable, 49 CFR part 568 *Vehicle Manufactured in Two or More Stages—All Incomplete, Intermediate and Final-Stage Manufacturers of Vehicle Manufactured in Two or More Stages;*

(2) Have been produced by an entity whose Disadvantaged Business Enterprise DBE goals have been submitted to FTA pursuant to 49 CFR part 26;

(3) Identify the maximum rated quantity of standee passengers on the interior bulkhead in 2 inch tall or greater characters;

(4) Meet all applicable Federal Motor Vehicle Safety Standards, as defined by the National Highway Traffic Safety Administration in part 571 of this title; and

(5) Be substantially fabricated and assembled using the techniques, tooling, and materials that will be used in production of subsequent buses of that model with the manufacturing point of origin for the bus structure, the axles, the foundation brakes, the propulsion power system and auxiliary power systems (engine, transmission, traction batteries, electric motor(s), fuel cell(s)), and the primary energy storage and delivery systems (fuel tanks, fuel injectors & manifolds, and the fuel injection electronic control unit) identified in the test request submitted to FTA during the scheduling process.

(b) If the new bus model has not previously been tested at the Bus Testing Facility, then the new bus model shall undergo the full tests requirements for Maintainability, Reliability, Safety, Performance (including Braking Performance), Structural Integrity, Fuel Economy, Noise, and Emissions Tests.

(c) If the new bus model has not previously been tested at the Bus Testing Facility and is being produced on a third-party chassis that has been previously tested on another bus model at the Bus Testing Facility, then the new bus model may undergo partial testing in place of full testing.

(d) If the new bus model has previously been tested at the Bus Testing Facility, but is subsequently manufactured with a major change in chassis or components, then the new bus model may undergo partial testing in place of full testing.

(e) Buses shall be tested according to the service life requirements identified in the prevailing published version of FTA Circular 5010.

(f) Tests performed in a higher service life category (*i.e.,* longer service life) need not be repeated when the same bus model is used in lesser service life applications.

§ 665.13 Test report and manufacturer certification.

(a) The operator of the Bus Testing Facility shall implement the performance standards and scoring system set forth in this part.

(b) Upon completion of testing, the operator of the facility shall provide the scored test results and the resulting test report to the entity that submitted the bus for testing and to FTA. The test report will be available to recipients only after both the bus manufacturer and FTA have approved it for release. If the bus manufacturer declines to release the report, or if the bus did not achieve a passing test score, the vehicle will be ineligible for FTA financial assistance.

(c)(1) A manufacturer or dealer of a new bus model or a bus produced with a major change in component or configuration shall provide a copy of the corresponding full Bus Testing Report and any applicable partial testing report(s) to a recipient during the point in the procurement process specified by the recipient, but in all cases before final acceptance of the first bus by the recipient.

(2) A manufacturer who releases a report under paragraph (c)(1) of this section also shall provide notice to the operator of the facility that the test

results and the test report are to be made available to the public.

(d) If a tested bus model with a Bus Testing Report undergoes a subsequent major change in component or configuration, the manufacturer or dealer shall advise the recipient during the procurement process and shall include a description of the change. Any party may ask FTA for confirmation regarding the scope of the change.

(e) A Bus Testing Report shall be available publicly once the bus manufacturer makes it available during a recipient's procurement process. The operator of the facility shall have copies of all the publicly available reports available for distribution. The operator shall make the final test results from the approved report available electronically and accessible over the internet.

(f) The Bus Testing Report and the test results are the only official information and documentation that shall be made publicly available in connection with any bus model tested at the Bus Testing Facility.

Subpart C—Operations

§ 665.21 Scheduling.

(a) All requests for testing, including requests for full, partial, or repeat testing, shall be submitted to the FTA Bus Testing Program Manager for review prior to scheduling with the operator of the Bus Testing Facility. All test requests shall provide: A detailed description of the new bus model to be tested; the service life category of the bus; engineering level documentation characterizing all major changes to the bus model; and documentation that demonstrates satisfaction of each one of the testing requirements outlined in section 665.11(a).

(b) FTA will review the request, determine if the bus model is eligible for testing, and provide an initial response within five (5) business days. FTA will prepare a written response to the requester for use in scheduling the required testing.

(c) To schedule a bus for testing, a manufacturer shall contact the operator of the Bus Testing Facility and provide the FTA response to the test request. Contact information and procedures for scheduling testing are available on the operator's Bus Testing Web site, *http://www.altoonabustest.com.*

(d) Upon contacting the operator, the operator shall provide the manufacturer with the following:

(1) A draft contract for the testing;

(2) A fee schedule; and

(3) The test procedures for the tests that will be conducted on the vehicle.

(e) The operator shall process vehicles FTA has approved for testing in the order in which the contracts are signed.

§ 665.23 Fees.

(a) The operator shall charge fees in accordance with a schedule approved by FTA, which shall include different fees for partial testing.

(b) Fees shall be prorated for a vehicle withdrawn from the Bus Testing Facility before the completion of testing.

(c) The manufacturer's portion of the test fee shall be used first during the conduct of testing. The operator of the Bus Testing Facility shall obtain approval from FTA prior to continuing testing of each bus model at the Bus testing program's expense after the manufacturer's fee has been expended.

§ 665.25 Transportation of vehicle.

A manufacturer shall be responsible for transporting its vehicle to and from the Bus Testing Facility at the beginning and completion of the testing at the manufacturer's own risk and expense.

§ 665.27 Procedures during testing.

(a) Upon receipt of a bus approved for testing the operator of the Bus Testing Facility shall:

(1) Inspect the bus design configuration and compare it to the configuration documented in the test request;

(2) Determine if the bus, when loaded to Gross Weight, does not exceed its Gross Vehicle Weight Rating, Gross Axle Weight Ratings, or maximum tire load ratings;

(3) Determine if the bus is capable of negotiating the durability test track at curb weight, seated load weight, and Gross Vehicle Weight;

(4) Determine if the bus is capable of performing the Fuel Economy and Emissions Test duty cycles within the established standards for speed deviation.

(b) The operator shall present the results obtained from the activities of 665.27(a) and present them to the bus manufacturer and the FTA Bus Testing Program Manager for review prior to initiating testing using the Bus testing program funds. FTA will provide a written response within five (5) business days to authorize the start of testing or to request clarification for any discrepancies noted from the activities of 665.27(a). Testing can commence after five (5) business days if FTA does not provide a response.

(c) The operator shall perform all maintenance and repairs on the test vehicle, consistent with the manufacturer's specifications, unless the operator determines that the nature of the maintenance or repair is best performed by the manufacturer under the operator's supervision.

(d) The manufacturer shall be permitted to observe all tests. The manufacturer shall not provide maintenance or service unless requested to do so by the operator.

(e) The operator shall investigate each occurrence of unauthorized maintenance and repairs and determine the potential impact to the validity of the test results. Tests where the results could have been impacted must be repeated at the manufacturer's expense.

(f) The operator shall perform all modifications on the test vehicle, consistent with the manufacturer's specifications, unless the operator determines that the nature of the modification is best performed by the manufacturer under the operator's supervision. All vehicle modifications performed after the test has started will first require review and approval by FTA. If the modification is determined to be a major change, some or all of the tests already completed shall be repeated or extended at FTA's discretion.

(g) The operator shall halt testing after any occurrence of unapproved, unauthorized, or unsupervised test vehicle modifications. Following an occurrence of unapproved or unsupervised test vehicle modifications, the vehicle manufacturer shall submit a new test request to FTA that addresses all the requirements in 665.11 to reenter the Bus testing program.

(h) The operator shall perform eight categories of tests on new bus models. The eight tests and their corresponding performance standards are described in the following paragraphs.

(1) *Maintainability test.* The Maintainability test shall include bus servicing, preventive maintenance, inspection, and repair. It shall also include the removal and reinstallation of the engine and drive-train components that would be expected to require replacement during the bus's normal life cycle. Much of the maintainability data should be obtained during the Bus Durability Test. All servicing, preventive maintenance, and repair actions shall be recorded and reported. These actions shall be performed by test facility staff, although manufacturers shall be allowed to maintain a representative on-site during the testing. Test facility staff may require a manufacturer to provide vehicle servicing or repair under the supervision of the facility staff. Since the operator may not be familiar with the detailed design of all new bus models that are tested, tests to

determine the time and skill required for removing and reinstalling an engine, a transmission, or other major propulsion system components may require advice from the bus manufacturer. All routine and corrective maintenance shall be carried out by the operator in accordance with the manufacturer's specifications.

(i) The Maintainability Test Report shall include the frequency, personnel hours, and replacement parts or supplies required for each action during the test. The accessibility of selected components and other observations that could be important to a bus purchaser shall be included in the report.

(ii) The performance standard for Maintainability is that no greater than 125 hours of total unscheduled maintenance shall be accumulated over the execution of a full test.

(2) *Reliability test.* Reliability shall not be a separate test, but shall be addressed by recording all bus failures and breakdowns during all other testing. The detected bus failures, repair time, and the actions required to return the bus to operation shall be presented in the report. The performance standard for Reliability is that the vehicle under test experience no more than one uncorrected Class 1 failure and two uncorrected Class 2 failures over the execution of a full test. Class 1 failures are addressed in the Safety Test, below. An uncorrected Class 2 failure is a failure mode not addressed by a design or component modification that would cause a transit vehicle to be unable to complete its transit route and require towing or on-route repairs. A failure is considered corrected when a design or component modification is validated through sufficient remaining or additional reliability testing in which the failure does not reoccur.

(3) *Safety test.* The Safety Test shall consist of a Handling and Stability Test, a Braking Performance Test, and a review of the Class 1 reliability failures that occurred during the test. The Handling and Stability Test shall be an obstacle avoidance double-lane change test performed on a smooth and level test track. The lane change course will be set up using pylons to mark off two 12 foot center to center lanes with two 100 foot lane change areas 100 feet apart. Bus speed shall be held constant throughout a given test run. Individual test runs shall be made at increasing speeds up to a specified maximum or until the bus can no longer be operated safely over the course, whichever speed is lower. Both left- and right-hand lane changes shall be tested. The performance standard is that the test vehicle can safely negotiate and remain within the lane change test course at a speed of no less than 45 mph.

(i) The functionality and performance of the service, regenerative (if applicable), and parking brake systems shall be evaluated at the test track. The test bus shall be subjected to a series of brake stops from specified speeds on high, low, and split-friction surfaces. The parking brake shall be evaluated with the bus parked facing both up and down a steep grade. There are three performance standards for braking. The stopping distance from a speed of 45 mph on a high friction surface shall satisfy the bus stopping distance requirements of FMVSS 105 or 121 as applicable. The bus shall remain within a standard 12-foot lane width during split coefficient brake stops. The parking brake shall hold the test vehicle stationary on a 20 percent grade facing up and down the grade for a period of 5 minutes.

(ii) A review of all the Class 1 failures that occurred during the test shall be conducted as part of the Safety Test. Class 1 failures include those failures that, when they occur, could result in a loss of vehicle control; in serious injury to the driver, passengers, pedestrians, or other motorists; and in property damage or loss due to collision or fire. The performance standard is that at the completion of testing with no uncorrected Class 1 failure modes. A failure is considered corrected when a design or component modification is validated through sufficient remaining or additional Reliability Tests in which the failure does not reoccur over a number of miles equal to or greater than the additional failure up to 100% of the durability test mileage for the service life category of the tested bus.

(4) *Performance test.* The Performance Test shall measure the maximum acceleration, speed, and gradeability capability of the test vehicle. In determining the transit vehicle's maximum acceleration and speed, the bus shall be accelerated at full throttle from rest until it achieves its maximum speed on a level roadway. The performance standard for acceleration is that the maximum time that the test vehicle requires to achieve 30 mph is 18 seconds on a level grade. The gradeability test of the test vehicle shall be calculated based on the data measured on a level grade during the Acceleration Test. The performance standard for the gradeability test is that the test vehicle achieves a sustained speed of at least 40 mph on a 2.5 percent grade and a sustained speed of at least 10 mph on a 10 percent grade.

(5) *Structural integrity tests.* Two complementary Structural Integrity Tests shall be performed. Structural Strength and Distortion Tests shall be performed at the Bus Testing Center, and the Structural Durability Test shall be performed at the test track.

(i) *Structural strength and distortion tests.* (1) The bus shall be loaded to GVW, with one wheel on top of a curb and then in a pothole. This test shall be repeated for all four wheels. The test verifies:

(i) Normal operation of the steering mechanism and;

(ii) Operability of all passenger doors, passenger escape mechanisms, windows, and service doors. A water leak test shall be conducted in each suspension travel condition. The performance standard shall be that all vehicle passenger exits remain operational throughout the test.

(2) Using a load-equalizing towing sling, a static tension load equal to 1.2 times the curb weight shall be applied to the bus towing fixtures (front and rear). The load shall be removed and the two eyes and adjoining structure inspected for damages or permanent deformations. The performance standard shall be that no permanent deformation is experienced at static loads up to 1.2 times the vehicle curb weight.

(3) The bus shall be towed at CW with a heavy wrecker truck for 5 miles at 20 mph and then inspected for structural damage or permanent deformation. The performance standard shall be that the vehicle is towable with a standard commercial vehicle wrecker without experiencing any permanent damage to the vehicle.

(4) With the bus at CW, probable damages and clearance issues due to tire deflating and hydraulic jacking shall be assessed. The performance standard shall be that the vehicle is capable of being lifted with a standard commercial vehicle hydraulic jack.

(5) With the bus at CW, possible damages or deformation associated with lifting the bus on a two post hoist system or supporting it on jack stands shall be assessed. The performance standard shall be that the vehicle is capable of being supported by jack stands rated for the vehicle's weight.

(i) *Structural durability test.* The Structural Durability Test shall be performed on the durability course at the test track, simulating twenty-five percent of the vehicle's normal service life. The bus structure shall be inspected regularly during the test, and the mileage and identification of any structural anomalies and failures shall be reported in the Reliability Test. There shall be two performance standards for the Durability Test, one to address the

vehicle frame and body structure and one to address the bus propulsion system. The performance standard for the vehicle frame and body structure shall be that there are no uncorrected failure modes of the vehicle frame and body structure at the completion of the full vehicle test. The performance standard for the vehicle propulsion system is that there are no uncorrected powertrain failure modes at the completion of a full test.

(ii) [Reserved]

(6) *Fuel economy test.* The Fuel Economy Test shall be conducted using duty cycles that simulate a diverse range of transit service operating profiles. This test shall measure the fuel economy or fuel consumption of the vehicle and present the results in metrics that minimize the number of unit conversions for mass, volume, and energy.

(i) The Fuel Economy Test shall be designed only to enable FTA recipients to compare the relative fuel economy of buses operating at a consistent loading condition on the same set of typical transit driving cycles. The results of this test are not directly comparable to fuel economy estimates by other agencies, such as the National Highway Traffic Safety Administration (NHTSA) or U.S. Environmental Protection Agency (EPA) or for other purposes.

(ii) The performance standard for fuel economy shall be the prevailing model year fuel consumption standards for heavy-duty vocational vehicles outlined in the NHTSA's Medium and Heavy-Duty Fuel Efficiency Program (49 CFR part 535).

(7) *Noise test.* The Noise Test shall measure interior noise and vibration while the bus is idling (or in a comparable operating mode) and driving over smooth and irregular road surfaces, and also shall measure the transmission of exterior noise to the interior while the bus is not running. The exterior noise shall be measured as the bus is operated past a stationary measurement instrument. There shall be two minimum noise performance standards: One to address the maximum interior noise during vehicle acceleration from a stop, and one to address the maximum exterior noise during vehicle acceleration from a stop. The performance standard for interior noise while the vehicle accelerates from 0–35 mph shall be no greater than 80 decibels A-weighted. The performance standard for exterior noise while the vehicle accelerates from 0–35 miles per hour shall be no greater than 83 decibels A-weighted.

(8) *Emissions test.* The Emissions Test shall measure tailpipe emissions of those exhaust constituents regulated by the United States EPA for transit bus emissions, plus carbon dioxide (CO_2) and methane (CH_4), as the bus is operated over specific repeatable transit vehicle driving cycles. The Emissions test shall be conducted using an emission testing laboratory equipped with a chassis dynamometer capable of both absorbing and applying power.

(i) The Emissions Test is not a certification test, and is designed only to enable FTA recipients to relatively compare the emissions of buses operating on the same set of typical transit driving cycles. The results of this test are not directly comparable to emissions measurements reported to other agencies, such as the EPA, or for other purposes.

(ii) The emissions performance standard shall be the prevailing EPA emissions requirements for heavy-duty vehicles outlined in 40 CFR part 86 and 40 CFR part 1037.

Appendix A to Part 665—Bus Model Scoring System and the Pass/Fail Standard

1. Bus Model Scoring System

The Bus Model Scoring System shall be used to score the test results using the performance standards in each category. A bus model that fails to meet a minimum performance standard shall be deemed to have failed the test and will not receive an aggregate score. For buses that have passed all the minimum performance standards, an aggregate score shall be generated and presented in each Bus Testing Report. A bus model that just satisfies the minimum baseline performance standard and does not exceed any of the standards shall receive a score of 60. The maximum score a bus model shall receive is 100. The minimum and maximum points available in each test category shall be as shown below in Table A. The Bus Testing report will include a scoring summary table that displays the resulting scores in each of the test categories and subcategories. The scoring summary table shall have a disclaimer footnote stating that the use of the scoring system is not mandatory, only that the bus being procured receive a passing score.

2. Pass/Fail Standard

The passing standard shall be a score of 60. Bus models that fail to meet one or more of the minimum baseline performance standards will be ineligible to obtain an aggregate passing score.

BILLING CODE P

TABLE A: Performance Standards, Scoring System, and Pass/Fail

Test Category		Performance Standard	All Performance Standards Met?		
			No	*Yes* → Assess Score	
				Base Score	+ Prorated Points for Measured Test Performance
Structural Integrity (30 pts.)	Distortion	All exits remain operational under each distortion loading condition		1.0	
	Static Towing	No significant deformation under 120% curb weight load		1.0	
	Dynamic Towing	Bus is towable with standard wrecker		1.0	
	Jacking	Bus is liftable with a standard jack		1.0	
	Hoisting	Bus stable on jacks		1.0	
	Durability	No uncorrected frame & body structure failures remaining at completion of test		13.0	
		No uncorrected powertrain failures remaining at completion of test		12.0	
Safety (20 pts.)	Hazards	No uncorrected Class 1 reliability failures remaining at test completion		10.0	
	Stability	Lane change speed no less than 45 mph		2.5	
	Braking	Stopping distance from 45 mph within 158 feet as per FMVSS 105 & FMVSS 121		0.5	Stopping distance from 45 mph (ft) 158 — 80; Points: 0.0 — 2.0
		Bus remains within lane during split coefficient brake stops		2.5	
		Parking brake holds on 20% grade		2.5	
Maintainability (16 pts.)		Accumulation of no more than 125 hours of unscheduled maintenance		2.0	Hours: 125 — 0; Points: 0.0 — 14.0
Reliability (8 pts.)		No more than 2 uncorrected Class 2 failures remaining at completion of test		2.0	Failures: 2 — 0; Points: 0.0 — 6.0

Fuel Economy (7 pts.) (Only 1 fuel type scored)	**Liquid Fuels** (Diesel, Gasoline, LPG, LNG)	**Compliant with 49 CFR part 535 MEDIUM- AND HEAVY-DUTY VEHICLE FUEL EFFICIENCY PROGRAM-** ***Heavy-Duty Vocational Vehicle Fuel Consumption Standards***		**1.0**	MPG: 1 13 Points: 0.0 6.0
	CNG				SCF/mi: 50 10 Points: 0.0 6.0
	Hydrogen				SCF/mi: 98 15 Points: 0.0 6.0
	Electric				kW-hr/mi: 3 1 Points: 0.0 6.0
Emissions (7 pts.) (All emissions categories scored)	**Carbon Dioxide (CO_2)**	**Compliant with all applicable EPA exhaust emissions regulations at date of manufacture including:** **40 CFR part 86 CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES** **40 CFR part 1037 CONTROL OF EMISSIONS FROM NEW HEAVY-DUTY MOTOR VEHICLES**		**1.0**	Grams/mi: 4000 0 Points: 0.0 4.0
	Carbon Monoxide (CO)				Grams/mi: 20 0 Points: 0.0 0.4
	Total Hydrocarbon (THC)				Grams/mi: 3 0 Points: 0.0 0.4
	Non-Methane Hydrocarbon (NMHC)				Grams/mi: 3 0 Points: 0.0 0.4
	Nitrogen Oxides (NOx)				Grams/mi: 2 0 Points: 0.0 0.4
	Particulate Matter (PM)				Grams/mi: 0.1 0 Points: 0.0 0.4
Noise (7 pts.)	**Interior - acceleration 0-35 mph**	**No greater than 80 decibels (dB(A))**		**0.5**	dB(A): 80 30 Points: 0.0 3.0
	Exterior - acceleration 0-35 mph	**No greater than 83 decibels (dB(A))**		**0.5**	dB(A): 83 50 Points: 0.0 3.0
Performance (5 pts.)	**Acceleration**	**Time from 0-30 mph no greater than 18 sec**		**1.5**	
	Gradeability	**Sustained speed on 2.5% grade no less than 40 mph**		**1.5**	
		Sustained speed on 10% grade no less than 10 mph		**2.0**	
Overall Result		**FAIL**		**60**	+ 0 40
		PASS			
			Maximum Aggregate Score	**100**	

Carolyn Flowers,

Acting Administrator.

[FR Doc. 2016–17889 Filed 7–29–16; 8:45 am]

BILLING CODE C

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 224

[Docket No. 150506424–6642–02]

RIN 0648–XD940

Endangered and Threatened Wildlife and Plants; Listing Three Angelshark Species as Endangered Under the Endangered Species Act

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Final rule.

SUMMARY: We, NMFS, issue a final rule to list three foreign marine angelshark species under the Endangered Species Act (ESA). We considered comments submitted on the proposed listing rule and have determined that the sawback angelshark (*Squatina aculeata*), smoothback angelshark (*Squatina oculata*), and common angelshark (*Squatina squatina*) warrant listing as endangered species. We will not designate critical habitat for any of these species because the geographical areas occupied by these species are entirely outside U.S. jurisdiction, and we have not identified any unoccupied areas within U.S. jurisdiction that are currently essential to the conservation of any of these species.

DATES: This final rule is effective August 31, 2016.

ADDRESSES: Chief, Endangered Species Division, NMFS Office of Protected Resources (F/PR3), 1315 East West Highway, Silver Spring, MD 20910.

FOR FURTHER INFORMATION CONTACT: Maggie Miller, NMFS, Office of Protected Resources (OPR), (301) 427–8403.

SUPPLEMENTARY INFORMATION:

Background

On July 15, 2013, we received a petition from WildEarth Guardians to list 81 marine species or subpopulations as threatened or endangered under the ESA. This petition included species from many different taxonomic groups, and we prepared our 90-day findings in batches by taxonomic group. We found that the petitioned actions may be warranted for 24 of the species and 3 of the subpopulations and announced the initiation of status reviews for each of the 24 species and 3 subpopulations (78 FR 63941, October 25, 2013; 78 FR 66675, November 6, 2013; 78 FR 69376, November 19, 2013; 79 FR 9880, February 21, 2014; and 79 FR 10104, February 24, 2014). On July 14, 2015, we published a proposed rule to list the sawback angelshark (*Squatina aculeata*), smoothback angelshark (*Squatina oculata*), and the common angelshark (*Squatina squatina*) as endangered species (80 FR 40969). We requested public comment on information in the draft status review and proposed rule, and the comment period was open through September 14, 2015. This final rule provides a discussion of the information we received during the public comment period and our final determination on the petition to list the sawback angelshark, smoothback angelshark, and common angelshark under the ESA. The status of the findings and relevant **Federal Register** notices for the other 21 species and 3 subpopulations can be found on our Web site at *http://www.nmfs.noaa.gov/pr/species/petition81.htm.*

Listing Species Under the Endangered Species Act

We are responsible for determining whether species 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 the ESA, then whether the status of the species qualifies it for listing as either threatened or endangered. Section 3 of the ESA defines a ''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.''

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.'' 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(a)(1) of the ESA requires us to determine whether any species is endangered or threatened due to any one or a combination of the following five threat 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. We are also required to make listing determinations based solely on the best scientific and commercial data available, after conducting a review of the species' status and after taking into account efforts being made by any State or foreign nation to protect the species.

In making a listing determination, we first determine whether a petitioned species meets the ESA definition of a ''species.'' Next, using the best available information gathered during the status review for the species, we complete a status and extinction risk assessment. In assessing extinction risk for these three angelshark 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 hammerhead sharks, and black abalone (see *http://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).

We then assess efforts being made to protect the species to determine if these conservation efforts are adequate to mitigate the existing threats. Section 4(b)(1)(A) of the ESA requires the Secretary, when making a listing determination for a species, to take into consideration those efforts, if any, being made by any State or foreign nation to protect the species.