DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

23 CFR Part 490

[Docket No. FHWA–2013–0053]

RIN 2125–AF53

National Performance Management Measures; Assessing Pavement Condition for the National Highway Performance Program and Bridge Condition for the National Highway Performance Program

AGENCY: Federal Highway Administration (FHWA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The purpose of this final rule is to establish measures for State departments of transportation (State DOT) to use to carry out the National Highway Performance Program (NHPP) and to assess the condition of the following: Pavements on the National Highway System (NHS) (excluding the Interstate System), bridges carrying the NHS which includes on- and off-ramps connected to the NHS, and pavements on the Interstate System. The NHPP is a core Federal-aid highway program that provides support for the condition and performance of the NHS and the construction of new facilities on the NHS. The NHPP also ensures that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS. This final rule establishes regulations for the new performance aspects of the NHPP that address measures, targets, and reporting. The FHWA is in the process of creating a new public Web site to help communicate the national performance story. The Web site will likely include infographics, tables, charts, and descriptions of the performance data that State DOTs report to FHWA. The FHWA issues this final rule based on sec. 1203 of MAP–21, which identifies national transportation goals and requires the Secretary to promulgate rules to establish performance measures and standards in specified Federal-aid highway program areas.

DATES: This final rule is effective February 17, 2017. The incorporation by reference of certain publications listed in the regulation is approved by the Director of the Federal Register as of February 17, 2017.

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SUPPLEMENTARY INFORMATION

Electronic Access and Filing

The notice of proposed rulemaking (NPRM) was published at 80 FR 326 on January 5, 2015, and all comments received may be viewed online at *http://www.regulations.gov*. Electronic retrieval help and guidelines are available on the Web site. It is available 24 hours each day, 365 days each year. An electronic copy of this document may also be downloaded from the Office of the Federal Register's Web site at *http://www.orf.gov* and the Government Printing Office's Web site at *http://www.gpo.gov*.

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I. Executive Summary

A. Incorporating the FAST Act

On December 4, 2015, the President signed the Fixing America's Surface Transportation Act (FAST) Act (Pub. L. 114–94) into law. For the most part, the FAST Act is consistent with the new performance management elements introduced by MAP–21. For convenience and accurate historical context, this rule will refer to MAP–21 throughout the preamble to signify the fundamental changes MAP–21 made to States' authorities and responsibilities for overseeing the implementation of performance management. For this final rule, there are two areas where the FAST Act made changes to performance management requirements.

The first change is sec. 119(e)(7), title 23, United States Code (23 U.S.C. 119(e)(7)), which relates to the requirement for a significant progress determination for NHPP targets. The FAST Act amended this provision to remove the term ''2 consecutive reports.'' The FHWA has incorporated this change into the final rule by removing the term ''2 consecutive determinations,'' which was proposed in section 490.109(f) of the NPRM, published January 5, 2015 (80 FR 326). In section 490.109(f) of the NPRM, FHWA proposed that if FHWA determines that a State DOT has not made significant progress toward achieving NHPP targets in two consecutive FHWA determinations, then that State DOT would document the actions it will take to achieve the targets in its next Biennial Performance Report. The FAST Act changed this requirement. Due to the FAST Act, the final rule requires State DOTs to take action when they do not make significant progress for each biennial determination (instead of 2 consecutive biennial determinations) made by FHWA.

The second change made by the FAST Act is removal of the term ''2 consecutive reports'' in 23 U.S.C. 119(f)(1)(A), which relates to triggering the penalty for Interstate pavement condition that has fallen below the minimum condition level established under this rule. In section 490.317 of the NPRM, FHWA proposed that it would determine annually whether or not a State DOT's Interstate pavement condition is below the minimum condition level. If FHWA determines that a State DOT's Interstate pavement condition is below the minimum condition level for the ''most recent 2 years,'' then that State DOT would be subject to the penalty under 23 U.S.C. 119(f)(1)(A). A description and example application on this penalty is available for review on the docket. Due to the FAST Act, the final rule subjects State DOTs to the penalty under 23 U.S.C. 119(f)(1)(A) if FHWA determines that its Interstate pavement condition has fallen below the minimum condition level for the most recent year (instead of most recent 2 years).

B. Purpose of the Regulatory Action

The MAP–21 (Pub. L. 112–141) transforms the Federal-aid highway program by establishing new requirements for performance

management to ensure the most efficient investment of Federal transportation funds. Performance management increases the accountability and transparency of the Federal-aid highway program and provides a framework to support improved investment decisionmaking through a focus on performance outcomes for key national transportation goals.

As part of performance management, recipients of Federal-aid highway funds will make transportation investments to achieve performance targets that make progress toward national goals. The national performance goal for bridge and pavement condition is to maintain the condition of highway infrastructure assets in a state of good repair. The purpose of this final rule is to implement MAP–21 and FAST Act performance management requirements.

Prior to MAP–21, there were no explicit requirements for State DOTs to demonstrate how their transportation program supported national performance outcomes. State DOTs were not required to measure condition or performance, establish targets, assess progress toward targets, or report on condition or performance in a nationally consistent manner that FHWA could use to assess the entire system. Without State DOTs reporting on the above factors, it is difficult for FHWA to look at the effectiveness of the Federal-aid highway program as a means to address surface transportation performance at a national level.

This final rule is one of several rulemakings that DOT has or is conducting to implement MAP–21's new performance management framework. The collective rulemakings will establish the regulations needed to more effectively evaluate and report on surface transportation performance across the Nation. This final rule will:

- Require State DOTs to maintain their bridges and pavements at or above a minimum condition level;
- Provide for greater consistency in the reporting of condition and performance;
- Require the establishment of targets that can be aggregated at the national level;
- Improve transparency by requiring consistent reporting on progress through a public reporting system;
- Require State DOTs to make significant progress toward meeting their targets; and
- Establish requirements for State DOTs that have not met or made significant progress toward meeting their targets.

State DOTs and metropolitan planning organizations (MPO) will be expected to use the information and data generated as a result of the new regulations to inform their transportation planning and programming decisions. The new performance aspects of the Federal-aid highway program that result from this rule will provide FHWA the ability to better communicate a national performance story and to more reliably assess the impacts of Federal funding investments. The FHWA is in the process of creating a new public Web site to help communicate the national performance story. The Web site will likely include infographics, tables, charts, and descriptions of the performance data that State DOTs would be reporting to FHWA.

The FHWA is required to establish performance measures to assess performance in 12 areas [1] generalized as follows: (1) Serious injuries per vehicle miles traveled (VMT); (2) fatalities per VMT; (3) number of serious injuries; (4) number of fatalities; (5) pavement condition on the Interstate System; (6) pavement condition on the non-Interstate NHS; (7) bridge condition on the NHS; (8) traffic congestion; (9) on-road mobile source emissions; (10) freight movement on the Interstate System; (11) performance of the Interstate System; and (12) performance of the non-Interstate NHS. This rulemaking is the second of three that establish performance measures for State DOTs and MPOs to use to carry out Federal-aid highway programs and to assess performance in each of these 12 areas. This final rule establishes national measures for pavement condition on the Interstate System and non-Interstate NHS and bridge condition on the NHS (numbers 5, 6 and 7 in the above list). Other rulemakings have or will establish national measures for the remaining areas.

State DOTs will be required to establish performance targets and assess performance in 12 areas [2] established by MAP–21, and FHWA will assess [3] their progress toward meeting targets in 10 of these areas [4] in accordance with MAP–21 and the FAST Act. State DOTs that fail to meet or make significant progress toward meeting pavement and bridge condition performance targets in a biennial performance reporting period will be required to document the actions they will undertake to achieve their targets in their next biennial performance report.

This final rule establishes performance measures to assess pavement and bridge conditions on the Interstate System and non-Interstate NHS for the purpose of carrying out the NHPP. The four measures to assess pavement condition are: (1) Percentage of pavements on the Interstate System in Good condition; (2) percentage of pavements on the Interstate System in Poor condition; (3) percentage of pavements on the NHS (excluding the Interstate System) in Good condition; and (4) percentage of pavements on the NHS (excluding the Interstate System) in Poor condition. The two performance measures for assessing bridge condition are: (1) Percentage of NHS bridges classified as in Good condition; and (2) percentage of NHS bridges classified as in Poor condition.

This final rule also establishes the minimum level for pavement condition for the Interstate System as required by the statute and incorporates the minimum condition level for bridges carrying the NHS which includes on- and off-ramps connected to the NHS as established by the statute. In addition, this final rule establishes the process for State DOTs and MPOs to use to establish and report targets and the process that FHWA will use to assess the progress State DOTs have made in achieving targets.

Lastly, FHWA recognizes that implementation of the performance management requirements in this final rule will evolve with time for a variety of reasons such as: The introduction of new technologies that allow for the collection of more nationally consistent and/or reliable performance data; shifts in national priorities for the focus of a goal area; new federal requirements; or the emergence of improved approaches to measure condition/performance in supporting investment decisions and national goals. The FHWA is committed to performing a retrospective review of this rule after the first performance period, to assess the effectiveness of the requirements to identify any necessary changes to better support investment decisions through performance-based planning and programming and to ensure the most efficient investment of Federal transportation funds. In implementation of this rule, FHWA realizes that there are multiple ways that State DOTs and MPOs can make

[1] These areas are listed within 23 U.S.C. 150(c), which requires the Secretary to establish measures to assess performance or condition.

[2] These areas are listed within 23 U.S.C. 150(c), which requires the Secretary to establish measures to assess performance or condition.

[3] 23 U.S.C. 148(i) and 23 U.S.C. 119(e)(7).

[4] Serious injuries per vehicle VMT; fatalities per VMT; number of serious injuries; number of fatalities; pavement condition on the Interstate System; pavement condition on the non-Interstate NHS; bridge condition on the NHS; performance of the Interstate System; and performance of the non-Interstate NHS under MAP–21. Freight movement on the Interstate System under the FAST Act.

decisions to achieve more efficient and cost effective investments; as part of a retrospective review, FHWA will also utilize implementation surveys to identify how agencies complying with the rule are developing their programs and selecting their projects to achieve targets.

C. Summary of the Major Provisions of the Regulatory Action in Question

This final rule retains the majority of the major provisions of the NPRM but makes significant changes by:

- Originally anticipating the rule's effective date as fall 2016, FHWA has now postponed the Baseline Performance Period Report and subsequent biennial reports by 2 years relative to those described in the NPRM (*i.e.,* from 2016 to 2018);
- Removing the requirements for State DOTs to declare and describe NHS limits in their Baseline Performance Period Report;
- Adding guidance for MPO target establishment to address situations where metropolitan planning areas extend across multiple States;
- Removing the requirement to use the Metropolitan Planning Agreement as the means to document how MPOs report their established and adjusted targets to their respective State DOTs;
- Clarifying the list of extenuating circumstances that may prevent a State DOT from making significant progress to include the sudden discontinuation of federally furnished data due to lack of Federal funding;
- Removing references to provisional American Association of State Highway and Transportation Officials (AASHTO) standards to ensure consistency in reporting year over year (including references to PP68–14, PP69–14, and PP70–14);
- Providing an option for State DOTs to report Present Serviceability Rating (PSR) for highways with a posted speed limit under 40 miles per hour (MPH) in place of International Roughness Index (IRI), cracking, rutting, and faulting;
- Changing the threshold for pavements with Poor IRI condition to greater than 170 inches per mile for all areas, rather than the NPRM's proposed threshold of 220 inches per mile for urbanized areas with a population greater than 1 million people;
- Changing the threshold for Poor crack rating for asphalt pavement sections from greater than 10 percent to greater than 20 percent and the threshold for Poor crack rating for jointed concrete pavement sections from greater than 10 percent to greater than 15 percent;
- Changing the threshold for Good faulting rating for jointed concrete pavement sections from less than 0.05 inch to less than 0.1 inch;
- Revising the network coverage of data reporting requirements for Interstate pavement condition from both directions of mainline highways to single, inventory direction of mainline highways;
- Changing the approach in dealing with missing, unresolved, or invalid pavement data;
  - Removing the proposed language on rating sections with missing, unresolved, or invalid data as Poor condition; and
  - Revising the requirements for reporting on sections with missing, unresolved, or invalid data. In the final rule, no more than 5 percent of the network is to be represented with missing, unresolved, or invalid data due to construction, closure, disaster, flood, deterioration or any other reasons;
- Revising the equation for calculating the percentage of missing, unresolved, or invalid data so that it is based on total lane-miles of the system excluding bridges and unpaved and ''other'' surface types instead of total lane-miles of the system;
- Adjusting the minimum condition standards for pavement condition on the Interstate highways for Alaska because Highway Performance Monitoring System (HPMS) data indicated that a regional adjustment was needed for this State;
- Revising the definition and computation for the classification of structurally deficient; and
- Providing a transition period for implementing the revised definition and computation for the classification of structurally deficient, and using the new calculations for deck area of culverts and border bridges.

The FHWA updated these and other elements in this final rule based on the review and analysis of comments received. For additional detail on all the changes FHWA made in the final rule, please refer to Section VI of this document. The following is a summary of the final rule. Section references below refer to sections of the regulatory text for title 23 of the Code of Federal Regulations (23 CFR).

This final rule adds to subpart A general information applicable to part 490, to include requirements for target establishment, reporting on progress, and how determinations would be made on whether State DOTs have made significant progress toward NHPP targets. Subpart A also includes definitions and clarifies terminology associated with target establishment, reporting, and making significant progress. Lastly, subpart A incorporates by reference the HPMS Field Manual, the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, Report No. FHWA–PD–96–001 (December 1995) and errata, and several of the AASHTO standards. Section 490.105 describes the process to be used by State DOTs and MPOs to establish targets for each of the four pavement and two bridge measures. The State DOTs will establish 2- and 4-year targets for a 4-year performance period for the condition of infrastructure assets. State DOTs will establish their first statewide targets 1 year after the effective date of this rule. The MPOs will establish targets by either supporting a State DOT's statewide target, or defining a target unique to the metropolitan area each time State DOTs establish a target. The MPOs have up to 180 days after State DOTs establish their pavement and bridge condition targets to establish their own targets. The FHWA has placed a timeline on the docket that illustrates how this transition could be implemented.

Section 490.107 identifies performance reporting requirements for State DOTs and MPOs. The State DOT will submit its established targets in a baseline report at the beginning of the performance period and report progress at the midpoint and end of the performance period. State DOTs will be allowed to adjust their 4-year target at the midpoint of the performance period. The MPOs are not required to provide separate reporting to FHWA. However, State DOTs and MPOs will need to coordinate and mutually agree to a target establishment reporting process. Coordination will also be required between State DOTs and MPOs if a State DOT adjusts its 4-year target at the midpoint of the performance period.

Section 490.109 establishes the method FHWA will use to determine if State DOTs have achieved or have made significant progress toward the achievement of their NHPP targets. Significant progress will be determined from an analysis of estimated condition/performance and measured condition/performance of each of the NHPP targets. If applicable, State DOTs will have the opportunity to discuss why targets were not achieved or significant progress was not made. If a State DOT fails to achieve significant progress in a biennial performance reporting period, then it is required to document the actions they will undertake to achieve their targets in the next biennial performance report (though encouraged to document sooner).

Subparts C and D establish performance measures and other related requirements to assess pavement and bridge conditions. In subparts C and D, sections 490.305 and 490.405 establish program-specific definitions to ensure that the performance measures are clear and consistent.

Sections 490.307 and 490.407 require that State DOTs and MPOs use a total of six measures to assess the condition of pavements and bridges on the NHS. The pavement measures will be applicable to both Interstate and non-Interstate NHS mainline roads and the bridge measures would be applicable for all bridges carrying the NHS which includes on- and off-ramps connected to the NHS. Both the pavement and bridge measures will reflect the percentage of the system in Good and Poor condition. The measure calculations will utilize data documented in the HPMS and in the National Bridge Inventory (NBI).

Section 490.315 establishes the minimum level for condition of pavements on the Interstate System as required by 23 U.S.C. 150(c)(3)(A)(iii).

Section 490.411 incorporates the minimum level for condition of bridges as required by 23 U.S.C. 119(f)(2).

D. Costs and Benefits

The FHWA estimated the incremental costs associated with the new requirements that represent a change to current practices of State DOTs and MPOs.[5] The FHWA also estimated the incremental costs associated with the new requirements proposed in this regulatory action. The new requirements represent a change to the current practices of State DOTs and MPOs. The FHWA derived the costs of the new requirements by assessing the expected increase in the level of labor effort for FHWA, State DOTs, and MPOs to standardize and update data collection and reporting systems and establish and report targets.

The FHWA derived the costs of each of these components by assessing the expected increase in level of labor effort and additional capital needed to standardize and update State DOT data collection and reporting systems and to establish and report targets. The FHWA sought opinions from pavement and bridge subject matter experts (SMEs) to estimate impacts of the final rule. Cost estimates were developed based on assumptions based on information received from SMEs.

To estimate costs, FHWA multiplied the level of effort, expressed in labor hours, with a corresponding loaded wage rate that varied by the type of laborer needed to perform the activity.[6] Where necessary, capital costs were also included. Following this approach, the 10-year undiscounted incremental costs to comply with this rule are $156.0 million.

The final rule's 10-year undiscounted cost ($156.0 million in 2014 dollars) decreased from the proposed rule ($196.4 million in 2012 dollars). The FHWA made several changes that affected the cost estimate. These changes include updating costs to 2014 dollars from 2012 dollars and labor costs to reflect current Bureau of Labor Statistics (BLS) data. In addition, FHWA revised the final rule Regulatory Impact Analysis (RIA) to reflect: (1) The deferment of the effective date; (2) the postponed implementation of establishing and updating performance targets, reporting on performance targets, and assessing significant progress toward achieving performance targets; (3) a decrease in the number of MPOs expected to establish quantifiable targets and upgrade software; (4) the costs of coordinating the establishment of targets in accordance with 23 CFR 450; (5) a decrease in pavement data collection requirements for State DOTs; and (6) added effort for State DOTs to collect data on the non-Interstate NHS.

The FHWA expects that the rule will result in significant benefits, although they are not easily quantifiable. The rule will yield greater accountability because MAP–21 mandated reporting increases visibility and transparency. The data reported to FHWA will be consistent across the States and will be comprehensive, which will allow for a clear national picture of the status of pavement and bridge conditions. In addition, this data would be available to the public and would be used to communicate a national performance story. The FHWA is developing a public Web site to share performance related information. In addition, the rule will help focus the Federal-aid highway program on achieving balanced performance outcomes.

The FHWA used a break-even analysis as the primary approach to quantify benefits. For both pavements and bridges, FHWA focused its analysis on vehicle operating costs (VOC) savings. The FHWA estimated the number of road miles of deficient pavement that will have to be improved (Table 5, Section VII, Rulemaking Analysis and Notices) and the number of posted bridges that will have to be avoided (Table 6, Section VII, Rulemaking Analysis and Notices) in order for the benefits of the rule to justify the costs. The results of the break-even analysis quantified the dollar value of the benefits that the rule must generate to outweigh the threshold value, the estimated cost of the rule, which is $156.0 million in undiscounted dollars. The results show that the rule must result in the net improvement of approximately 71 miles of pavement (*i.e.,* from Poor condition) from its current base case projection, and three 1-year-long bridge postings will need to be avoided over 10 years, to generate enough benefits to outweigh the cost of the rule. The FHWA believes that the benefits of this rule will surpass this threshold. Therefore, the benefits of the rule are anticipated to outweigh the costs.

Relative to the proposed rule, the threshold for the pavement break-even analysis decreased in the final rule. Specifically, the number of NHS miles in Poor condition needing improvement to Fair condition decreased from 435 to 71 in the final rule. The break-even point was affected by an adjustment to the weighted average incremental cost per VMT related to maintenance and repair particularly by updating the VMT vehicle class weights, a decrease in the undiscounted 10-year cost of the pavement rule, an increase in the total VMT that are in poor, and an increase in the number of NHS miles estimated to be in poor condition based on more recent performance data.

The threshold for the bridge break-even analysis increased in the final rule relative to the proposed rule. Specifically, the number of year-long bridge postings that need to be reduced increased from two to three in the final rule. The break-even point increased due to the following updates to input data:

- The average detour for bridges posted with weight limits of at least 40 percent below the legal load decreased from 20 miles to 10.45 miles, and
- The percentage of trucks of total average annual daily traffic on posted bridges decreased from 12.6 percent to 9.7 percent.

The below table displays the Office of Management and Budget (OMB) A–4 Accounting Statement as a summary of the cost and benefits calculated for this rule.

[5] See Table 4 in Section VII, Rulemaking Analysis and Notices.

[6] Bureau of Labor Statistics Employee Cost Index, 2014.

OMB A–4—ACCOUNTING STATEMENT

Category	Estimates			Units			Source/citation
	Primary	Low	High	Year dollar	Discount rate (percent)	Period covered	
Benefits:							
Annualized Monetized ($ millions/year)	None None	None None	None None	NA NA	7 3	NA NA	Not Quantified.
Annualized Quantified	None None	None None	None None	NA NA	7 3	NA NA	Not Quantified.
Qualitative	With regard to the pavement condition measures, the rule is cost-beneficial if it results in the net improvement of approximately 71 miles of pavement (i.e., from poor condition to good) per year, or 710 miles over 10 years, from its current base case projection. With regard to the bridge condition measures, 0.3 year-long bridge postings will need to be avoided per year, or 3 year-long bridge postings over 10 years, in order for benefits to justify costs. Because of these low thresholds, FHWA determines that the rule benefits outweigh the costs.						Final Rule RIA.
Costs:							
Annualized Monetized ($/year)	$17,100,924 $16,232,012			2014 2014	7 3	10 Years 10 Years	Final Rule RIA.
Annualized Quantified	None None	None None	None None	2014 2014	7 3	10 Years 10 Years	Final Rule RIA.
Qualitative							
Transfers	None						
From/To	From:			To:			
Effects:							
State, Local, and/or Tribal Government	$17,026,477 $16,161,365			2014 2014	7 3	10 Years 10 Years	Final Rule RIA.
Small Business	Not expected to have a significant impact on a substantial number of small entities.			NA	NA	NA	Final Rule RIA.

II. Acronyms and Abbreviations

Acronym or abbreviation	Term
AASHTO	American Association of State Highway and Transportation Officials.
AC	Asphalt-Concrete.
ACPA	American Concrete Pavement Association.
ADA	Americans with Disabilities Act.
Alaska DOT&PF	Alaska Department of Transportation and Public Facilities.
AMPO	Association of Metropolitan Planning Organizations.
ASCE	American Society of Civil Engineers.
ASR	Alkali Silica Reactivity.
CDOT	Colorado Department of Transportation.
CIP	Capital Improvement Program.
CFR	Code of Federal Regulations.
CMAQ	Congestion Mitigation and Air Quality Improvement Program.
COMPASS	Community of Planners Association of Southwestern Idaho.
CRCP	Continuously Reinforced Concrete Pavements.
DOT	U.S. Department of Transportation.
State DOT	State Department of Transportation.
EIA	Energy Information Administration.
EO	Executive Order.
FHWA	Federal Highway Administration.
FAST Act	Fixing America's Surface Transportation Act.
FTA	Federal Transit Administration.
HPMS	Highway Performance Monitoring System.
HSIP	Highway Safety Improvement Program.
HSP	Highway Safety Plan.
IRI	International Roughness Index.
LRP/LRTP	Long Range Plan/Long Range Transportation Plan.
MAP–21	Moving Ahead for Progress in the 21st Century Act.
MARC	Mid-American Regional Council.
MEPDG	Mechanistic-Empirical Pavement Design Guide[7].
MPH	Miles per hour.
MPO	Metropolitan Planning Organization.
MTC	Metropolitan Transportation Commission.

Acronym or abbreviation	Term
MTP	Metropolitan Transportation Plan.
NARA	National Archives and Records Administration.
NARC	National Association of Regional Councils.
NBI	National Bridge Inventory.
NBIS	National Bridge Inspection Standards.
NHPP	National Highway Performance Program.
NCHRP	National Cooperative Highway Research Program.
NHS	National Highway System.
NPRM	Notice of Proposed Rulemaking.
NYMTC	New York Metropolitan Transportation Council.
NYSAMPO	New York State Association of Metropolitan Planning Organizations.
OMB	Office of Management and Budget.
PCA	Portland Cement Association.
PCCP or Jointed PCCP	Portland Cement Concrete Pavements.
PCI	Pavement Condition Index.
PRA	Paperwork Reduction Act.
PSR	Present Serviceability Rating.
PSRC	Puget Sound Regional Council.
RIA	Regulatory Impact Analysis.
RIN	Regulatory Identification Number.
ROW	Right of Way.
RSL	Remaining Service Life.
Secretary	Secretary of the U.S. Department of Transportation.
SHSP	Strategic Highway Safety Plan.
SME	Subject Matter Expert.
TEMPO	Association of Texas Metropolitan Planning Organizations.
TMA	Transportation Management Area.
TAMP	Transportation Asset Management Plan.
UMRA	Unfunded Mandates Reform Act of 1995.
U.S.C.	United States Code.
VMT	Vehicle Miles Traveled.
VOC	Vehicle Operating Costs.

[7] *http://onlinepubs.trb.org/onlinepubs/archive/mepdg/home.htm.*

III. Background

The DOT's proposal regarding MAP–21's performance requirements is being presented through several rulemakings, some of which were referenced in the above discussions. As a summary, these rulemaking actions are listed below and should be referenced for a complete picture of performance management implementation. The summary below describes the main provisions that DOT plans to propose for each rulemaking.

On January 5, 2015, FHWA published an NPRM (80 FR 326) proposing the following: (1) The definition of national measures for the condition of NHS pavements and bridges; (2) the process to be used by State DOTs and MPOs to establish their pavement and bridge condition related performance targets that reflect the measures proposed in the NPRM; (3) the process State DOTs must follow to report on progress toward meeting or making significant progress toward meeting pavement and bridge condition related performance targets; (4) a methodology to be used to assess State DOTs' compliance with the target achievement provision specified under 23 U.S.C. 148(i); and (5) the minimum levels for the condition of pavement on the Interstate System and bridges carrying the NHS which includes on- and off-ramps connected to the NHS.

On March 15, 2016, FHWA published a final rule (81 FR 13882) covering the safety-related elements of the Federal-aid Highway Performance Measures Rulemaking that included the following: (1) The definitions that are applicable to the new 23 CFR part 490; (2) the process to be used by State DOTs and MPOs to establish their safety-related performance targets that reflect the safety measures; (3) a methodology to be used to assess State DOTs' compliance with the target achievement provision specified under 23 U.S.C. 148(i); and (4) the process State DOTs must follow to report on progress toward meeting or making significant progress toward meeting safety-related performance targets. The final rule also included a discussion of the collective rulemaking actions FHWA intends to take to implement MAP–21 and FAST Act performance related provisions.

The FHWA published a third Federal-aid Highway Performance Measures Rulemaking (Regulatory Identification Number (RIN) 2125–AF54) on April 22, 2016, FR Vol. 81, No. 78. In this NPRM, FHWA proposed national measures for the remaining areas under 23 U.S.C. 150(c) that were not discussed under the first and second measure rules. The third rulemaking effort includes the following measure areas: (1) National Management Performance Measures for Performance of the Interstate System and non-Interstate NHS; (2) Freight Movement on the Interstate System and the Congestion Mitigation and Air Quality Improvement Program (CMAQ) Traffic Congestion; (3) CMAQ On-Road Mobile Source Emissions; (4) the State DOT and MPO target establishment requirements for the Federal-aid highway program; and (5) performance progress reporting requirements and timing.

When FHWA began implementation of MAP–21, the three related Federal-aid highway performance measure rules were to be published at the same time to allow for a single, common effective date for all three rules. While FHWA recognizes that one common effective date could be easier for State DOTs and MPOs to implement, the process to develop and implement all of the Federal-aid highway performance measures required in MAP–21 has been lengthy. In light of this, instead of waiting for all three rules to be final before implementing the MAP–21 performance measure requirements, each of three Federal-aid highway performance measures rules will have individual effective dates. This would

allow FHWA, State DOTs, and MPOs to begin implementing some of the performance requirements much sooner than waiting for the rulemaking process to be complete for all three rules. The FHWA also believes that a staggered approach to implementation (*i.e.,* implementing one set of requirements at the onset and adding on requirements over time) will better help State DOTs and MPOs transition to a performance based framework. The FHWA expects that even though the effective date for each rule would occur as that rule is finalized, the second rule would ultimately be aligned with the third rule through a common performance period and reporting requirements for the proposed measures. A timeline for Biennial Performance Reports is shown in Figure 1 in section 490.105(e)(1).

Although FHWA believes that individual implementation dates will help State DOTs and MPOs transition to performance based planning, to lessen any potential burden of staggered effective dates, FHWA will provide guidance to State DOTs and MPOs on how to carry out the new performance requirements.

In addition to providing this guidance, FHWA is committed to providing stewardship to State DOTs and MPOs to assist them as they take steps to manage and improve the performance of the highway system. As a Federal agency, FHWA is in a unique position to use resources at a national level to capture and share strategies that can improve performance. The FHWA will continue to dedicate resources at the national level to provide technical assistance, technical tools, and guidance to State DOTs and MPOs to assist them in making more effective investment decisions. It is FHWA's intent to be engaged at a local and national level to provide resources and assistance from the onset to identify opportunities to improve performance and to increase the chances for full State DOT and MPO compliance of new performance related regulations. The FHWA technical assistance activities include conducting national research studies, improving analytical modeling tools, identifying and promoting best practices, preparing guidance materials, and developing data quality assurance tools.

IV. Summary of the Notice of Proposed Rulemaking

The NPRM published on January 5, 2015 (80 FR 326), was one of several NPRMs that FHWA issued to implement sec. 1203 of MAP–21, which establishes performance management as a way to transform the Federal-aid highway program and refocus it on national transportation goals, increase accountability and transparency of the program. The NPRM proposed a set of national measures for State DOTs to use to assess the condition of pavement and bridges on the NHS in support of MAP–21's national goal of maintaining the condition of highway infrastructure assets in a state of good repair.

After a period of engagement and outreach with State DOTs, MPOs, and other stakeholders and a review of nationally recognized reports, FHWA's NPRM proposed six national performance measures that rated the percentage of all mainline pavements on the NHS (excluding the Interstate System), bridges carrying the NHS which includes on- and off-ramps connected to the NHS, and mainline pavements on the Interstate System in either Good or Poor condition. The ratings proposed in the NPRM were derived from several quantitative metrics that addressed physical characteristics of pavement and bridge condition and were tracked and reported regularly to FHWA by State DOTs in the HPMS and the NBI. The NPRM also proposed a minimum level of condition for pavements on the Interstate System as required by the statute. The NPRM also incorporated the minimum condition level for NHS bridges, as stated in 23 U.S.C. 119(f)(2). To support the new measures, the NPRM proposed to establish standardized data requirements that prescribed State DOTs' pavement and bridge condition data gathering practices. These requirements specified the data elements State DOTs must collect, methods for collecting those data elements, and the spatial and temporal coverage of the data they collect. The NPRM's proposed data requirements ensured more accurate calculation of the proposed national pavement and bridge performance measures based on State DOTs' data.

The NPRM also proposed to establish the processes for State DOTs and MPOs to establish and report progress toward achieving targets, and the process for FHWA to determine whether State DOTs have made significant progress in achieving targets.

The measures, data requirements, and related processes included in the NPRM were selected by FHWA after careful determination that they represented the best choices for achieving greater consistency among State DOTs in compiling accurate infrastructure condition information, following processes for target setting, and reviewing progress toward targets. In turn, FHWA expected the measures to enhance accountability and support a strong national focus on the condition of the Nation's highways, while minimizing the number of measures needed and maintaining reasonable flexibility for State DOTs as they manage risk, differing priorities, and fiscal constraints. Lastly, FHWA anticipated that the proposed measures could be implemented in the timeframe required under MAP–21, without introducing a considerable burden on State DOTs.

Pavement Condition Measures

The four pavement condition measures proposed in the NPRM were: (1) Percentage of pavements on the Interstate System in Good condition; (2) Percentage of pavements on the Interstate System in Poor condition; (3) Percentage of pavements on the NHS (excluding the Interstate System) in Good condition; and (4) Percentage of pavements on the NHS (excluding the Interstate System) in Poor condition.

Pavement Data Requirements and Metrics

Under the NPRM, performance ratings of Good, Fair, or Poor condition for pavement were determined by FHWA using a combination of several metrics derived from data elements collected by State DOTs and reported to the HPMS. These metrics collectively provided a way to quantify pavement condition in terms of roughness and cracking for all pavement types, rutting for asphalt pavement surfaces, and faulting (misalignment between concrete slabs) for jointed concrete pavement surfaces. Roughness affects users' travel speeds, safety, comfort, and transportation costs. Cracking, rutting, and faulting are considered surface indicators of structural deterioration in different pavement types. Since 2010, most State DOTs have reported roughness, cracking, rutting, and faulting data annually to FHWA through HPMS.

The NPRM specified that data for the roughness, cracking, rutting, and faulting metrics must be collected consistent with practices outlined in the HPMS Field Manual (A draft of the updated HPMS Field Manual was placed on the docket with the NPRM at FHWA–2013–0053).

Calculation of Pavement Measures

The proposed pavement measures were designed to reflect a pavement's predominant condition, represented by roughness, cracking, rutting, and faulting data elements, as applicable. For a section of pavement to be rated in Good condition, the absolute values for all relevant metrics need to exceed thresholds specified in the NPRM.

Conversely, a section of asphalt or jointed concrete pavement would be rated in Poor condition if any two of three relevant metrics were below specified threshold values. A section of Continuously Reinforced Concrete Pavement would be rated in Poor condition if the two relevant metrics are below the specified threshold values. The FHWA explained that a measurement approach that focused only on increasing Good conditions or reducing Poor conditions may result in practices that would not optimize the benefits of infrastructure investments.

Bridge Condition Measures

The two bridge condition measures proposed in the NPRM were: (1) Percentage of NHS bridge deck area classified as in Good condition and (2) Percentage of NHS bridge deck area classified as in Poor condition.

Bridge Data Requirements and Metrics

Under the NPRM, performance ratings of Good or Poor condition for bridges were determined by FHWA using a combination of several metrics collected by each Federal agency, State DOT, and tribal government as part of their NBI submittals (specifically deck, superstructure, substructure, and culverts). These metrics provide an overall characterization of the general physical condition of the entire bridge component being rated. The NBI database was established in 1972 and State DOTs have been required to submit annual NBI reports to FHWA since 1978. The NBI is a highly consistent set of national data for evaluating and monitoring the condition and performance of bridges that is based on National Bridge Inspection Standards (NBIS) for the proper and uniform inspection and evaluation of highway bridges. The NPRM further proposed to weight the classifications by the respective deck area of the bridge and express condition totals as a percentage of the total bridge deck area on the NHS in a State.

Calculation of Bridge Measures

The NPRM's proposed bridge measures reflected the lowest component condition rating for the bridge, based on the NBI condition ratings for deck, superstructure, substructure, and culverts. For a bridge to be classified as in Good condition, all the relevant metrics need to equal the values specified in the NPRM. Similarly, a bridge would be classified as in Poor condition if any of the relevant metrics equal the values specified in the NPRM.

State Departments of Transportation and Metropolitan Planning Organizations Pavement and Bridge Performance Targets

The NPRM described a process by which the six pavement and bridge condition performance measures would be used by State DOTs and MPOs to establish quantifiable statewide performance targets to be achieved over a 4-year performance period, with the first performance period starting in 2016. Under the NPRM, a State DOT or MPO could consider a number of factors (*e.g.,* funding availability and local transportation priorities) that could impact the targets they ultimately establish for pavement and bridge system conditions. According to the NPRM, State DOTs would establish 2- and 4-year targets for the six pavement and bridge condition measures 1 year after the effective date of the rule. The MPOs would establish targets by either supporting the State DOT's statewide target, or defining a target unique to the metropolitan planning area each time the State DOT establishes a target. In accordance with MAP–21, the NPRM provided MPOs a 180-day period following the date at which the State DOT established their pavement and bridge targets. Furthermore, the NPRM proposed a minimum level of condition for Interstate System pavements of no more than 5 percent of pavement lane miles in Poor condition, and reiterated the MAP–21 requirement of no more than 10 percent of the deck area of bridges on the NHS classified as structurally deficient.

State Departments of Transportation and Metropolitan Planning Organization Pavement and Bridge Performance Reporting

The NPRM proposed that State DOTs submit biennial reports to FHWA on the condition and performance of the NHS. Under the NPRM, State DOTs submitted their targets in a baseline report at the beginning of each performance period and reported progress in achieving targets at the midpoint and end of the performance period. State DOTs were allowed to adjust their 4-year target at the midpoint of the performance period. The MPOs were not required to provide separate reporting to FHWA. However, State DOTs and MPOs needed to agree on a reporting process in the Metropolitan Planning Agreement.

Determination of Significant Progress

The NPRM proposed the method for FHWA to determine if State DOTs achieved significant progress toward their target from an analysis of estimated condition/performance and measured condition/performance of each of the targets. If applicable, State DOTs could have the opportunity to discuss why targets were not achieved or significant progress was not made. If a State DOT failed to achieve significant progress in two consecutive biennial determinations, then the State DOT was required to document in their next biennial performance report, and encouraged to document sooner, the actions they would undertake to achieve their targets.

V. Discussion of Comments

The FHWA received 127 public comment submissions to the docket. This included letters from 42 State DOTs, 13 MPOs, 19 counties or local government agencies, 16 industry associations, and several other submissions from individuals, advocacy organizations, and private industry members. One submission contained over 1,000 duplicates of a letter expressing support for the rule and appreciation to FHWA for responding to public comment on the first performance management NPRM related to safety. The comment submissions covered a number of topics in the proposed rule, with the most substantive comments on establishment of targets, reporting, the significant progress determination process, pavement condition performance measures, and bridge condition performance measures.

Of the 127 public comment submissions received, the majority expressed overall support for the rule. Commenters expressed general concerns over NHS ownership, the performance period timespan, the start of the reporting cycle, target adjustment, significant progress determination and timing, incorporation by reference, and minimum condition penalties. For pavement condition measures specifically, commenters had mixed opinions regarding the use of the IRI and other metrics and expressed concern over the proposed extent of data collection, the treatment of missing data, and the proposed minimum condition level. For bridge condition measures specifically, commenters expressed mixed opinions about the use of element level data and expressed opposition to the proposed definition of structurally deficient.

The FHWA thanks all commenters for their responses to the NPRM. The FHWA carefully considered the comments received from the stakeholders.

Selected Topics for Which FHWA Requested Comments

In the NPRM, FHWA requested comments on different topics related to the rulemaking. Several of those had an impact on the final rule and are discussed in this section. The others are discussed in the section-by-section analysis.

Purpose and Approach of the Regulatory Action

The FHWA received general support of the performance management concept and its proposed implementation from State DOTs, industry groups, and private citizens.[8] The FHWA also received several comments that opposed specific portions of the proposed rule from State DOTs, industry, local governments, and advocacy groups.[9] Some of these same commenters shared their overall support of the rule.

A number of State DOTs and MPOs took issue with the assumptions and levels of cost analysis associated with the requirements of the NPRM reflected in the benefit-cost analysis and suggested that it be reconsidered.[10] These comments are discussed in more detail in Section VI. In terms of benefits, Fugro Roadware, a firm that manufactures and operates equipment that is used to measure the pavement conditions on State and municipal networks, asserted that the ''entire pavement and traffic assessment management process has been shown to improve the quality of road networks without an overall increase of funding. . . .''

Finally, FHWA received numerous comments that fell outside of the scope of the rulemaking. The American Motorcyclist Association, for example, endorsed the design standards that advance the safety of motorcycle use. The advocacy group Perils for Pedestrians commented that more pedestrians are injured by falls than vehicles. The American Society of Civil Engineers (ASCE) requested FHWA incorporate Life Cycle Costs into performance management rules. Finally, private citizens (1) requested an addition to the proposed rule to promote small business during the inspection and accounting for each new project; (2) advocated for improved standards for design and construction of longitudinal joints in pavements; (3) endorsed the goals for Safety and Asset Management Rules as well as incentives to increase public transit; and ''(4) suggested the rule require the use of compact joints on highways to extend the pavement's lifetime.''

Public Comments in Response to FHWA's Questions in the NPRM

In the NPRM, FHWA requested comments on certain topics related to the pavement and bridge condition performance measures rulemaking. Comments received in response are summarized below.

Does the approach to performance measures support the nine implementation principles?

The FHWA listed nine principles in the NPRM preamble that were considered in the development of the proposed regulation.[11] Overall, commenters (AASHTO and the State DOTs of Alabama, Connecticut, Georgia, Maryland, New Jersey, New York State, Oregon, and Texas, and private entity Steve Mueller Consultancy) supported FHWA's nine principle approach. However, the New York Metropolitan Transportation Council (NYMTC) felt the NPRM was inconsistent with the nine principles in relationship to linking financial penalties to the single nationwide [*sic,* statewide] targets for pavement and bridges causing inconsistency with the principles of: (1) Understand that Priorities Differ (''Single targets do not acknowledge regional differences in infrastructure age, . . .''), (2) Recognize Fiscal Constraints (''These targets and penalties have the effect of limiting flexibility we have for investing in assets across our systems at the state, regional, and local levels, as we deem appropriate.''), and (3) Provide for Flexibility (''Tying penalties to the specific measures in § 490.317 and § 490.413 and requiring [S]tates to focus spending on two specific components of the transportation system (Interstate pavement and NHS bridges) is the antithesis of flexibility.'') NYSDOT (New York State Department of Transportation) and other NYMTC members are responsible for the entire transportation system in the region, and all approach asset management from a system-level perspective (including both NHS and non-NHS assets). These thresholds and associated penalties could lead to an exclusive focus on Interstate pavement and NHS bridges at the expense of the remainder of the system.''

In addition, the Northeast Pavement Preservation Partnership (NEPPP) felt most of the principles were covered but that FHWA did not address the following principles: (1) Recognize Fiscal Constraints—(''The proposed performance measures do not encourage optimal investment. It can be argued that they instead encourage worst-first mentality, since there is a target for percent poor, and since there are bins

[8] The State DOTs of Alaska, Florida, Georgia, Illinois, Iowa, Louisiana, Maine, Minnesota, Missouri, New Hampshire, New York, Oregon, Vermont, Virginia, and Washington State; and AASHTO, Cemex USA, National Asphalt Pavement Association, National Association of Regional Councils, National Center for Pavement Preservation, New York Metropolitan Transportation Council, New York State Association of Metropolitan Planning Organizations, Northeast Pavement Preservation Partnership, Oversight Committee for the California Local Streets and Roads Needs Assessment, Southern California Association of Governments, Southeast Michigan Council of Governments, Southeast Pavement Preservation Partnership, and Transportation for America, Blake Rubenstein.

[9] State DOTs of Alaska, Idaho, New York, North Dakota, Oregon, South Dakota, Rhode Island, and Wyoming; the City of Santa Rosa, CA and the Seattle DOT; and Agile Assets, American Road and Transportation Builders Association, Center for American Progress, Michigan Transport Commission and Asset Management, and Transportation for America.

[10] Atlanta Regional Commission, Texas Association of Metropolitan Planning Organizations, Transportation for America, and State DOTs of Colorado, Rhode Island, North Carolina, Mississippi, Oklahoma, Michigan, Georgia, Louisiana, and Oregon.

[11] Nine principles used in the development of proposed regulations for national performance management measures under 23 U.S.C. 150(c), *www.regulatons.gov*, Docket FHWA–2013–0053:

i. Provide for a National Focus—focus the performance requirements on outcomes that can be reported at a national level.

ii. Minimize the Number of Measures—identify only the most necessary measures that will be required for target establishment and progress reporting. Limit the number of measures to no more than two per area specified under 23 U.S.C. 150(c).

iii. Ensure for Consistency—provide a sufficient level of consistency, nationally, in the establishment of measures, the process to set targets and report expectations, and the approach to assess progress so that transportation performance can be presented in a credible manner at a national level.

iv. Phase in Requirements—allow for sufficient time to comply with new requirements and consider approaches to phase in new approaches to measuring, target establishment, and reporting performance.

v. Increase Accountability and Transparency—consider an approach that will provide the public and decision makers a better understanding of Federal transportation investment needs and return on investments.

vi. Consider Risk—recognize that risks in the target establishment process are inherent, and that performance can be impacted by many factors outside the control of the entity required to establish the targets.

vii. Understand that Priorities Differ—recognize that State DOTs and MPOs must establish targets across a wide range of performance areas, and that they will need to make performance trade-offs to establish priorities, which can be influenced by local and regional needs.

viii. Recognize Fiscal Constraints—provide for an approach that encourages the optimal investment of Federal funds to maximize performance but recognize that, when operating with scarce resources, performance cannot always be improved.

ix. Provide for Flexibility—recognize that the MAP–21 requirements are the first steps that will transform the Federal-aid highway program to a performance-based program and that State DOTs, MPOs, and other stakeholders will be learning a great deal as implementation occurs.

(*i.e.,* percent good, percent fair, and percent poor)). Optimal investment could much more readily be achieved with an overall Index or RSL approach, where pavement preservation is encouraged along with rehabilitation.''); and (2) Provide for Flexibility—(''It is not apparent in the rules how flexibility is provided for. No provision is made for allowing a [State] DOT to implement and manage toward different measures which may be more cost-effective.''). The National Asphalt Pavement Association (NAPA) made similar arguments in regard to principle (1) ''Recognize Fiscal Constraints—(''NAPA is concerned that the proposed rule could lead to poor decisions (*i.e.,* ''worst first'') in order to comply with the NPRM minimum pavement condition, rather than decisions that factor in the long-term preservation and performance of pavements.''); and (2) Provide for Flexibility—(''Agencies should have flexibility to make decisions that balance preserving good/fair pavements with improving and rehabilitating poor pavements.'')

While the following commenters generally agreed that FHWA's approach to performance measures was consistent with the nine principles, they also identified areas that were lacking. Georgia DOT stated that the approach in the proposed rule may not fully support the principle of recognizing fiscal constraints or provide for an approach that encourages the optimal investment of Federal funds to maximize performance.

The NYMTC and the Georgia and Maryland DOTs stated that limited funding could prevent targets and minimums from being achievable and that imposing the proposed penalties could result in worsening of other assets. Moreover, the NYMTC commented that with no long term funding solution for national or State transportation programs, States may not have a defensible way to establish targets or make changes to their investment strategies.

The NEPPP also commented that the proposed rule will not allow a State DOT to implement and manage their program toward different measures or metrics that encourage a balanced program based on asset management pavement preservation conceptions.

Several commenters cited concerns over flexibility in the rule tied to implementation principles. The NYS DOT commented that States should not be forced to use specific performance targets or measures. The New Jersey DOT raised concerns about reporting requirements, commenting that they will need to maintain ''two sets of books,'' one for national performance reporting and one to manage their network, using appropriate pavement management and asset management principles.

Suggestions for How FHWA Can Best Assist State DOTs and MPOs To Maximize Opportunities for Successful Implementation of the Proposed Performance Measures

Generally, States expressed a desire for more training materials, technical assistance, and technical guidance so that they can implement the rule accurately and efficiently. Several commenters, including AASHTO and the State DOTs of Connecticut, Louisiana, New Jersey, and Oregon, expressed a desire for additional technical assistance and guidance detailing the process FHWA will use to compute the overall pavement condition measures. Commenters also requested guidance on target setting best practices for State DOTs and MPOs. The Maryland DOT suggested that FHWA provide a contact person or Web link for technical assistance activities. In addition, the Alabama DOT commented that more guidance be given on data quality. They argued that the training materials have lacked information in statistical methodology and note, ''it is simple to determine if a dataset is reasonable; it is quite a different matter to determine of the dataset is correct.''

Should the measures reflect additional factors such as facility location, functional class, level of use, environment, or impact it may have on other aspects of transportation performance?

The American Concrete Pavement Association (ACPA) and Portland Cement Association (PCA) requested that FHWA modify the proposed rule to provide a better assessment of the performance of our highways and bridges. A private citizen, Joyce Dillard, commented that the measures should reflect level of use, environment, and overweight trucks. Acknowledging that there is limited funding and increasing needs, Oregon DOT commented that adding additional factors could help show progress. The commenter suggested adding measures such as functional class, progress made on other deficiencies (*e.g.,* painting, vertical clearance, and rail), and risk. Additionally, for bridges specifically, the commenter suggested looking at mitigation measures to reduce vulnerability to seismic activity and scour. In addition, the New York City DOT recommended that traffic counts on bridges could be a useful measure to collect. The commenter noted that that traffic counts are an important variable that quantifies a bridge's performance and life expectancy.

Appropriateness of the Proposed Threshold Criteria To Determine Good, Fair, and Poor Ratings

- *Concerns with Pavements:* Commenters stated that agencies will be driven to overemphasize treatments that lower cracking and improve ride quality on pavements that currently rank as Poor at the cost of solutions that extend the performance life of the pavements that currently rank as Good or Fair (*e.g.,* surface treatments). In addition, commenters noted that although pavement types referenced in the NPRM (Portland Cement Concrete Pavements and Continuously Reinforced Concrete Pavements (CRCP)) make up the vast majority of the NHS, other pavement surfaces exist in small quantities.

Should FHWA establish a minimum condition threshold that would become more stringent over time?

Commenters provided mixed opinions on the establishment of a minimum condition threshold that would become more stringent over time. Several commenters expressed concern that pressure to meet a difficult minimum condition threshold may push States to implement a worst-first approach to pavement preservation, which would run counter to the asset management principles and planning approach advocated by FHWA.[12] The Oregon DOT commented that a problem with pavement performance measures is that they ''discourage proven, cost effective, pavement preservation techniques.'' Agencies that are under pressure to meet performance targets may implement a worst-first approach.

Other State DOTs and AASHTO recommended FHWA evaluate the effects of the national level performance measures, targets and minimum condition levels to ensure that these policies have a positive impact on management approaches.

[12] State DOTs of Arkansas and Mississippi, the Southern California Association of Governments, the Seattle Department of Transportation.

VI. Section-by-Section Discussion of the General Information and National Performance Management Measures for the National Highway Performance Program: Pavement and Bridge

A. Subpart A—General Information

Discussion of Section 490.101 General Definitions

In the NPRM, FHWA proposed several definitions for used in this regulation.

Only Washington State DOT commented on the definition for the term ''HPMS'' and they agreed with the definition. The FHWA retains the definition for HPMS.

In the NPRM, the term ''full extent'' was defined as ''continuous collection and evaluation of pavement condition data over the entire length of the roadway.'' The term ''mainline highways'' was defined as ''the through travel lanes of any highway exclude ramps, shoulders, turn lanes, crossovers, rest areas, and other pavement surfaces that are not part of the roadway normally travelled by through traffic.''

Only Washington State DOT commented on the definition for ''full extent'' and they agreed with the definition. The State DOTs of Connecticut, Maine, New Hampshire, Vermont, and Washington State and AASHTO agreed with the definition of ''mainline highways.'' However, Colorado DOT stated that the definition conflicts with section 490.309(c)(1)(i) requiring data for the full extent of the mainline highway of the NHS which would indicate that State DOTs need to collect data on all through travel lanes. The Colorado DOT added that the intent is that States collect one lane's worth of data on NHS. The FHWA described in the NPRM that section 490.309(c) applies to Through Lanes, Surface Type, and Structure Type Data Items, while section 490.309(b) requires that State DOTs report IRI, rutting, faulting, and Cracking Percent only apply to the rightmost travel lane or one consistent lane, if the rightmost travel lane is not accessible. Based on this, FHWA believes that the definitions of ''mainline highways'' and ''full extent'' do not conflict with other sections in this rule. The FHWA retains those definitions in the final rule.

The Washington State DOT agreed with the definitions for ''metric'' and ''measure,'' and Mid-America Regional Council appreciated the distinction between the two terms. The FHWA retains the definitions for ''metric'' and ''measure.''

The Puget Sound Regional Council (PSRC) urged FHWA to consider allowing MPOs to establish performance targets that ''encompass all areas within their planning boundary rather than only the Federally designated metropolitan planning area.'' They added that this definition of area would allow for consistent infrastructure condition targets for the full region in the event the MPO target differs from the State target. To eliminate the ambiguity with the term ''metropolitan planning area,'' FHWA includes the definition for ''metropolitan planning area'' in this regulation as the term defined in the Statewide and Nonmetropolitan and Metropolitan Transportation Planning Regulations at 23 CFR 450.104. This term is used consistently as the extent of an MPO target that represents performance outcomes of the transportation network within the area. So the definition has been included to ensure consistency in interpretation by readers.

In the NPRM, the term ''non-urbanized area'' was defined as ''any geographic area that is not an 'urbanized area' under either 23 U.S.C. 101(a)(34).'' The FHWA received comments from Washington State and Virginia DOTs on the definition for ''non-urbanized area.'' The Washington State DOT supported the proposed definition. The Virginia State DOT pointed out that the proposed definition is missing a citation because only one citation (23 U.S.C. 101(a)(34)) was provided after the word ''either.'' The FHWA appreciates the comments from both agencies and examined the definition for better clarification while maintaining consistency with section 490.105(e)(3)(ii), which specifies a single collective non-urbanized area target and is consistent with the language in the final rule for safety performance measures. The FHWA also recognizes the word ''either'' was inadvertently included in the proposed definition. As a result, FHWA revised the definition for ''non-urbanized area'' to clearly indicate that a non-urbanized area is a single, collective area comprising all of the areas in the State that are not ''urbanized areas'' defined under 23 U.S.C. 101(a)(34).

Only Washington State DOT commented on the definition for the term ''performance period,'' agreeing with the proposed definition. The FHWA retains the definition for ''performance period.''

The Washington State DOT agreed with the definition for ''target.'' The Minnesota DOT recommended the term ''plan outcome'' as opposed to ''target'' because they said that Minnesota DOT uses the term ''target'' to identify an aspirational performance objective to define investment need, as opposed to an objective that they expect to achieve within the constraints of the resources currently available.'' The FHWA appreciates Minnesota DOT's suggestion on the term. However, FHWA retains the term ''target'' in the final rule because the term is referenced in the statute (23 U.S.C. 150(d), 134(h), 135(d), and 119(e)).

As discussed in section 490.309 (Using Structure_Type to Identify and Exclude Bridges) and section 490.405, FHWA moves the definition of ''bridge'' from subpart D (*i.e.,* section 490.405) to this section in subpart A to use the term in a consistent manner throughout this rule. The FHWA strikes the term ''this section'' in the definition of ''bridge'' and replaces with the term ''this Part'' to ensure that the definition of ''bridge'' in this section applies to both subparts in the final rule. Therefore, the definition of ''bridge'' in the final rule is: ''Bridge, as used in this Part, is defined in § 650.305 of this title, the National Bridge Inspection Standards.'' Please see discussion sections for sections 490.309 and 490.405 for more detail.

Finally, FHWA retains the definitions for ''National Bridge Inventory'' as proposed in the NPRM. There were no substantive comments regarding the definition.

Discussion of Section 490.103 Data Requirements

The FHWA proposed in section 490.103 of the NPRM, the data requirements that apply to more than one subpart in part 490. Additional proposed data requirements that are unique to each subpart are included and discussed in their respective subpart.

Some comments from AASHTO and the State DOTs of Alaska and Connecticut referenced section 490.103 in their respective letters, but their comments were on the incorporation by reference of the HPMS Field Manual and NBI Coding Guide. Please refer to the discussion on section 490.111 on incorporation by reference for response and discussion.

There were no direct comments on section 490.103(a). However, FHWA did correct the referenced subparts in section 490.103(a) by changing ''B and C'' to ''C and D'' so that the regulatory text correctly refers to the subparts in the final rule.

In section 490.103(b), FHWA proposed that State DOTs submit urbanized area boundaries reported to HPMS in the year the Baseline Performance Period Report is due. Section 490.105(d)(3) specifies that the urbanized boundaries used in the Baseline Performance Period Report are

applicable for the entire performance period, regardless of whether FHWA approves adjustments to the urbanized area boundary during the performance period. This provision was proposed because the urbanized area boundaries and resulting non-urbanized area boundary have the potential to change on varying schedules; and changing a boundary during a performance period may lead to changes in the measures reported for the area, which could impact how an established target relates to actual measured performance. The FHWA also explained in the NPRM that State DOT submitted boundary information would be the authoritative data source for: (1) The target scope for the additional targets for urbanized and non-urbanized areas (section 490.105(e)(3)); (2) progress reporting (section 490.107(b)); and (3) IRI rating (section 490.313(b)(1)) for the pavement condition measures identified in section 490.105(c)(1) through (3).

The FHWA received four comments directly related to the urbanized area boundary. The Missouri State DOT supported that State DOT-submitted boundary information should be the authoritative data source for the target scope for the additional targets for urbanized and non-urbanized areas. The Oregon State DOT commented that keeping urbanized area constant for the performance measures' entire 4-year performance period is ''too inflexible and may not reflect how investment decisions are actually made during the performance period due to changing route priorities.'' They added that the proposed approach ''looks backward in the mirror, rather than forward which is needed to incorporate up to date planning and policy.'' The FHWA agrees with Oregon State DOT in that at the time of target establishment, agencies should be looking forward by incorporating up-to-date planning and policy decisions and anticipate future changes. Although planning and policy decisionmaking should be ''forward-looking,'' for the purpose of assessing the impact of investment on condition/performance, FHWA believes preserving consistent boundaries throughout a performance period is essential to consistently assess target achievement during a performance period. The Texas State DOT and Texas Association of Metropolitan Planning Organizations commented that guidance is needed on where an urbanized area boundary will be set in relation to bridges. They stated that in some cases, the midpoint of the structure has been used as the boundary. There should be a determination regarding this issue in relation to how these bridges are classified at urban/rural boundaries and, in the case of two adjacent MPO planning area boundaries, to which MPO area the structure is assigned. Considering these comments, FHWA plans to issue guidance on urbanized and non-urbanized target establishment, which will address issues related to bridge boundaries.

Because the threshold values for IRI metric no longer depend on the location (*i.e.,* urbanized area with a population greater than 1 million) of pavement sections which is discussed in section 490.313(b)(1), FHWA revises sections 490.103(b) and 490.107(b)(1)(ii)(D) to remove the term ''IRI rating determination.''

Section 490.103(c) is reserved.

No direct comment was received for section 490.103(d), and FHWA retains the language as proposed in the NPRM. Please see revised section 490.105(d)(3) for discussion on NHS limits and refer to the section 490.111 discussion section on the incorporation by reference.

Discussion of Section 490.105 Establishment of Performance Targets

In section 490.105 of the NPRM, FHWA proposed the minimum requirements that would be followed by State DOTs and MPOs in the establishment of targets for all measures identified in section 490.105(c). These requirements were proposed to implement the 23 U.S.C. 150(d) and 23 U.S.C. 134(h)(2) target establishment provisions in a manner that provides for the consistency necessary to evaluate and report progress at a State, MPO, and national level, while also providing a degree of flexibility for State DOTs and MPOs.

A couple of general comments on section 490.105 were received by FHWA. The Oregon State DOT expressed their appreciation for the proposed rule allowing State DOTs to establish performance targets ''without the unnecessary burden of an FHWA target approval process.'' However, the Virginia State DOT commented that the proposed rule is ''unclear on what may occur if FHWA disagrees with a State's proposed performance target and/or a State's strategy to meet that performance target.'' They added that the ''rule does not indicate what actions FHWA may take in such a situation, the rule as proposed sets up a possible point of future conflict between States and FHWA on how the State manages its resources in order to effectively manage its highway infrastructure to meet traffic demands and assure public safety.'' However, the Virginia State DOT noted that they are in favor of the proposal's approach to States establishing targets. In response to the comment from Virginia State DOT, FHWA notes that there is no language in the NPRM or this rule related to FHWA's approval or rejection of established targets by State DOTs and MPOs because the statutory language in MAP–21 provides that State DOTs and MPOs have the ability to establish their own targets and MAP–21 does not provide FHWA the authority to approve or reject State DOT or MPO established targets. In the discussion for section 409.109 in the NPRM, FHWA stated that ''State DOTs would, through a transparent and public process, want to establish or adjust targets that strive to improve the overall performance of the Interstate and National Highway systems.'' The North Carolina State DOT requested clarification of the meaning of ''transparent and public'' in regard to the target establishment process. They asked if FHWA considered that State DOTs are already required to hold public hearings when they select projects for the Statewide Transportation Improvement Program (STIP), and if this would satisfy the target establishment requirement. The FHWA does not prescribe specific methods for making the target establishment process transparent and public. Please refer to the final Planning Rule [13] for performance requirements for the statewide transportation plan and STIP, including any requirements to include targets in the planning documents and the methods for developing those documents.

The Center for American Progress stated that MAP–21 established that a clear goal of Federal policy is to ''maintain the highway infrastructure asset system in a state of good repair.'' They added that ''Congress did not intend for States to set their performance goals to include assets being in worse condition in the future than they currently are.'' A letter from Steve Mueller Consultancy stated it would be ''wrong to accept declining conditions on our roads of national importance.'' They added that State DOTs and MPOs should reprioritize their expenditure plans to change because the declining condition is ''unacceptable.''

However, comments from AASHTO, Association of Metropolitan Planning Organizations (AMPO), Metropolitan Transportation Commission, Mid-America Regional Council, New York

[13] Final Rule on Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning (Regulatory Identification Number (RIN) 2125–AF52) on May 27, 2016, FR Vol. 81, No. 103.

Metropolitan Transportation Council, city of Seattle Department of Transportation, an anonymous citizen, and the State DOTs of Alaska, Arkansas, California, Connecticut, Florida, Idaho, Iowa, Maine, Minnesota, Mississippi, Missouri, Montana, New Hampshire, New York, North Dakota, Oregon, Pennsylvania, South Dakota, Vermont, Washington State, and Wyoming stated that State DOTs and MPOs should have the flexibility to establish targets, including targets that have condition/performance holding steady or, in some situations, declining. They added that targets indicating declined condition/performance are discussed in the preamble of the NPRM but not in the proposed rule itself. These commenters recommended that specific language be included in the rule.

The FHWA believes that State DOTs and MPOs have the authority to establish their targets at their discretion. Moreover, as stated previously in this section, MAP–21 does not provide FHWA the authority to approve or reject State DOT or MPO established targets. The FHWA believes that this rule does not hinder the ability of State DOTs and MPOs to establish targets that have performance holding steady or, declining targets. Thus, FHWA believes that specific language describing potential target level scenarios in the regulatory language is unnecessary. Therefore, FHWA retains the language in section 490.105(a). The FHWA did add ''of this section'' to the paragraph to meet the publication requirements of the **Federal Register**, and improve the clarity and consistency of the text. This addition did not change the intent of the original text in the NPRM.

In section 490.105(b), FHWA proposed in the NPRM that State DOTs and MPOs shall establish performance targets for the HSIP measures in accordance with section 490.209. The Alaska Department of Transportation and Public Facilities (Alaska DOT&PF) recommended that this paragraph should be removed because section 490.209 is not part of this rulemaking. The FHWA disagrees with the comment because FHWA felt this paragraph is necessary to point out target establishment requirements related to the HSIP measures that are different from this subpart. Therefore, FHWA retains the language in section 490.105(b).

The FHWA did not receive any substantive comments regarding section 490.105(c), therefore, FHWA made no changes.

Discussion of Section 490.105(d) Ownership

Section 490.105(d) specifies that the targets established by State DOTs and MPOs shall, regardless of ownership, represent the transportation network or geographic area, including bridges that cross State borders, that are applicable to the pavement and bridge condition measures. Title 23 U.S.C. 150(c)(3) requires the establishment of measures for State DOTs to use to assess the condition of pavements on the Interstate System, the condition of pavements on the NHS (excluding the Interstate), and the condition of bridges carrying the NHS which includes on- and off-ramps connected to the NHS for the purpose of carrying out the NHPP. Additionally, 23 U.S.C. 150(d) requires State DOTs to establish performance targets that reflect the established measures. Furthermore, 23 U.S.C. 119(e)(7) specifies State requirements when it does not achieve or make significant progress toward achieving the established performance measures targets for the NHS.

To implement the statutory provisions of 23 U.S.C. 150(c)(3), FHWA proposed that the pavement condition measures in subpart C are applicable to the mainline highways on the Interstate System and on the non-Interstate NHS and the bridge condition measures in subpart D are applicable to bridges carrying the NHS which includes on- and off-ramps connected to the NHS (sections 490.307 and 490.403). To ensure that the performance targets required under 23 U.S.C. 150(d) are applicable to the same extent to highways and bridges as the performance measures in sections 490.307 and 490.403, FHWA included the phrase ''regardless of ownership,'' in section 490.105(d).

To implement the requirements of 23 U.S.C. 119(e)(7), section 490.109(e) provides that FHWA would determine whether or not a State DOT achieved or made significant progress toward achieving the State DOT targets, consistent with the target scope described in section 490.105(d), for the NHS NHPP targets. In the NPRM, FHWA recognized the limit of the direct impact State DOTs and MPOs can have on the performance outcomes within the State and the metropolitan planning area, respectively, and that State DOTs and MPOs need to consider this uncertainty when establishing targets. The FHWA further stated that some Federal and tribal lands contain roads and bridges carrying the NHS, which includes on- and off-ramps connected to the NHS that State DOTs would need to consider (as appropriate) when establishing targets. Finally, FHWA expressed a need for State DOTs and MPOs to consult with relevant entities (*e.g.,* Federal Land Management agencies, State DOTs, MPOs, local transportation agencies, and tribal governments) as they establish targets to better identify and consider factors outside of their direct control that could impact future condition/performance.

The FHWA received comments from 19 State DOTs (Arkansas, Colorado, Connecticut, Florida, Georgia, Iowa, Maine, Maryland, Michigan, Mississippi, Missouri, New Hampshire, Oklahoma, Oregon, Pennsylvania, Texas, Vermont, Virginia, and Washington State), AASHTO, AMPO, Atlanta Regional Council (ARC), Center for American Progress, Community Planning Association of Southwestern Idaho (COMPASS), National Association of Regional Councils (NARC), National Center for Pavement Preservation, NYMTC, Association of Texas Metropolitan Planning Organizations (TEMPO), and an anonymous commenter [14] generally indicating that State DOTs and MPOs have no authority or control over maintenance and/or investment decisions on some of the assets on NHS. Therefore, State DOTs and MPOs should not be held responsible for the reporting of data, target establishment, and the condition of these assets (*i.e.,* significant progress determination). The letters from the Connecticut, Virginia, and Washington State DOTs and AASHTO argued that State DOTs may not be able to legally collect data on assets they do not own.

The AASHTO, AMPO, ARC, and the Mississippi and Tennessee State DOTs recommended that each agency (*e.g.,* Federal Government, State DOT, tribal government, local agency, transit agency, and tolling authority) that has ownership of an NHS facility should report on and be held accountable for their portion of the system.

As stated above, the statutory provisions under 23 U.S.C. 150(c)(3) require the establishment of measures for ''States to use to assess (I) the condition of pavements on the Interstate System; (II) the condition of pavements on the [NHS] (excluding the Interstate); [and] the condition of bridges on the [NHS]'' for the purpose of carrying out the NHPP. Also, 23 U.S.C. 150(d) requires States to establish performance targets that ''reflect the established measures.'' The MAP–21 also provides a description of the limits (or components) of the Interstate System and National Highway System in 23

[14] FHWA–2013–0053–0135.

U.S.C. 103(c) and 23 U.S.C. 103(b), respectively, and defines the terms ''States'' and ''MPOs'' in 23 U.S.C. 101(a)(25) and 23 U.S.C. 134 (b), respectively. This statutory language in MAP–21 prescribes the applicability of the NHPP under 23 U.S.C. 119 and the applicability of performance measures and the scope of performance targets under 23 U.S.C. 150.

Considering this statutory language, MAP–21 requires that the performance management requirements (23 U.S.C. 150) and NHPP (23 U.S.C. 119) apply to the entire NHS and Interstate System and not to a subset of the NHS (*e.g.,* State DOT owned or operated Interstate System, State DOT owned or operated National Highway System), as the commenters would prefer. The MAP–21 does not define the terms ''State'' or ''MPO'' for purposes of 23 U.S.C. 150 and 119 as something other than already defined elsewhere in MAP–21. Accordingly, FHWA retains the language in section 490.105 (which requires that State DOTs and MPOs establish targets for the entire NHS and Interstate System within the State or metropolitan planning area, regardless of ownership).

As stated in the NPRM, FHWA recognizes that there is a limit to the direct impact State DOTs and MPOs can have on the performance outcomes within the State and the metropolitan planning area, respectively. The FHWA encourages State DOTs and MPOs to consult with relevant entities (*e.g.,* Federal Land Management Agencies, local transportation agencies, and tribal governments) as State DOTs and MPOs report performance data and establish targets. This will allow for a better assessment of the condition of pavements and bridges on the entire NHS and better identify and consider factors outside of their direct control that could impact future condition/performance.

In section 490.105(d), FHWA added the phrase ''of this paragraph'' to improve the clarity and consistency of the text. This addition did not change the intent of the original text in the NPRM.

In section 490.105(d)(1), FHWA made an editorial correction and replaced the word ''areawide'' with ''area wide.''

The FHWA added cross reference numbers to section 490.105(d)(1)(i) through (iii) to clarify the specific section that corresponds to each measure. The original intent of the section did not change.

Section 490.105(d)(2) is reserved.

Discussion of Section 490.105(d)(3) NHS Limits

In section 490.105(d)(3), FHWA proposed requiring State DOTs to declare and describe NHS limits in their Baseline Performance Period Report at the beginning of each performance period for the purpose of target establishment, reporting, and progress evaluation and significant progress determination. To ensure consistency of network for target establishment, reporting, and progress evaluation and significant progress determination, the proposed language in section 490.105(d)(3) further specified that any changes in NHS limits during a performance period would not be accounted for until the following performance period. As explained in the NPRM, FHWA proposed this methodology because it recognized that if NHS limits changed after a State DOT establishes its targets, actual measured performance of the transportation network within the changed NHS limits would represent a different set of highways as compared to what was originally used to establish the target. As a result, this difference could impact a State DOT's ability to make significant progress toward achieving targets.

The FHWA received individual letters from ARC, Cemex USA, Oregon DOT, and Texas DOT and a joint letter from the ACPA and PCA in relation to dealing with changes in NHS limits during a performance period. The letter from Texas DOT stated that the proposed approach in dealing with NHS limit changes may cause ''overly burdensome'' bookkeeping to keep track of NHS network changes. A similar comment was found in the joint letter from ACPA and PCA and the letter from Cemex USA which stated that the proposed method does not take into consideration new pavements or additional lanes constructed, thereby inadvertently penalizing States for expanding the NHS as a means of upgrading performance. They recommended that the measures should reflect the changes in NHS limits. They also added that since the proposed measures are percentage-based, measures reflecting NHS changes would accurately take into consideration improvements made without ''artificially altering'' performance indicators.

The Oregon DOT commented that the proposed approach appears to be too ''inflexible'' and may not reflect how investment decisions are actually made during the performance period due to changing route priorities. They added that the proposed approach ''looks backward in the mirror rather than forward which is needed to incorporate up to date planning and policy.''

Finally, ARC agreed with the proposed approach that a baseline network must be identified and ''frozen'' for purposes of a reporting cycle, but they suggested that at regular intervals (*i.e.,* 2 years), each State DOT should be permitted to adjust their networks and targets as they feel appropriate in collaboration with FHWA. The ARC commented that permitting the network to change on a regular basis does create a slight ''apples to oranges'' problem with analyzing long-term progress, but added that changes to the NHS network in reality are likely to be ''infrequent and minimal'' in impact when compared to the overall network.

Some additional comments related to the NHS limits were received by FHWA. The TEMPO and Texas DOT commented that the criteria used to identify the NHS are still being developed. They added that if this issue is not addressed before reporting and evaluation deadlines are implemented, State DOTs and MPOs could expend significant resources collecting, analyzing, and maintaining data that is not part of the final NHS. They also indicated that some portions of the NHS will not be included in the performance management effort resulting in ''missing'' data segments. The TEMPO and Texas DOT recommended FHWA should not set deadlines for reporting on and evaluating performance measures until the NHS has been established nationwide and accepted by FHWA. The Seattle DOT made similar comments that before imposing NHS-specific regulatory requirements, FHWA should reassess current NHS designation criteria based on functional classification to consider critical routes based on multiple criteria such as person trip volumes rather than on vehicle miles traveled.

The FHWA evaluated the arguments made by commenters regarding the approach for dealing with potential NHS limits changes during a performance period. The FHWA recognizes that NHS limits will directly impact the performance data collection coverage, measure calculation, the extent of targets, significant progress determination, and determination of minimum levels for condition of pavements and bridges. The FHWA agrees with the comments from ACPA, Cemex USA, PCA, and Texas DOT that the proposed approach would exclude realigned and newly constructed NHS roads/lanes in the measure calculation as a means of improved condition/

performance. In addition to the impacts of NHS expansion, FHWA examined NHS contraction. In case of a NHS contraction, the approach proposed in the NPRM would have required State DOTs to report metrics for the part of NHS no longer designated as NHS for the entire performance period. Moreover, for both expansion and contraction cases, FHWA anticipates that communicating and explaining to the general public the condition/performance of NHS based on previous NHS limit (*i.e.,* baseline) would be particularly difficult. In addition to evaluating the comments, FHWA analyzed historical changes in the NHS network using HPMS data for each State. Based on the historical data, in general, FHWA found that NHS network changes are relatively small except when NHS expansion was required under MAP–21. In such case, FHWA plans to issue guidance to deal with mandated changes in NHS limits for implementing performance management.

After consideration of the comments and the issues associated with the proposed approach dealing with the NHS limit changes, FHWA revised section 490.105(d)(3) in the final rule. The State DOTs are no longer required to declare and describe NHS limits in their Baseline Performance Period Report so the changes in NHS limits during a performance period would be accounted for. Since the National Highway System Data Item in HPMS and the Highway System of the Inventory Route Data Item in NBI are required to be reported to FHWA annually together with condition metric data, NHS limits for pavement condition measures will come from the same dataset submitted to HPMS in the same year as the condition metric data is submitted. The NHS designation for bridge condition measures will come from the same NBI data set as the condition metric data of the same year. Accordingly, FHWA removed section 490.107(b)(1)(ii)(E) because State DOTs no longer have to declare and describe NHS limits in their Baseline Performance Period Report. Also, FHWA amended section 490.109(d)(4). The NHS information for the baseline conditions, for the purpose of the significant progress determination of the achievement of the pavement and bridge condition targets, will come from the data reported in HPMS and NBI in the year in which the Baseline Period Performance Report is due to FHWA. The FHWA believes that the revised approach will eliminate the burden of bookkeeping of the multiple data sets by State DOTs and MPOs and will improve communicating the performance with the public. The FHWA also believes that it will make the NHS extent consistent with other performance publications of State data (*e.g.,* Highway Statistics [15] and Condition and Performance Report to Congress [16]). Since the calculated measure reflects the NHS limit change, States DOTs and MPOs should consider anticipated NHS limit changes when establishing their targets.

Discussion of Sections 490.105(e)(1) and 490.105(f)(1) Implementation Timeline for State DOTs and MPOs

The FHWA proposed the requirements for State DOT and MPO performance targets in sections 490.105(e) and 490.105(f), respectively. Section 490.105(e)(1) specified the schedule for State DOT target establishment as ''not later than 1 year of the effective date of this rule and for each performance period.'' Also in the NPRM, section 490.105(f)(1) specified a schedule for MPO target establishment as ''no later than 180 days after the respective State DOT(s) establishes their targets.'' The proposed regulatory language specifying target establishment schedules came directly from the statutory language in MAP–21.[17] Accordingly, FHWA proposed a schedule in section 490.107(b) for State DOT target and progress reporting as the first report (*i.e.,* State Biennial Performance Report) that would be due to FHWA by October 1, 2016 and subsequent report due every 2 years on October 1 thereafter. The October 1, 2016, and subsequent biennial due dates are a statutory requirement.[18] To implement these statutory requirements in a consistent manner, FHWA proposed a definite period of time (*i.e.,* performance period) during which condition/performance would be measured, evaluated, and reported. The FHWA proposed a consistent time period of 4 calendar years that would be used to assess pavement and bridge conditions. The FHWA carefully examined this proposed time period so that it aligns with the timing of the biennial performance reporting requirements under 23 U.S.C. 150(e). This proposed time period is calendar year based so that it is consistent with data reporting requirements currently in place to report pavement and bridge conditions.

During the development of the NPRM, FHWA anticipated the final rule for the proposal to be effective no later than October 1, 2015. The Oregon DOT commented that the effective date would be difficult to meet and suggested FHWA consider a delayed effective date of January 2017. As stated in the preamble of the NPRM, the October 1, 2015 date would have allowed for at least a 1-year period for State DOTs to establish targets so that they can be reported in the first biennial performance report (*i.e.,* Baseline Performance Period Report) that would be due to FHWA by October 1, 2016. The FHWA also stated in the preamble of the NPRM that it recognizes that if the final rule is effective after October 1, 2015, the due date to report State DOT targets for the first performance period may need to be adjusted, or FHWA would need to issue implementation guidance that would provide State DOTs a 1-year period to establish and report targets.

The FHWA received numerous comments that the 1-year duration between the effective date of this rule and the first reporting of targets (*i.e.,* Baseline Performance Period Report for the first performance period) is difficult for State DOTs and MPOs to meet.

The AASHTO and Connecticut DOT commented that the process to collect/analyze data, understand the trends, and establish targets will require additional time and that the submission of the first Baseline Performance Period Report by October 1, 2016, is ''truly unrealistic.'' The AASHTO and Mississippi and Connecticut DOTs argued that the opportunity for ''cold weather States'' to collect data for baseline condition/performance of 2015 is limited because all data has to be collected between the effective date (October 1, 2015) and the end of calendar year 2015 for 2016 condition/performance reporting. The North Dakota DOT and Seattle DOT made similar comments as AASHTO did. The Michigan and Minnesota DOTs expressed their support for the AASHTO comments.

The Texas DOT commented that State DOTs will need more time to transition and measure the metrics required that are not currently collected, and to develop some history to establish the targets, especially for the Interstate since the proposed metric is based on the overall condition.

The Mississippi DOT commented that many State DOTs already have multi-year contracts in place for their data collection. They said that the changes related to the expanded NHS and

[15] Highway Statistics (FHWA): *https://www.fhwa.dot.gov/policyinformation/statistics.cfm.*

[16] Conditions and Performance Report to Congress (FHWA): *https://www.fhwa.dot.gov/policy/2013cpr/.*

[17] 23 U.S.C. 150(d)(1) and 23 U.S.C. 134(h)(2)(C).

[18] 23 U.S.C. 150(e).

additional data requirements would make it impossible for many State DOTs to meet the proposed reporting timelines. Furthermore, they said that if additional data required under this rule is obtained, State DOTs will not have the historical data to analyze trends to effectively establish targets. The AMPO, COMPASS, and TEMPO made similar comments that the timeline in NPRM for identifying baseline condition/performance and reporting targets for the first performance period is ''aggressive.'' They added that the proposed timeline affords little ability or is insufficient for States to identify reasonably attainable targets.

The Southeast Michigan Council of Governments (SEMCOG) commented that the additional and unfamiliar data requirements (*i.e.,* cracking, faulting, rutting, and roughness data) make it difficult to meet the accelerated timelines for collecting the data. They noted that the NPRM assumes that they will be able to work with the Michigan DOT and finish the reporting within 1 year. They commented that the reporting time will actually be much less than 1 year, especially in the first year. The Missouri DOT stated that including cracking, rutting, and faulting metrics under this rule needs to be delayed until national standards are developed and vetted through a quality control process. They added that these metrics will result in additional costs to collect, analyze, and manage the data.

The New York State DOT cited that FHWA intends to use HPMS as a primary mechanism to report pavement performance data. The New York State DOT recommended that State DOTs be provided adequate time and resources to implement the necessary process and system changes.

The Michigan DOT added that their pavement performance management ''took years to develop, test, and refine'' and recommended an alternative implementation schedule and process until the national measures mature enough that State DOTs become confident using them as the basis for investment decisions. The NYMTC ''strongly objected'' to the proposed October 1, 2015, effective date for the data collection and reporting requirements associated with the performance measure rules because they do not have sufficient information available about current pavement conditions using the proposed measures and data collection methods. They also added that, given the constraints on available data and analysis tools, they cannot predict the future conditions.

The AASHTO and Connecticut and Tennessee DOTs suggested providing State DOTs the opportunity to extend the deadline if they demonstrate that they are working toward and making progress in adopting all requirements. The AASHTO and Connecticut and North Dakota DOTs commented that the coordination for establishing targets will require additional time because it encompasses a wide range of performance areas that can be influenced by local and regional needs. The Michigan State Transportation Commission and Michigan Asset Management Council commented that FHWA must allow State DOTs sufficient time to adequately coordinate with local agencies after the rules are finalized but before implementation begins.

The AASHTO and Connecticut and Oregon DOTs recommended a 24-month phase-in period between the effective date and the first target reporting for the Interstate pavement and bridge condition measures in sections 490.307(a)(1) and (2) and 490.407(c). And, they recommended a 48-month phase-in period between the effective date and the first target reporting for the Non-Interstate NHS pavement condition measures in section 490.307(a)(3) and (4). The Alaska DOT&PF recommended at least a 4-year period to report all new data under this rule since the NHS has also changed with MAP–21. The AASHTO and Connecticut and Oregon DOTs also recommended delaying significant progress determination under section 490.109.

The NYMTC also asked FHWA to consider the impacts of this proposed rule on State DOTs and MPOs that must adjust their planning and programming processes to the new requirements under this rule. The NYMTC requested that FHWA lengthen the amount of time before penalties are imposed so that State DOTs and other agencies could make adjustments while they have the maximum amount of flexibility in the use of available funding.

The AASHTO and Connecticut and New Jersey DOTs commented that the time frame for enacting minimum condition level determination for bridges under section 490.413 is too short. They commented that State DOTs will have no time to assess their current situation and then implement reasonable projects to meet the 10 percent threshold. The AASHTO and Connecticut and Oregon DOTs recommended not determining minimum condition levels under sections 490.315 and 490.411 until 48 months after the effective date.

The FHWA appreciates the comments on the proposed timeline. The FHWA understands that collection of new data items, development of tools, coordination, planning process adjustments, and integrating with other regulatory requirements to implement this rule will take time and effort for State DOTs. The FHWA recognizes that data required in section 490.309 for the pavement condition measures is new to some State DOTs. Therefore, FHWA amended the proposed data collection timeline for the pavement condition measures to reflect the effective date of this final rule. (See discussion section for section 490.309(a) for data collection timeline for the pavement measures.) Accordingly, FHWA retains phase-in requirements related to the targets for Interstate pavement measures and significant progress determination for those targets, as provided in sections 490.105(e)(1) and 490.109(e)(3), respectively, so that the effective date of this final rule is reflected. The FHWA also retains the transition of non-Interstate pavement measure in section 490.313(e) as proposed.

In addition to the challenges associated with new data items, FHWA recognizes that State DOTs are challenged with NHS expansion, lack of historic data and analytical tools for establishing targets, additional coordination requirements, adjustment to their planning process, and integrating with other regulatory requirements. However, as stated previously, State DOT target establishment ''not later than 1 year of the effective date of this rule'' in section 490.105(e)(1) is a statutory requirement under 23 U.S.C. 150(d). The date for reporting progress toward targets of October 1, 2016 is also a statutory requirement in 23 U.S.C. 150(e). Therefore, FHWA cannot delay the due date of State DOT target establishment or reporting on performance targets.

Since this rule is being issued and effective after October 1, 2016, FHWA issued guidance [19] on the Initial State Performance Report on August 31, 2016, to provide State DOTs the opportunity to comply with the statutory deadline for the first performance report under 23 U.S.C. 150(e). In this guidance, FHWA recognized that State DOTs would not have established targets for the measures in this rule. The FHWA simplified the reporting requirement by only requiring a description of the planned processes for target establishment and coordination with relevant MPOs and other agencies that will occur in the selection of targets. The FHWA has amended the implementation timeline to reflect the

[19] FHWA Guidance: Initial State Performance Report: *http://www.fhwa.dot.gov/tpm/guidance/160831.cfm.*

effective date of this final rule. (See subsequent discussion in this section for more details on timeline adjustments.)

In response to the comments from AASHTO and Connecticut and New Jersey DOTs above, FHWA disagrees that the time frame for enacting minimum condition level determination for bridges on the NHS is too short and that State DOTs will have no time to assess their current situation and then implement reasonable projects to attempt to meet the 10 percent threshold. The MAP–21 was enacted in October 2012. In September of 2012, FHWA provided initial guidance through its MAP–21 Bridge Q&A Web site [20] on how FHWA intended to implement the statutory requirements under the 23 U.S.C. 119(f)(2). Additionally, State DOTs are familiar with the classification of structurally deficient as it had been used for decades to implement the Highway Bridge Program. Because of this familiarity, State DOTs are well aware of their current situation in regards to structurally deficient bridges on the NHS. Based on FHWA guidance provided on the MAP–21 Bridge Q&A Web site, which describes the implementation schedule of the minimum condition level determination, and the familiarity State DOTs have with the classification of structurally deficient, State DOTs have had sufficient time to take actions to meet the 10 percent threshold. Because of its long implementation history and State DOTs' familiarity with the classification of structurally deficient bridges, FHWA believes that implementing the requirement of 23 U.S.C. 119(f)(2) does not depend on the effective date of this rule. Moreover, FHWA has been examining NBI data that State DOTs have been reporting since the enactment of MAP–21 and found sufficient evidence that State DOTs are taking actions to meet the statutory requirement. For example, if the 2013 NBI data was used as the baseline for structurally deficient bridges carrying the NHS, then there were potentially 13 State DOTs that would have been affected by the penalty if the trend of percentage structurally deficient deck area of greater than 10 percent continued for another 2 years. However, based on the 2014 NBI data, the number of State DOTs that would be affected by the penalty dropped to eight. Based on 2015 NBI data, the number dropped even further to six State DOTs. This dramatic change in the potential number of States leads FHWA to conclude that some State DOTs have taken action in addressing their NHS structurally deficient bridges. Therefore, FHWA believes that a delay in implementing the 23 U.S.C. 119(f)(2) provision is not necessary.

The Louisiana DOT recommended the first data collection cycle, to be used in performance analysis, be pushed back to a later date. The Louisiana DOT cited a large number of conflicts between HPMS, the AASHTO specifications, the Fiscal Management Information System (FMIS) requirements for HPMS, and the proposed rules. They commented that these conflicts will not allow an ''apples to apples'' data comparison or analysis between the current year and future years, nor among States. However, the Louisiana DOT did not identify how delaying the start of the data collection would mitigate the perceived conflicts or how anything having to do with the FMIS impacts the data reporting for HPMS. The FHWA understands that State DOTs will need some time to adjust contracts and programs to meet the data reporting requirements and the final rule has identified the first reporting dates to be 2019 for Interstate routes and 2021/2022 for non-Interstate NHS routes.

A letter [21] from the State DOTs of Maine, New Hampshire, and Vermont recommended a bi-directional format to support FMIS, which intends to use HPMS data as its source. In the NPRM, FHWA proposed Interstate pavement condition data to be collected on both directions of the Interstate highway in section 490.309(b)(1)(i). However as a result of further studies,[22] FHWA amended section 490.309(b)(1)(i) so that the pavement condition data collection on Interstate is only required in one direction of highway, eliminating the need for examining a bi-directional format to support FMIS and the potential discrepancies with HPMS.

The AMPO and COMPASS stated that the process for amending Metropolitan Planning Agreements is a time consuming and requires considerable opportunity for public input. They recommended a timeline that could lead to more realistic targets. The AASHTO, NYMTC, and Oregon and Washington DOTs urged FHWA to delay the MPO target establishment requirement until the start of the second performance period. They argued that there will be lack of complete (*i.e.,* full extent) performance data for cracking, rutting, and faulting for the Non-Interstate NHS, where full extent data will only be collected for the second half of the first performance period, as described in sections 490.309(b)(2)(ii) and 490.313(e). They added that until complete data is collected and evaluated, the MPOs might have a difficult time understanding the complexities of this data and establishing targets. They also recommended delay because it will allow additional time for State DOTs and MPOs to further develop their collaborative efforts in response to this rule and the Asset Management Plan rule (23 CFR 515). The NARC commented that additional time for MPOs would be helpful because of the significant collaboration and the data collection requirements in this rule.

The SEMCOG expressed the opinion that a piecemeal approach is being used to develop the performance measures in this rule. This approach makes it difficult to identify the total system performance requirements, the complete data needs, and costs to collect the required data and to program and implement projects to address the performance measures.

The FHWA appreciates these comments and understands that implementing this rule takes time and effort for MPOs as they face similar challenges to State DOTs. In response to comments related to the Metropolitan Planning Agreement, FHWA amended the language in section 490.107(c)(1) to remove the requirement to use the agreement as the means to document how MPOs will report their established targets to their respective State DOTs. The FHWA also amended the language in section 490.105(f)(8) to remove the requirement to document the target adjustment process in the Metropolitan Planning Agreement. (See discussion sections for sections 490.105(f)(8) and 490.107(c)(1) for more details on Metropolitan Planning Agreement for MPO target adjustment and reporting, respectively.) The FHWA re-iterates that the State DOT target establishment schedule of ''not later than 1 year of the effective date of this rule'' in section 490.105(e)(1) and MPO target establishment schedule of ''no later than 180 days after the respective State DOT(s) establishes their targets'' in section 490.105(f)(1) are statutory requirements under 23 U.S.C. 150(d) and 23 U.S.C. 134(h)(2)(C), respectively. Therefore, to meet the statutory mandates, FHWA cannot delay the due date of the MPO target establishment. (See discussion on MPO implementation schedule in section 490.105(f)(1).)

[20] Question and Answer #2 at: *http://www.fhwa.dot.gov/map21/qandas/qabridges.cfm.*

[21] Docket Document FHWA–2013–0053–0096—*http://www.regulations.gov/#!documentDetail;D=FHWA-2013-0053-0096.*

[22] ''Evaluation of Pavement Conditions on the Interstate System: Preliminary Summary'', Rada 2015.

As discussed above and in the NPRM, FHWA described its plans in the event that the final rule would not be effective until after October 1, 2015. The FHWA stated in the NPRM that, if it becomes clear that the final rule will not be effective until after October 1, 2015, FHWA would consider adjusting the first performance period in the final rule or would issue implementation guidance that would provide State DOTs a 1-year period to establish and report targets. As this rule is issued and effective after October 1, 2015, providing State DOTs less than 1 year to establish targets prior to the October 1, 2016 report, FHWA has amended the timeline in the final rule. These adjustments are necessary to ensure that State DOTs have at least 1 year between the effective date of this rule and biennial performance reporting of their target while adhering to the statutory reporting due dates [23] under 23 U.S.C. 150(e). Therefore, as stated in the NPRM, FHWA amended the due date for State DOT on reporting their targets for the first performance period from October 1, 2016, to October 1, 2018. To accommodate the amendment of the reporting date for the first performance period, FHWA adjusted the start of first performance period (and start dates for subsequent performance periods) in the final rule so that target reporting could be aligned with corresponding performance periods. Although the due date for State DOT on reporting their targets for the first performance period is October 1, 2018, this amendment does not exempt State DOTs from the October 1, 2016, report required under 23 U.S.C. 150(e). As such, FHWA issued guidance [24] on the Initial State Performance Report on August 31, 2016, to provide State DOTs the opportunity to comply with the statutory deadline for the first performance reporting under 23 U.S.C. 150(e). In this guidance, FHWA recognized that State DOTs would not have established targets for the measures in this rule. The FHWA simplified the reporting requirement by only requiring a description of the planned processes for target establishment and coordination with relevant MPOs and other agencies that will occur in the selection of targets. Since this final rule was not effective by October 1, 2015, FHWA adopted the following in this final rule:

- State DOTs shall establish targets for the first performance period not later than 1 year of the effective date of this rule as specified in section 490.105(e)(1) to meet the statutory requirement in 23 U.S.C. 150(d).
- The MPOs shall establish targets for the first performance period no later than 180 days after the respective State DOTs establish their targets as specified in section 490.105(f)(1) to meet the statutory requirement under 23 U.S.C. 134(h)(2)(C).
- The first performance period shall begin on January 1, 2018, and shall end on December 31, 2021, and subsequent 4-year performance periods shall follow thereafter, as provided in as provided in section 490.107(b) and shown in Figure 1 below.
- The State DOTs will begin collecting Interstate pavement condition data (IRI, rutting (asphalt pavements), faulting (jointed concrete pavements), and Cracking Percent) in accordance with section 490.309(b)(1) in calendar year 2018.
- The State DOTs will begin collecting non-Interstate NHS pavement condition data (IRI, rutting (asphalt pavements), faulting (jointed concrete pavements), and Cracking Percent) in accordance with section 490.309(b)(2) in calendar year(s) 2020/2021.
- The State DOTs shall submit their first biennial performance report (*i.e.,* Baseline Performance Period Report for the first performance period) on October 1, 2018. Subsequent biennial performance reports are due every 2 years after the first biennial performance report, as provided in section 490.107(b).
- The FHWA will make first significant progress determinations after State DOTs report their Mid Performance Period Progress Report for the first performance period on October 1, 2020, and biennially thereafter.
- The FHWA will not make a determination of significant progress toward the achievement of 2-year targets for Interstate System pavement condition measures in calendar year 2020, as discussed in section 490.109(e)(3)(i).
- To meet the statutory requirement under 23 U.S.C. 119(f)(2), FHWA will make the first minimum bridge condition level determination in calendar year 2016 (by October 1, 2016) and in calendar year 2017 (by October 1, 2017) by considering structurally deficient as a classification given to a bridge which has significant load carrying elements in Poor or worse condition, or the adequacy of the waterway opening provided by the bridge is determined to be insufficient to the point of causing overtopping with intolerable traffic interruptions. Beginning with calendar year 2018 and each calendar year thereafter, FHWA will make the minimum bridge condition level determination by considering structurally deficient as a classification given to a bridge which has any component in Poor or worse condition, as defined in section 490.405 and described in section 490.411(b).
- The FHWA will make the first minimum Interstate pavement condition level determination by October 1, 2019, and each year thereafter, as provided in section 490.317.

[23] Report no later than October 1, 2016 and biennially thereafter.

[24] FHWA Guidance: Initial State Performance Report: *http://www.fhwa.dot.gov/tpm/guidance/160831.cfm.*

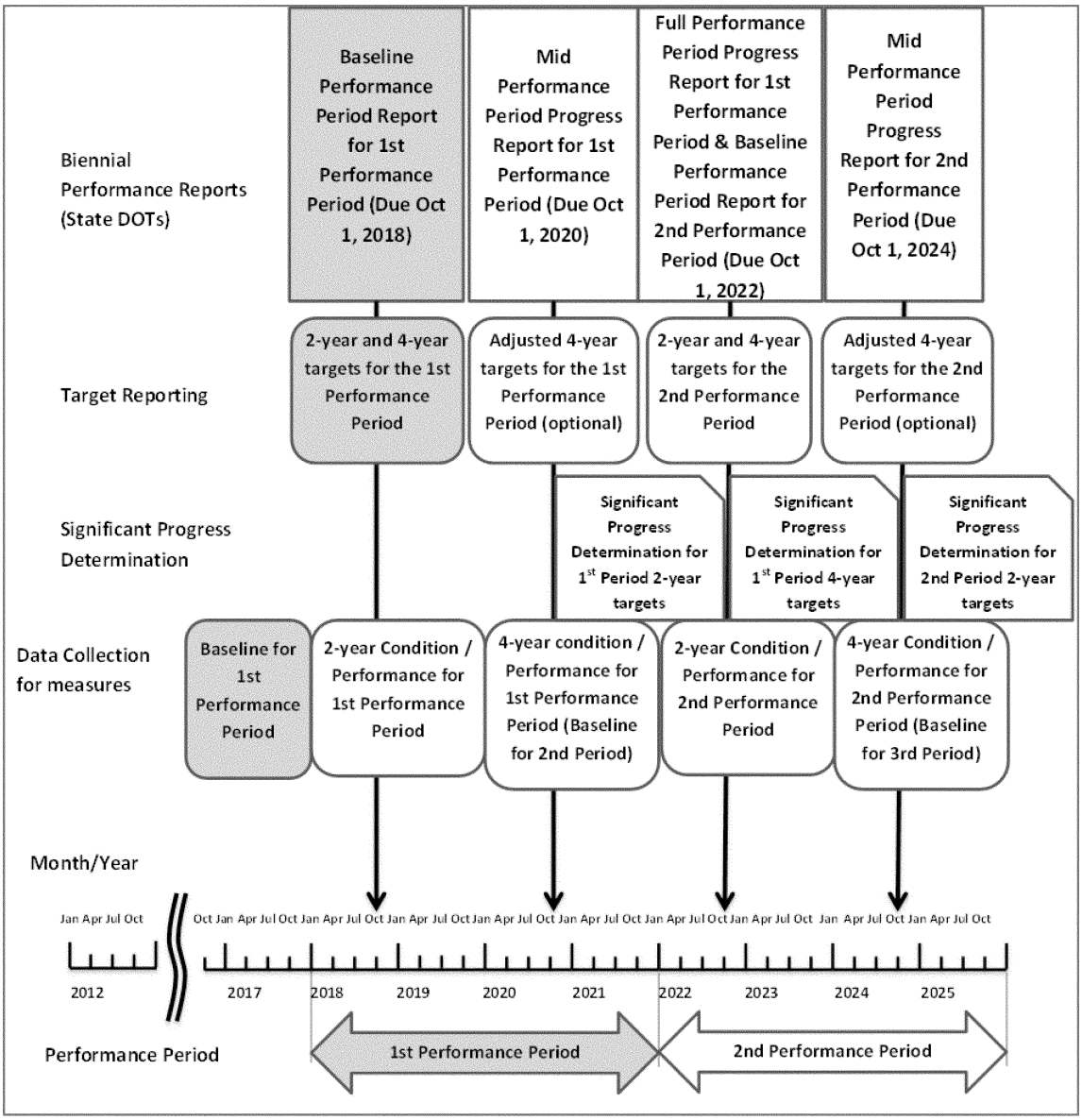

Figure 1 – Biennial Performance Reports – The Baseline Performance Period Report

The FHWA retains the language in section 490.105(e)(1), as proposed in the NPRM, because the due date for State DOT target establishment of ''not later than 1 year of the effective date of this rule'' in this paragraph is a statutory requirement under 23 U.S.C. 150(d).

Discussion of Sections 490.105(e)(2) and 490.105(f)(2) Target Coordination

Sections 490.105(e)(2) and 490.105(f)(2) specify State DOT and MPO coordination requirements for the establishment of targets, as provided in 23 U.S.C. 135(d)(2)(B)(i)(II) and 23 U.S.C. 134(h)(2)(B)(i)(II). In the NPRM, FHWA sought comment on alternative approaches that could be considered to effectively implement the coordination requirements under MAP–21.

The Mid-America Regional Council supported the language that encourages State DOT and MPO coordination ''to the extent practicable'' in target establishment. They also encouraged FHWA to offer guidance and share best practices of coordination among neighboring States and MPOs. The New York State Association of Metropolitan Planning Organizations (NYSAMPO) supported the language in section 490.105(e)(2). They also noted that a ''significant portion'' of the NHS in New York is owned by local governments and public authorities. They pointed out that the rule is silent on coordination with other owners and noted that they would support language requiring such coordination. The Orange County Transportation Authority made a similar comment and urged FHWA to include language to support MPO coordination with county transportation commissions and local DOT districts to establish targets and funding priorities, and to allow targets to be established at the sub-regional level.

The Mid-America Regional Council also commented that if State DOTs choose to establish additional targets, under section 490.105(e)(3), for urbanized areas, the rule should encourage coordination with the corresponding MPOs.

The Florida DOT shared their coordination efforts in their letter. The Florida DOT held performance measure workshops in 2014 and 2015 for the representatives of various State DOT Offices, Federal Transit Administration, MPOs, and FHWA. They stated that the workshops resulted ''in a rich dialogue with numerous ideas and opinions conveyed through discussion and in writing.'' The Florida DOT also indicated in their letter that a Performance Measurement Collaboration Task Force has been formed to coordinate performance measurement activities with FHWA, FTA, Florida's 27 MPOs, and the Florida Metropolitan Planning Organization Advisory Council. According to Florida DOT, the task force will continue to be used to exchange information during the rulemaking process and implementation. The Florida DOT also indicated that they plan to examine opportunities for data sharing, coordinated target establishment, and combined reporting where practical and efficient. They added that they will look for better ways to communicate the importance of good transportation performance to their State's economy and their quality of life. The FHWA appreciates the Florida DOT sharing their coordination efforts.

The Illinois DOT commented that the portions of NHS which are not under the jurisdiction of the State DOT will require coordination between Illinois DOT and MPOs on the selection of targets to ensure consistency, to the maximum extent practicable.

The AASHTO and the Connecticut and Oregon DOTs commented that performance measurement and management of NHS pavements and bridges are not the only part of the planning effort State DOTs must undertake in order to deliver a successful program to the public. They emphasized that other tasks and the level of effort and coordination with local agencies, the public, and other stakeholders is ''substantial.'' They urged FHWA to recognize that the entire process to collect/analyze data, understand the trends, and establish targets needs to be made across a wide range of performance areas that can be influenced by local and regional needs. Finally, they commented that ''coordination takes time.''

The AASHTO and the Oregon and Washington DOTs disagreed with the phrase ''to ensure consistency, to the maximum extent practicable'' in sections 490.105(e)(2) and 490.105(f)(2). They recommended that the regulatory text change to ''to facilitate or encourage consistency.'' They argued that this modification would reduce the chances of unreasonable expectations on State DOTs during the implementation.

An anonymous commenter [25] stated that coordination between key stakeholders (such as MPOs) and State DOTs needs to be more active. The commenter argued that requiring consultation with MPOs is not enough, and collaboration in goal development is important. Another anonymous commenter [26] noted the importance of performance and funding for the entire statewide-non-Interstate NHS and commented that a State DOT should not be allowed to give preference to funding projects on highways within their jurisdiction merely because they are within their jurisdiction.

The North Carolina DOT commented that most of the NHS in North Carolina is owned and operated by North Carolina DOT. They inquired whether or not coordination is ''relevant'' for North Carolina DOT.

The Northeast Ohio Areawide Coordinating Agency commented that, unless there is a financial rationale or specific policy to coordinate targets, coordination is unlikely, particularly as State laws varies regarding the responsibility of asset management.

The Southern California Association of Governments (SCAG) recommended clear provisions be provided that outline the exact coordination process between State DOTs and MPOs toward the establishment of performance targets. A private citizen, Joyce Dillard, commented that the development of consistent targets across a State can only be achieved when the targets take into account State required plans already in existence, such as the General Plan and its Circulation Element.

Finally, the NARC commented that the success of the national performance management program will rely in part on the extent to which State DOTs and their MPOs are able to work together, establish common ground, and find complementary purpose. They made reference to the discussion of section 490.105(e)(2) in the NPRM which states ''FHWA recognizes the need for State DOTs and MPOs to have a shared vision on expectations for future condition/performance in order for there to be a jointly owned target establishment process.'' The NARC stated that ''in some cases, this shared vision is a difficult—if not impossible—standard.'' The NARC encouraged FHWA to foster a ''shared vision,'' and recommended that FHWA ''take a deeper look'' into case studies, peer exchanges, and other input from State DOTs and MPOs in coordination for the establishment of targets. Finally, NARC commented that this is an opportunity to explore existing relationships between State DOTs and MPOs, and create stronger ties between them.

The FHWA appreciates the comments received regarding coordination. The FHWA plans to provide technical assistance to the State DOTs and MPOs through a number of means, including the issuance of guidance, conducting peer reviews and workshops, sharing best practices, and conducting training on topics such as target setting, implementation of performance-based planning and programming, interagency coordination, data collection, and performance progress reporting. The language in sections 490.105(e)(2) and 490.105(f)(2) mirror the statutory language in 23 U.S.C. 135(d)(2)(B)(i)(II) and 23 U.S.C. 134(h)(2)(B)(i)(II) and the regulatory language in 23 CFR 450.206(c)(2) and 23 CFR 450.306(d)(2)(iii) of the final Planning Rule. The FHWA believes the phrase ''selection of targets'' in 23 U.S.C. 135(d)(2)(B)(i)(II) and 23 U.S.C. 134(h)(2)(B)(i)(II) applies to adjustment of targets. The FHWA expects State DOT and MPO coordination requirements to be carried out for both establishment and adjustment of State DOT and MPO targets in sections 490.105(e)(2) and 490.105(f)(2). The final Planning Rule considers performance target selection as part of statewide and metropolitan transportation planning processes. Therefore, as part of the target selection process, State DOTs are required to consider the concerns of relevant Federal Land Management agencies and Indian tribal governments, and cooperate with affected local elected and appointed officials with responsibilities for transportation (or applicable regional transportation planning organization(s) identified in 23 CFR 450.208(a)), when selecting performance targets. (See 23 CFR 450.206, 23 CFR 450.208, and 23 CFR 450.306 of the final Planning Rule for more details on planning and coordination processes.) The FHWA also encourages State DOTs to coordinate with relevant MPOs and other stakeholders identified in 23 CFR 450.208(a) when establishing additional targets, described in section 490.105(e)(2).

The FHWA amended language in sections 490.105(f)(8) and 490.107(c)(1) to remove the requirement to document the target adjustment process and reporting of targets in the Metropolitan Planning Agreement. The FHWA replaced it with a requirement to

[25] Comment #: FHWA–2013–0053–0140.

[26] Docket Document FHWA–2013–0053–0135.

document the target adjustment process in a manner that is mutually agreed upon by State DOTs and MPOs. (See discussion sections for sections 490.105(f)(8) and 490.107(c)(1).) The FHWA recognizes that the performance management of NHS pavements and bridges are not the only part of the planning effort State DOTs and MPOs are required to undertake. The FHWA also recognizes that the level of effort and coordination with local agencies, the public, and other stakeholders is substantial and takes time. As discussed in section 490.105(d), the target scope (or the extent of target) for a State DOT consists of the entire NHS within the State, and the target scope for an MPO is the entire NHS within the metropolitan planning area. For this reason, State DOTs and MPOs are required to establish targets for the entire system within their respective areas, regardless of who owns the system. The section also requires close coordination between State DOTs and MPOs in selection of State DOT and MPO targets.

In response to the comments from North Carolina DOT and Northeast Ohio Areawide Coordinating Agency, coordination in the target selection process is required under 23 U.S.C. 135(d)(2)(B)(i)(II) and 23 U.S.C. 134(h)(2)(B)(i)(II), as stated above. Therefore, coordination is not an option, but it is a requirement under statute. Moreover, coordination for target selection is not bound by ownership of assets or asset management responsibilities, but must be consistent with coordination requirements in the statewide and metropolitan transportation planning processes.

In response to SCAG's comments, FHWA believes that the exact coordination process for target selection of an area should be determined by the relevant State DOTs and MPOs in that area. To help establish this process, FHWA plans to provide best practices, Webinar opportunities, and other resources on target selection coordination processes so that the coordination process is effectively implemented.

As stated earlier, the phrase ''to ensure consistency, to the maximum extent practicable'' in sections 490.105(e)(2) and 490.105(f)(2) is statutory language in 23 U.S.C. 135(d)(2)(B)(i)(II) and 23 U.S.C. 134(h)(2)(B)(i)(II). The FHWA retains the language in sections 490.105(e)(2) and 490.105(f)(2), as proposed in the NPRM.

Discussion of Section 490.105(e)(3) Additional Target

The FHWA proposed to allow State DOTs to establish additional targets for any of the proposed measures in subparts C and D, beyond the required statewide target. The State DOT may establish additional targets for any number and combination of urbanized areas and a target for the non-urbanized area for any or all of the proposed measures. This is intended to give State DOTs flexibility when establishing targets, and to aid State DOTs in accounting for differences in urbanized areas and the non-urbanized area. For example, a State DOT could choose to establish additional targets for a single urbanized area, a number of urbanized areas, or all urbanized areas separately or collectively. For State DOTs that want to establish a non-urbanized target, it would be a single target that applies to the non-urbanized area statewide. In the NPRM, FHWA sought comments on optional additional targets for urbanized and non-urbanized areas. The FHWA also sought comments on any other flexibility it could provide related to the voluntary establishment of additional targets.

The AASHTO and the Connecticut and New York DOTs supported the proposed approach for optional additional targets for urbanized and non-urbanized areas beyond the required statewide target. The AASHTO stated that State DOTs will voluntarily establish additional targets for various geographical boundaries on an ad hoc basis, working with their MPOs and local agencies. The AASHTO added that no other flexibilities need to be provided except that the establishment of additional targets should be at the sole discretion of State DOTs and not encumbered by Federal reporting or other requirements. The Connecticut and New York DOTs echoed AASHTO's comment.

The Georgia DOT commented that the proposed approach provides adequate flexibility in setting targets that will allow differentiation between urban and rural areas. The New Jersey DOT recommended allowing additional targets based on jurisdictional limits of each of the various stewards of the NHS and bridge ownership boundaries. The Oregon DOT recommended allowing States to establish targets of importance to them to provide flexibility in additional targets. The Tennessee DOT stated that they do not believe that it is necessary to provide for separate targets for urbanized and non-urbanized areas at this time.

The Texas DOT commented that optional targets for Texas may be needed for operational needs, but not for collective reporting. They added that many factors could come into play in optional targets, such as climate zones, subgrade, massive industry expansion (*e.g.,* energy sector). The Texas DOT incorporates these factors into district level target setting as it relates to pavement asset condition. They noted that these district level targets accumulate to one State target.

The Missouri State DOT commented that the additional targets should only be considered ''if the MPOs desire to have a different target than the State DOT.'' The Mid-America Regional Council and NARC commented that when a State DOT chooses to establish urbanized and non-urbanized area targets, State DOTs should be encouraged or required to coordinate those targets with relevant MPOs and rural transportation planning organizations. The TEMPO recommended usage of the terms ''rural,'' ''urban,'' and ''urbanized'' areas, and recommended urbanized area targets for the NHS. The NYMTC, PSRC, and Joyce Dillard recommended that additional flexibility should be provided for State DOTs to establish targets for metropolitan planning areas or urbanized areas. Joyce Dillard also suggested that MPO areas should be viewed in sub-areas for Transportation Management. The NYMTC added that one benefit of using metropolitan planning areas is that the boundaries are likely to change less frequently than urbanized area boundaries, allowing for a longer period of time during which measures would be evaluated on a consistent basis.

Questions were asked by several agencies regarding the additional targets. The Florida DOT asked the reason for the requirements in section 490.105(d)(3) for declaring and describing urbanized area boundaries within the State boundary in the Baseline Performance Period Report (required by section 490.107(b)(1)) for the additional targets. The Colorado DOT questioned the advantages of setting additional targets when these targets are not subject to significant progress determinations under section 490.109(e). Similarly, the NEPPP questioned the incentive of establishing additional targets.

The FHWA appreciates the comments on the voluntary establishment of additional targets and on other flexibilities it could provide. The FHWA strongly encourages State DOTs to monitor condition/performance by different geographic areas (*e.g.,*

jurisdiction, population, functional class, planning, terrain, and climate) to better understand the location dependency of condition/performance. The FHWA encourages State DOTs to establish targets beyond the required statewide targets where they feel necessary. The FHWA agrees with the comments from AASHTO and the Connecticut and New York State DOTs that State DOT established targets beyond the required statewide targets are at the sole discretion of State DOTs. This agreement was evident in the NPRM and in this final rule because the language does not require State DOTs to establish these targets. However, if a State DOT decides to establish urban or non-urbanized area targets beyond the required statewide targets, FHWA expects that State DOT to meet the coordination and reporting requirements under sections 490.105(e)(2) and 490.107(b). Although urban or non-urbanized area targets are not subject to significant determination under section 490.109, FHWA feels that the coordination and reporting requirements are necessary because once those targets are reported to FHWA (and become available to the public), the transparency and accountability of those targets will be expected by the public. For these reasons, FHWA retains the language in sections 490.105(e)(3)(i), (e)(3)(ii), and (e)(3)(iv) so that State DOTs have the maximum flexibility in monitoring condition/performance by different geographic areas and establishing targets beyond the required statewide targets, while preserving State DOT discretion to establish those targets. However, FHWA revised the language in section 490.105(e)(3)(iii) by striking the phrase ''available to FHWA'' in the paragraph because the urbanized area data reporting requirement is already covered in section 490.103(b).

Discussion of Section 490.105(e)(4) Performance Period Length and Schedule Alignment

The FHWA proposed a definitive performance period while recognizing that planning cycles and time-horizons for long-term performance expectations differ among State DOTs and MPOs. The FHWA understands that, although differences exist, it is necessary to provide for consistency in performance periods and proposed a 4-year performance period considering: (1) Providing for a link between the interim short-term targets (*i.e.,* 2-year and 4-year time horizons) to individual State DOT's long-term performance expectations as part of a performance-based planning and programming process; (2) ensuring the time horizon is long enough to allow for condition/performance change to occur through the delivery of programmed projects; (3) aligning the schedule of reporting on targets and the evaluation of progress toward achieving the targets with the biennial performance reporting requirements under 23 U.S.C. 150(e); and (4) reporting targets using a consistent performance period as part of the evaluation of State DOT effectiveness in the performance-based planning process provided to the Congress, as required by 23 U.S.C. 135(h). Therefore, 2-year targets represent the anticipated or intended condition/performance level at the midpoint of each performance period, and 4-year targets represent the anticipated or intended condition/performance level at the end of each performance period. As stated in the NPRM, it is important to emphasize that established targets (2-year targets and 4-year targets) should be considered as interim conditions/performance levels that lead toward the accomplishment of longer term performance expectations in a State DOT's long-range statewide transportation plan [27] and NHS asset management plans.[28]

Two main issues on the proposed 4-year performance period were raised by the commenters: (1) The 4-year performance period duration is too short for noticeable changes in the condition of bridges and pavements and for demonstrating the impact of the investments [29] and (2) the timeline of the performance periods does not align with planning cycle of State DOTs and MPOs.[30]

The ASCE commented that the proposed regimen of performance period and progress reporting ''is in accordance with the intent of MAP–21 and will help document the strides that States are making to improve asset conditions.'' They also recommended that FHWA pay particularly close attention to the investment strategies section of progress reviews to help ensure that States are prioritizing investment decisions in a way that will help them reach their intended targets in accordance with national goals. Nicholas Cazares [31] commented that the proposed approach of performance period is ''reasonable.'' The Center for American Progress commented that a 4-year performance period is of adequate length to allow States to ''make or fail to make progress.''

However, AASHTO and the California, Connecticut, and Texas DOTs commented that the condition of bridges and pavements does not change a great deal in relatively short time periods (*i.e.,* 2-year and 4-year). Additionally, the AASHTO and the Texas DOT provided an example of ''a bridge built with a design life of 75 years does not normally show a great amount of change from one inspection cycle to the next (every 2 years).''

The AASHTO, Metropolitan Transportation Commission, Nashville Area MPO, Orange County Transportation Authority, Oversight Committee for the California Local Streets and Road Needs Assessment, Rural Counties Task Force, SCAG, and TEMPO and the State DOTs of California, Colorado, Connecticut, Iowa, New Jersey, and Texas commented that ''planning, programming, project delivery, data collection, data reporting of projects'' typically takes much longer than 4 years, so the impact of infrastructure investment programs on condition/performance would be difficult to demonstrate with short-term targets (2-year and 4-year targets). The AASHTO and Connecticut and New York DOTs recommended providing State DOTs and MPOs the flexibility to voluntarily establish long-term targets (10 years or more) outside of the regulatory framework and recommended report progress on a 4- or 5-year interval. The Metropolitan Transportation Commission, Nashville Area MPO, Orange County Transportation Authority, the Oversight Committee for the California Local Streets and Roads Needs Assessment, and the Rural Counties Task Force recommended target establishment cycles between 5 and 10 years. The SCAG and TEMPO recommended that performance periods should be at least 10 years. The California and Texas DOTs recommended a 10-year performance period with a 5-year mid performance period progress report. The New York DOT also suggested a 5-year

[27] 23 U.S.C. 135(f).

[28] 23 U.S.C. 119(e).

[29] AASHTO; Transportation for America; the Southeast Pavement Preservation Partnership; the State DOTs of California, Connecticut, Idaho, Iowa, Minnesota, Montana, New Jersey, New York State, North Dakota, South Dakota, Texas, and Wyoming; Rural Counties Task Force; the Organ County Transportation Authority; the Oversight Committee for California local Streets and Road Needs Assessment; TEMPO; the Metropolitan Transportation Commission, the Southern California Association of Governments; Nashville Area MPO.

[30] State DOTs of Connecticut, New York, and Texas, the National Association of Regional Councils, the New York State Association of Metropolitan Planning Organizations, the New York Metropolitan Transportation Council, the Association of Metropolitan Planning Organizations, Atlanta Regional Commission, the Association of Texas Metropolitan Planning Organizations, and the Community Planning Association of Southwestern Idaho.

[31] Docket Letter FHWA–2013–0053–0078.

reporting cycle. The North Carolina DOT suggested 6- to 8-year goals for the bridges. The State DOTs of Idaho, Montana, New York, North Dakota, South Dakota, and Wyoming recommended a longer reporting cycle. Transportation for America recommended the reporting period be 8 or 10 years.

The letters from AMPO, COMPASS, Iowa DOT, Nashville Area MPO, SEMCOG, TEMPO, and Transportation for America suggested that the performance period should coincide with State DOT and MPO Long Range Plan (LRP) cycles. Transportation for America stated that not aligning the performance period with the LRP cycle ''creates a disincentive for these important entities to engage in the performance measure targeting and investment process or place an undue burden for these entities to conduct planning and target setting outside the planning process.'' The AMPO and COMPASS added that the misalignment of performance periods may cause confusion when discussing baseline conditions and targets within the LRP.

The Iowa DOT indicated that due to their 5-year planning and program development cycle, much of the investment planned for the time period of 2016 through 2020 will already be set by the time these rules go into effect. They added that they have limited ability to make changes, and it may take some time for them to redirect investment, if the national measures indicate different investment prioritization. Similarly, North Carolina DOT indicated that the 2 and 4 year periods will result in their State setting targets based on work that is already planned rather than targets that represent desired long-term system improvement.

The TEMPO did not support the 4-year frequency proposal and argued that MAP–21 does not specify target dates, ranges, or frequencies. They added that State DOTs and MPOs should be allowed to fulfill the continuing, cooperative, and comprehensive process as it relates to the establishment of feasible performance targets and their use in planning activities and documents. They also made a comment that State DOTs and MPOs should establish appropriate targets and meet the statutorily required biennial progress report for each target. Lastly, they rejected any specific target year or target setting frequency proposed by other entities under this and all other related rulemakings.

Finally, the Minnesota DOT indicated that the proposed framework requiring 4-year performance periods with both 2-year targets and 4-year targets may be overly complex.

The FHWA is aware that pavement and bridges deteriorate slowly and agrees with the comments from AASHTO and the State DOTs of California, Connecticut, and Texas. However, it is important to recognize the difference between condition changes for individual pavement sections or individual bridges over time versus condition changes of system network or system deck areas over time. To confirm this difference, FHWA examined both pavement and bridge condition trends using the proposed condition measures and found noticeable changes over 2-year and 4-year time periods.[32] This is also evident in the letter submitted by Oregon DOT [33] for their bridge condition trends using the proposed bridge measures. This analysis provided sufficient evidence for FHWA to believe that the magnitude of percentage of system changes in Good and Poor condition for bridges is noticeable.

As stated in the NPRM, established targets (2-year target and 4-year target) would need to be considered as interim conditions/performance levels that lead toward the accomplishment of longer term performance expectations in State DOT long-range statewide transportation plans [34] and NHS asset management plans.[35] In order to avoid confusion, FHWA used the term ''longer-term performance expectations'' in the NPRM to distinguish between longer term targets and the interim anticipated condition/performance (*i.e.,* 2-year and 4-year targets) toward those longer-term performance expectations. The FHWA recognizes the importance of considering a longer time horizon for planning and programming projects that considers and evaluates temporal tradeoffs between feasible improvements for more efficient and effective investment decisions. The FHWA strongly recommends that State DOTs and MPOs consider longer time horizons, which look beyond 4 years (*i.e.,* multiple performance periods), for planning and programming of projects so identification and selection of those projects is guided by the longer term performance expectations. As indicated above, the purpose of the performance period is simply to measure and evaluate condition/performance, which should not be assumed to be a ''planning, programming, project delivery, data collection, data reporting'' cycle of individual improvement projects or a program of projects. Thus, the performance period and LRP cycles look at different periods of time and do not have to be aligned to be effective. For these reasons, FHWA believes that the performance period does not need to be aligned with the current LRP cycles of State DOTs and MPOs. Therefore, FHWA retains the intent of the proposed language in sections 490.105(e)(4) and (e)(5) in the final rule. In sections 490.105(e)(4)(iii) and (e)(4)(iv), FHWA added the phrase ''for the measures in paragraphs (c)(1) through (c)(3) of this section'' to codify the specific measures being discussed. This addition does not change the intent of the paragraph.

Discussion of Section 490.105(e)(5) State DOT Reporting

Because there were no substantive comments on section 490.105(e)(5), FHWA made no changes.

Discussion of Section 490.105(e)(6) Target Adjustment

The FHWA proposed that State DOTs may adjust their established 4-year targets when they submit their Mid Performance Period Progress Report (described in section 490.107(b)(2)). This language recognizes that State DOTs would need to consider many factors in establishing targets that could impact progress, such as uncertainties in funding, changing priorities, and external factors outside the control of State DOTs. This target adjustment allowance is limited to the Mid Performance Period Progress Report, and is not allowed at any other time during the performance period. In the NPRM, FHWA expressed that this frequency of adjustment allows a State DOT to address changes they could not have foreseen in the initial establishment of 4-year targets while still maintaining a sufficient level of control in the administrative procedure necessary to carry out program requirements in an equitable manner. The MPOs impacted by a State DOT's adjustment of targets have the option to adjust their target by either: (1) Agreeing to plan and program projects so that they contribute toward the adjusted State DOT target for that performance measure or (2) committing to a new quantifiable target for that performance measure for its metropolitan planning area when a State DOT adjusts their target, as described in section 490.105(f)(7). The Metropolitan Transportation Commission expressed

[32] FHWA (2015) analysis results have been included in the Docket with the filename ''NHS Bridge Condition Changes 2015 09 29.''

[33] NPRM Comment FHWA–2013–0053–0161: *https://www.regulations.gov/document?D=FHWA-2013-0053-0161.*

[34] 23 U.S.C. 135(f).

[35] 23 U.S.C. 119(e).

their support for the proposed approach and stated that the ''flexibility of revising targets in mid-stream will improve the ability of State DOTs and MPOs to more accurately predict future performance achievement.'' The Illinois DOT expressed their desire for FHWA to retain the language in section 490.105(e)(6). However, the Center for American Progress and Transportation for America opposed the proposed language by stating that the proposed rule provides State DOTs with too much flexibility when establishing performance management targets and recommended that the rule should not allow State DOTs to adjust targets. Transportation for America stated that section 490.105(e)(6) is ''directly against the intent of Congress for the nation's performance management program to increase accountability and transparency of the Federal-aid highway program and improve project decision making through performance-based planning and programming.'' They added that section 490.105(e)(6) ''provides State DOTs blanket approval to amend their self-established targets after just 2 years without any criteria'' and amending self-established targets is ''unnecessary and contradictory to congressional intent.''

The AASHTO and the State DOTs of Connecticut, Missouri, Oklahoma, and Oregon recommended that State DOTs should be allowed to adjust targets annually. The South Dakota DOT stated that MAP–21 clearly provides that individual State DOTs establish their own targets. However, they believe that the proposed rule suggests that FHWA can restrict State DOTs' authority to establish targets, notably as to when targets can be revised. They added that FHWA ''must fully respect a State's authority to set and revise targets.''

The FHWA disagrees with the comment made by Transportation for America that its approach is ''unnecessary and contradictory to congressional intent'' and may reduce accountability and transparency of the Federal-aid highway program. As stated previously, the language in section 490.105(e)(6) is a result of FHWA's recognition that State DOTs have to consider many factors in establishing targets that could impact progress such as uncertainties in funding, changing priorities, and external factors outside the control of State DOTs.

Although the flexibility of adjusting target is granted, FHWA does not believe this approach reduces the accountability associated with targets and transparency in adjusting targets. First, as stated previously, the target adjustment allowance is limited to the Mid Performance Period Progress Report and not allowed at any other time during the performance period.

Second, the 4-year target adjustment through the Mid Performance Period Progress Report will provide a more consistent method for significant progress determinations under section 490.109. The FHWA felt it is necessary to provide State DOTs the same opportunity to make significant progress for 4-year targets as for the 2-year targets. As shown in Figure 2 below, both 2-year and 4-year targets for the first performance period are reported to FHWA by October 1, 2018. Those 2-year targets will be subjected to a significant progress determination under section 490.109 after the Mid Performance Period Progress Report is submitted on October 1, 2020. Therefore, for the 2-year targets, the duration between target reporting and significant progress determinations is about 2 years. However, for 4-year targets, the duration between target reporting and significant progress determination is about 4 years because the targets are reported on October 1, 2018, and the significant progress determination will be made after the Full Performance Period Progress Report is submitted on October 1, 2022. Allowing the adjustment of the 4-year target in the Mid Performance Period Progress Report provides the opportunity to make the duration between target reporting and significant progress determination about 2 years, which is consistent with 2-year targets.

Third, this rule includes section 490.107(b)(2)(ii)(E) which requires State DOTs to include in their Mid Performance Period Progress Report a discussion on the basis for the adjustment and how the adjusted target supports expectations documented in longer range plans (*e.g.,* the State asset management plan and the long-range statewide transportation plan).

Finally, a State DOT's discussion on targets and adjustment will be available on a public Web site to ensure transparency and accountability in the process.

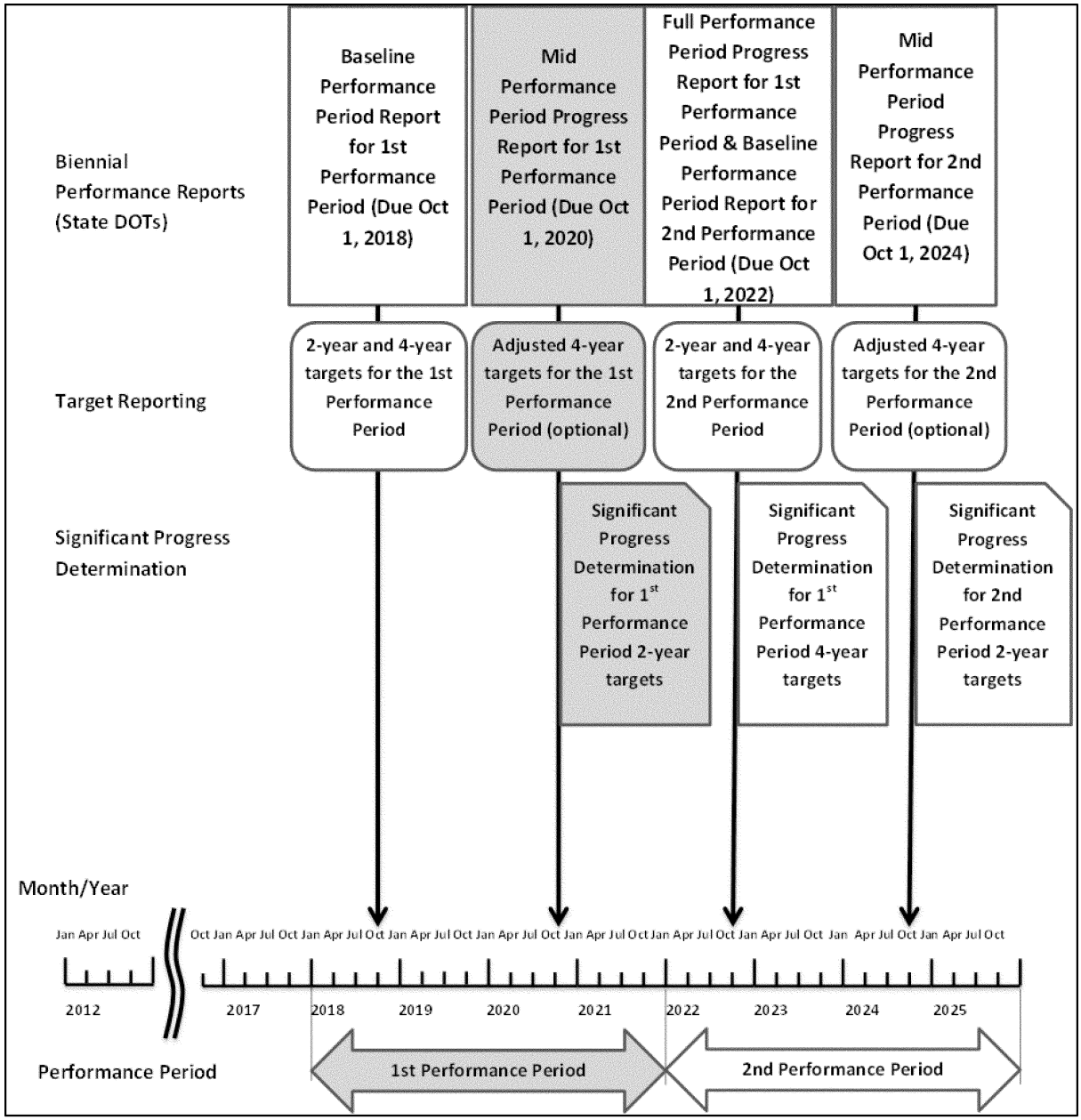

Figure 2 – State DOT Target Adjustment in Mid Performance Period Progress Report

The MAP–21 gives FHWA the discretion to establish requirements for targets such that any targets a State DOT establishes will achieve the overall requirements of the program. The FHWA believes State DOTs have the authority and flexibility to establish targets for the performance measures. However, contrary to South Dakota DOT's comment, FHWA does not believe MAP–21 provides State DOTs the authority to adjust or revise targets at their discretion. Instead, FHWA believes that the statute provides FHWA the authority to establish requirements for targets. The FHWA feels that some requirements must be established so that accountability and transparency are instilled in the performance management process. The FHWA also believes that these requirements for targets are consistent with six [36] of the

[36] Six of the Nine principles used in the development of proposed regulations for target establishment criteria: *www.regulatons.gov*, Docket FHWA–2013–0053:

- Ensure for Consistency—provide a sufficient level of consistency, nationally, in the establishment of measures, the process to set targets and report expectations, and the approach to assess progress so that transportation performance can be presented in a credible manner at a national level.
- Increase Accountability and Transparency—consider an approach that will provide the public and decision makers a better understanding of Federal transportation investment needs and return on investments.
- Consider Risk—recognize that risks in the target establishment process are inherent, and that performance can be impacted by many factors outside the control of the entity required to establish the targets.
- Understand that Priorities Differ—recognize that State DOTs and MPOs must establish targets across a wide range of performance areas, and that they will need to make performance trade-offs to establish priorities, which can be influenced by local and regional needs.
- Recognize Fiscal Constraints—provide for an approach that encourages the optimal investment of Federal funds to maximize performance but

nine principles listed in the NPRM preamble that were considered in the development of the proposed regulation.

The biennial reporting cycle, as shown in Figure 2 above, has the appearance of only allowing State DOTs to incorporate uncertainties 2 years in advance. However, as shown in Figure 2 above, the actual duration (*i.e.,* from Mid Performance Period Progress Report due date, October 1, to the end of the performance period) State DOTs have to incorporate uncertainties is shorter than 2 years. For example, as shown in Figure 2, the 4-year target established in 2018 (the first State Biennial Performance Report) may be adjusted in 2020 (the second State Biennial Performance Report due on October 1, 2020). Note that the 4-year target for the first performance period is the anticipated condition/performance level at the end of each performance period (December 31, 2021). As discussed in section 490.105(e)(4), 4-year targets would reflect the programmed improvement projects anticipated to be delivered, and their condition/performance to be measured, by the end of that performance period. Therefore, FHWA believes that target adjustment, in October 2020 for the anticipated condition/performance as of December 2021, provides State DOTs a sufficient level of control in the administrative procedure necessary to carry out these program requirements in a reasonable manner. Note that duration from October 2020 to December 2021 is 15 months, not 2 years.

Annual target adjustment, as suggested by AASHTO and others, would be adjusting the 4-year target (the anticipated condition/performance as of December 2021) during calendar year 2021. The FHWA believes the transparency of target and the target establishment process will be compromised if targets are allowed to be adjusted close to the end of the assessment period. Therefore, FHWA retains the language in section 490.105(e)(6) that allows State DOTs to only adjust their established 4-year targets when they submit their Mid Performance Period Progress Report.

In the NPRM, FHWA proposed that, if an MPO had originally agreed to accept the State DOT's targets and the State DOT adjusts them, the MPO would need to revisit its targets. Several MPOs and MPO associations, including NARC and TEMPO, argued that the final rule should explicitly state that when a State DOT chooses to adjust targets, an MPO is not required to also adjust its own established targets. The commenters suggested that a State DOT should be required to coordinate with the MPO if the State DOT adjusts its targets, just as State DOTs are required to do when establishing initial targets. The TEMPO recommended that any target adjustments proposed by a State DOT that directly impact an MPO's planning area should be made jointly with the MPO. The FHWA agrees with these comments to implement the target selection coordination requirements under 23 U.S.C. 135(d)(2)(B)(i)(II). Therefore, FHWA added language in section 490.105(e)(6) that if a State DOT decides to adjust their 4-year targets then it must coordinate with relevant MPOs.

Discussion of Section 490.105(e)(7) Phase-in Requirements for Interstate Pavement Measure

In the NPRM, FHWA recognized that some State DOTs may not be able to meet all data requirements in section 490.309(b)(1) prior to the start of the first proposed performance period for the Interstate System pavement condition measure. As a result, FHWA proposed the following for the measures in section 490.307(a)(1) and (a)(2) in the NPRM:

- State DOTs establish their 4-year targets and report these targets in their Baseline Performance Period Report, required under section 490.107(b)(1);
- State DOTs are not required to report 2-year targets and baseline condition/performance in their Baseline Performance Period Report; and
- State DOTs update the baseline condition/performance in their Baseline Performance Period Report, with the 2-year condition/performance in their Mid Performance Period Progress Report, described in section 490.107(b)(2)(ii)(A). Also, State DOTs may adjust their 4-year targets, as appropriate.

The State DOTs of Maine, New Hampshire, and Vermont commented that the phase-in process for the Interstate pavement condition proposed in the NPRM only relieves State DOTs from reporting baseline condition and 2-year targets, but ignores all other new requirements. They commented that establishing both 2 and 4-year targets will require the same baseline data. They questioned whether relieving only the 2-year target was an oversight in the NPRM, and if FHWA should also delay the establishment of 4-year targets. They requested additional clarification and guidance on how to establish 4-year targets in the absence of baseline condition data. The New Jersey DOT made a similar comment stating that it is impractical to establish and report 4-year targets in the absence of baseline condition information and requested clarification of the requirement to report 4-year targets when a baseline condition/performance reporting is not required. Texas DOT stated that establishing the targets will be challenging since some State DOTs may not have historical information for some of the metrics in this rule and requested guidance on how these measures could be phased in along with new metrics.

During the development of the NPRM, FHWA considered numerous ways for State DOTs to meet the target and progress reporting requirements under the 23 U.S.C. 150(d)(1) and 150(e), which require State DOTs to establish the first set of performance targets one year after the effective date of the final rule and to report those targets not later than October 1, 2016.[37] The FHWA felt at the time of the development of the NPRM that some State DOTs may not be able to meet the new data reporting requirements for Interstate pavement condition, as provided in section 490.309(b)(1), until after the start of the first proposed performance period. The FHWA had to consider how State DOTs could meet the statutory requirements. The FHWA also realized that those State DOTs would encounter difficulties in establishing 4-year targets without sufficient data or the baseline condition/performance for Interstate pavement condition measure for the first performance period. Therefore, FHWA allowed State DOTs to estimate their initial 4-year target. This would be done with the understanding that State DOTs would not have baseline condition when the target was first established and State DOTs would be provided an opportunity to adjust their estimated 4-year target through Mid Performance Period Progress Report 2 years later. Their actual 2-year condition in the Mid Performance Period Progress Report would become the baseline condition for the first performance period.

The FHWA has considered the comments and examined State DOTs' ability to implement the data requirements in section 490.309(b)(1) for the Interstate pavement measures with respect to the updated implementation timeline in Figure 2 above. As provided in section 490.309(a), the first data collection cycle

recognize that, when operating with scarce resources, performance cannot always be improved.

- Provide for Flexibility—recognize that the MAP–21 requirements are the first steps that will transform the Federal-aid highway program to a performance-based program and that State DOTs, MPOs, and other stakeholders will be learning a great deal as implementation occurs.

[37] "4 years after the date of enactment of the MAP–21" stipulated in 23 U.S.C. 150(e).

(1-year cycle) will be in calendar year 2018. Therefore, assuming this final rule is effective in calendar year 2016, some State DOTs will not have the baseline conditions for Interstate pavement measures at the time of target reporting in Baseline Performance Period Report in calendar year 2018. The FHWA understands that it will be difficult to estimate targets without the baseline condition data for some State DOTs. However, State DOT target establishment ''not later than 1 year of the effective date of this rule'' in section 490.105(e)(1) is a statutory requirement under 23 U.S.C. 150(d). Therefore, to meet the statutory mandate, FHWA cannot delay the due date of State DOT target establishment. Therefore, as stated above, FHWA has allowed State DOTs to estimate their initial 4-year target. This would be done with the understanding that State DOTs would not have baseline condition when the target is first established and State DOTs would be provided an opportunity to adjust their estimated 4-year target through Mid Performance Period Progress Report 2 years later. Their actual 2-year condition in the Mid Performance Period Progress Report would become the baseline condition for the first performance period. Therefore, FHWA retains the phase-in requirements for Interstate pavement measure in section 490.105(e)(7) as proposed in the NPRM.

Discussion of Section 490.105(f) MPO Targets

Section 490.105(f) describes MPO requirements for the establishment of targets for all measures identified in section 490.105(c). The MPOs are required to implement the 23 U.S.C. 134(h)(2)(B) target establishment provisions in a manner that provides for a level of consistency necessary to evaluate and report progress at both the national and MPO level.

Discussion of Section 490.105(f)(1) MPO Target Schedule

To meet the statutory requirements in 23 U.S.C. 134(h)(2)(C), section 490.105(f)(1) requires each MPO to establish 4-year targets no later than 180 days after the relevant State DOT establishes its targets.

As discussed in the combined discussion for sections 490.105(e)(1) and 490.105(f)(1), FHWA recognizes that the level of effort and required coordination for selecting performance targets is substantial and takes time. However, to meet the statutory requirements in 23 U.S.C. 134(h)(2)(C), FHWA retains the language in section 490.105(f)(1).

In the NPRM, FHWA attempted to develop these target establishment requirements so that they could be met by all MPOs. Recognizing that MPOs vary in size, capability, resource availability, and ability to establish performance targets, FHWA proposed that they only be required to establish 4-year targets and have target establishment options, as provided in section 490.105(f)(4) of the NPRM (section 490.105(f)(3) of the final rule). The FHWA proposed MPO target establishment options: (1) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT targets or (2) committing to quantifiable targets for their metropolitan planning area.

The NARC expressed their appreciation for FHWA's recognition of the burden an MPO faces in establishing targets and not requiring them to establish 2-year targets. However, Transportation for America stated that this rule lacks consistency as State DOTs are required to establish both a 2-year and 4-year targets while MPOs are only required to establish 4-year targets. The FHWA considered these comments and determined that because MPOs vary in capability, resources, and their ability to establish performance targets it is important that the measures be structured in a way that allows all MPOs to meet the requirements in this rule. The FHWA retains the proposed language in NPRM section 490.105(f)(1)(i), in the final rule.

Section 490.105(f)(1)(ii) is reserved.

The FHWA retains the language of section 490.105(f)(2), as proposed in the NPRM. (See discussion for section 490.105(e)(2).)

The FHWA deleted the language in section 490.105(f)(3) of the NPRM because this paragraph is redundant with what is already in section 490.105(f)(1). Subsequent paragraphs in section 490.105(f) were renumbered in the final rule.

Discussion of Section 490.105(f)(3) and (4) MPO Target Establishment Option and MPOs Serving a Multistate Metropolitan Planning Area

In the NPRM, FHWA proposed MPO target establishment options that would provide for a level of consistency necessary to evaluate and report progress at an MPO level, while providing for a degree of flexibility to support metropolitan planning needs. The FHWA also attempted to develop these target establishment requirements so that they could be met by all MPOs, recognizing that MPOs vary in capability, resource availability, and ability to establish performance targets. Therefore, FHWA proposed in section 490.105(f)(4) that MPOs would establish targets specific to the metropolitan planning area by either: (1) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT targets, or (2) committing to quantifiable targets for their metropolitan planning area. The proposed language gave MPOs two options to establish targets. The MPOs could establish their own quantifiable targets. Alternatively, recognizing that the resource level and capability of some MPOs to reliably predict performance outcomes varies across the country, FHWA proposed an approach that would allow MPOs that did not want to establish their own quantifiable target to establish targets by supporting State DOT targets for performance. The FHWA also stated in the NPRM that regardless of which option MPOs choose to establish targets, MPOs may need to work with relevant State DOTs to coordinate, plan, and program projects for their planning area.

The NARC expressed their appreciation for the flexibility provided in section 490.105(f)(4) of the NPRM (section 490.105(f)(3) in the final rule), which gives an MPO target establishment options. Moreover, they supported flexibility that emphasizes local transportation priorities in establishing targets and allows MPOs to establish targets that represent a decline in pavement or bridge conditions, if dictated by local priorities. The Connecticut DOT, Mid America Regional Council, and NYSAMPO expressed their support for the proposed MPO target establishment options. However, the Center for American Progress opposed the options, stating that MPOs should be required to establish quantitative performance targets.

The Northeast Ohio Areawide Coordinating Agency stated that if State funds are distributed with a focus on improving capacity, MPOs should have the freedom to establish regional targets that are realistic to the level of funding an MPO receives for maintenance separate from the State DOT goals. The Iowa DOT suggested FHWA should consider a waiver process by which the performance monitoring requirements for MPOs in those States where State DOTs hold sole programming authority over the State's NHPP funding allocation. This would effectively eliminate the MPOs' ability to impact the NHPP. The Connecticut DOT commented that many of the smaller MPOs do not currently have the resources to collect and analyze this data so this is likely to put additional

burdens on State DOTs. They advocated that any MPO electing to establish their own targets should be required to collect and analyze whatever data is needed to support their plan, if that data is not already available from State DOT or other entities. Because FHWA believes that MPOs vary in size, capability, resources, and ability to establish performance targets, FHWA disagrees with the Center for American Progress's comment to require that MPOs only be allowed to establish quantifiable targets. The FHWA believes that performance management practices will continuously improve as State DOTs and MPOs implement the requirements under this rule. The FHWA anticipates that more MPOs will be able to establish their own quantitative targets in the future as the performance management practices mature.

In response to the comments from Northeast Ohio Areawide Coordinating Agency and Iowa DOT, FHWA emphasizes that regardless of who controls funds or programming authority, coordination in target selection is required under 23 U.S.C. 135(d)(2)(B)(i)(II) and 23 U.S.C. 134(h)(2)(B)(i)(II). (See the discussion section for sections 490.105(e)(2) and 490.105(f)(2) for more details on target selection coordination requirements.)

In response to Connecticut DOT's comment, FHWA notes that the pavement condition measures in subpart C are applicable to the mainline highways on the Interstate System and on the non-Interstate NHS. The bridge condition measures in subpart D are applicable to bridges carrying the NHS, which includes on- and off-ramps connected to the NHS. This is consistent with the statutory provisions in 23 U.S.C. 150(c)(3). Therefore, the applicable network for State DOTs and MPOs within that State are not mutually exclusive. The data collection and analysis must be done by State DOTs and MPOs in a coordinated manner, as required in 23 CFR 450.208.

The FHWA considered the comments on MPO target establishment options and retains in the final rule the proposed options with minor revision in section 490.105(f)(4) of the NPRM (section 490.105(f)(3)). The revision is to clarify that an MPO can exercise different target establishment options for each measure in subparts C and D, and that they do not have to select the same option for all measures in subparts C and D. The FHWA amended section 490.105(f)(4) so that MPOs shall establish a target by either: (1) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure, or (2) committing to a quantifiable target for that performance measure for their metropolitan planning area.

The New Jersey DOT commented that multi-state MPOs should have the discretion to establish different targets for each State. In response to the comment, FHWA added section 490.105(f)(4) to address situations where metropolitan planning areas extend across multiple States. As discussed in section 490.105(f)(3), MPOs have an option for establishing a target by either: (1) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT targets, or (2) committing to quantifiable targets for their metropolitan planning area. The added language in section 490.105(f)(4)(i) provides MPOs the option to choose different target establishment options, as specified in section 490.105(f)(3), for the portion of the metropolitan area within each State. For example, if a metropolitan planning area of an MPO is located within two States (*e.g.,* ''State A'' and ''State B''), that MPO could establish their target for a measure by: (1) Agreeing to plan and program projects so that they contribute toward the accomplishment of the State A target for the portion of metropolitan planning area within State A; and (2) committing to quantifiable target for the portion of their metropolitan planning area within State B. The language in section 490.105(f)(4)(ii) clarifies that if an MPO chooses the option to ''agree to plan and program projects to contribute toward State targets'' for the entire metropolitan planning area, then they must plan and program projects in support of the individual State DOT targets as applicable to the portion of the metropolitan area within each State.

Although MPOs could exercise their target establishment options provided in section 490.105(f)(3) and (4), FHWA emphasizes that all MPOs are required to coordinate with relevant State DOTs in MPO target establishment regardless of which options MPOs choose in target establishment.

Sections 490.105(f)(5) and 490.105(f)(6) are reserved.

Discussion of Section 490.105(f)(7) MPO Response to State DOT Target Adjustment

The FHWA proposed MPO response options to State DOT target adjustment, described in section 490.105(e)(6), through the State DOT's Mid Performance Period Progress Report. This MPO response option was only for those MPOs who established their targets by agreeing to plan a program of projects so that they contribute to the adjusted State DOT target for a performance measure, as provided in section 490.105(f)(4)(i) of the NPRM (section 490.105(f)(3)(i) of the final rule). Those MPOs responding to State DOT target adjustment have the following options: (1) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT targets, or (2) committing to quantifiable targets for their metropolitan planning area.

The NARC made a comment that the rule should explicitly state that when a State DOT chooses to adjust its targets, an MPO is not required to also adjust its own established targets. The FHWA believes that the language in this rule does not require MPOs to adjust their own quantifiable target when State DOTs adjusts their targets. The FHWA feels that it is not necessary to explicitly state this in the final rule. The FHWA retains the proposed MPO response options with minor revisions in section 490.105(f)(7). The revision is to clarify that MPOs can exercise different target establishment options for each measure in subparts C and D, and that they do not have to select the same option for all measures in subparts C and D. The FHWA amended section 490.105(f)(7) to read that MPOs shall respond to State DOT target adjustment by either: (1) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure, or (2) committing to a quantifiable target for that performance measure for their metropolitan planning area. Although MPOs could exercise their target selection options provided in section 490.105(f)(7), FHWA emphasizes all MPOs are required to coordinate with relevant State DOTs in target selection, as required in section 490.105(f)(3), regardless of which option MPOs choose in target selection.

Discussion of Section 490.105(f)(8) MPO Target Adjustment

The Texas DOT commented that ''if the proposed rules are adopted as drafted, Texas State DOT will need to work with TEMPO and their MPOs and transit providers to amend all existing Metropolitan Planning Agreements to include language regarding performance planning, measures, targets, etc.'' They added that this is going to become ''even more important in light of the new OMB Super Circular and the potential need to make changes to the Metropolitan Planning Agreements based on new regulations in 2 CFR 200.'' The Texas

DOT commented that ''this requirement is a significant task, and State DOTs and MPOs should be given the greatest degree of latitude and flexibility in making these revisions on a schedule of their own choosing without penalty.''

The NYMTC commented that this rule requires State DOTs and MPOs to document procedures for reporting, target setting, target adjustment, and related coordination in metropolitan planning agreements. The NYMTC commented that they object to the use of metropolitan planning agreements for this purpose. In lieu of the metropolitan planning agreements, they recommended maximum flexibility for State DOTs and MPOs in establishing the coordination that is appropriate to each State and region. They argued that MPOs and State DOTs should not have to revisit the metropolitan planning agreements each time they make an adjustment to targets or related data collection and performance reporting procedures.

The comment from Texas DOT on metropolitan planning agreement requirements is beyond the scope of this rule. (See 23 CFR 450.314 for details on metropolitan planning agreement requirements.)

Addressing NYMTC's comments, FHWA amended the language in section 490.105(f)(8) to remove the requirement to document the target adjustment process in the metropolitan planning agreement. The manner in which targets will be adjusted is to be mutually agreed upon by State DOTs and MPOs. This change is consistent with numerous comments received on this rule and the Planning Rule. As noted in the discussion of section 490.107(c)(1) on MPO reporting, amending the metropolitan planning agreement as part of the performance management process is onerous and does not provide the flexibility needed. This change is also intended to emphasize the need for State DOTs and MPOs to coordinate when adjusting targets, just as they are to do when establishing targets. (See discussion section for section 490.107(c)(1) for more information.)

No substantive comments were received for section 490.105(f)(9). The FHWA retains the language in section 490.105(f)(9) as proposed.

Discussion of Section 490.107 Reporting on Performance Targets

Section 490.107 deals with the biennial performance reporting schedule and requirements. The Montana DOT commented that, with multiple rulemakings underway and more planned in the future, FHWA should coordinate the reporting deadlines for all of the rules that fall under this title. This will reduce the burden on States and allow reasonable process development timeframes.

As outlined in section 490.107, FHWA notes that reporting timeframes will be coordinated to the maximum extent practicable.

The New York DOT submitted a comment expressing their support for the provision that requires that only State DOTs report to FHWA on performance targets and progress in achieving established targets.

Discussion of Section 490.107(a)(1)–(2) General Reporting on Performance Targets

The North Carolina DOT commented that the use of three different reports and the associated requirements is unduly complex. They suggest that since the data is being submitted to HPMS and NBIS, FHWA should extract and use the information to meet the reporting requirements.

The FHWA clarifies that performance metric data is completely different from performance target, condition/performance, progress evaluation, etc. The FHWA felt it is necessary to differentiate the two in this rule because metric data refers to IRI, Cracking Percent, rutting, and faulting values for pavement sections reported to HPMS and NBI Data Items 58-Deck, 59-Superstructure, 60-Substructure, and 62-Culverts). These reported metric data are not performance measures and they do not represent performance targets. Section 490.107 in this rule deals with reporting targets, condition/performance, progress evaluation, etc. and they are also required under 23 U.S.C. 150(e). For this reason, FHWA retains section 490.107(a)(1) and 490.107(a)(2) as proposed in the NPRM.

Discussion of Section 490.107(a)(3) Electronic Reporting Template

The FHWA retains the language in section 490.107(a)(3) that states an electronic template, provided by FHWA, will be used for State DOT reporting. Comments from the AASHTO, Connecticut DOT, Iowa DOT, Missouri DOT, New York DOT, Oklahoma DOT, Oregon DOT, PSRC, Texas DOT, and Washington DOT expressed their support for an electronic template. They wanted State DOTs to be included in the development of the product and given time to review and comment on the requirements to ensure it is not an undue burden to report the data.

The FHWA will invite the public to attend demonstrations of the reporting tool and plans to solicit comments on the reporting tool during this demonstration. The FHWA will consider comments received on the electronic reporting template.

The New York State DOT commented that FHWA should minimize additional requirements by allowing States and MPOs to work within existing processes, to the extent possible, without imposing onerous reporting requirements or requiring significant adjustment to existing legal documentation. The FHWA notes that development of an electronic reporting template is intended to aid in streamlining the reporting process.

Discussion of Section 490.107(b)(1)(i) Baseline Performance Period Report Schedule

The FHWA received comments on the proposal to require submission of the first Baseline Performance Period Report on October 1, 2016, in section 490.107(b)(1)(i). Comments from Washington DOT and Alaska DOT&PF noted that the proposed 2016 due date would not allow the time required by MAP–21 to establish targets. The Seattle DOT noted this as well, but asked that all deadlines be removed and State DOTs be allowed to conduct an extensive comment and revision process without a specific deadline.

The statute established target establishment and reporting deadlines for State DOTs and MPOs. The FHWA cannot change statutory deadlines. Accordingly, because this rule is being issued and effective after October 1, 2016, FHWA issued guidance on the State DOT report due on October 2016 to advise State DOTs how to comply with the statutory deadline for the first performance reporting under 23 U.S.C. 150(e). Please see discussion section for sections 490.105(e)(1) & (f)(1) for more on the FHWA issued guidance. Considering the comments received on this section, and the requirements in sections 490.105(e)(1) and 490.105(f)(1) (requiring establishment of State DOT targets within 1 year of the effective date of each final rule and MPO targets to be established within 180 days of State targets), FHWA amended the implementation timeline in section 490.107(b)(1)(i). The FHWA amended the due date of the first Baseline Performance Period report from October 1, 2016, to October 1, 2018.

With the revision to section 490.107(b)(1)(i), the first Baseline Performance Period Report is now due October 1, 2018, which is a delay of 2 years. Due to this change, the related performance period discussed in section 490.105(e)(4)(i) will also be delayed 2 years and begin on January 1, 2018. State DOTs and MPOs will still be

required to establish targets by the date specified in sections 490.105(e)(1) and 490.105(f)(1). A timeline for Biennial Performance Reports is shown in Figure 1 in section 490.105(e)(1).

Discussion of Section 490.107(b)(1)(ii)(A) and (C) Baseline Performance Period Report Content

The North Dakota DOT commented that the reporting requirements in section 490.107 were too detailed and that the use of the phrase ''to the maximum extent practicable'' opens the door to an unconstrained demand on State DOTs with possibilities of abuse. They added that documents such as the long-range statewide transportation plan are already required to document the measures, targets, and financial plans.

The FHWA disagrees with the comment from the North Dakota DOT. The FHWA has identified the minimum reporting requirements in section 490.107 needed to establish a performance management program that meets the intent and requirements of MAP–21, and allows for the discussion of performance management at a national level. The FHWA believes a set of minimum reporting requirements are necessary to provide a sufficient level of consistency in the report and the approach to assess progress, so that transportation performance can be presented in a credible manner at a national level. The FHWA also believes that the requirements in section 490.107 provide the public and decisionmakers a better understanding of Federal transportation investment needs and return on investments, thereby increasing accountability and transparency in the performance management process. The FHWA used the phrase ''to the maximum extent practicable'' in section 490.107(b)(1)(ii)(A) and (C) where State DOTs are required to include discussions for the basis for each established target and their relationship with other performance expectations (in longer range plans, such as the State asset management plan or the long-range statewide transportation plan). The FHWA believes these descriptions are necessary for State DOT justifications to the public and decisionmakers on how their targets are derived. The FHWA reiterates that the statutory language in MAP–21 provides that State DOTs have the ability to establish their own targets but does not provide FHWA the authority to approve or reject State DOT established targets. The FHWA believes more detailed and defensible explanations will benefit the public, decisionmakers, and State DOTs. The FHWA retains the language in section 490.107(b)(1)(ii)(A) and (C) in the final rule.

Discussion of Section 490.107(b)(1)(ii)(C) and 490.107(b)(2)(ii)(C) Relationship With Other Performance Expectations in Baseline Performance Report and Investment Strategy Discussion in the Mid-Period Performance Report

Sections 490.107(b)(1)(ii)(C) (Relationship with other performance expectations in Baseline Performance Report) and 490.107(b)(2)(ii)(C) (Investment strategy discussion in the Mid-Period Performance Report) outline the requirements to discuss the link between the performance management targets, other plans, and the effectiveness of the investment strategies documented in the State asset management plan. The AASHTO, Alaska DOT&PF, and Connecticut DOT commented that these requirements should be removed as they are ''duplicative and excessive reporting requirements,'' and open the ''door to an unconstrained demand on State DOTs for information and discussion.'' They also commented that the existing documents, such as the long-range Statewide transportation plan and STIP, have requirements to document measures, targets, financial plans, and how the projects support program goals. The North Carolina DOT commented that the mid-period discussion of the State asset management plan could be excessive. The North Carolina DOT asked if this discussion is to be a one-time occurrence or occur in each mid-period report.

As discussed above for section 490.107(b)(1)(ii)(A) and (C), FHWA believes minimum reporting requirements are necessary to provide a sufficient level of consistency, in the expectations and approach, to assess progress so that transportation performance can be presented in a credible manner at a national level. The FHWA also believes that the requirements in section 490.107 provide the public and decisionmakers a better understanding of Federal transportation investment needs and return on investments, thereby increasing accountability and transparency in the performance management process. The FHWA does not agree that the items to be reported in the biennial performance reports are duplicative from the State asset management plan, long-range statewide transportation plan, STIP, or others. Although plans and reports support performance management implementation and the performance targets in section 490.105, the biennial performance reports under this rule are updates of performance information every 2 years, but the long-range statewide transportation plan and STIP are required as part of planning process. Moreover, FHWA believes that it will be very difficult for the public and decisionmakers to obtain performance information by searching through various plans (*e.g.,* State asset management plan, long-range statewide transportation plan, STIP, and others). The FHWA believes that the minimum reporting requirements under section 490.107 will facilitate public access to performance information in a consistent cycle for all State DOTs, thereby increasing accountability and transparency and helping to facilitate the presentation of transportation performance at a national level. Therefore, FHWA retains the language in sections 490.107(b)(1)(ii)(C) and 490.107(b)(2)(ii)(C), as proposed in the NPRM. The reporting requirements are focused on the impacts of performance management. Including this information within the reports from all State DOTs and on the same timeline will aid in the creation of a national performance story.

Discussion of Section 490.107(b)(1)(ii)(D) Urbanized Area Boundaries and Population Data for Targets

The FHWA proposed in section 490.313(b)(1) that thresholds for IRI rating determination (Good, Fair, or Poor) would be different among the pavement sections located within and outside of the urbanized areas with a population greater than 1 million. In the case of urbanized area boundary changes during a performance period, FHWA proposed that State DOTs declare and describe the urbanized area in their Baseline Performance Period Report at the beginning of each performance period so that the IRI rating determinations could be done consistently throughout the performance period. The FHWA revised section 490.107(b)(1)(ii)(D) to remove the term ''IRI rating determination'' because the thresholds for IRI rating determination are the same regardless of the location of pavement segments. (See sections 490.103(b) and 490.313(b)(1) for further discussion.)

For section 490.107(b)(1)(ii)(D), the Florida DOT requested clarification on the use of the term ''applicable urbanized areas'' in regards to the NPRM language that states: ''. . . State DOTs shall document the boundary extent for all applicable urbanized areas and the latest Decennial Census population data, based on information in HPMS.''

Should a State DOT choose to establish additional urbanized targets, as outlined in section 490.105(e)(3), urbanized boundary information would need to be submitted. The term ''applicable urbanized areas'' in section 490.107(b)(1)(ii)(D) applies to the urbanized areas for which State DOTs establish optional targets under section 490.107(e)(3). As stated above, the thresholds for IRI rating determinations in section 490.107(b)(1)(ii)(D) are no longer based on the location of pavement sections. Therefore, the urbanized areas with a population greater than 1 million will no longer apply in this paragraph. In the final rule, the term ''applicable urbanized areas'' in section 490.107(b)(1)(ii)(D) applies only to the urbanized areas for which State DOTs establish optional targets under section 490.105(e)(3).

Discussion of Section 490.107(b)(1)(ii)(E) Deleted Section

The FHWA deleted section 490.107(b)(1)(ii)(E) so State DOTs will not be required to declare or describe NHS limits for the entire performance period. The NHS limits for pavement condition measures will come from the same year's dataset as the pavement condition metric data in HPMS. The NHS designations for bridge condition measures will come from the same year's dataset as the bridge condition metric data in NBI. (See discussion section for section 490.105(d)(3) for more detail.)

Discussion of Section 490.107(b)(2)(i) Schedule

In section 490.107(b)(2)(i), FHWA has delayed the Mid Performance Period Progress Report due date by 2 years from 2018 to 2020. This was done to be consistent with the delayed start to the performance period and Baseline Performance Report, as discussed in section 490.107(b)(1)(i).

Discussion of Section 490.107(b)(2)(ii)(C) and (E) Investment Strategy Discussion and Target Adjustment Discussion

The NEPPP noted that the investment strategy discussion in section 490.107(b)(2)(ii)(C) specifically identifies the State asset management plan for the NHS, while the other reports do not specify the NHS. The NEPPP requested clarification on the Interstate versus NHS in each of the three reports.

In response to the comments, FHWA inserts the phrase ''for NHS'' after ''State asset management plan'' in sections 490.107(b)(1)(ii)(C) and 490.107(b)(2)(ii)(E) to clearly indicate that the State asset management plan under required under 23 U.S.C. 119(e) is applicable to NHS. This revision is consistent with the term ''State asset management plan for NHS'' in sections 490.107(b)(2)(ii)(C) and 490.107(b)(3)(ii)(C). The measures in subparts C and D are applicable to the NHS. The measures in subpart C assess the condition of pavements on the NHS (which includes the Interstate System and NHS exclusive of the Interstate System). The measures in subpart D assess the condition of bridges carrying the NHS, which includes on- and off-ramps connected to the NHS.

Discussion of Section 490.107(b)(2)(ii)(H) NHPP Target Achievement Discussion

The FHWA amended the language by replacing the phrase ''improve . . . condition'' with ''achieve targets,'' when State DOTs describe the actions they will take required under section 490.109(f). The FHWA received a comment, discussed in section 490.109(f)(1) through (3), that the phrase ''improve condition'' could be perceived as a ''worst-first'' management practice. As discussed in sections 490.109(f)(1) through (f)(3), this revision was made to be consistent with the statutory language in 23 U.S.C. 119(e)(7).

Discussion of Section 490.107(b)(3)(i) Schedule

The FHWA delayed the report on the full performance period by 2 years, from 2020 to 2022. This was done to be consistent with the delayed start to the performance period and Baseline Performance Report, as discussed in section 490.107(b)(1)(i).

Discussion of Section 490.107(b)(3)(ii)(B) 4-year Progress in Achieving Performance Targets

The FHWA changed the phrase ''. . . each established 4-year target in paragraph (b)(1)(ii)(A) or (E) of this section, . . .'' to ''. . . each 4-year target established in paragraph (b)(1)(ii)(A) or in paragraph (b)(2)(ii)(E) of this section.'' This is an editorial change to correct the section reference in the regulatory text.

The AMPO and New Jersey DOT requested clarification on the difference between the reporting requirements in sections 490.107(b)(3)(ii)(B) and 490.107(b)(3)(ii)(E). The differences between the two are that paragraph (B) applies to all targets, including any additional (urbanized and non-urbanized area) targets in section 490.105(e)(3), but paragraph (E) applies only to the statewide NHPP targets subject to significant progress determination outlined in section 490.109. Additionally, paragraph (B) is a qualitative assessment or explanation of any reasons for differences in the actual and target values. Paragraph (E) is a summary of accomplishments (*e.g.,* how implemented investment strategies impacted the actual condition/performance) of State DOTs in achievement of 4-year targets for the NHPP measures. The FHWA retains sections 490.107(b)(3)(ii)(B) and 490.107(b)(3)(ii)(E) in the final rule.

Discussion of Section 490.107(b)(3)(ii)(G) NHPP Target Achievement Discussion

As discussed in section 490.107(b)(2)(ii)(H), FHWA amended section 490.107(b)(3)(ii)(G) by replacing the phrase ''improve . . . condition'' with ''achieve targets'' when State DOTs describe the actions they will take as required under section 490.109(f). (See discussion section for sections 490.107(b)(2)(ii)(H) and 490.109(f)(1) through (3).)

Discussion of Section 490.107(c)(1) MPOs Shall Report Established Targets to State DOT

The FHWA amended the language in section 490.107(c)(1) to remove the requirement to use the metropolitan planning agreement to document how MPOs shall report their established targets to their respective State DOTs. The final rule requires MPOs to report their established targets to State DOTs in a manner that is documented and mutually agreed upon by both parties.

The Mid-America Regional Council expressed support for the language in the NPRM that required the method for reporting targets be documented in the metropolitan planning agreement. However, AMPO, ARC, COMPASS, NARC, NYSDOT, NYMTC, NYSAMPO, and TEMPO objected to the proposed documentation requirement as it would require the metropolitan planning agreement to be updated. The Transportation for America's commented that ''States should form an agreed to process with all MPOs within the State.''

23 CFR 450.314(h) of the final Planning Rule provides State DOTs and MPOs options for mutually identifying the agency roles and responsibilities for performance-based planning and programming in metropolitan areas in writing, either through the metropolitan planning agreements or by some other mutually determined means. To address the received comments above and to ensure consistency between this final rule and the final Planning Rule, FHWA has removed references to the

metropolitan planning agreement from this Rule.

The Connecticut DOT and NYMTC commented that States and MPOs should have maximum flexibility and discretion in target setting. As stated in discussion for section 490.105(a), MAP–21 does not provide FHWA the authority to approve or reject State DOT or MPO established targets. The FHWA reiterates that this rule does not hinder the ability of State DOTs and MPOs to establish targets that have performance holding steady or declining.

The Memphis Urban Area MPO requested clarification on the frequency and method of reporting data to State DOTs. The FHWA did not specify a required MPO reporting process in this rule. Please refer to the 23 CFR 450.324 for the requirements for MPO system performance report in the metropolitan transportation plan.

Discussion of Section 490.107(c)(2) MPO System Performance Report

The FHWA retains the language in section 490.107(c)(2) that requires MPOs to report baseline condition/performance and progress toward the achievement of their targets in the system performance report for the metropolitan transportation plan (MTP), in accordance with part 450 of this chapter and as provided in 23 U.S.C. 134(i)(2)(c). The Mid-America Regional Council expressed their support for this requirement.

The IOWA DOT, NYMTC, and NYSAMPO asked for clarification on the timing of the initial Metropolitan Transportation Plan System Performance Report, given the variability of MTP adoption schedules. The inquiries related to the MTP are outside of the scope of this rule. Those inquiries should refer to the Planning final rule.

The Iowa DOT expressed concerns with submitting the system performance report with the Long Range Transportation Plan (LRTP), which is required every 4–5 years (depending on air quality in the MPO). The Iowa DOT asked how that will line up with the 2-year reporting periods outlined in the NPRM. The Iowa DOT also commented that the NPRM sets specific dates for implementing the performance measure reporting, which may or may not align with LRTP update cycles for individual MPO agencies. The NYSAMPO commented that it is important to coordinate all of the reporting and target setting timelines for each of the performance measure rules so that State DOTs and MPOs are not burdened with numerous reporting schedules that are out of synch with one another. Transportation for America echoed these concerns, and suggested that FHWA ''ensure the performance period being proposed syncs up with the plan update cycles for State DOTs and MPOs.'' The AMPO and COMPASS advised FHWA to have MPOs align their performance periods to their LRTP cycle. The TEMPO stated that each MPO should set its own individual target setting and biennial reporting timelines. The AMPO requested clarification on whether MPOs would be required to report on the same timelines as State DOTs.

It is true that the performance period and individual MPO planning cycles may not coincide, but there is no requirement that they do. At the time of MTP adoption (LRTP or MTP), the MPO would include what information it had in its system performance report and expand on the information with the next report update. In addition, MPOs can choose to adopt their MTPS before the 4–5 year requirement, and more closely align their planning cycle and the performance period cycle.

The Iowa DOT requested more detail on what will be required to report in their system performance report. The regulatory requirements of the system performance report are provided in 23 CFR part 450.[38] The inquiries related to the system performance report are outside of the scope of this rule. Those inquiries should refer to the Planning final rule.

Section 490.109 Assessing Significant Progress Toward Achieving the Performance Targets for the National Highway Performance Program

Discussion of 490.109(a) General

The FHWA retains the language in section 490.109(a) which makes State DOTs accountable for making progress for all pavements and bridges on the NHS regardless of ownership. The FHWA made minor clerical edits to clarify the cross-references. The AASHTO recommended that non-State DOT assets (*e.g.,* assets owned by the Federal government, tribal governments, local agencies, and others) be excluded from the significant progress determination under section 490.109. The AASHTO and State DOTs of Connecticut, Maine, New Hampshire, Vermont, and Washington argued that State DOTs may not be legally able to collect data on non-State DOT assets and may have no authority to control how funding on those assets is spent or assets are maintained. As discussed in section 490.105(d), FHWA is aware of a limit to the direct impact that State DOTs can have on performance outcomes for the non-State controlled assets within the State. However, as the recipients and stewards of the NHPP funds for the NHS in respective State DOTs, FHWA expects that State DOTs would consider the uncertainty and associated performance outcome of the non-State owned assets. The FHWA expects State DOTs to coordinate with the appropriate owners of the non-State controlled NHS assets in the establishment of State DOT targets.

Both the Alaska DOT&PF and the Oregon DOT suggested alternatives to the term significant progress and its definition. The Alaska DOT&PF commented that the term be redefined to mean ''meet or exceed the ½ target'' or the term should be removed from the rule entirely. The Oregon DOT suggested that the term significant progress be revised to ''adequate'' progress. However, FHWA retains the term ''significant progress'' in the final rule because the term is referenced in the statute (23 U.S.C. 119(e)(7)).

Discussion of 490.109(b) Frequency

Section 490.109(b) specifies the frequency for FHWA to determine whether a State DOT has or has not made significant progress toward the achievement of NHPP targets to be every 2 years (*i.e.,* at the midpoint and the end of each performance period) which aligns with State DOT Biennial Performance Reports in 490.107. In the NPRM, FHWA stated that it expects that during a performance period, State DOTs would routinely monitor leading indicators (*e.g.,* program delivery status) to assess if they are on track to make significant progress toward achievement of their NHPP targets. If a State DOT anticipates that it may not make significant progress, it is encouraged to work with FHWA and seek technical assistance during the performance period to identify the actions that can be taken to improve progress.

In the NPRM, FHWA sought comment on whether it should require State DOTs to more frequently (*e.g.,* annually) evaluate and report the progress they have made. The Tennessee DOT supported the 2-year cycle of significant progress determinations and added that ''annual reporting would be unlikely to show significant differences in results than biennial reporting.'' The Missouri DOT commented that State DOTs will have the ability to report data annually. The data should be updated in HPMS and NBI systems, but State DOTs should not be asked to submit a progress report on an annual basis. The AASHTO and

[38] Statewide and Nonmetropolitan Transportation Planning: Metropolitan Transportation Planning (FR Vol. 81, No. 103).

Connecticut State DOT opposed more frequent reporting and determinations.

The FHWA clarifies that FHWA did not seek comments on the frequency of FHWA significant progress determination (*i.e.,* every 2 years). Instead, FHWA requested comments on whether or not State DOTs should evaluate their condition/performance and report the progress they have made more frequently than every 2 years. Through more frequent condition/performance evaluation, State DOTs would more frequently monitor their condition/performance and have the opportunity to proactively take necessary actions make significant progress toward achievement of the NHPP targets. The FHWA appreciates the comments, but retains the biennial frequency of progress reporting in § 490.107. The FHWA strongly encourages State DOTs to routinely monitor their condition/performance so they can proactively take actions necessary to make significant progress toward achievement of the NHPP targets.

Discussion of § 490.109(c) Schedule

The FHWA retains the language in section 490.109(c) which says FHWA will determine significant progress toward the achievement of a State DOT's NHPP targets after the State DOT submits the Mid Performance Period Progress Report for progress toward the achievement of 2-year targets, and again after the Full Performance Period Progress Report for progress toward the achievement of 4-year targets.

The Missouri and Tennessee DOTs expressed support for the proposed timeline, noting that the necessary data is submitted annually and therefore FHWA is able to complete their assessment with the frequency they deem necessary.

The Oregon DOT requested clarification on who at FHWA will perform the assessment of significant progress.

The AASHTO and the Oregon and Connecticut DOTs recommend that FHWA inform State DOTs of their achievement of making significant progress by December 31 of the calendar year in which the assessment was made. They also recommended that the rule provide that if a State DOT does not receive that information by the deadline, then it is conclusively deemed to have made significant progress in that time period. North Carolina DOT also commented that notification should be as soon as possible.

The FHWA is committed to a timely notification of significant progress determination results to State DOTs so they can take prompt actions, as described in section 490.109(f). The FHWA is also committed to a timely publication of determination results on the public Web site to meet the demands of the public and Congress. The FHWA clarifies that prior to its determination, State DOTs are required to report actual condition/performance in their Mid Performance Period Progress Report and Full Performance Period Progress Report, as provided in sections 490.107(b)(2)(ii)(A) and 490.107(b)(3)(ii)(A). The FHWA also clarifies that the reported actual condition/performance in sections 490.107(b)(2)(ii)(A) and 490.107(b)(3)(ii)(A) are not a qualitative assessment of performance, but they are quantitative values (*i.e.,* calculated measures). The qualitative assessment of performance is required under sections 490.107(b)(2)(ii)(B) and 490.107(b)(3)(ii)(B). With quality HPMS and NBI data from State DOTs, FHWA believes that State DOT reported condition/performance will be no different from FHWA calculated condition/performance in significant progress determination in section 490.109.

State DOTs are also required to discuss the progress they have made toward the achievement of all targets established for the NHPP measures, as described in sections 490.107(b)(2)(ii)(F) and 490.107(b)(3)(ii)(E), in the Mid Performance Period and Full Performance Period Progress Reports. The FHWA believes that through these requirements, State DOTs will be well aware of whether they will make significant progress prior to FHWA determination notification. Therefore, FHWA retains the language in section 490.109(c), as proposed in the NPRM. The FHWA plans to issue guidance clarifying when the determination notification to State DOTs will be made after publication of the final rule.

The North Carolina DOT requested clarification on whether States that failed to achieve significant progress would be able to adjust their targets. Failure to achieve significant progress does not trigger the opportunity or requirement to adjust targets. The State DOTs have the opportunity to establish or adjust targets every 2 years, as provided in sections 490.105(e)(4)(i) and (e)(4)(ii) and 490.105(e)(6), respectively. The process used by FHWA to determine significant progress is transparent. As discussed in section 490.105(e)(6), FHWA believes if targets are allowed to be adjusted more frequently, then the transparency of target and target establishment process will be compromised. The FHWA strongly encourages State DOTs to track their significant progress on their own, and adjust targets in their Mid Performance Period Progress Report as they deem necessary.

Discussion of 490.109(d)(1) Through (d)(3) Source of Data/Information

In sections 490.109(d)(1) through (d)(3), FHWA proposed data extraction dates for the significant progress determination for NHPP measures. The proposed data extraction dates were:

- June 15 of the year in which the significant progress determination is made for the Interstate System pavement condition measures;
- August 15 of the year in which the significant progress determination is made for the non-Interstate NHS pavement condition measures; and
- June 15 of the year in which the significant progress determination is made for the NHS bridge condition measures.

The Oregon DOT requested a wording change from ''prior year'' to ''most recent data collected'' in sections 490.109(d)(1) and (d)(2). The commenter noted that the term ''prior year'' indicates that data has to be collected in the 2nd and 4th years for the non-Interstate NHS sections. They asked what if a State wants to collect this data in years 1 and 3 of the performance period. The commenter stated that the wording should be changed to allow States to use the most recent data collected as this gives the States flexibility in selecting data collection cycles to match other processes, such as STIP development, within the State.

The FHWA clarifies that the data collection frequency requirement for non-Interstate NHS pavement data is every 2 years, as described in section 490.309(b)(2). So, in this rule, there is no requirement for State DOTs to collect their pavement condition data for the entire non-Interstate NHS within a particular year. The FHWA also clarifies that biennial data collection frequency for non-Interstate NHS requires annual data reporting to HPMS making the most recent data collected replacing the data from previous data collection cycle. So, if a State DOT chooses to collect pavement data for the entire non-Interstate NHS in the first year of a performance period and collect data again for the entire non-Interstate NHS in the third year of that performance period, that State DOT will meet the requirements in section 490.309(b)(2). The FHWA believes that this approach will not hinder State DOTs from selecting their data collection cycles to match other processes. Please note that annual pavement data collection

frequency is required for the Interstate System, as described in section 490.309(b)(1). Because of the provided explanation, FHWA believes the term ''prior year'' is more appropriate in sections 490.109(d)(1) and (d)(2) because the term refers to the ''most recent data collected and reported'' in HPMS. Therefore, FHWA retains the language in sections 490.109(d)(1) and (d)(2), as proposed in the NPRM.

The FHWA did not receive any substantive comments regarding these data extraction dates but received substantive comments on the proposed data reporting dates for both pavement and bridge condition measures. Please refer to sections 490.311(c)(4) and (c)(5) and 490.411(d) for discussion of those comments. As discussed in sections 490.311(c)(4) and (c)(5) and 490.411(d), FHWA adopts the language in sections 490.109(d)(1) through (d)(3) in the final rule.

Discussion of 490.109(d)(4) Baseline Condition Data

The FHWA revised section 490.109(d)(4) so that the NHS limits for significant progress determination for pavement condition measures will come from the same year's dataset as the pavement condition metric data in HPMS. The NHS designations for the significant progress determination for the bridge condition measures will come from the same year's dataset as the bridge condition metric data in NBI. Similarly, the NHS information for the baseline conditions for significant progress determination of the targets for the pavement and bridge condition measures will come from the data contained in HPMS and NBI of the year in which the Baseline Period Performance Report is due to FHWA. (See discussion sections for 490.105(d)(3), and 490.107(b)(1)(ii)(E) for more detail.)

In addition, sections 490.313(b)(1) and (b)(2) are revised so that IRI condition ratings of Good, Fair, and Poor will no longer depend on whether a pavement section is within an urbanized area with a population greater than 1 million. Therefore, urbanized area data for significant progress determinations of pavement condition targets is no longer necessary. (See discussion sections for 490.313(b)(1) for more detail.)

Discussion of 490.109(e)(1) General Discussion of Significant Progress Determination for Individual NHPP Targets

The FHWA revised the language in section 490.109(e)(1) to correct a typographical error and replaced the word ''and'' with ''through.'' The final rule reads ''. . . established by the State DOT for the NHPP measures described in 490.109(c)(1) through (c)(3).'' This error was noted by AASHTO and the Connecticut and Virginia DOTs.

The AASHTO and Connecticut DOT commented that significant progress should only be determined based on the required targets in section 490.105(d)(1), not any additional targets State DOTs have voluntarily chosen to establish in section 490.105(e)(3). The language in section 490.109(e)(1) of the NPRM and final Rule is consistent with this. Section 490.109(e)(1) specifically says that FHWA will not assess the progress achieved for any additional targets a State DOT may establish under section 490.105(e)(3). No change to the final rule is required.

Discussion of 490.109(e)(2) Significant Progress Toward Individual NHPP Targets

The FHWA retains the language in section 490.109(e)(2), which states that for each NHPP target, progress toward the achievement of the target would be considered significant when either of the following occur: (1) The actual condition/performance level is equal to or better than State DOT Baseline Performance Period Report; or (2) actual condition/performance is equal to or better than the established target. To make the comparisons in a consistent manner, the language in sections 490.313(f) and 490.409(c) includes the precision level (*i.e.,* decimal places) for the measures, which is to be calculated to the one tenth of a percent (0.1 percent). The Colorado DOT expressed their support for the 0.1 percent achievement threshold.

In the first performance measures NPRM, which addresses safety, FHWA proposed in section 490.211 of the NPRM a statistical evaluation approach for determining significant progress. Comments received on the Safety NPRM indicated that it was too complicated and seemed arbitrary. In the Final Rule for safety performance measures, FHWA changed its approach from statistical evaluation to improvement over baseline. Therefore, in this final rule, FHWA is retaining the determination methodology proposed.

The following summarizes the comments on the proposed methodology for determining significant progress. In regard to the proposed significant progress methodology, the comments from AASHTO said that ''the approach must be retained in the final rule.'' They also added that the approach would ''give State DOTs flexibility to establish aggressive targets if desired but will not result in States being punished if they do not meet those targets.'' Missouri DOT also supports the approach as ''straightforward and easy to determine.'' Oregon DOT voiced their support by indicating that it is ''reasonable and accommodates both increasing and decreasing pavement conditions.'' Minnesota DOT expressed their support, stating that it would allow States to establish declining targets, but still achieve significant progress.

While many State DOTs did not specifically mention their support, they indicated their general support for the AASHTO's letter in support of the proposed approach. These State DOTs included Alaska, Arkansas, Colorado, Florida, Georgia, Idaho, Maryland, Michigan, Missouri, Montana, New Jersey, North Dakota, Pennsylvania, South Dakota, and Wyoming. The support of the proposed approach was also expressed by the Metropolitan Transportation Commission and the Mid-America Regional Council.

However, some commenters expressed disagreement with FHWA's proposed method for determining significant progress. Washington DOT and the PSRC commented that ''significant change'' should be based on a statistical evaluation of the data submitted by the State DOT and suggested use of the standard deviation of the data to determine the level of significance. The FHWA considered some statistical methods for significant progress determination approach during the time of preparing the NPRM. However, this option was determined to be unfeasible because the magnitude of ''statistically significant change'' in condition/performance would have to be an arbitrarily selected significance level. Without an established target value, determining the magnitude of ''statistically significant change'' was not possible. In addition, in the final rule for safety performance measures, FHWA changed its approach from statistical evaluation to improvement over baseline after receiving comments that the statistical methods were ''too complex and difficult.''

The AASHTO and the Connecticut and Iowa DOTs stated that the use of 0.1 percent was arbitrary. In the discussion of section 490.109 of the NPRM, FHWA found that any improvement better than the baseline condition/performance, which represents a 0.1 percent improvement, would be viewed as significant progress. Although the AASHTO supported the proposed approach for determining significant progress, they argued that 0.1 percent improvement above the baseline ''seems

arbitrary with no basis.'' The Connecticut, Iowa, and Washington DOTs made similar comments as well. Oregon DOT cited that 0.1 percent of Oregon's Interstate System equates to 1.5 miles for Oregon and argued that the 0.1 percent tolerance is too ''tight.'' They suggested 0.5 or 1 percent tolerance.

Illinois DOT requested clarification on how ''significant progress'' is defined, asking whether it is any improvement made toward the target, a measure of a partial percentage point, or something else.

As stated above, the proposed approach for determining significant progress is based on comparison between: (1) Target and the actual condition/performance and (2) baseline condition/performance and the actual condition/performance. To make the comparisons in a consistent manner, the language in sections 490.313(f) and 490.409(c) included precision level (*i.e.,* decimal places) of the measures, which is to be calculated to the one tenth of a percent. By specifying precision levels for the measures, FHWA believes the comparisons in significant progress determinations would be done in a consistent manner. The FHWA understands decimal places of measures could be translated to a tolerance level in making significant progress, as Oregon DOT's example indicated. However, FHWA believes a larger tolerance level with less precision level could work against State DOTs. For example, with a 1 percent tolerance (*i.e.,* measures round to the nearest to 1 whole percent), if a State DOT actually made 0.1 percent improvement above the baseline condition/performance, it would not be considered significant progress because the 0.1 percent would be rounded down and the condition/performance level would be considered as equal to the baseline condition/performance. Therefore, FHWA retains the proposed language.

The Center for American Progress and Transportation for America stated that 2-year target establishment and significant progress determinations should be required for MPOs. They argued that accountability requirements should be the same for State DOTs and MPOs. In 23 U.S.C. 119(e)(7), biennial significant progress determinations under section 490.109 only apply to State DOT NHPP targets. There is nothing in the statute that requires a similar assessment with similar consequences for MPOs. Therefore, FHWA does not have the statutory authority to make significant progress determination on MPO targets.

The TEMPO recommended expanding section 490.109(e)(2) to allow FHWA Division Administrators to determine significant progress. As stated in section 490.109(a), FHWA will assess each State DOT target for the NHPP measure to determine the significant progress made toward its achievement with the method prescribed in section 490.109. The FHWA believes the method outlined in section 490.109 provides a fair and consistent process to determine compliance across State DOTs. Although FHWA Division Offices will notify State DOTs with the results of the significant progress determination, FHWA clarifies that no one individual in FHWA will make the significant progress determination at his or her discretion. Following the publication of the final rule, FHWA will publish guidance on the timing of significant progress determinations and notifications. Therefore, FHWA retains the language in section 490.109(e)(2), as proposed in the NPRM.

Discussion of 490.109(e)(3) Phase-In of New Requirements for Interstate System Pavement Condition Measures

The FHWA proposed a phase-in of new requirements for Interstate pavement condition measures. Only at the midpoint of the first performance period and only for the targets for Interstate System pavement condition measures in section 490.307(a)(1) and (a)(2), FHWA would not make a determination of significant progress toward the achievement of 2-year targets for these measures. The FHWA received comments related to the phase-in of Interstate System pavement condition measures in section 490.105(e)(7), but no direct comments on the phase-in proposed in section 490.109(e)(3).

Since these measures are being phased-in, FHWA will not determine significant progress until after the measures are established and the State DOTs have had time to complete a biennial reporting cycle. As discussed in section 490.105(e)(7), FHWA retains the language in section 490.105(e)(7)(ii) that for the first performance period only, State DOTs are not required to report their 2-year targets and baseline condition/performance for the Interstate pavement condition measures in their Baseline Performance Period Report. Accordingly, FHWA will classify the assessment of progress toward the achievement of targets for the Interstate pavement condition measures as ''progress not determined'' at the 2-year significant progress determination. The FHWA retains the language in section 490.109(e)(3) as proposed in the NPRM. (See discussion for section 490.105(e)(7) for more details.)

Discussion of § 490.109(e)(4) Insufficient Data and/or Information

The FHWA proposed that if a State DOT does not provide sufficient data or information necessary for FHWA to make significant progress determination for each bridge or pavement condition target, FHWA would determine that the State DOT has not made significant progress toward the achievement of the applicable individual targets.

The State DOTs of Connecticut, Oklahoma, and Oregon requested that the phrase ''does not provide sufficient data and/or information'' be clarified.

In response to these comments, FHWA revised section 490.109(e)(4). The revised text in section 490.109(e)(4)(i) specifies that all measures must meet the reporting requirements in section 490.107. If a State DOT does not submit a required report, targets, or other information as specified in section 490.107, then FHWA will determine that the State DOT has not made significant progress toward the achievement of NHPP target.

Section 490.109(e)(4)(ii) specifies if FHWA determines that a total mainline lane-miles of missing, invalid, or unresolved sections for Interstate System is 5 percent or more, as described in section 490.313(b)(4)(i), then FHWA will determine that the State DOT has not made significant progress toward the achievement of targets for the Interstate System pavement condition measures in section 490.105(c)(1).

Section 490.109(e)(4)(iii) specifies if FHWA determines that a total mainline lane-miles of missing, invalid, or unresolved sections for non-Interstate NHS is 5 percent or more, as described in section 490.313(b)(4)(i), then FHWA will determine that the State DOT has not made significant progress toward the achievement of targets for the non-Interstate NHS pavement condition measures in section 490.105(c)(2). (See discussion for section 490.313(b)(4) for further discussion and information on the revisions to this section.)

Section 490.109(e)(4)(iv) specifies that for the NHS bridge condition measures in section 490.105(c)(3), if a State DOT's reported data is not cleared in the NBI as of June 15, then FHWA will determine that the State DOT has not made significant progress toward the achievement of targets for the bridge condition measures in section 490.105(c)(3).

As stated above in section 490.109(e)(2), the approach for determining significant progress is

based on comparison between: (1) Target and the actual condition/performance and (2) baseline condition/performance and the actual condition/performance. Section 490.109(e)(4)(v) provides an approach for determining significant progress when reported data for baseline condition/performance is determined ''insufficient'' in the year in which the Baseline Performance Period Report is due to FHWA. If the data for baseline condition/performance is determined insufficient, the comparison between the baseline condition/performance and the actual condition/performance cannot be made. In this situation, FHWA will make the significant progress determination for that measure by comparing the target to the actual condition/performance. The FHWA will determine that a State DOT has not made significant progress toward the achievement of a target if data for the baseline condition/performance was determined insufficient previously, and the actual condition/performance level is not equal to or better than the established target.

Discussion of § 490.109(e)(5)(i) Extenuating Circumstances

The FHWA amended the language for section 490.109(e)(5)(i) related to the list of extenuating circumstances that may prevent a State DOT from making significant progress. In the final rule, FHWA added language to clarify that extenuating circumstances include the sudden discontinuation of Federally furnished data due to a lack of Federal funding. This text was added to clarify that the lack of funding is not a stand-alone reason, but it is tied to the data access associated with target establishment and evaluation.

The list of extenuating circumstances details issues that could be considered outside of State DOTs ability to make significant progress toward achieving targets. If a State DOT encounters these extenuating circumstances, State DOTs would document the explanation in their performance progress report. If the explanation is accepted by FHWA, then the associated NHPP targets would be excluded from FHWA significant progress determinations. Comments from a private citizen [39] supported FHWA's proposal.

The AASHTO comment letter suggested adding the following additional extenuating circumstances: (1) Lack of Federal funding through a long-term surface transportation program; (2) Cost inflation beyond assumed levels; and (3) another cause reported by the State not covered under the previous circumstances. The Connecticut DOT made identical comments. The California DOT commented that the situations considered extenuating circumstances are too narrow. They suggested broader circumstances to include fiscal limitations and project delivery constraints. The Illinois DOT recommended that the rule account for the uncertain funding impacts by explicitly recognizing how this might inhibit the achievement of targets for significant progress requirements and determinations in section 490.109. The Colorado and Washington DOTs sought clarification on whether a lack of funding would be considered an extenuating circumstance that would result in a finding of ''progress not determined'' by FHWA. The Minnesota and North Carolina DOTs commented that budget uncertainties could result in a lack of funding and should be an extenuating circumstance. The Colorado DOT requested clarification on whether a sudden, unforeseen reduction in Federal funding would be considered an extenuating circumstance. The Oregon DOT commented that the discussion of proposed extenuating circumstances covers a range of possible circumstances, but it is also limited to those specifically listed in the rule. The Oregon DOT suggested including some language to allow States to describe circumstances not on the list. They added that there could be situations not yet thought of that should be open for consideration. The Tennessee DOT proposed that the significant progress determinations account for decreases in anticipated Federal funding, inflation above expected rates, or other unforeseeable reasons. The Washington DOT commented that FHWA should consider extenuating circumstances documented by a State DOT in the assessment of progress toward the achievement of NHPP targets in the relevant State Biennial Performance Report.

The majority of the above comments wanted to add financial uncertainty to the list of extenuating circumstances. As noted in the NPRM, FHWA understands that there are many external factors that could impact the condition/performance and the State DOT's ability to make significant progress, including financial uncertainty. However, FHWA believes that the frequency of target establishment, and the ability to adjust 4-year targets at the mid-point of a performance period creates a relatively short forecast window that should allow State DOTs to consider the impacts of funding shortfalls and uncertainty (*e.g.,* lack of funding for investment, cost escalation, and others) in initial targets and any subsequent adjustments. As discussed in section 490.105(e)(6), the State Biennial Performance Report has the appearance that State DOTs must consider uncertainties 2 years in advance. In truth, the duration that State DOTs have to consider uncertainties is shorter than 2 years. For example, the 2-year target established in 2018 is not actually submitted until October 2018 when the first State Biennial Performance Report is due. Therefore, while it reflects a 2-year period (2018 and 2019), it is in place for less than 2 years (*i.e.,* October 2018 to December 2019). (See discussion section for section 490.105(e)(6) for additional details of the timing of reports and the impact on targets.) The FHWA does not intend to use the significant progress determination process to be punitive or to lead State DOTs to simply establish easy targets. The FHWA believes one purpose of establishing targets and assessing progress is to encourage State DOTs and MPOs to establish data-supported targets that consider anticipated resources and potential uncertainties. Establishing targets and assessing progress also encourage State DOTs to provide data-supported explanations of condition/performance changes. If a State DOT did not make significant progress because of the absence of a long-term surface transportation program, unanticipated cost escalation, and other reasons, FHWA expects that State DOT would provide data-supported explanations for not achieving significant progress.

The FHWA strongly believes transportation performance management is not just about making significant progress. It is also about effectively communicating to Congress and the public how the absence of a long-term surface transportation program, unanticipated cost escalation, and other circumstances are impacting the condition/performance of the transportation infrastructure. Moreover, FHWA believes the determination process must be meaningful and bring accountability to the program as MAP–21 and FAST Act intended. Therefore, FHWA believes that adding more circumstances to exclude State DOTs from the determination will decrease the level of accountability. For these reasons, FHWA is keeping the list of extenuating circumstances short. The FHWA modified the language in section 490.109(e)(5) only to include the

[39] Nicholas Cazares, Docket Letter FHWA–2013–0053–0078.

discontinuation of Federally furnished data due to a lack of Federal funding.

In section 490.109(e)(5)(ii), FHWA proposed to accept a State DOT's explanation if it pertains to the extenuating circumstances listed in section 490.109(e)(5)(i). The FHWA would classify the progress toward achieving the relevant NHPP targets as ''progress not determined,'' and those targets will be excluded from the determination. The FHWA did not receive any substantive comments regarding this paragraph. Therefore, FHWA retains the language in section 490.109(e)(5)(ii) in the final rule.

Discussion of § 490.109(f) Performance Achievement Requirements

The AASHTO, Oregon DOT, and a private citizen [40] support basing performance achievement on two consecutive FHWA determinations. This provides State DOTs some opportunity to improve their performance before being assessed the penalty. The ASCE took the opposite view and argued that if a State DOT did not make significant progress after two consecutive reviews, intervention by the DOT should be immediate. They argued that the proposed timeline for penalties did not represent the type of speedy accountability that the public expects and that it will benefit our transportation system. Section 119(e)(7) of Title 23 of the U.S.C. required States to describe the actions they will take to achieve targets after they fail to achieve significant progress on two consecutive determinations. Subsequently, FAST Act removed the phrase ''two consecutive'' in 23 U.S.C. 119(e)(7) and added that the description of actions will be included in the biennial performance report under 23 U.S.C. 150(e). Pursuant to 23 U.S.C. 119(e)(7), FHWA amended section 490.109(f) so that State DOTs are required to describe the actions they will take to achieve targets after they fail to achieve significant progress for each FHWA biennial determination. The FHWA believes this required change in section 490.109(f) will ensure the accountability ASCE urged in their comment.

The Southeast Pavement Preservation Partnership commented that the short time horizon given to recognize improvement in the pavement network may force States into a ''worst-first'' mentality for the preservation of pavements. The FHWA agrees that indiscriminately attempting to improve condition could lead to a ''worst-first'' mentality. The FHWA also realizes that the proposed language in section 490.109(f) is inconsistent with the principle of ''Recognize Fiscal Constraints'' [41] in the NPRM preamble. In addition, FHWA emphasizes that, as discussed in section 490.105, State DOTs and MPOs have the authority to establish their targets at their discretion. The MAP–21 does not provide FHWA the authority to approve or reject State DOT or MPO established targets.

Therefore, FHWA amended section 490.109(f)(1) through (f)(3) by replacing the phrase ''improve . . . condition'' with ''achieve targets'' to be consistent with the nine principles and 23 U.S.C. 119(e)(7). Similarly, in section 490.109(f)(6), FHWA replaces the phrase ''improve progress'' with ''achieve targets'' to be consistent with the statutory language in 23 U.S.C. 119(e)(7).

Discussion of Section 490.111 Incorporation by Reference

The FHWA proposed to incorporate by reference several items. First, FHWA proposed to incorporate the HPMS Field Manual to codify the data requirements for measures, as discussed throughout part 490, and to be consistent with the HPMS reporting requirements. Second, FHWA also proposed to incorporate by reference the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges (NBI Coding Guide), which contains all of the NBI items listed in subpart D. Finally, FHWA proposed to incorporate by reference five permanent AASHTO Standards (M328–14, R36–13, R43–13, R48–10, R57–14) and three provisional AASHTO Standards (PP68–14, PP69–10, PP70–10) to codify the methods and devices used to collect data for the metrics (*i.e.,* IRI, Cracking Percent, rutting, and faulting). The FHWA proposed specific versions of each item in the NPRM with an understanding that future changes to the HPMS Field Manual, NBI Coding Guide, and AASHTO Standards will be subject to **Federal Register** notices. Because of the incorporation by reference, FHWA had posted the Proposed HPMS Field Manual 2015 for 2nd Performance Measure NPRM,[42] the 10 proposed AASHTO Standards, and the NBI Coding Guide on the docket.

The Mid-America Regional Council expressed general support for the incorporation by reference of the proposed documents, stating ''the use of widely accepted standards and calculation methods will facilitate the establishment of targets and monitoring of progress toward their achievement.'' The FHWA agrees and appreciates the comment.

The Alabama DOT recommended that FHWA consider adding AASHTO R56–10 (Standard Practice for Certification of Inertial Profiling Systems) in the final rule. The FHWA appreciates the need for certification of the Inertial Profiling Systems used in the HPMS data collection and included a requirement for equipment certification as part of the Data Quality Management Program in section 490.319(c). It is expected that State DOTs would specify AASHTO R56 or an equivalent standard as their method for equipment certification in the State Data Quality Management Program.

The AASHTO, Alaska DOT&PF, and Connecticut DOT recommended modifying the wording of the proposed rule ''so that any proposed changes to items (b)(1) or (b)(2) would be subject to public notice and comment by State DOTs and other affected parties''.[43] The FHWA agrees that any updated versions of the HPMS Field Manual and the AASHTO Standards will not be incorporated by reference without public notice and comment.

The AASHTO and the State DOTs of Connecticut, Florida, Mississippi, North Dakota, Iowa, and Oregon commented that AASHTO standards are developed in a voluntary manner and are used by State DOTs in a voluntary manner. Commenters noted that incorporating these standards into a Federal rulemaking is not their intended use and could cause unintended consequences. The FHWA recognizes the voluntary process used to develop AASHTO Standards and appreciates the efforts of State DOTs in creating them. However, the five permanent AASHTO Standards incorporated by reference in section 490.111 of this final rule contain well-known protocols for data collection, equipment requirements, and data compilation. These protocols are useful in determining pavement performance. Since these standards have been balloted and approved by a

[40] Nicholas Cazares Docket Letter FHWA–2013–0053–0078.

[41] Nine principles used in the development of proposed regulations for national performance management measures under 23 U.S.C. 150(c), *www.regulatons.gov*, Docket FHWA–2013–0053 ''Recognize Fiscal Constraints''—provide for an approach that encourages the optimal investment of Federal funds to maximize performance but recognize that, when operating with scarce resources, performance cannot always be improved.

[42] Proposed HPMS Field Manual 2015 for 2nd Performance Measure NPRM: Docket Document FHWA–2013–0053–0050: *http://www.regulations.gov/#!documentDetail;D=FHWA-2013-0053-0050.*

[43] State DOTs of Alaska, Connecticut, Idaho, Montana, North Dakota, Oklahoma, Oregon, South Dakota, and Wyoming.

majority of State DOTs, it is preferable that State DOTs use the appropriate parts of these standards to guide quality data collection, even though additional calculations may be needed to meet the reporting requirements for the HPMS Field Manual.

The AASHTO and the State DOTs of Connecticut, Iowa, Minnesota, Missouri, and North Dakota recommended that FHWA ''develop a mechanism . . . to ensure that the most recent version of AASHTO standards is used or not used as appropriate.'' Similarly, Oregon DOT recommended that FHWA provide States with some flexibility in which versions of AASHTO Standards they use. The Oregon DOT recommended that instead of directly referencing specific standards the final rule, FHWA should provide separate guidance for this information.

The FHWA appreciates the desire for flexibility in application of standards and the latest versions. However, Federal law requires a formal comment and review process for any modification of a document incorporated by reference in a rulemaking. The FHWA may undertake this process in the future, but there is no mechanism to automatically ensure that the latest versions of AASHTO Standards be used. The final rule retains the language in section 490.111(b).

The TEMPO, Oregon DOT, and Texas DOT expressed concern over FHWA's proposal to use provisional AASHTO Standards that will be refined following completion of an ongoing study on cracking and rutting measurements. When provisional standards become full standards, changes may occur in the reported data, causing inconsistencies from previously reported data. The FHWA agrees with the commenters, and removed references to provisional AASHTO standards PP67, PP68, PP69, and PP70 to ensure consistency in reporting. Specific guidance on data collection and reporting for the topics covered by these provisional standards has been added to the HPMS Field Manual, which is posted on the docket. (See discussion section for section 490.309 for more details.)

In addition, the Center for Auto Safety, PSRC, and *Public Resource.org* expressed concern over the availability of the documents incorporated by reference. The PSRC commented that ''section 490.111 lists AASHTO Standard Specifications that States must follow when collecting and calculating pavement distress; however, these specifications are not freely available. Please consider providing access to the AASHTO standards for pavement data collection as a component of MAP–21 implementation.'' In a joint letter, the Center of Auto Safety and *Publicresource.org* expressed concern that the AASHTO standards incorporated by reference were not freely available to the public.

While FHWA acknowledges that the proposed AASHTO Standards are available for purchase on the AASHTO Web site, they were posted on the docket for review by the public. Furthermore, AASHTO provides copies of all Standards to State DOTs without charge. Therefore, FHWA retains the language as proposed.

The Louisiana DOT commented that the final rule should specify that those documents incorporated by reference are ''revised to all English units of measure to be consistent and to eliminate the numerous metric to English conversion rounding issue.'' The HPMS Field Manual that is incorporated in the final rule indicates that English units are the preferred method for measurement. However, there is no prohibition on using metric devices for measurement and converting measurements to the English standards. State DOTs electing to convert metric measurement are guided to follow the accepted U.S. standard process [44] for conversions.

Regarding the proposed HPMS Field Manual, Wisconsin DOT asked when the proposed file that reflects these changes would be available if the HPMS Field Manual would continue to be re-released every year. In response to those questions, the final rule incorporates the revisions to the HPMS Field Manual, which is available on the docket with the final rule. The incorporation by reference requires that future updates to the HPMS Field Manual be made through a formal public comment and review process.

The PSRC asked which standards should be used to collect IRI data. The PSRC also asked for clarification on the following: (1) Whether bituminous road would include those with a chip seal wearing surface; (2) whether the AASHTO method required for distress evaluation is also appropriate for chip sealed surfaces; and (3) whether the percent cracking distress only refers to fatigue and/or alligator cracking.

In response, the HPMS Field Manual has been revised to clarify the standards to be used to collect and report all pavement measurements to the HPMS.

The AASHTO commented that in section 490.309(a), the word ''include'' should be changed to ''are.'' The use of ''include'' suggests that there could be additional pavement metrics or requirements that are not discussed in this section or elsewhere in the NPRM. The FHWA appreciates the comment and has amended the language in section 490.309(a) to clarify the extent of the metrics and data elements State DOTs are required to report.

B. Subpart C National Performance Management Measures for Assessing Pavement Condition

Discussion of Section 490.301 Purpose

To implement the statutory provisions under 23 U.S.C. 150(c)(3)(A)(ii)(I) and(II), FHWA proposed a statement of purpose which required the establishment of performance measures for State DOTs to use to assess the condition of pavements on the Interstate System and the NHS excluding the Interstate System. No comments specific to this section were received, although Washington DOT concurred with the concept that MAP–21 provided more flexibility in the use of Federal funds.

Discussion of Section 490.303 Applicability

This section described the applicability of this rule to highways on the NHS for purposes of implementing the NHPP. Comments from 19 State DOTs (Arkansas, Colorado, Connecticut, Florida, Georgia, Iowa, Maine, Maryland, Michigan, Mississippi, Missouri, New Hampshire, Oklahoma, Oregon, Pennsylvania, Texas, Vermont, and Washington State), and AASHTO expressed concerns about the requirements to report pavement conditions on routes not owned or operated by States. The commenters also inquired as to whether required reporting included ramps and similar connectors.

In the NPRM, FHWA indicated that the pavement measure would apply to all mainline highways on the NHS. The 19 State DOTs identified above, the AASHTO, AMPO, ARC, Center for American Progress, COMPASS, NARC, National Center for Pavement Preservation, NYMTC, and one anonymous commenter generally agreed that State DOTs and MPOs have no authority or control over maintenance and/or investment decisions on some of the assets on NHS. Therefore, commenters said State DOTs and MPOs should not be held responsible for the reporting of data. The commenters suggested that the responsibility for data collection, reporting, and programming rests with the entities that own the highway system. Similar comments were raised, as discussed in section 490.105(d), regarding highway

[44] Process is defined in Publication SP 1038–2006 from the National Institute of Standards.

ownership as it pertains to the accountable entity to establish and achieve targets. The statutory language in MAP–21 requires that the performance management requirements under 23 U.S.C. 150 and NHPP under 23 U.S.C. 119 apply to the entire NHS and Interstate System, not to a subset of the NHS (*e.g.,* ''State DOT owned or operated Interstate System,'' ''State DOT owned or operated National Highway System,'' and others) as the commenters would prefer. The MAP–21 does not define the terms ''State'' and ''MPOs'' for purposes of 23 U.S.C. 150 and 119 as something other than what is already defined elsewhere in MAP–21. Accordingly, FHWA retains the language in section 490.303 for purposes of the performance management requirements in 23 U.S.C. 150 and 119(e)(7), which require performance measures for the entire NHS and Interstate System within the State. The FHWA evaluated the extent of the enhanced NHS that is not owned or maintained by State DOTs. In that analysis,[45] FHWA found that a majority of State DOTs own at least 90 percent of the Interstate (40 States) and non-Interstate NHS (28 States) within the State boundary. The FHWA expects State DOTs to coordinate with other entities that own and maintain portions of the NHS in support of these new performance requirements.

The New York DOT and Seattle DOT provided comments to express concern with the focus on the NHS. They commented that this system only comprises a portion of the roadways they need to maintain and improve. The FHWA appreciates these comments and recognizes the challenges that transportation and planning organizations are faced with in managing the transportation system under tight budgetary constraints. However, 23 U.S.C. 150 requires the measure to apply to both the Interstate System and the non-Interstate NHS and precludes FHWA from establishing measures outside those areas described in 23 U.S.C. 150(c). Therefore, FHWA cannot change the applicability of the measures beyond the limits defined in this section of title 23 U.S.C. (See discussion on target scope for the measures in the discussion section for section 490.105(d)(1).)

The National Highway System routes for pavement conditions are specifically defined as mainline highways excluding ramps and connectors. The comments received on the proposed requirement to limit the applicability to the mainline highways of the NHS for the pavement measure were supportive of this requirement.

Discussion of Section 490.305 Definitions

The NPRM proposed a number of definitions related to pavement performance to clarify specific meaning in Subpart C. Where additional clarification is needed, the HPMS Field Manual is to be used for interpretation. The Ada County Highway District (ACHD) commented that both the definition and means of computing Cracking Percent are unclear. They requested that the final rule either describe how the metric should be computed or reference the HPMS Field Manual, whose definition is clearer. The Iowa DOT expressed concern over the definition of PCC pavements. They noted that the definition does not appear to cover all possible types of cracks and is overly simplistic. As a result, a very small crack could cause an entire pavement slab to be assigned a ''failing'' grade. They suggested that the definition use ''percent slabs cracked'' for PCC overlay projects. The FHWA agrees with this concern and has made changes to the thresholds for PCC pavements described below and in revisions to the HPMS Field Manual. The Portland Cement Association commented that composite pavement should be added to the rule as a fourth pavement type. They remarked that composite pavements consist of an asphalt overlay of existing concrete pavement (either jointed or Continuously Reinforced Concrete Pavement). They argued that composite pavement behaves differently than asphalt pavements and will respond differently to preservation, repair, rehabilitation, and replacement requirements. As such, defining composite pavement as a separate pavement type will provide a more consistent assessment of roughness and distress. While there is merit to this suggestion, not all State DOTs have a complete inventory indicating the limits of composite pavement on their networks. The FHWA has concerns about the cost of requiring this level of detail and does not find it justified at this time. Therefore, the comment was not accepted.

An anonymous commenter requested that FHWA add additional details to the pavement cracking definition, noting that the definition in HPMS is too vague. The FHWA does not think the definition used here is too vague; however, the details about measurement and reporting have been revised in the sections that follow to improve clarity.

The Oregon DOT expressed concern with the definition for Cracking Percent, spalling, and visible defects in the proposed rule. In addition, the commenter stated that the proposed unintentional break cracking definition is not included in AASHTO standards or the HMPS Field Manual. The definitions in the final rule are identical to those used in the HPMS Field Manual and are intended to cover the typical conditions that are typically measured on highway pavements. The NPRM defined a term called Pavement Surface Rating that might be used with manual evaluation of pavement surfaces. The Alabama DOT stated that PSR should refer to ''Present Serviceability Rating'', rather than ''Pavement Surface Rating.'' The FHWA acknowledges the error in the term used and has revised the language the definition to read ''Present Serviceability Rating'' (PSR) as ''an observation based system used to rate pavements.'' The prohibition on its use was deleted from the definition because the use of PSR is permitted in the final rule for reporting conditions on certain pavement sections as discussed in sections 490.309 and 490.311.

In a joint submission, the State DOTs of Vermont, Maine, and New Hampshire commented that the definition for cracking in the proposed rule was unclear and stated that more work is necessary to identify data collection requirements and interpretation of the cracking performance metric. In addition, the commenters expressed concern with the proposed data collection methodology for rutting. The commenters said the 5-point system can underestimate rutting measurements and the differences between the 5-point system and the automated transverse data profile can lead to inconsistent data presentation at the national level. The FHWA agrees that there is some ambiguity in the description of the methods used for collecting and reporting cracking and rutting and has made changes in the sections that follow. The definitions used in the NPRM are adequate and have been retained in the final rule. The Louisiana DOT expressed concern with several definitions in the proposed rule and urged FHWA to develop standardized definitions. In addition, the commenter remarked that the proposed rule did not include a definition for transverse crack. The issues raised by Louisiana are covered in the specific sections of the final rule and discussed in the sections describing the measurement and reporting of each distress.

In the final rule, FHWA adds a definition for a ''Pavement Section'' as a nominally 0.1 mile-long reported

[45] Docket Document.

segment that defines the limits of pavement condition metrics required by FHWA. The added definition is to clearly differentiate between reported condition metric sections and dynamically segmented condition metric sections for calculating measures and determining missing, invalid, and unresolved data. Please see discussion in section 490.309 for more details.

The FHWA proposed a definition for the term ''sampling'' as ''a means for measuring pavement conditions on a short section of pavement as a statistical representation for the entire section.'' The FHWA also proposed in the NPRM that sampling is not to be used to measure or rate Interstate and non-Interstate NHS pavement conditions. As discussed in section 490.309, FHWA retains the language stating that no sampling of condition metric and inventory data items is allowed for required pavement condition data and their inventory data items for performance measures or condition rating. To ensure consistency, FHWA revised the definition of sampling by adding ''Sampling is not to be used to measure or rate NHS pavement conditions.'' This reflects the requirements in sections 490.309 and 490.313(e).

Discussion of Section 490.307 National Performance Management Measures for Assessing Pavement Condition

This section proposed four performance measures required by 23 U.S.C. 150(c)(3)(A)(ii)(I) and(II) for measuring pavement conditions, two for the Interstate System, and two for the NHS excluding the Interstate System. Twenty comments were received from highway agencies, planning organizations, local governments, and industry. In summary, the issues raised included: (1) Not including traffic in the measures; (2) the use of the terms ''Good,'' ''Fair,'' and ''Poor;'' (3) inconsistency in how those terms are determined for pavements and bridges; and (4) finalizing the enhanced NHS.

In the NPRM, FHWA asked for comments on whether other factors such as facility location, functional class, level of use, or environment should be considered in the design of the pavement performance measure. The Louisiana DOT disagreed with the language in the proposed rule. The commenter argued that traffic is an important measure of pavement condition because of the impact that truck traffic has on the long-term structural viability of pavements and bridges. The AMPO, NYMTC, and Washington DOT provided comments that suggested the pavement measures be weighted by the level of traffic on the roadway. The FHWA agrees that traffic impacts pavement conditions. However, FHWA believes incorporating traffic volume in the pavement condition measures could unintentionally force the State DOTs and MPOs put more emphasis on high-trafficked highway sections. The FHWA believes incorporating traffic in the investment decisionmaking should be dictated by local priorities. So, FHWA does not incorporate traffic in the pavement condition measures in the final rule. A private citizen, William Grenke, commented that there should be separate ratings for pavement performance and pavement maintenance level of service. While there is merit to this suggestion, the statute limits pavement performance in this rule to pavement conditions.

The AASHTO, Maryland SHA, and Minnesota DOT suggested expanding the terms ''Good'', ''Fair'', and ''Poor'' to describe the level of repair needed to address each respective condition level. The Connecticut DOT opposed making this change. The Memphis MPO expressed support for the transition to a numerical based scoring system to assess the quality of NHS roads and bridges as well as Interstate pavement. The commenter argued that using numerical scoring eliminates the ambiguity associated with qualitative scores (*e.g.,* Good, Fair, or Poor).

In selecting the terms and calculation methodologies in the final rule, FHWA intended to identify pavement conditions where ''Good'' suggests no major investment is needed and ''Poor'' suggests conditions where major investment for pavement reconstruction is needed. ''Fair'' pavement conditions suggest that minor expenditures for maintenance and repairs are expected. The MAP–21 delegates the selection of actions to States. It would be inappropriate for FHWA to prescribe any actions needed to address a respective condition level. The FHWA agrees with comments from Connecticut DOT that no change should be made to these terms and definitions as they are terms commonly understood by the public.

The AASHTO, NEPPP, and NYMTC commented that the focus on Good and Poor conditions will not promote management practices to preserve existing conditions. The focus on Good and Poor pavements conditions for measuring performance is not intended to prescribe State DOT management practices. The statute makes preservation activities eligible for NHPP funding and State DOTs may find that preservation programs are cost effective ways to achieve performance targets. However, FHWA has no authority to require them to use preservation programs.

The South Carolina DOT commented that the rating system of Good, Fair, and Poor as a national standard presents a conflict. By setting new metrics for measuring system performance nationally, it challenges State DOTs to tell a new story about the condition of their assets. If State DOTs have traditionally used those terms in their own metrics to communicate the condition of our asset to the public, stakeholders, and legislators, it could give the appearance that State DOTs are ''manipulating the information.'' The South Carolina DOT also commented that they have no issue with complying with the rule, but recommended that FHWA grant State DOTs the discretion in their reporting to remain consistent in what and how they have been communicating the condition of their assets. The AASHTO, NYSAMPO, and the State DOTs of California, Connecticut, Michigan, and Oklahoma suggested that the Fair condition level be defined and added to the list of four required measures. The Washington DOT commented that they did not see the need for a Fair category, and were in agreement with FHWA's use of Good and Poor.

The FHWA believes the net increase or decrease of percent Fair network condition does not easily indicate improvement or declining condition. For example, if there was an increase in percent Fair, it could be the result of declined condition of pavement sections that were previously rated as Good condition or improved condition of pavement sections that were previously rated as Poor condition. Therefore, the net increase (or decrease) in percent Fair may not adequately portray condition improvement (or decline) for the highway network. The FHWA believes that focusing on Good and Poor conditions will better indicate improvement or decline of network condition and also will better inform the public about pavement conditions and what they should expect from investments in highway pavements. Finally, the requirement to establish targets for each of the final four measures does not prohibit a State DOT or MPO from focusing on maximizing Fair conditions. For these reasons, FHWA retains the four measures in the final rule.

A few commenters commented that the approaches to determining Good, Fair, and Poor conditions should be consistent for pavements and bridges.

The FHWA proposed approaches that determine pavement condition levels based on the predominance of metric condition levels and bridge condition levels based on the lowest metric condition level. In the NPRM, FHWA discussed how each of these approaches supported current practice and the findings of pilot studies [46] conducted prior to the rulemaking effort. Although the methods for determining pavement and bridge condition levels are different, the results of the two methods discussed in the studies provide sound assessments of the condition level of pavements and bridges. Consistency or using a single methodology to determine pavement and bridge condition level is desirable from a process standpoint. However, having assessments that best reflect the condition of pavements and bridges is more desirable. It is also important to note that pavements and bridges are two distinct types of assets with distinct performance characteristics. Therefore, having different methodologies for determining their condition levels should not be unexpected. The FHWA retains the two methodologies for assessing the condition level of pavements and bridges in the final rule.

The TEMPO expressed concerns that the criteria used to identify the NHS are still being developed for implementing performance measures applicable to the NHS. They commented that if this issue is not addressed before reporting and evaluation deadlines are implemented, State DOTs and MPOs could expend significant resources collecting, analyzing, and maintaining data that is not part of the final NHS. They urged FHWA to delay implementation of the new pavement requirements until the limits of the NHS are finalized.

As discussed in combined discussion sections for sections 490.105(e)(1) and 490.105(f)(1), FHWA cannot delay the due date of the State DOT target establishment or the State DOT reporting on performance targets because of the statutory deadlines in MAP–21. The FHWA also recognizes that NHS limits could change during a performance period. Therefore, FHWA revised section 490.105(d)(3) in this final rule so that State DOTs are no longer required to declare and describe NHS limits in their Baseline Performance Period Report. As a result, the changes in NHS limits during a performance period would be accounted for. As discussed in section 490.105(d)(3), the National Highway System Data Item in HPMS and the Highway System of the Inventory Route Data Item in NBI are required to be reported to FHWA annually together with the condition metric data. The NHS limits for pavement condition measures will come from the same data set submitted to HPMS in the same year as the performance condition metric data is submitted, and NHS designation for bridge condition measures will come from the same NBI data set as the performance condition metric data of the same year. (See more details on implementation timeline discussion in sections 490.105(e)(1) and 490.105(f)(1) and discussion on NHS limits in the discussion for section 490.105(d)(3).)

Discussion of Section 490.309 Data Requirements

The FHWA proposed four condition metrics to be collected and reported to the HPMS to calculate the pavement measures. These metrics included IRI, rutting, faulting, and Cracking Percent. Comments on the inclusion of these four metrics were primarily focused on the consideration of IRI as a required metric. The AASHTO and eight State DOTs [47] commented that, of the four proposed metrics, IRI is the only one ready to be measured consistently in all States and therefore should be the only measure of pavement condition. Alternatively, they suggested that the additional three metrics be phased in over time. In contrast, the ACPA, Cemex USA, Connecticut DOT, Georgia DOT, Illinois DOT, Louisiana DOT, Ohio DOT, and PCA supported the use of the four metrics. Some commenters [48] suggested that the four metrics not be equally weighted in the calculation of the pavement measures. The FHWA considered these differing opinions and elected to retain the requirement for the collection and reporting of the four metrics. The FHWA has found through documented research [49] that nearly all State DOTs currently use more than IRI in their pavement management programs. Publications by recognized pavement experts indicate that pavement conditions cannot be determined using only IRI alone [50] [51] [52] [53]. However, FHWA recognizes and appreciates that the methods to collect and report the rutting, faulting, and Cracking Percent metrics may be new to some State DOTs. The Alabama DOT suggested that FHWA replace IRI with Mean Roughness Index (MRI) in order to avoid confusion. The FHWA agrees with Alabama that MRI is the correct measurement and the HPMS Field Manual has been revised to clarify this distinction. The term IRI is still used because it is familiar to most users even though the actual collection and reporting is the MRI value.

The FHWA recognizes that the level of pavement data collection for the four metrics is more intensive than the HPMS requirements in previous years and will require time for State DOTs to adjust contracts and equipment to comply. The final rule delays the requirements for pavement data collection until January 1, 2018, for Interstate highways and until January 1, 2020, for non-Interstate NHS routes. Further, FHWA has delayed the implementation of data collection, reporting, and target establishment requirements so that the first performance period begins in 2018. The phased approach pushes the determination of baseline pavement conditions for the first performance period from 2018 to 2020 (the mid-point of this period). This phased approach to target establishment for the pavement measures is presented in the discussion for section 490.105(e)(7). The FHWA believes that these actions will advance the state of practice to more consistently collect and report rutting, faulting, and cracking while allowing for a phased approach to full implementation.

Several commenters,[54] primarily representing local governments and

[46] Improving FHWA's Ability to Assess Highway Infrastructure Health Pilot Study Report FHWA–HIF–12–049 2012.

[47] Alaska DOT&PF, Connecticut DOT, Idaho DOT, Montana DOT, North Dakota DOT, South Dakota DOT, Washington State DOT, and Wyoming DOT, Michigan Asset Management Council, Michigan State Transportation Commission.

[48] Oregon DOT, Association of Metropolitan Planning Organizations, and Illinois DOT.

[49] NCHRP Study 401 ''Quality Management of Pavement Condition Data Collection 2009.''

[50] ''Pavement Management Practices in State Highway Agencies'': Newington, Connecticut Peer Exchange Results. 2011: *http://www.fhwa.dot.gov/asset/pubs/hif11036/hif11036.pdf.*

[51] ''Pavement Asset Management'', Uhlmeyer, J., Luhr, D., and Rydholm, T., Washington State Department of Transportation. 2016: *https://www.wsdot.wa.gov/NR/rdonlyres/E93CF754-0452-4FDE-92BA-02A7BC4CB98A/0/WSDOTPavementAssetManagement2816.pdf.*

[52] ''Performance Measures for Pavement Assets under Performance Based Contracts'', Alyami, Z., Tighe, S., Gransberg, D., 9th International Conference on Managing Pavement Assets, 2014: *https://vtechworks.lib.vt.edu/bitstream/handle/10919/56400/ICMPA9-000173.PDF?sequence=2&isAllowed=y.*

[53] ''Performance Measures: Pavement Condition 2015'', Kansas DOT 2015: *https://kdotapp.ksdot.org/perfmeasures/documents/pavement_fact_sheet.pdf.*

[54] City of Fremont, CA, City of Santa Rosa, CA, City of Vacaville, CA, Colorado DOT, Contra Costa County, CA, County of Marin, CA, Metropolitan Transportation Commission, Oversight Committee for the California Local Streets and Roads Needs Assessment, Puget Sound Regional Council, Rural counties Task Force, California DOT, Cemex USA, City of Vancouver, WA, Connecticut DOT, County of Los Angeles, Oregon DOT, South Dakota DOT,

planning organizations, objected to the use of IRI as a metric in the calculation of the pavement measure. The ACHD, for example, commented that collecting data on low speed roads is difficult and generally results in poor quality data. As such Ada County suggested dropping IRI as a measure for local roads. Similarly, the city of Santa Rosa commented that while the California DOT is collecting IRI data on California's NHS, it will likely be the responsibility of local agencies to collect IRI data in the future. This change could disrupt established process for PCI collection and will result in increased cost and duplicative data collection efforts. The Alaska DOT&PF commented that asphalt cracking has no standard method of collection, remarking that two methods, windshield and laser, are not comparable. Finally, CEMEX USA and the Portland Cement Association suggested adding Remaining Service Interval as a condition metric. The majority of the commenters represent cities and counties that utilize the Pavement Condition Index (PCI) as their primary method to assess pavement conditions. The commenters noted that the PCI method does not include IRI nor an assessment of ride quality. Several commenters, primarily local agencies in California, commented that applying IRI to local roads could lead to ''worst-first'' strategies. Additionally, the ACHD commented that using IRI on local roads may mean that cost-effective pavement preservation techniques (*e.g.,* chip seals) will no longer be useful as they can negatively impact IRI. The commenters expressed a number of concerns related to the cost and burden of collecting IRI using a high speed profiler testing device; and the lack of correlation between PCI and IRI. In addition, many of these commenters suggested that local agencies be allowed to use their own methods to classify pavements as being in Good, Fair, or Poor condition. The ACHD suggested that straight-edge based methods could replace IRI or manual methods on local roads. This alternative method would remain accurate and would be much more practical. Furthersmore, as discussed later in this section, a number of commenters raised concerns with the accuracy of collecting IRI in urban environments. Discussions with manufacturers of IRI data collection equipment and the comments from the Road Profiler Users Group confirmed that this is particularly difficult where posted speed limits are less than 40 mph, usually in urban settings. In the final rule, an alternative method known as PSR is permitted to determine the overall condition of pavement sections only on roadways where posted speed limits are less than 40 mph.

In section 490.309(b) of the NPRM, FHWA proposed the data collection requirements for Interstate and non-Interstate NHS pavements necessary to calculate the four pavement condition metrics. A wide range of comments was received on these proposed data collection requirements. This section includes a discussion on the response to the comments and the changes resulted in the final. This discussion is organized into the following categories of issues raised by commenters:

- Reference to AASHTO protocols
- Collecting data in both directions on Interstate pavements
- Collecting data at an annual frequency for Interstate pavements
- Collecting IRI data on lower speed roadways
- Processing data at 0.10 mile intervals
- Requiring full extent data collection on the full NHS for all four metrics
- Using structure type to identify and exclude bridges
- Travel lane required for data collection
- Devices for rutting collection

Reference to AASHTO Protocols

Because the data requirements to calculate pavement performance vary somewhat from current data collection practices, the NPRM specified defined collection protocols for each of the required data elements. The majority of the methods and standards for data collection are outlined in the HPMS Field Manual and reference some of the aspects of certain AASHTO Standards. These documents are incorporated by reference in section 490.111. Several adopted and provisional AASHTO Standards were specified in the NPRM with the intention of providing guidance and background for measuring data needed to determine performance.

The AASHTO and others [55] submitted comments about the proposed methods for data collection, suggesting that these standards were never intended for regulatory purposes. The comments noted distinctions between AASHTO Standards and those in the HPMS Field Manual for cracking measurement. The commenters also noted that AASHTO Provisional Standards PP68–14, PP69–10, and PP70–10 were never intended as permanent standards, are subject to change, and inappropriate for use in rulemaking.

The FHWA recognizes that AASHTO Standards were not specifically designed for collecting data that is used for pavement performance evaluations. However, the 10 AASHTO Standards incorporated by reference in section 490.111 contain well-known protocols for data collection, equipment requirements, and data compilation that are useful in determining pavement performance. It is preferable that State DOTs use the appropriate parts of these standards to guide quality data collection even when additional calculations are needed to meet the requirements for the HPMS Field Manual. For example, AASHTO Standard PP68–14 contains excellent methods to collect cracking images in asphalt pavements. Additional calculations can easily be done to make this value meet the HPMS requirement for area of pavement cracked. Guidance on how to make these calculations is included in the HPMS Field Manual. The FHWA agrees with AASHTO that including the provisional standards PP67–14, PP68–14, PP69–14, and PP70–14 as requirements in the rule is inappropriate. The FHWA directs State DOTs to refer to the HPMS Field Manual for data collection methods for automated data collection of pavement cracking and rutting. However, FHWA recognizes the extensive efforts by State DOTs involved in developing these provisional standards. The HPMS Field Manual may continue to reference them as preferred methods for data collection with specific guidance for making calculations from that data to report pavement conditions to HPMS.

Collecting Data in Both Directions on Interstate Pavements

The FHWA proposed in section 490.309(b) for State DOTs to collect data in both directions of travel for the full Interstate for all four condition metrics to accurately capture the directional differences associated with pavement type, age, traffic loading, and roadway geometry. Three State DOTs and one planning organization [56] expressed

Seattle DOT, Orange County Transportation Authority, City of Portland, OR, City of Sacramento, CA, City of Gilroy, CA, City of Napa, CA, Town of Tiburon, CA, City of Spokane, WA, California Association of Counties, South Jersey Transportation Planning Organization, Portland Cement Association, American concrete Pavement Association, Northwest Pavement Management Association, Fugro Roadware, NCE, Brian Domsic, John Harvey, An anonymous commenter, Stephen Mueller Consultancy, League of California Cities, and LA DOT.

[55] Colorado DOT, Connecticut DOT, Florida DOT, Georgia DOT, Idaho DOT, Illinois DOT, Minnesota DOT, Montana DOT, North Dakota DOT, Oregon DOT, Rhode Island DOT, South Dakota DOT, Wyoming DOT, Mid-America Regional Council, and Southeastern Pavement Preservation Partnership.

[56] Georgia DOT, Missouri DOT, Oregon DOT, Atlanta Regional Commission.

concerns with the burden associated with collecting data in both directions. The Maryland State Highway Administration and Missouri DOT suggested a revision to the final rule to limit the requirement for collection in both directions to only those cases where the highway is divided with either a median or a physical barrier. Conversely, two State DOTs [57] commented that they collect data on their Interstate in both directions, and in some cases, in all lanes. In addition, it was noted by the Oregon DOT that data for the required inventory metrics (Through Lanes, Surface Type, and number of lanes) are collected and reported in one direction only, which may not represent information in the non-inventory direction correctly. In the NPRM, an HPMS review indicated that 52 percent of State DOTs do not report data in both directions on the Interstate. The comments received on this requirement support that finding.

Contrary to the comments opposing data collection on both directions of Interstate System, the joint letter from the Maine, New Hampshire, and Vermont DOTs supported the pavement condition data requirements on ''both barrels of dual-carriageways.'' The letter stated that the New Hampshire DOT has been measuring pavement condition and other measurements on each carriageway for all of their Interstate System for ''several years and it has taken significant effort to combine the data for FHWA purposes.'' They noted that requiring data for ''both barrels'' of divided Interstate System would relieve them from additional post-processing and create a more comprehensive picture of the statewide pavement condition in their State. They also recommended FHWA to consider the dual-carriage data format to support FMIS, which intends to use HPMS data as its source.

In a recent study for FHWA,[58] pavement conditions were measured in both directions on a significant number of miles of Interstate highways. The findings indicated that the difference in pavement conditions between the two directions was insignificant. This supports the claims made in the comments indicating that data collection in both directions on Interstate highways is not warranted. However, FHWA also recognizes that agencies, like New Hampshire DOT, collect their data in a dual-carriageway data format for a more comprehensive assessment of the statewide pavement condition and for better integrating with FMIS. Therefore, section 490.309(b)(1) in the final rule was amended to require pavement data reporting for ''at least one direction'' for the Interstate System, and section 490.309(b)(1)(iii) in the final rule provides State DOTs the option to collect and report pavement condition data separately for each direction of divided highways (carriageway) on the Interstate System. Please note if a State DOT chooses to exercise the option of reporting Interstate pavement data in dual-carriage data format, then that State DOT must report the data for the entire Interstate System within the State (*i.e.,* no partial network dual-carriage option allowed). As stated previously, FHWA provides this option for State DOTs for a more comprehensive assessment of their statewide pavement condition and for better integrating with FMIS. The FHWA expects State DOTs to not convert data format only to meet the minimum Interstate pavement condition level and/or to make significant progress. Considering a substantial amount of effort required to covert data format (*i.e.,* single/inventory direction to dual carriage or vice versa) in accordance with HPMS Field Manual, FHWA does not believe State DOTs will convert the data format just to meet the minimum Interstate pavement condition level and/or to make significant progress. Therefore, FHWA does not specify an allowable frequency of changes in data format in the final rule so that State DOTs have the flexibility of converting their Interstate data format at any time. The FHWA recommends that State DOTs should carefully examine the effects of data format conversion on condition/performance trends and on the ability to meet the minimum Interstate pavement condition level and significant progress toward achieving targets. Also, it is important to note that if a State DOT decides to report Interstate System data in a dual-carriageway data format, then the Interstate pavement metrics in section 490.311 will be determined separately for each direction (*i.e.,* inventory and non-inventory directions) and the Interstate pavement measures in section 490.313 will be computed using the data from both directions of the Interstate highways. Please refer to the HPMS Field Manual in the docket for data requirements associated with dual-carriageway data format for Interstate System.

Collecting Data on an Annual Frequency for Interstate Pavements

The FHWA proposed to maintain the current HPMS requirement to collect data annually for the IRI metric and an increased frequency of annual (from biennial collection) collection for the Cracking Percent, rutting, and faulting metrics for the Interstate System. A total of 23 comments [59] addressed the proposed annual data collection requirements. The majority of these commenters expressed concern with the costs and burden associated with annual data collection and questioned the need to capture annual changes in pavement condition. The Oregon DOT noted that an evaluation of their annual collection efforts after 7 years of testing concluded that ''it was not necessary or cost effective to collect data annually,'' citing that the overall condition does not change dramatically from year to year. The Michigan State Transportation Commission and Michigan Asset Management Council opposed the annual data collection requirement and recommended that FHWA work in cooperation with States to determine the most appropriate frequency and level of detail for data collection. In general, the commenters did not feel it was necessary to capture annual changes in condition.

The Rhode Island, Pennsylvania, and Minnesota DOTs commented that they collect data on their Interstate System on an annual basis. The Rhode Island DOT commented that their data coverage and frequency were the result of a recommendation by the National Center for Pavement Preservation to account for the rapid deterioration that pavements in Rhode Island can exhibit from year to year due to the weather conditions. Fugro Roadware supported the proposed data coverage and data collection frequency. Fugro Roadware emphasized the importance of identifying many of the potential problems early and clearly so that State DOTs and other agencies can ensure that they are optimizing the work performed on the network to limit deterioration and potential need for more advanced and expensive treatments.

The FHWA believes that the minimum Interstate pavement condition requirements in 23 U.S.C. 119(f) require annual assessments of condition. The FHWA recognizes that, for a specific pavement, conditions may not change

[57] Tennessee DOT, New Hampshire DOT.

[58] Evaluation of Pavement Conditions on the Interstate System: Preliminary Summary, Rada 2015.

[59] AASHTO, California DOT, Connecticut DOT, Delaware DOT, Hawaii DOT, Idaho DOT, Iowa DOT, Maryland DOT, Michigan DOT, Minnesota DOT, Montana DOT, North Carolina DOT, North Dakota DOT, Oregon DOT, Pennsylvania DOT, Rhode Island DOT, South Dakota DOT, Northeast Pavement Preservation Partnership, Southeastern Pavement, Preservation Partnership, NYSAMPO, SJTPO, Michigan State Transportation Commission (STC) and Michigan's Transportation Asset Management Council (TAMC).

dramatically each year. However, FHWA believes that changes in conditions of the full-extent Interstate System within a State will be evident from year to year due to construction activities, weather events, and variability in the durability of the highway pavements. State DOTs have been reporting IRI for the Interstate highways to HPMS on an annual basis since 1989. A review of the HPMS data from 2007 to 2011 showed that 29 State DOTs reported at least a 1 percent change in the IRI for their Interstate pavements in Good condition. During the same period, 10 State DOTs reported at least a 10 percent change in annual Good pavement condition levels.

Although the new pavement measure includes multiple condition metrics, FHWA believes this account of historical changes in IRI condition suggest that similar changes should be expected for the new pavement measure. Furthermore, FHWA believes that the 0.1 percent reporting accuracy required of the new pavement measure necessitates at least an annual frequency of testing in order to accurately determine State DOT compliance with the minimum condition requirements in 23 U.S.C. 119(f).

As discussed in the Executive Summary, the FAST Act removed the phrase ''two consecutive reports'' in 23 U.S.C. 119(f)(1)(A), which relates to triggering the penalty for when the Interstate pavement condition has fallen below the minimum condition level established under this rule. Under the FAST Act the penalty will be based on each FHWA minimum condition level determination instead of two consecutive minimum condition level determinations. The FHWA believes that the changes due to FAST Act further support the importance of the annual data collection for implementing the statutory requirements under 23 U.S.C. 119(f)(1).

For these reasons, FHWA retains the requirement of annual data collection for all four condition metrics for the Interstate pavements in the final rule.

Collecting IRI Data on Lower Speed Highways

The FHWA proposed that IRI data be collected on all NHS roadways. As previously discussed, a number of commenters [60] noted the challenges with collecting IRI data on roadways in urban settings and lower speed roadways. Although IRI is a well-known measure for pavement performance, it is less detectable to highway users at low speeds and less useful as a measure of pavement performance. To specifically address this issue, FHWA added an alternative method known as PSR [61] that may be used to determine overall pavement condition for Interstate and non-Interstate NHS sections where the posted speed limit is less than 40 mph (sections 490.309(b)(1)(iv) and 490.309(b)(2)(iii)). The intent of this change is to allow continued use of a method that has been a part of HPMS for many years to provide pavement condition information for locations where IRI data collection is not practical. In addition, section 490.309(b)(2)(iii) provides that State DOTs may use conversions to PSR from other pavement condition assessment methods, such as the U.S. Army Corps of Engineers PCI,[62] if they demonstrate to FHWA that the conversion produces pavement conditions equivalent to the PSR method.[63] (See discussion section for section 490.313(b) for the thresholds to define Good, Fair, and Poor condition levels based on PSR.)

Processing Data at 0.10 Mile Intervals

The FHWA proposed in sections 490.309(b) and 490.311(c) that data be collected and reported at 0.10 mile intervals for the four pavement metrics for the full NHS to provide better uniformity and increased accuracy in condition assessment. The majority of commenters, including 18 State DOTs,[64] 3 industry associations,[65] 2 planning organizations,[66] ACHD and AASHTO opposed or expressed concerns with the proposed requirement. In general, the commenters noted that the uniform 0.1 mile reporting requirement did not align with their current State DOT pavement measuring and reporting practices. The commenters cited the costs to conform to this requirement and urged FHWA to consider an approach that would provide greater flexibility to State DOTs to allow for varying reporting lengths. The reporting of the inventory data elements in section 490.311(c) of the NPRM generated some questions. Fugro Roadware recommended that sections shorter than 0.1 mile be considered for other significant changes in the pavement inventory, such as change in pavement surface type and change in route identification (*i.e.,* where reference posts reset at county lines and overlapping highways start and end). The Georgia DOT urged FHWA to define the method for calculating cracking, rutting, and faulting, including differentiation of surface types. The Kentucky Transportation Cabinet requested clarification on how sections should be broken down when there are discontinuities in the route or surface type within a section. Considering these comments, FHWA revised sections 490.309(a) and 490.311(c)(2) to clarify that State DOTs are required to report all relevant [67] condition metrics for each pavement section. This means that each pavement section and all relevant condition metrics must be spatially coincident (*i.e.,* identical Route_ID, Begin_Point, and End_Point values in HPMS). Recognizing that inventory data items do not perfectly align (or are not spatially coincident) with the pavement sections, FHWA revised section 490.311(c) and added section 490.311(d) in the final rule to clarify that State DOTs are required to report the three inventory data items (Through Lanes, Surface Type, and Structure Type) using the protocols in the HPMS Field Manual. In contrast to the section lengths for the measured pavement metrics, the section length for each of the inventory data items is not restricted to the 0.1 mile length. Instead, it reflects logical start and end points. These inventory data items will be tied to measured pavement conditions reported in the metrics using each State DOT's linear referencing system, as described in chapter 4 of the HPMS Field Manual.

Nine State DOTs [68] the Northeast Ohio Areawide Coordinating Agency and the Southeast Pavement Preservation Partnership provided comments expressing support for 0.1-mile intervals and noted that they collect and report data at 0.10 mile intervals and did not

[60] Ada County Highway District (ACHD), John Harvey, CEMEX USA, City of Vacaville, CA, Portland Cement Association, Metropolitan Transportation Commission, Oregon DOT.

[61] Carey and Irick, Highway Research Bulletin (1960).

[62] ASTM Standard D6433.

[63] An example in publication: Al-Omari and Darter, ULUI–ENG–92–2013 (1992).

[64] Georgia DOT, New York State DOT, North Carolina DOT, North Dakota DOT, Pennsylvania DOT, South Dakota DOT, Wyoming DOT, Idaho DOT, Minnesota DOT, Mississippi DOT, South Carolina DOT, Texas DOT, Colorado DOT, Illinois DOT, Iowa DOT, Alabama DOT, Connecticut DOT, and Montana DOT.

[65] Road Profiler User's Group, NCE, Agile Asset Inc., and Northeast Pavement Partnership.

[66] Texas Association of Metropolitan Planning Organizations and Association of Metropolitan Planning Organizations, Michigan State Transportation Commission, Michigan Asset Management Council.

[67] For asphalt pavement sections (Surface_Type is 2,6,7, or 8), relevant condition metrics are IRI, rutting, and Cracking_Percent; for jointed concrete pavement sections (Surface_Type is 3,4,9, or 10), relevant condition metrics are IRI, faulting, and Cracking_Percent; and for Continuously Reinforced Concrete Pavements (CRCP) sections (Surface_Type is 5), relevant condition metrics are IRI and Cracking_Percent.

[68] Hawaii DOT, Kentucky DOT, Maryland DOT, Oklahoma DOT, Oregon DOT, Missouri DOT, New Jersey DOT, Tennessee DOT and Washington State DOT.

see an undue burden with this proposed requirement. However, many of these State DOTs asked for more clarification on how they should address breaks in the system that would prevent collection at 0.10 mile lengths.

The NPRM contained substantial discussion about the importance of the 0.10 mile length data collection and reporting lengths in providing uniformity and increased accuracy in pavement condition assessment. The RIA prepared for the NPRM considered the increased costs of data collection and processing to comply with the requirements. Some State DOTs currently collect and report pavement condition at 0.10 mile intervals to the HPMS. An evaluation of the network level condition outcomes in these State DOTs using 0.20 mile section lengths indicated a minor difference in the percentage of Good condition pavements but a considerable difference in percentage of Poor condition pavements compared to the 0.10 mile length.

In the final rule, the 0.10 mile uniform pavement section data collection and reporting is retained because it is needed for a consistency in national performance reporting. Current data collection and processing technologies can easily accommodate it, and it is already an accepted practice in several State DOTs. Furthermore, this requirement does not impose restrictions on State DOT management programs. State DOTs can and should operate pavement management programs as they see fit.

Related to the section lengths, the commenters asked for more clarification on how State DOTs should address breaks in the system where collection at 0.10 mile lengths is not practical. These breaks occur due to uneven lengths in highway routes, interruptions to measurements by intersections, change in surface type, bridges, and similar locations where uniform 0.1 mile lengths are not possible. In the NPRM, allowance was made to report conditions for smaller pavement sections if needed, but that none should exceed 0.1 mile in length. It was noted in the comments and confirmed by examination of existing HPMS data that field measurements do not always align exactly with official State route maps. These deviations relate to the accuracy of global positioning devices and other field conditions that can result in sections slightly exceeding 0.1 mile lengths but always within a tolerance of approximately 50 feet. In the final rule, the intent is that State DOTs will report in 0.1 mile sections wherever possible, but are provided an allowance for lengths up to 0.11 mile (580.8 feet) to accommodate the alignment issue. Therefore, FHWA revised sections 490.309(b)(1)(i)(C), 490.309(b)(2)(i)(C), 490.309(b)(2)(ii)(C) and added sections 490.309(b)(1)(iv)(C) and 490.309(b)(2)(iii)(C). These changes were made so that shorter than 0.10 mile pavement sections are permitted at the beginning of a route, end of a route, bridges, locations where surface type changes, or other locations where a section length of 0.10 mile is not achievable and specified that the maximum length of sections shall not exceed 0.11 mile (580.8 feet). Please note that as discussed in sections 490.309(a) and 490.311(c)(2), State DOTs are required to report spatially coincident (*i.e.,* identical Route_ID, Begin_Point and End_Point values in HPMS) sections for all relevant [69] condition metrics to HPMS.

As stated above, the sections of condition metrics (*i.e.,* IRI, rutting, faulting, Cracking_Percent, and PSR) are 0.10-mile long sections (shorter than 0.10 mile sections are permitted at the situation specified above) and not exceeding 0.11 mile, and all relevant condition metrics must be spatially coincident for each section. On the other hand, as discussed above, the section lengths of inventory data items (Through Lanes, Surface Type, and Structure Type) shall be in accordance with the protocols in the HPMS Field Manual so those data items do not necessarily spatially align with the condition metrics sections. However, in order to calculate measures (described in section 490.313) and to determine missing, invalid, or unresolved data (described in 490.313(b)(4)(i)), the data items (*i.e.,* inventory data items, and other related data items) which do not spatially align with condition metrics are required. So, for the purpose of calculating measures and determining missing, invalid, or unresolved data, condition metric data will be dynamically segmented with all three inventory data items (Through Lanes, Surface Type, and Structure Type), functional class data item (Data Item F_System in HPMS) and NHS data item (Data Item NHS in HPMS). To provide clarification on how sections should be broken down when there are discontinuities in the route in responding to the comment from Kentucky Transportation Cabinet, FHWA differentiates between condition metric sections and dynamically segmented condition metric sections by adding a definition for condition metric sections in section 490.305. The FHWA defines a ''Pavement Section'' as a nominally 0.1 mile-long reported segment that defines the limits of pavement condition metrics required by FHWA. The revised sections 490.309(b)(1)(i)(C), 490.309(b)(2)(i)(C), 490.309(b)(2)(ii)(C) and added sections 490.309(b)(1)(iv)(C) and 490.309(b)(2)(iii)(C) used the term ''pavement section.''

Requiring Full Extent Data Collection on the Full NHS for the Four Condition Metrics

The FHWA proposed that the data for all four condition metrics be collected on the full extent of the Interstate and non-Interstate NHS. This proposal introduced and increased the data collection burden for cracking, rutting, and faulting. Comments provided by AASHTO, ARC, the National Asphalt Pavement Association, and the State DOTs of Connecticut, Florida, Georgia, Kentucky, Minnesota, Mississippi, Missouri, and Oregon noted that the requirement for full extent data coverage is ''unnecessary and excessive.'' They also commented that the full extent data provides only marginally better insight into the system condition with significant financial consequences for State DOTs. Alabama DOT commented that sampling should be permitted on off-system routes, even if the end goal is to eliminate sampling on-system. The Mississippi DOT commented that the cost associated with the proposed requirement is not just in the data collection, but also includes review, analysis, maintenance, and reporting of the data. These requirements create additional burdens to the personnel resources of State DOTs. The Illinois DOT commented that automated crack mapping is still an emerging technology, and it is possible for there to be some inconsistencies in the way that States collect and report this data. They added that manual distress surveys of the entire NHS system are not a viable option.

The AASHTO and State DOTs of Connecticut, Georgia, Idaho, Minnesota, Montana, North Dakota, South Dakota, and Wyoming recommended allowing State DOTs to report metric data on samples in lieu of full extent. The AASHTO and Connecticut and Minnesota DOTs argued that sampling is a more cost effective approach than measuring the full extent. The Oregon

[69] For asphalt pavement sections (Surface_Type is 2,6,7, or 8), relevant condition metrics are IRI, rutting, and Cracking_Percent; for jointed concrete pavement sections (Surface_Type is 3,4,9, or 10), relevant condition metrics are IRI, faulting, and Cracking_Percent; and for Continuously Reinforced Concrete Pavements (CRCP) sections (Surface_Type is 5), relevant condition metrics are IRI and Cracking_Percent.

DOT commented that the full extent requirement is somewhat ''understandable'' for the Interstate System because there is a minimum pavement condition standard applied nationwide with significant financial consequences. Therefore, full extent measurement ''makes sense'' to ensure the most accurate data. However, the Oregon DOT recommended a sampling approach for the non-Interstate NHS because the system is not subjected to financial consequences. The Oregon DOT also stated that a sampling approach could also help avoid the inherent data errors associated with full extent IRI data where the data collection vehicle must stop at traffic lights. The Rhode Island DOT commented that State DOTs typically manage and maintain each direction of the Interstate System as separate roadways, but only report one direction to the HPMS. The Pennsylvania DOT commented that they collect data in both directions on divided non-Interstate NHS roads and requested clarification from FHWA on if they will only need to report one direction in the future. In addition, the commenter requested clarification on the frequency with which they need to report the data, since it is collected every year.

As discussed in the NPRM, reporting the full extent measurement for the whole NHS is important to determining pavement performance.[70] The final rule retains the language in section 490.309(b)(1) that requires State DOTs to collect and report IRI, rutting (asphalt pavements), faulting (jointed concrete pavements), and Cracking Percent annually for the full extent of the mainline highway Interstate System and collect data biennially and report data annually for the full extent of the non-Interstate NHS. As discussed in sections 490.109(d)(1) through (d)(3), State DOTs are required to collect non-Interstate NHS data every two years but State DOTs are required to report data for the entire non-Interstate NHS network to HPMS every year, hence, replacing the reported data from previous data collection cycle with the most recent data collected in HPMS. In response to Pennsylvania DOT's question on the non-Interstate NHS, FHWA retains the language, as proposed in the NPRM, that only one direction (*i.e.,* inventory direction) data collection and reporting for non-Interstate NHS is required for the pavement metrics and inventory data (sections 490.309(b)(2)(i)(D), 490.309(b)(2)(ii)(D), 490.309(b)(2)(iii)(D) and 490.309(c)(1)(ii)). Please note that the non-Interstate NHS pavement measures in section 490.313 will be computed using only the data referenced to the inventory direction of the non-Interstate NHS highways in HPMS. If a State DOT chooses to collect pavement data for the non-Interstate NHS on an annual basis, that State DOT will still meet the requirements in section 490.309(b)(2). In this case, the actual 2-year condition/performance (midpoint of a performance period) will be derived from the collected pavement data for the entire non-Interstate NHS in the second year of a performance period, and the actual 4-year condition/performance (end of a performance period) will be derived from the collected pavement data for the entire non-Interstate NHS in the fourth year of a performance period.

In response to comments suggesting use of a sampling approach, a recent statistical study[71] found that, even under controlled conditions, the variability of pavement data was substantial. A sampling program would require sample sizes approaching full data collection to provide a reasonable level of confidence in the results. It is not practical to implement this kind of a sampling program.

Using Structure Type To Identify and Exclude Bridges

In section 490.313(f)(1) of the NPRM, FHWA proposed that bridges would be excluded prior to computing all pavement condition measures by removing the sections where the Structure Type field value is coded as ''1'' in the HPMS. This was done to meet the statutory requirement (23 U.S.C. 119(f)(1)(A)) that pavement analyses must be done ''excluding bridges.''

The AASHTO, Fugro Roadware, and the State DOTs of Alabama, Colorado, Connecticut, Georgia, New Jersey, Oregon, and Texas requested clarification on how the bridge limits would be removed from the 0.10 mile interval continuous pavement performance data, particularly where the bridge limits do not spatially coincide with the 0.10 mile pavement sections. Fugro Roadware recommended that areas with bridge structures simply be invalidated and identified as a bridge. The AASHTO and Connecticut and New York DOTs recommended flexibility for State DOTs to use segments other than 0.10 mile at the bridges. Oregon DOT commented that they prefer not to include IRI data for the structures, but State DOTs have been required for several years to report IRI metric data for bridges under the current HPMS reporting requirements. Oregon DOT added that this redundant effort to provide pavement condition data on structures that is not being used by FHWA is inefficient. This creates concern because of the current environment where staff and money are scarce. The AASHTO and Illinois and Montana DOTs commented that there is a discrepancy between pavement data reporting requirements in the current HPMS and the proposed measure calculation process for handling pavement data on bridges. The Hawaii DOT commented that pavements on viaduct structures should be excluded from the pavement condition performance measures. The FHWA concurs since viaduct structures meet the definition for bridges and are excluded in the legislation.

The New Hampshire DOT commented that the Federal definition of bridges requires structures to be greater than 20 feet long. However, in New Hampshire there are several shorter bridges that often impact roughness just as larger structures do because many of them contain expansion joints or cause transverse cracking through expansion.

The FHWA has evaluated the comments regarding the methodology for excluding bridges for pavement condition measure calculation. The FHWA clarified several of the issues related to bridges on the NHS in the final rule.

First, in response to the comment from New Hampshire DOT, the term ''bridge'' used throughout subparts C and D is consistent with the definition proposed in section 490.405 of the NPRM. The FHWA agrees with New Hampshire DOT that structures less than 20 feet long could impact the condition of pavement sections. As discussed in the NPRM, FHWA recognizes that State DOTs may have different definitions for bridge. However, FHWA believes that these discrepancies would cause problems in calculating pavement measure consistently at the national level by excluding additional structures. The FHWA believes that the use of an established definition would continue to provide consistent and standardized data to be analyzed for the evaluation of State DOT and national progress. Therefore, FHWA moved the definition for the term ''bridge'' in subpart D (section 490.405) to subpart A (section 490.101) to use it in a consistent manner

[70] FHWA (2012). Improving FHWA's Ability to Assess Highway Infrastructure Health Pilot Study Report, FHWA–HIF–12–049. *http://www.fhwa.dot.gov/asset/pubs/hif12049/hif12049.pdf.*

[71] Evaluation of Pavement Conditions on the Interstate System: Preliminary Summary, Rada 2015.

throughout the rule. As discussed in section 490.405, FHWA did not receive any substantive comments on the definition. The FHWA made an editorial revision to the definition in section 490.101 by striking the phrase ''this section'' and replacing it with the phrase ''this part'' to ensure that the definition in subpart A applies to both subparts C and D in the final rule.

The FHWA also clarifies that excluding bridges means that bridge limits will be determined by the coded values ''Route_ID,'' ''Begin_Point,'' and ''End_Point'' for the Structure Type Data Item in HPMS where the value is coded ''1.'' Those determined bridge limits will not be used for calculating pavement performance measures.

The FHWA agrees with the comments and recommendations from AASHTO and Connecticut and New York DOTs to provide flexibility for State DOTs to use segments other than 0.10 mile at the bridges. Therefore, FHWA revised sections 490.309(b)(1)(i)(C), 490.309(b)(2)(i)(C), 490.309(b)(2)(ii)(C), and 490.309(b)(ii)(C) and added sections 490.309(b)(1)(iv)(C) and 490.309(b)(2)(iii)(C) so that shorter than 0.10 mile pavement sections are permitted at bridges. The FHWA also provided flexibility for State DOTs in reporting pavement sections by either: (1) Reporting uniform section lengths of 0.10 mile regardless of presence of bridges (Figure 3); or (2) reporting shorter than 0.10 mile pavement sections adjacent to bridges (Figure 4). The method of excluding the bridges for both options will be the same for both pavement section reporting options. The FHWA notes that if the first option is chosen, the reported IRI, rutting, faulting, and Cracking Percent metric values for a 0.10 mile pavement section will be influenced by the surface condition of the bridge deck. State DOTs should carefully examine the impact of bridge surface condition on the pavement condition measures when choosing the options on reporting pavement sections at (or adjacent to) bridges.

The FHWA cautions State DOTs in changing the way they report pavement sections at (or adjacent to) bridges between the time of target establishment and the time of progress evaluation. Such changes may alter the measures reported, which could then impact how an established target relates to actual measured performance. This difference could impact a State DOT's ability to make significant progress toward achieving targets. Therefore, FHWA recommends that reporting of pavement section pavement sections at (or adjacent to) bridges is consistent between the HPMS data reporting cycles so that evaluating progress toward achieving target is consistent.

Finally, unlike the NHS limits and urbanized area boundary, FHWA did not propose that constant bridge limits would be used for excluding bridges throughout performance period. The FHWA did not add language in the final rule specifying constant bridge limits to be used for excluding bridges throughout performance period. However, FHWA expects State DOTs to take necessary actions so that changes (both the number and the limits) in reported Structure Type Data Item in HPMS will be minimal between the data reporting cycles and have minimal impact on changes in pavement condition. In the discussion section for section 490.105(d)(3), ARC commented that changes to the NHS network are likely to be ''infrequent and minimal'' in impact when compared to the overall network extent. The FHWA expects the majority of changes in reported Structure Type Data Item in HPMS between data reporting cycles will be due to changes in NHS limits. For example, if a State DOT reports Structure Type Data Item in HPMS for only a small fraction of their bridges at the time of target establishment but reports for all bridges in subsequent years, the progress evaluation of targets for pavement condition measures will not be done in a consistent manner. The FHWA encourages State DOTs to take necessary actions to better integrate data between NBI and HPMS prior to establishing performance targets to minimize the impact of changes in HPMS between reporting cycles.

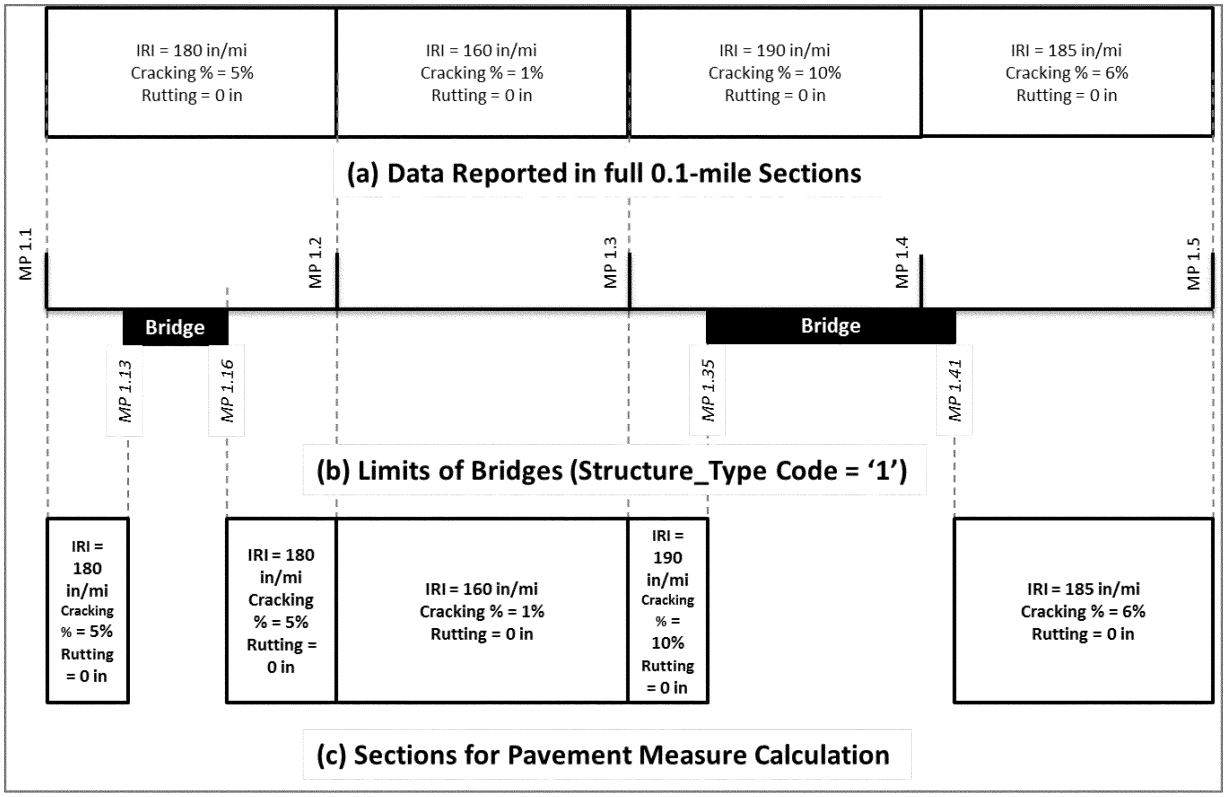

Figure 3 – An example of 0.10 mile pavement section with data measured in full 0.10 mile sections

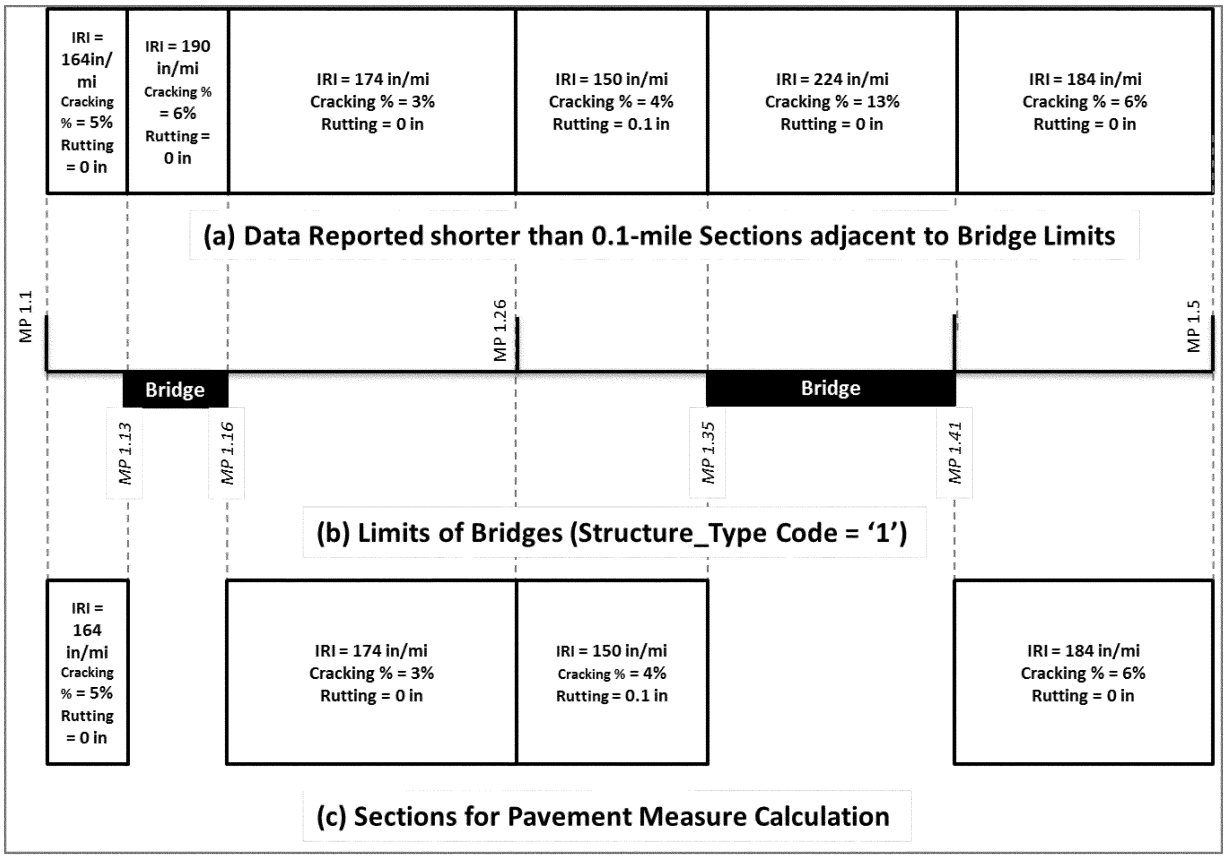

Figure 4 – An example of shorter than 0.10 mile pavement sections adjacent to bridge limits where data is measured separately for each section

Travel Lane Required for Data Collection

In the NPRM, FHWA proposed that data be collected for all four condition metrics in the rightmost travel lane, or one consistent lane if the rightmost travel lane is not accessible. The AMPO stated that a lane-mile requirement could become prohibitively expensive. This commenter suggested a compromise similar to the Interstate requirement where data is collected in each direction for highways divided by a physical median. Similarly, the commenter said data for frontage roads, which serve NHS facilities, should be collected as well and be reported separately. The AASHTO and the Connecticut and Wisconsin DOTs commented that the rightmost lane may not be the most effective for data collection. They agreed that a consistent lane should be used, but preferred that State DOTs make the decision on the lane for data collection. The commenters expressed concerns with using the rightmost lane in mountainous areas. They argued that these lanes are often dedicated to truck travel and not representative of the other lanes on the roadway. They also expressed concern with the challenges of collecting data in urban settings where the rightmost lane is often more congested than other lanes. The Tennessee DOT commented that they currently test the rightmost lane and supported the proposed requirement.

The FHWA considered these points and acknowledges that pavement conditions measured in dedicated truck lanes and congested lanes may not be representative of the overall condition of pavements in all lanes. The FHWA amended section 490.309(b) to allow other lanes to be used if the rightmost lane carries traffic that is not representative of the remainder of the lanes or is not readily accessible due to closure, excessive congestion, or other events impacting access.

Devices for Rutting Collection

The Florida and Oregon DOTs commented that the proposed process for data collection allows for rutting measurements using either a device that determines rutting from 5 points across the lane, or a device that determines rutting from 1,000 points or more across the lane. They argued that there is a large difference between the two methods. Fugro Roadware commented that AASHTO R48–10 is not a reliable solution and should be removed as an option for pavement condition reporting. A review of AASHTO Standards R48–10 and PP–70 suggests that differences in precision exist. While the automated transverse profiling devices are the preferred method for measuring rutting, FHWA realizes that the devices are not yet universally adopted by State DOTs and that a significant number of State DOTs use the 5-point devices in their pavement programs. The NPRM provided for use of either device. No changes are made in the final rule.

Discussion of Section 490.311 Calculation of Pavement Metrics

The FHWA proposed the methodology to be used by State DOTs to calculate the IRI, cracking, rutting, and faulting metrics and the requirements to report these metrics and the three inventory data elements to the HPMS. The condition metrics are used, as defined in section 490.313, to classify pavements as being in Good, Fair, or Poor condition. These methods and metrics were derived primarily from

published standards [72] used in pavement design and adopted by a majority of State DOTs.

A number of commenters suggested additional or alternative metrics to be collected and identified challenges with the use of IRI in some local jurisdictions. The FHWA included discussion on these comments and the changes to the final rule in the previous sections of this rulemaking.

In the NPRM, FHWA proposed a requirement in section 490.311(b)(1) for State DOTs to determine the IRI metric for all NHS sections. As discussed in the previous section, a number of comments raised concerns with the collection of IRI in urban settings and on lower speed roadways. The FHWA used these comments to adjust the requirement of data collection to allow for an alternative method (PSR) to assess pavement condition on roadways where the posted speed limit is less than 40 mph. The PSR is to be determined using the method prescribed in the HPMS Field Manual, which is a visual overall assessment of pavement condition. The new provision also allows for State DOTs to utilize an alternative assessment method to estimate the PSR using a correlation that is approved by FHWA.

In section 490.311(b)(2)(i), FHWA proposed the method to calculate the amount of cracking in each asphalt pavement section. Many commenters noted inconsistencies with the proposed regulations and the HPMS Field Manual, the types of cracks to be included in the metric, and the consideration of cracks that have been sealed. In addition, several commenters noted concerns with the use of provisional AASHTO Standards that have been removed, as discussed previously for section 409.309 (under ''Reference to AASHTO Protocols''). Fugro Roadware and the Ada County Highway District recommended the HPMS Field Manual metric of percent area of fatigue cracking for use on asphalt roads. The NCE commented that Cracking Percent may be overly simplistic for use in pavement management. The commenter states that Cracking Percent is a much simpler measure than PCI and adopting it in the rule as opposed to PCI ''would be a step backwards.'' The commenter also remarked that Cracking Percent is not widely used by either local agencies or States. In addition, the commenter expressed concerns with the proposed thresholds for pavement measures, stating that they are inappropriate for local roads.

Some comments sought clarification on the location of cracks to be included in the metric or how the area of cracked pavement is to be calculated. The language in the HPMS Field Manual has been changed to more clearly state that the location of cracks to be included shall be limited to the wheel paths only. The Louisiana DOT suggested that a wheel path be defined as 3 feet wide to eliminate metric conversion errors. The HPMS Field Manual further clarifies the width and location of each wheel path is in English units. In addition, commenters asked for clarification on the types of cracks to be included in the metric. Suggestions were provided to consider the severity of the crack and to limit the metric to only fatigue related cracking. Stephen Mueller Consultancy suggested that the severity level of cracking (high, medium, or low) be added to the HPMS ''Cracking Percent'' reporting requirement to be used as one of the pavement condition rating thresholds in the regulation. In addition, the Maine Turnpike Authority commented that severity of cracking will be crucial for making a fair assessment of a road's performance.

The intent of the metric is to only include load associated cracking in the wheel path. The HPMS Field Manual has been revised to clearly state that only fatigue (interconnected cracks) will be included in the metric. The FHWA believes that, for the purpose of the pavement measure being established through this rulemaking, an overall assessment of cracking is adequate to monitor system-wide performance. Consequently, FHWA does not feel that the cracking metric needs to consider the severity of the crack or cracking that is not related to pavement fatigue. The FHWA believes that the majority of fatigue generated cracking is in the wheel paths for asphalt pavements and therefore should be considered in the metric. The HPMS Field Manual has been revised to provide a clarification and guidance in reporting fatigue cracks, regardless of severity, in the metric.

Several commenters asked for clarification on the inclusion of sealed cracks in the cracking metric specifically related to asphalt pavements. The NEPPP noted that sealed cracks are often rated more severe using automated methods. The FP^2 corporation commented that crack sealing is an effective pavement preservation technique and should not be considered equal to an unsealed crack. The Rhode Island DOT commented that sealed cracks should be considered in the metric.

In response to these comments, it should be noted that while sealing pavement cracks is an accepted practice for preserving pavements in Good condition, sealing cracks caused by fatigue does not restore structural capacity or alter the need for investment. The cracking performance metric in the final rule is predicated on measurement of fatigue cracking located only in the wheel path, regardless of whether the cracks are sealed. Therefore, no change was made in this final rule.

In section 490.311(b)(2)(ii), FHWA proposed methods to determine the rutting metric for asphalt pavements that permitted the use of either 5-point devices, scanning laser devices, or manual measurements. The Connecticut DOT asked for clarification on the accuracy of rutting measurement and Texas DOT suggested a minimum rut measurement spacing interval be required to determine the rutting average. The Michigan DOT suggested that if the precision level equaled the threshold for Good, then only pavements with zero rutting would be considered Good. The Texas DOT suggested an alternative metric that would represent the extent of rutting, in terms of the percentage of the section exhibiting rutting, to the proposed average value of rutting in a section. The Colorado, Florida, and North Carolina DOTs commented that the two devices identified in the NPRM for measuring rutting do not produce the same results. They recommended that only one device be permitted. The South Carolina DOT commented that it only has a 3-point laser system, and asked that FHWA consider the inability of State DOTs to perform the work in-house as required by the new rulemaking.

In consideration of these comments and inquiries made to the manufacturers of the measuring devices, the final rule clarified section 490.311(b)(2)(ii) and Item 50 of the HPMS Field Manual. The final rule requires the *average* rutting measurement to be computed to the nearest 0.01 inch, and that the measured rut values in each wheel path should be averaged first and then used as the basis for the final rutting metric calculation (average of the average wheel path ruts). The FHWA concurs with the comment by Texas DOT related to the minimum spacing for manual rut measurement at 12 inches and has included clarification in the HPMS Field Manual. However, FHWA does not concur with the suggestion to base the rutting measurement on the extent of rutting in a section instead of the averaged area of

[72] Mechanistic-Empirical Pavement Design Guide, A Manual of Practice, August 2015, 2nd Edition. American Association of State Highway and Transportation Officials, Washington, DC. Table 7.1

rutting. While there is merit to the suggested method, it conflicts with typical practices used in a majority of State DOTs and would require major reworking of planning and other performance models, such as the Highway Economics Requirements System, currently in use by FHWA. The final rule retains the use of averaged area as the basis for the rutting metric.

In section 490.311(b)(3), FHWA proposed the method to determine the cracking metric for CRCP. Commenters [73] requested a more clear description of how cracking, punch-outs, and patching should be measured to determine the percentage of the area for the metric. The Alabama DOT commented that the values for Item 52 are rounded to the nearest 5 percent under the current HPMS Field Manual, meaning that a result of 7.5 percent cracked is rounded to 5 percent and values up to 12.5 percent are rounded to 10 percent cracked. Louisiana DOT made similar comments regarding rounding in the HPMS Field Manual. Item 52 in the HPMS Field Manual was revised to clarify how cracking and other distresses in CRCP are to be measured and reported to the HPMS.

In section 490.311(b)(4)(i), FHWA proposed the method to determine the cracking metric for jointed concrete pavements. There were a number of comments [74] requesting clarification about the method of calculation, the types of cracks to be included, and the consideration of sealed cracks to the measure. Item 52 of the HPMS Field Manual (attached to the NPRM and posted to the docket) has been revised to clarify how the cracking metric for jointed concrete pavements is to be calculated and reported to the HPMS. There are no changes in the final rule language related to this issue.

In section 490.311(b)(4), FHWA proposed the method to determine the faulting metric for jointed concrete pavements from measured pavement profiles, although there is no prohibition from using manual methods. A number of comments [75] focused on the method to determine faults from pavement profiles, the determination of average faulting, and the accuracy of reporting. The NPRM proposed the use of AASHTO Standard R36–13 as the method to identify faults, allowing for both automated and manual detection of faults. Several commenters [76] expressed concerns with the potential for bias using the automated method. They remarked that the automated method would only average joints that exhibit measurable faulting. They noted that AASHTO Standard R36–13 allows for variability in the method of detecting the location of joints, which causes variation in the reported faulting values.

In response to these concerns, FHWA has revised the section for Data Item 51 in the HPMS Field Manual to clarify how to calculate and report the average faulting to the HPMS.

The Michigan DOT, Alabama DOT, and Louisiana DOTD pointed out a conflict in the threshold proposed to determine Good faulting condition and the accuracy of reporting for the faulting metric. The Louisiana DOT stated that the proposed metrics for faulting appear to be based on pre-2000 historical faulting data, which ignores the significant increase in Truck Traffic and is relatively limited in scope. As Michigan DOT pointed out, if the precision of the reporting of average faulting for a section is 0.05, the process of rounding would eliminate the possibility of a Good classification unless the pavement faulting was zero. For example, if in a section one half of the measurements were 0.02 inch and one half of the measurements were 0.04 inch, the average would be 0.03 inch, which would be rounded up to 0.05 inch. Since the threshold is also 0.05 inch, this section would be classified as Fair per the NPRM, even though all of the measurements were in the Good range. A recheck with the manufacturers of the measuring equipment indicated that the devices would not have a problem providing an average measurement to the 0.01 inch precision. This would eliminate the problem. The basis for the faulting thresholds is the ''end of design life'' from the AASHTO Mechanistic-Empirical Pavement Design Guide (MEPDG),[77] not pre-2000 historical faulting data as suggested by Louisiana DOT.

In the final rule, FHWA revised the reporting accuracy of faulting from 0.05 inches to 0.01 inches to address conflicts associated with rounding in the determination of condition levels.

In section 490.311(c)(4) and (5), FHWA proposed due dates of April 15th and June 15th to report metrics to the HPMS for the Interstate and non-Interstate NHS, respectively. The AASHTO, Alaska DOT&PF, Illinois DOT, Mississippi DOT, New York DOT, Oregon DOT, Rhode Island DOT, and Texas DOT objected to these due dates. They expressed concern with managing two different submission dates and the challenges of meeting the April 15th deadline for Interstates. The commenters felt that the earlier due date was not necessary and that all of the data should be submitted no later than June 15th. The Wisconsin and the Kentucky DOTs commented that they could meet the proposed April 15th deadline. The Washington DOT agreed with reporting metrics for the entire Interstate System by April 15th.

The FHWA included discussion in the NPRM to explain the reasoning for this proposed change. In summary, the accelerated due dates for Interstate pavements and NHS bridges is needed to administer the NHPP condition requirements prescribed in 23 U.S.C. 119(f). These provisions require FHWA to make a determination of compliance in a time frame that would allow for any resulting penalties to be applied by the next fiscal year. The April 15th deadline was proposed to provide sufficient time for the data to be reviewed and for any issues to be addressed before a determination is made. As discussed previously, the determination will be made based on HPMS data extracted on June 15th. State DOTs will have 2 months prior to June 15th to address any unresolved issues with the data submitted to HPMS. The final rule retains the due dates for HPMS submission as proposed.

Discussion of Section 490.313 Calculation of Performance Management Measures

The FHWA proposed the following: (1) The methods to calculate the condition levels for each of the four condition metrics; (2) the approach to address missing data; (3) a transition in the design of the pavement measure for non-Interstate NHS pavements; and (4) the method to calculate the section 490.307 pavement performance measures. The proposed approach utilized a method that considered the predominant condition level, represented by the four condition metrics, to determine the overall condition of each pavement section. The overall condition was proposed to be used to determine the percentage of the Interstate and non-Interstate NHS in Good and Poor conditions. In addition, the NPRM provided for a transition for non-Interstate NHS pavements that

[73] AMPO, Fugro Roadware, Virginia DOT, Illinois DOT, Louisiana DOTD, New Jersey DOT, Portland Cement Association.

[74] Colorado DOT, Connecticut DOT, Louisiana DOT, Michigan DOT, Mississippi DOT, New Jersey DOT, New Mexico DOT, New York DOT, Oregon DOT, Rhode Island DOT, Tennessee DOT, Wisconsin DOT, FP2 Inc., NAPA, NCE, Portland Cement Association, Southeastern Pavement Preservation Partnership, and three private citizens.

[75] Michigan DOT, Wisconsin DOT, Iowa DOT, Louisiana DOT, PCA, Roadway Profile Users Group.

[76] Michigan DOT, Wisconsin DOT, Iowa DOT, Louisiana DOT, Ohio DOT (Tim McDonald), PCA, Roadway Profile Users Group.

[77] Mechanistic Empirical Design Guide, A Manual of Practice, Second Edition AASHTO 2015.

utilized only the IRI metric for the first performance period in determining the pavement measure. Finally, the NPRM also proposed an approach to consider all sections with missing data to be in Poor condition.

A number of comments were received on the use of the terms ''Good,'' ''Fair,'' and ''Poor'' and the condition metrics that were proposed to determine condition levels and the final pavement measures. The City of Seattle DOT suggested that FHWA define pavement condition in terms of 3 to 4 predominant assessment systems, arguing that it would provide additional flexibility. The FHWA considered these comments in the review of section 490.307. The discussion in section 490.307 of this preamble responds to comments and describes corresponding changes to the final rule.

In section 490.313(b), FHWA proposed thresholds for each of the four condition metrics that would be used to determine Good, Fair, and Poor condition levels. Several comments, primarily from local government agencies,[78] suggested that the thresholds be set differently for higher and lower volume roadways. The Louisiana DOT proposed that different performance metrics be identified for pavements that have higher traffic volumes. Maryland DOT generally agreed that the proposed criteria are appropriate, but suggested that alternative thresholds may be appropriate if friction is included as a metric, or if consideration is given to the causes of and repairs to structural cracking versus surface (functional) cracking. The Missouri DOT commented that one approach should be used for all roadways. The FHWA agrees with the comment from Missouri DOT and maintains that a standard definition of condition levels be used for all levels of roadway. The intent of MAP–21 is that State DOTs and MPOs establish targets that reflect different expectations for pavement conditions due to higher and lower traffic volumes and/or other reasons. For example, a State DOT may elect to establish the pavement performance condition target for high traffic volume roads to be significantly smoother and less prone to disruption from maintenance activities than conditions on lower volume roads.

The FP² Corporation and State DOTs of Georgia, Rhode Island and Illinois expressed concerns regarding the weighting of pavement measures. They suggested that rather than weighting equally (except for rutting and faulting, which are combined), FHWA should consider weighting rutting and faulting differently. Fatigue cracking and rutting typically have a higher impact on the overall pavement condition rating and deterioration rate than does IRI or faulting. In addition, the State DOTs of Connecticut and Illinois argued that excluding bridges from the IRI calculation conflicts with the current HPMS Field Manual reporting practices. The State DOTs asked if the HPMS Field Manual will be updated.

The FHWA appreciates the concerns from FP² Corporation and the Georgia, Rhode Island and Illinois DOTs about the issues related to weighting of the pavement metrics. The FHWA recognizes that weighting is a typical practice for pavement management in many jurisdictions. However, the evaluation of pavement performance is more of a snapshot of existing conditions than a predictor of future conditions. Because of this, it is dependent more or less equally on each of the parameters described in the NPRM and maintained in the final rule. With reference to the bridges, it should be noted that the HPMS Field Manual made changes related to excluding bridges as required by 23 U.S.C. 119(f)(1)(A). Revisions to the HPMS Field Manual incorporated in the final rule retain these changes.

In section 490.313(b)(1), FHWA proposed IRI thresholds of less than 95 for Good condition and more than 170 for Poor condition with an exception for urbanized areas over 1 million in population. The IRI equal to 95 threshold reflects the generally accepted point where a road surface is no longer considered smooth; an IRI equal to 170 is the point where a road surface is considered unacceptably rough. A threshold of 220 for Poor was proposed for urbanized areas over 1 million in population, citing that a greater tolerance for increased roughness, lower travel speeds, utilities and construction difficulties existing in these areas. Several commenters[79] objected to this provision. They argued that population should not be part of the definition of pavement roughness and that if adopted, it should be extended to all urban areas. The AASHTO and Connecticut DOT also requested clarification on the definition of urban, suggesting that urban areas should include more than the 1 million population threshold proposed in the NPRM. The Orange County Transportation Authority, PSRC, Road Profilers Users Group, Tennessee DOT, and Washington DOT suggested that the threshold for IRI on pavements be based on speed, not population. New Jersey DOT argued that the Interstate IRI should never be greater than 170, regardless of whether or not it is urban. CEMEX USA suggested that a ''Poor IRI threshold of greater than 170 in/mile'' be used for both rural and urban Interstate applications. Similarly, the Northeast Areawide Coordinating Agency, the Metropolitan Transportation Commission, and the Portland Cement Association agreed that urbanized and non-urbanized areas should have the same thresholds. Florida DOT and Illinois DOT also noted that there is potential confusion over census boundaries, adjusted/approved boundaries, and metropolitan planning areas.

The FHWA agrees that a separate threshold should not be established for urban areas, primarily because of the point raised by Florida DOT on confusion about boundaries for urbanized areas with a population over 1 million. The exception provided for in the NPRM (section 490.313(b)(2)) has been removed from the final rule. The change requires that all pavements will be considered in Poor IRI condition when the IRI is greater than 170.

In section 490.313(b)(2), FHWA proposed cracking thresholds of less than or equal to 5 percent for Good condition and greater than 10 percent for Poor condition. The New Mexico DOT commented that the definition of Cracking Percent is unclear, particularly for flexible pavements. In addition, the commenter stated the proposed threshold is too low. The Louisiana DOT commented that the thresholds for Cracking Percent be reviewed. The commenter stated that the usefulness of Cracking Percent is extremely limited. In addition, the commenter proposed that total length of cracks in a section be used as opposed to Cracking Percent. The AASHTO and Alabama DOT

[78] City of Fremont, CA, City of Santa Rosa, CA, City of Vacaville, CA, Colorado DOT, Contra Costa County, CA, County of Marin, CA, Metropolitan Transportation Commission, Oversight Committee for the California Local Streets and Roads Needs Assessment, Puget Sound Regional Council, Rural Counties Task Force, California DOT, Cemex USA, City of Vancouver, WA, Connecticut DOT, County of Los Angeles, Oregon DOT, South Dakota DOT, Seattle DOT, Orange County Transportation Authority, City of Portland, OR, City of Sacramento, CA, City of Gilroy, CA, City of Napa, CA, Town of Tiburon, CA, City of Spokane, WA, California Association of Counties, League of California Cities, Ada County Highway District.

[79] Alaska DOT&PF, AASHTO, CalTrans, Association of Municipal Planning Officials, Connecticut DOT, Idaho DOT, Illinois DOT, Iowa DOT, Louisiana DOT, Mississippi DOT, Missouri DOT, Montana DOT, New Jersey DOT, North Dakota DOT, Oklahoma DOT, South Dakota DOT, Tennessee DOT, Washington State DOT, Wyoming DOT, Puget Sound Regional Council, Road Profilers Users Group, North East Ohio Areawide Coordinating Agency, CEMEX, USA, Brian Domsic, Ohio DOT, Larry Scofield.

commented that the proposed cracking thresholds for asphalt and jointed concrete pavements were more appropriate for Interstates and intended for project level assessments, citing references in the AASHTO MEPDG for different design thresholds. The FP[2] Corporation proposed alternative cracking thresholds of less than 10 percent for Good condition and greater than 20 percent for Poor condition.

In response to the comments, the threshold for Poor due to cracking is relaxed in section 490.313(b)(2) of the final rule (Table 1). This change aligns with the AASHTO MEPDG [80] for arterial highways and reflects actual practices States DOTs use for design and management of NHS highways.

TABLE 1—CRACKING PERCENT PAVEMENT CONDITION RATING THRESHOLDS

Surface type	Metric	Metric range (percent)	Rating
Asphalt Pavement	Cracking Percent	<5	Good.
		5–20	Fair.
		>20	Poor.
Jointed Concrete Pavement	Cracking Percent	<5	Good.
		5–15	Fair.
		>15	Poor.
CRCP	Cracking Percent	<5	Good.
		5–10	Fair.
		>10	Poor.

No comments were received on the proposed cracking condition thresholds for CRCP (section 490.313(b)(2)(iii). Therefore, they have been incorporated as proposed.

In section 490.313(b)(3), FHWA proposed asphalt pavement rutting thresholds of less than 0.20 inch for Good condition and greater than 0.40 inch for Poor condition. Several commenters [81] objected to these standards. They argued that the thresholds were not reasonable in areas where tire studs and snow chains are used and that 0.75 inch was a more acceptable threshold. Connecticut DOT suggested that increments of 0.25 inches be used for the thresholds, as opposed to the proposed 0.10 inch increments. Cemex USA and PCA commented that the rutting threshold of 0.10 should be the threshold for Poor condition as this is the level where hydroplaning would begin to occur. The Ohio DOT commented that the proposed rutting threshold of 0.10 would minimize the risk of hydroplaning. For 0.10 mile segments that have relatively uniform rutting, the threshold is appropriate, however, the threshold is inappropriate for 0.10 mile intervals that contain high stress areas.

The FHWA acknowledges the issues related to the use of tire studs and snow chains; however, as noted by Cemex USA and PCA, the presence of rutting has a potential safety impact to users of the system regardless of the stress in the pavement. Although hydroplaning is possible at rutting level as low as 0.10 inch, the documented practices for State DOTs [82] identify rutting above 0.20 inch as cause for concern and above 0.40 inch as needing immediate attention. Moreover, these levels are supported by the design thresholds in the MEPDG,[83] which has been widely adopted by State DOTs. The final rule retains the proposed thresholds for asphalt pavement rutting.

In section 490.313(b)(3)(ii), FHWA proposed faulting thresholds for jointed concrete pavement of less than 0.05 inch for Good condition and greater than 0.15 inch for Poor condition. There were a number of comments [84] about this proposal. Some commenters argued that the thresholds were too stringent, particularly to define Good conditions. Some noted that there appears to be a conflict in the proposed threshold of 0.05 inch for Good condition and in the 0.05 inch accuracy of reporting for faulting (discussed earlier in section 490.311(b)). Others suggested that the 0.05 inch threshold for Good faulting would be difficult to maintain using sound construction, preservation, and maintenance activities. The suggested thresholds for Good ranged from 0.05 inch to 0.25 inch.

In the NPRM, FHWA proposed a minimum requirement for reporting faulting in the HPMS to a precision level of 0.05 inch, reflecting measuring capabilities from legacy equipment no longer in use. Current devices are accurate to 0.002 inches [85] for individual measures and routinely deliver average values to a precision level of 0.01 inch. The HPMS permits State DOTs to report values more precisely than 0.10 inch and several report values to 0.01 inch or even 0.001 inch precision levels.

The FHWA revised section 490.313(b)(3)(ii) to provide a 0.01 inch precision level for reporting average faulting, reflecting the existing state of the practice. The FHWA also revised section 490.313(b)(3)(ii)(A) to set the threshold for Good at 0.10 inch, as discussed in the research.[86] The FHWA retains the threshold for Poor at 0.15 inch since the same research indicates that a highway with an average of this faulting level would be considered unsatisfactory to all users and not easily repaired.

In response to the concerns with collecting IRI data on lower speed roadways and the request from local governments to consider alternative condition assessment methods, FHWA

[80] The Mechanistic-Empirical Pavement Design Guide: A Manual of Practice from AASHTO (2008). AASHTO distributed this document to State DOTs upon publication. The document is currently available for purchase on the AASHTO Web site. A copy has been placed on the docket and is available for viewing by the public.

[81] AASHTO, Colorado DOT, Connecticut DOT, Rhode Island DOT, Oregon DOT and North Dakota DOT.

[82] American Association of State Highway and Transportation Officials, ''Report of the AASHTO Joint Task Force on Rutting,'' Washington, DC, 1989.

[83] Mechanistic-Empirical Pavement Design Guide, A Manual of Practice, August 2015, 2nd Edition. American Association of State Highway and Transportation Officials, Washington, DC. Table 7.1.

[84] AASHTO, Idaho DOT, Connecticut DOT, Tennessee DOT, Mississippi DOT, North Dakota DOT, Oregon DOT, Rhode Island DOT, Virginia DOT, Louisiana DOTD, Portland Cement Association, Cemex USA, FP[2] Corporation, Fugro Roadware, and Southeast Pavement Preservation Partnership.

[85] This is also the standard sensor accuracy required in AASHTO Standard M328–10.

[86] Improving FHWA's Ability to Assess Highway Infrastructure Health FHWA–HIF–13–042.

has established thresholds to define Good, Fair, and Poor condition levels based on PSR in section 490.313(c)(4). In developing these thresholds, FHWA utilized relationships developed by Michael Darter.[87] Mr. Darter's research suggests a rough correlation between estimated PSR values and measured IRI. In the final rule, the usage of PSR is restricted only to locations where posted speed limits are less than 40 mph on any NHS highway. The intent of this restriction is to provide an alternative method for areas with ''stop-and-go'' traffic and where constant speeds needed for proper operation of the measuring devices are not attainable. The PSR is calculated based on a defined process[88] that uses pavement conditions that include cracking, rutting, and faulting. The overall performance condition rating for these sections is determined directly from the reported PSR values. The comments from the local agencies[89] indicated that some used methods other than PSR, such as PCI, to rate pavements. The final rule provides that equivalent methods to determine pavement condition can be used with prior approval from FHWA of the pavement data collection method and the technique to convert values to PSR.

In section 490.313(b)(4), FHWA proposed that roadway sections with missing, unresolved, or invalid data would be considered in Poor condition for each respective condition metric. The FHWA received comments from 41 groups[90] objecting to the proposal. The majority of the commenters expressed concern that the proposed action would give a false impression of the condition of the network and would mislead the public. Commenters identified common reasons for missing data, including actual or planned construction, road closures, disasters, and similar kinds of events. Most suggested that in any given year it would be unrealistic for a State DOT to reach more than 95 percent of their network, even under the best of conditions. The commenters offered alternative approaches to the proposed method, including: (1) An allowance of the network to be missed for valid reasons; (2) using previous year reported metrics when data is missing; (3) base the measure only on the sections that were tested and (4) an allowance for construction projects that will improve pavement surface be automatically categorized as Good until a formal rating can be given. The Illinois and Washington DOTs did not specifically object to the proposal, but asked if segments under improvement would default to Poor.

In response, FHWA revised section 490.313(b)(4)(i) to allow no more than 5 percent of the network lane miles, not including bridges, unpaved and ''other''surface types (such as cobblestone, planks, brick), to be represented with missing, unresolved, or invalid data due to the reasons noted in Table 2 below. The codes provided in Table 2 are to be documented in the HPMS submission whenever data is missing for any of the required relevant condition metrics or inventory data elements.

TABLE 2—HPMS CODES FOR MISSING DATA

Code	Description
1	Construction—Roadway was under construction.
2	Closure—Roadway was closed to traffic.
3	Disaster—Roadway was located in an area declared as a disaster zone.
4	Deterioration—Roadway is too deteriorated to measure; is already designated as ''Poor'' and is in the STIP for Capital Improvement Program purposes.
5	Other—Please describe in comments.

The FHWA will determine that a reported section in HPMS has a missing, invalid or unresolved data on June 15, 2019, and annually thereafter for Interstate System (section 490.317(b)) and on August 15, 2018 and biennially thereafter for non-Interstate NHS (sections 490.109(d)(2) and 490.109(d)(4)). Once State DOTs submit data to HPMS by April 15 for the Interstate System (sections 490.311(c)(4) and 490.311(d)(2)) and by June 15 for the non-Interstate NHS (sections 490.311(c)(5) and 490.311(d)(3)), FHWA will identify the data sections that do not meet the data requirements specified in sections 490.309 and 490.311(c) or do not provide sufficient data to determine its Overall Condition specified in sections 490.313(c) through (f) and FHWA will classify those data sections as ''missing or invalid data.'' The FHWA will then notify State DOTs the list of those data sections classified as missing or invalid data. Upon FHWA notification, State DOTs will have an opportunity to rectify by FHWA data extraction dates (June 15 for the Interstate System and August 15 for non-Interstate NHS) for determining minimum condition level for the Interstate System and significant progress determination for non-Interstate NHS. If a State DOT does not rectify FHWA identified missing or invalid data by FHWA data extraction dates, then those unrectified data will be classified as ''unresolved data.'' The FHWA will issue guidance on classifying ''missing, invalid or unresolved data.''

[87] ''Relationships between IRI and PSR'', Al-Omari and Darter, ULIU–ENG–92–2013 (1992).

[88] Carey, W.N. and Irick, P.E. ''The Pavement Serviceability Concept'' Bulletin 250, Highway Research Board, 1960.

[89] City of Fremont, CA, City of Santa Rosa, CA, City of Vacaville, CA, Colorado DOT, Contra Costa County, CA, County of Marin, CA, Metropolitan Transportation Commission, Oversight Committee for the California Local Streets and Roads Needs Assessment, Puget Sound Regional Council, Rural Counties Task Force, California DOT, Cemex USA, City of Vancouver, WA, Connecticut DOT, County of Los Angeles, Oregon DOT, South Dakota DOT, Seattle DOT, Orange County Transportation Authority, City of Portland, OR, City of Sacramento, CA, City of Gilroy, CA, City of Napa, CA, Town of Tiburon, CA, City of Spokane, WA, California Association of Counties, California League of Cities, South Jersey Transportation Planning Organization, Portland Cement Association, American Concrete Pavement Association, Northwest Pavement Management Association, Fugro Roadware, NCE, Brian Domsic, John Harvey.

[90] Alabama Department of Transportation, Alaska DOT&PF, California (Caltrans), Connecticut DOT, Delaware DOT, Georgia DOT, Idaho DOT, Iowa DOT, Kentucky TTC, Louisiana DOT, Maryland DOT, Michigan DOT, Minnesota DOT, Mississippi DOT, Missouri DOT, Montana DOT, New Jersey DOT, New York State DOT, North Carolina DOT, North Dakota DOT, Oregon DOT, Pennsylvania DOT, Rhode Island DOT, South Dakota DOT, Tennessee DOT, Texas DOT, Virginia DOT, Washington State DOT, Wyoming DOT, AASHTO, AMPO, National Association of Regional Councils (NARC), New York State Association of Metropolitan Planning Organizations, Northeast Pavement Preservation Partnership, Southeast Pavement Preservation Partnership, Texas Association of Metropolitan Planning Organizations, New York Metropolitan Transportation Council, Atlanta Regional Commission, Community Planning Association of Southwestern Idaho, Knoxville Regional TPO, Fugro Roadware.

The percentage will be determined by total lane-miles with missing, invalid, or unresolved for the network divided by the total lane-miles of the network (excluding the lane-miles of bridges, unpaved surface type, and ''other'' surface type). As shown above, the criteria for determining missing, invalid, or unresolved values did not include the data completeness of Structure Type data item. However, FHWA expects State DOTs to report comparable data contained their NBI data. Please see discussion sections for 490.313(f)(1) related to excluding bridges. The FHWA plans to check the reasonableness of total lane-miles of bridges reported in HPMS with the reported NBI data.

The final rule prohibits reporting data collected during the previous data collection cycles because it does not accurately represent current pavement conditions required for reporting performance. Similarly, pavements under construction are not in ''Good'' condition and should not be reported as such. A review of recent submissions to the HPMS indicates that timely and complete data submissions have been problematic for some State DOTs, although 23 CFR 420.105(b) has required State DOTs to ''provide data that supports FHWA's responsibilities to the Congress and to the public'' for many years. Failure to comply with this rule results in inadequate data to report performance, as required in section 490.107 for the NHS, and insufficient data to enforce the provisions of 23 U.S.C. 150(c)(3)(iii) for minimum conditions on the Interstate System. Because of the importance of the Interstate System to demonstrate progress toward the national goals in 23 U.S.C. 150(b), the final rule requires that State DOTs have at least 95 percent of the Interstate pavement data available, and demonstrate that no more than 5 percent of the pavements are in Poor condition to avoid imposition of the penalties under section 490.317.

In addition, FHWA revised section 490.109(e)(4) so that FHWA will determine that a State DOT has not made significant progress toward the achievement of an NHPP target if a State DOT does not comply with the data completeness requirement under this section. (See discussion on section 490.109(e)(4) for more detail.)

Finally, the equation to calculate the measure was revised. It is now based on the total lane-miles collected and reported, not the total lane-miles in the system.

In sections 490.313(c) and (d) FHWA proposed that the method to determine the overall condition of the pavement be based on the conditions levels for each metric. The AMPO and the State DOTs of Colorado and Illinois commented that the condition metrics should not be considered equally in the determination of overall condition. The North Dakota DOT commented that faulting and IRI are both indicators of roughness and therefore only one should be considered in the condition of jointed concrete pavements.

The FHWA notes that no data on pavement performance, as defined in the NPRM and in the final rule, exists at the present time. The MEPDG [91] suggests that the selected parameters are equally important in predicting future pavement conditions. The FHWA is committed to reevaluating the process through a future rulemaking once sufficient data has been collected. At this point there is no change in the proposed approach to determining the overall condition.

The FHWA established sections 490.313(c)(4) and 490.313(d)(4) to require the overall condition to be equal to the PSR condition level for roadways with posted speed limits less than 40 mph where State DOTs have reported PSR in lieu of the IRI, cracking, rutting, and faulting metrics. If a State DOT elects to collect PSR for pavement sections meeting these requirements, the overall condition of the section will be determined directly from the PSR values, as described in Table 3.

TABLE 3—OVERALL PAVEMENT CONDITION RATING THRESHOLDS USING PSR METRIC

Surface type	Metric	Metric range	Rating
All Pavements	PSR	≥4.0	Good.
		>2.0 and <4.0	Fair.
		≤2.0	Poor.

The FHWA proposed a transition period in section 490.313(e) for implementing cracking, rutting, and faulting metrics for full extent non-Interstate NHS pavement measures to allow State DOTs time to implement the data requirements. During the proposed transition period, the overall condition rating for all pavement types on the non-Interstate NHS would be based on IRI rating only.

The FHWA received one comment on the proposed transition approach. The Washington DOT disagreed with the proposed transition approach. The Washington DOT remarked that the sole reporting of full extent IRI may ''exaggerate the Poor condition.'' They provided an example in which IRI-based measure calculation yielded 17 percent Poor, but the measure calculation using all four metrics yielded 6.4 percent Poor for their for their non-Interstate NHS network. The Washington DOT recommended that the overall condition rating during the transition period should be based on HPMS sample sections for all four metrics. They argued that their approach ensures consistency in condition reporting across the entire first performance period. They also stated that MPOs would have no choice but to adopt the statewide targets (section 490.105(f)(3)) because the HPMS sample data would not be sufficient to represent their metropolitan planning area, and therefore they would not be able to establish their own unique targets.

The FHWA appreciates the comment and the recommendation from Washington DOT. As stated in the NPRM, FHWA recognized that complete data for establishing baseline condition/performance for the first performance period will not be available for many State DOTs. The IRI metric data is already required for all NHS routes and can be used by State DOTs and MPOs to estimate the baseline condition/performance during the non-Interstate NHS pavement measure transition period. The FHWA understands Washington DOT's concerns about the discrepancies between IRI and four metrics based measures. However, on a national basis, the pavement performance metrics using sampled sections of the NHS is substantially less

[91] The Mechanistic-Empirical Pavement Design Guide: A Manual of Practice from AASHTO (2008). AASHTO distributed this document to State DOTs upon publication. The document is currently available for purchase on the AASHTO Web site. A copy has been placed on the docket and is available for viewing by the public.

reliable and less representative of actual pavement conditions. For these reasons, FHWA retains section 490.313(e) in the final rule. (See discussion sections for sections 490.105(e)(7) and 490.109(e)(3) for more details on phase-in target establishment requirements and significant progress determination for the pavement condition measures.)

The New Jersey Department of Transportation requested clarification about how to report pavement conditions adjacent to bridges and other obstacles in the roadway. Alaska DOT noted that a significant portion of the NHS in Alaska is not paved and requested clarification about reporting conditions and rating performance on those routes.

Fugro Roadware recommended that sections with pavement surfaces that are not asphalt, PCCP, or CRCP be identified as alternative pavement types and should be excluded from the network length to determine the percent of Good, Fair, and Poor for Interstate and other NHS roadways.

In response to these requests, Section 490.313(f) includes exemptions for the sections of highway where the Structure is identified as a bridge and exempts sections that where the Surface Type is identified as unpaved or a type where pavement conditions cannot be measured, such as cobblestone or brick. The exemption for bridges conforms to the legislative requirement that measurement of performance not include bridges.

Discussion of Section 490.315 Establishment of Minimum Level for Condition of Pavements on the Interstate System

The MAP–21 requires the Secretary to establish minimum condition levels for pavements on the Interstate System to be maintained by State DOTs. The FHWA proposed the requirement that no more than 5 percent of Interstate pavements be classified as Poor. State DOTs are subject to a statutory penalty that would obligate a portion of NHPP funds and transfer a portion of STP funds to address Interstate pavement conditions if they fail to meet this minimum condition requirement for 2 consecutive years. Passage of the FAST Act in 2015 reduced the time from 2 consecutive years to 1 year.

The AASHTO and a number of State DOTs [92] submitted comments suggesting the following:

- States would not be able to meet the 5 percent requirement.
- FHWA should establish the threshold at 10 percent (or higher) or not establish a threshold at all.
- State DOTs should set their own requirement as part of the target setting process. The requirement should be distinct by region.
- The minimum pavement condition requirements should consider a range of pavement condition thresholds that accommodate regional variation.
- The rule should establish criteria that reflect a rational assessment of a State's Transportation Asset Management Plan.[93]
- Funds should not be diverted from one program to another as a penalty for not meeting the minimum condition standard.
- The FHWA should delay implementation of the minimum standard for 48 months from the effective date of the rule.[94]
- The FHWA should incorporate safety measures into the minimum condition for the Interstate System.

In the NPRM, FHWA cited a review of the reported conditions in recent HPMS submissions which suggested that at least 40 of the 52 jurisdictions could meet the 5 percent standard. The existing HPMS data is not as comprehensive as was proposed in the NPRM, but suggests that most State DOTs already prioritize funding to maintain Interstates at a high level. The FHWA believes that setting the threshold higher than 5 percent Poor is not justified by any available data and does not accomplish the national goal of keeping the Interstate System in a state of good repair. Acknowledging that there is virtually no existing data on performance, FHWA made a commitment in the NPRM to review the data submission from State DOTs for the first performance period and conduct a separate rulemaking to change the minimum standard if justified by the assessment of Interstate pavement conditions.

In response to the suggestion that State DOTs set their own minimum standard for Interstate highways, the statute clearly indicates the requirement for a national standard as part of the NHPP and specifically directs FHWA to establish it. The minimum standard is seen as the minimum tolerable condition for the Interstate system to meet the national goals set in the legislation.

Recent submissions to the HPMS suggested that State DOTs prioritized Interstate pavement conditions in every State and did not show significant differences in any region, except in Alaska. Alaska's recent submissions to HPMS showed rates of roughness, cracking, and rutting many times more than other parts of the country. The Alaska DOT&PF commented that Interstate highways in Alaska do not resemble Interstate highways elsewhere in the Nation. They cited the obvious climatic issues present in an Arctic and sub-Arctic environment such as embankment failures due to melting permafrost, cracking, and settlement due to extreme temperatures and the need for studded tire use for 7 months of the year. More importantly, Alaska DOT&PF noted that the Interstate routes were not constructed under the expansion of the National System of Interstate and Defense Highways funding that was used to construct much of the Interstate system in other States. When the Interstate System was designated in Alaska in 1976,[95] the routes typically were two lanes, did not have access control, and had been constructed under a variety of standards, none of which met Interstate requirements. In addition, Alaska DOT&PF requested that Section 490.315 only apply to ''signed'' Interstates. Furthermore, they requested that non-Intestate roads that are not paved or that have similar design features as Interstates should not be subject to the performance measures for pavement either.

Although Alaska DOT&PF requested an overall exemption from the minimum standard requirement, MAP–21 does not provide that option. However, the regional conditions and issues brought to light by the Alaska DOT&PF suggest that a greater allowance for Poor pavements is appropriate. A review of the recent HPMS submissions from Alaska DOT&PF suggests that a standard of no more than 10 percent Poor should be achievable and appropriate for the conditions, as provided for in section 490.315(b).

Commenters expressed mixed opinions on the establishment of a minimum condition threshold that would become more stringent over time. Several commenters expressed concern that pressure to meet a difficult minimum condition threshold may push State DOTs to implement a ''worst-first'' approach to pavement preservation, which would run counter to the asset management principles and

[92] New York State DOT, Connecticut DOT, Delaware DOT, Oregon DOT, Maine DOT, New Hampshire DOT, Vermont DOT, Ohio DOT, New York Association of Municipal Planning Organizations, Alaska DOT&PF, Connecticut DOT, Georgia DOT, Texas DOT, New York Metropolitan transportation Council.

[93] New York DOT.

[94] AASHTO, Connecticut DOT, New Jersey DOT.

[95] 23U.S.C. 103(c)(1)(B)(ii).

planning approach advocated by FHWA.[96]

However, AASHTO and the State DOTs of California, Louisiana, and Oregon recommended FHWA evaluate the effects of the national level performance measures and targets. They suggested that FHWA consider a graduated approach to setting minimum condition levels to ensure that these policies have a positive impact on management approaches.

The New York State DOT indicated that the establishment of penalties and minimum conditions should take into consideration sound performance and asset management policies. The New York State DOT suggested a delay until State DOTs adopt such measures.

The FHWA agrees that sound performance and asset management policies will aid State DOTs in establishing and achieving desired performance targets. However, it is clear that the intent of 23 U.S.C. 150(b)(2)(iii) and 23 U.S.C. 119(f)(1) is to keep Interstate pavements in a state of good repair in order to achieve the national goals outlined in the statute. The imposition of penalties that transfer Federal funds to Interstate programs is intended as a last resort for State DOTs that have not met this expectation. Delaying this effort would be contrary to the intent of the legislation.

In terms of implementation, the final rule establishes that State DOTs must start collecting Interstate pavement data for the HPMS according to the requirements in the rule not later than January 1, 2018, with the first reporting to HPMS not later than April 15, 2019. The FAST Act eliminated the ''two consecutive reporting periods'' provisions that were outlined in the NPRM. Therefore, the first evaluation of the Interstate pavement conditions for minimum condition levels will occur based on information in the HPMS database as of June 15, 2019. Delaying this determination is contrary to the intent of the FAST Act.

There are no changes to this section in the final rule except for modifying the 5 percent minimum requirement for Poor pavement condition to 10 percent in the State of Alaska.

Discussion of Section 490.317 Penalties for Not Maintaining Minimum Interstate System Pavement Condition

The FHWA proposed a methodology to annually assess the condition of Interstate pavements to determine compliance with the minimum condition requirements in 23 U.S.C. 119(f). The MAP–21 specifically applies penalties to State DOTs that do not meet the minimum requirements for pavement condition. These penalties adjust the funding requirements for the Interstate System until the minimum condition standards are met.

The AASHTO and the NCPP outlined concerns from State DOTs over the application and subsequent consequences of not meeting the minimum condition requirements established by Congress and proposed by FHWA in the NPRM with the following arguments:

- Penalties should be eliminated in their entirety because they can lead to a ''worst-first'' management approach.
- The FHWA should allow longer timeframes for reporting periods before imposing mandatory penalties.
- The transition to the proposed full extent data collection requirements for pavements needs to be fully implemented before assessing penalties for minimum condition.
- Minimum condition and penalties should consider important factors like the current conditions for Interstate pavements or other stressors, such as impacts of State-specific climates.
- The FHWA should defer the imposition of any penalties and minimum condition thresholds to the fullest extent possible. Penalties should be a last resort and only utilized if a State DOT has not adopted sound performance and asset management policies and methods.
- The FHWA should be cautious if establishing a minimum condition goal based primarily on a limited amount of data.
- Attainment of minimum condition thresholds without sufficient and reliable Federal funding will be difficult for some States[97] and therefore detrimental to off-NHS needs.

Several State DOTs[98] agreed with AASHTO's comments and suggested that no standard was needed or that the minimum condition standard should be set at a level that would be much easier to meet. The Michigan State Transportation Commission (STC) and Michigan's Transportation Asset Management Council (TAMC) suggested that the ''5 percent Poor'' (or 95 percent Good/Fair) goal for Interstate pavements should be removed from the rule, arguing that setting such a high standard for Interstate pavements will undermine State DOTs' ability to improve the condition or ensure the performance of the miles of NHS pavement under their control.

Title 23 U.S.C. 150(a) contains a declaration of policy directing the NHPP to provide efficient investment of Federal transportation funds by focusing on national transportation goals. These goals emphasize the importance of national routes to the economy, safety, and other concerns of the Nation. By including the requirements for a minimum level of condition for Interstate pavements and the penalty provisions in 23 U.S.C. 119(f), the statute focuses on the Interstate system as an essential part of achieving the stated goals. The statute is also clear that redirection of Federal funds is a last resort when Interstate highways do not meet the expectations for state of good repair.

A review of the Highway Statistics table for 2013[99] indicates that the percentage of State maintained highways that are Interstate lane miles averages 2.5 percent, with no State having more than 7 percent of the State maintained lane miles on the Interstate System. Even in the worst case, maintaining the Interstate lane miles to achieve 95 percent in Fair or better condition would not require the level of investment that would drive a program to a ''worst-first'' approach. On the contrary, good maintenance and preservation, as currently practiced by many State DOTs, would minimize requirements for major investment on these routes, most likely well below the threshold of 5 percent in Poor condition.

With respect to the timelines for implementation, the final rule takes into account the time State DOTs will need to acquire data collection equipment or arrange for contract data collection in section 490.309(a).

The AASHTO and the concurring State DOTs[100] noted that there may be climatic and other stressors affecting conditions of Interstate pavements. This may be true, but there is no evidence other than State HPMS submissions to estimate whether this variation actually exists. An examination of the 2013 submissions to HPMS suggests that no distinct variations in IRI or other reported pavement characteristics based on regional conditions were reported except in Alaska. Based on this finding

[96] State DOTs of Arkansas, Oregon and Mississippi, the Southern California Association of Governments, the Seattle Department of Transportation.

[97] New York DOT, National Asphalt Paving Association (NAPA).

[98] New York State DOT, Connecticut DOT, Delaware DOT, Oregon DOT, Maine DOT, New Hampshire DOT, Vermont AOT, New York Association of Municipal Planning Organizations.

[99] Highway Statistics 2013 Table HM–60.

[100] Alabama DOT, Connecticut DOT, Kentucky DOT, New Jersey DOT, New York State DOT, Tennessee DOT, Texas DOT, Alaska DOT&PF, and Georgia DOT.

and the estimation that the majority of State DOTs will meet the minimum pavement condition standard, the final rule was not changed except to accommodate Alaska, as described above. However, due to the limited availability of data on performance, FHWA committed to reexamine the pavement performance parameters after the first performance period and open a new rulemaking effort to make changes, if justified.

The MAP–21 language ties together the requirements for asset management plans and performance measurement. As previously stated, State DOTs are expected to have an asset management plan and sound performance policies within a certain period of time designated in the respective rules. In establishing the implementation schedule for data collection and performance evaluation under subpart C, care was taken to give State DOTs enough time to develop and implement the necessary programs to ensure pavement performance.

The FHWA agrees with AASHTO that the imposition of the penalty is a last resort effort necessary to ensure acceptable performance of the Interstate System to achieve the national goals for the NHPP.

Discussion of Section 490.319 Other Requirements

The FHWA proposed the Data Quality Management program requirements in section 490.319(c) to implement 23 U.S.C.150(c)(3)(A)(iv) for pavement condition data. As FHWA indicated in the NPRM, the structure of the data quality Management Program is left up to State DOTs but this section proposed that the plan must have methods to ensure that equipment is working properly, people are trained, data quality is being checked, and that a method of error resolution is documented.

However, AASHTO and a few State DOTs [101] objected to the language. They suggested that a data quality management program was not called for in the legislation; that no specific details are mentioned in the legislation; and that there is concern with the variability among FHWA Division Office approvals. The Oregon DOT requested clarification on which FHWA office would review and approve the Data Quality Management Program, noting that the requirement for a State DOT to seek approval for any change to the Program seemed excessive. In their joint letter, the State DOTs of Idaho, Montana, North Dakota, South Dakota, and Wyoming suggested that the requirements for Data Quality Management be revised so that States must certify they have a data quality management program and provide a description to FHWA. Conversely, the Alaska DOT&PF supported the provision to have a Data Quality Management Program and suggested that the Program be approved prior to States using the data for the performance measures.

The FHWA disagrees with the comments from AASHTO and those concurring State DOTs. The FHWA believes that MAP–21 gives it the discretion to establish requirements for implementing 23 U.S.C. 150(c)(3)(A)(iv). The FHWA also believes the data quality management program requirements in section 490.319(c) will ensure quality data and provide a sufficient level of consistency in report expectations. The FHWA believes the proposed language is consistent with the nine principles [102] in the NPRM preamble, which were considered in the development of the proposed regulation. Additionally, a recent FHWA study [103] on data quality indicated that most State DOTs have implemented parts of programs to ensure data quality but have not documented or formalized their use in the data collection process. As stated in the NPRM, the intent of this section was to ensure that the important step of formalization in the program occurs. The FHWA retains the language that leaves the content of the data quality management plan up to State DOTs because FHWA recognizes that every State DOT has unique methods, needs, and opportunities in the data collection. The FHWA approval of each State DOT's data quality management plan is to be based on its ability to deliver the specific outcomes identified in the NPRM and retained in the final rule. Specific guidance will be provided to Division Offices to ensure consistency in the Pavement Data Quality Plan requirements.

C. Subpart D National Performance Management Measures for Assessing Bridge Condition

Discussion of Section 490.401 Purpose

To implement the provisions of 23 U.S.C. 150(c)(3)(A)(ii)(III), FHWA proposed a statement of purpose which required the establishment of performance measures for State DOTs to use to assess the condition of bridges carrying the NHS which includes on- and off-ramps connected to the NHS. This is done to carry out the NHPP. The FHWA revised section 490.401 to provide clarity as to which highway bridges are subject to this regulation.

The FHWA received two comments on section 490.401. The Oregon DOT argued that the proposed rule would create a conflict by giving the Federal Government the authority to interfere with a State DOT's ability to independently manage its highway infrastructure assets.

The Virginia DOT provided a statement of support. The Virginia DOT argued that the proposed rule would promote a preservation approach to managing highway bridges and is an improvement over the ''worst-first'' approach.

The overall purpose of this rule and the underlying statutory provisions is to ensure that Federal transportation funds are efficiently invested and that the condition of highway infrastructure assets are maintained in a state of good repair, while increasing accountability and transparency of the Federal-aid highway program. (See 23 U.S.C. 150(a) and (b).) Although recipients of Federal-aid highway funds are expected to make transportation investments with a focus on national goals, the authority to establish performance targets and make project selections is still maintained by State DOTs.

The FHWA retains the language in section 490.401, as proposed in the NPRM, with a minor revision that provides clarity as to which highway bridges are subject to this regulation. The stated purpose is consistent with statutory language in MAP–21 and clear in the purpose of the performance measures.

Discussion of Section 490.403 Applicability

To implement the statutory provisions under 23 U.S.C. 150(c)(3)(A)(ii)(III), FHWA proposed that subpart D be applicable to bridges carrying the NHS which includes on- and off-ramps connected to the NHS.

The FHWA received comments from AASHTO, ARC, and 12 State DOTs (Arkansas, Colorado, Connecticut, Iowa,

[101] Alaska DOT&PF, Connecticut DOT, Idaho DOT, Montana DOT, New York DOT, North Dakota DOT, Oregon DOT, South Dakota DOT, Washington DOT, Wyoming DOT.

[102] Nine principles used in the development of proposed regulations for national performance management measures under 23 U.S.C. 150(c), *www.regulatons.gov*, Docket FHWA–2013–0053.

[103] ''Practical Guide for Quality Management of Pavement Condition Data Collection'' FHWA–HIF–14–006.

Maine, Michigan, Missouri, New Hampshire, North Dakota, Oklahoma, Tennessee, and Vermont) generally stating that State DOTs should not be responsible for the reporting of data, establishment of targets, asset condition, and managing of assets that are beyond their control.

The FHWA retains the language in section 490.403 with a minor revision that provides clarity as to which highway bridges are subject to this regulation. Section 23 U.S.C. 150(c)(3))(A)(ii)(III) of Title 23 of the U.S. Code requires the establishment of measures for ''States to use to assess the condition of bridges on the National Highway System'' for the purpose of carrying out the NHPP. The Section does not define the terms ''National Highway System'' or ''States.'' The MAP–21 did not provide FHWA with the authority to change the definition of State or NHS. Thus, the definitions in 23 U.S.C. 101(a)(15) and 23 U.S.C. 101(a)(25) have been used in this Rule. Therefore, a State DOT is not alleviated of the responsibilities under sec. 150 for the NHPP. As stated in the NPRM, FHWA recognizes that there is a limit to the direct impact State DOTs and the MPOs can have on the performance outcomes within the State and the metropolitan planning area, respectively. The FHWA encourages State DOTs to consult with relevant entities (*e.g.,* Federal Land Management Agencies, MPOs, local transportation agencies, and tribal governments) as they report performance data and establish targets. Consultation will help State DOTs to better assess condition of bridges carrying the NHS, which includes on- and off-ramps connected to the NHS and better identify and consider factors outside of their direct control that could impact future condition/performance. (See discussion on ownership in discussion section for section 490.105(d).)

The FHWA received comments from six State DOTs (Connecticut, Illinois, Iowa, Michigan, Minnesota, and Missouri) generally stating that the applicability of subparts C and D should be consistent. Specifically, they commented that the regulations apply only to mainline highway bridges carrying the NHS and that highway bridges on on- and off-ramps that connect to the NHS should not be subject to these regulations.

Historically, FHWA has provided guidance stating that ramps are to be considered to be the same functional classification as the highest facility served.[104] Although the NHS is not solely based on functional classification, but is instead defined by 23 U.S.C. 103, the practice of assigning the highest system served for a ramp is consistent with the FHWA guidance referenced above. Therefore, this section is applicable to the NHS (defined by 23 U.S.C. 103), which includes highway bridges that carry the NHS and bridges on on- and off-ramps connecting to NHS.

The FHWA received comments from five State DOTs (Connecticut, Illinois, Mississippi, Virginia, and Washington) seeking clarification on their responsibility for highway bridges on the NHS that cross the border with a neighboring State. One commenter expressed concern that there would be a ''double-counting'' of the deck area of highway bridges on the NHS when the bridge performance measures are calculated. Another commenter recommended that the responsibility of a highway bridge that crosses a border with a neighboring State should be based on the percentage of ownership. The commenter further stated that a State that does not own or share such a bridge should not be held responsible.

In regards to the responsibility for highway bridges carrying the NHS that cross a border with a neighboring State, State DOTs should refer to the above discussion on responsibility for the reporting of data, establishment of targets, asset condition, and managing of assets that are beyond the control of State DOTs and MPOs. State DOTS should also refer to the discussion on ownership in the discussion of section 490.105(d). Based on these previous discussions, border bridges are to be regarded in the same manner as any other highway bridge carrying the NHS that is within a State's boundaries.

In calculating the deck area, the total deck area of all the border bridges that cross a State's border will be included in the calculation of an individual State DOT's bridge performance measures and the percentage of the deck area of bridges classified as Structurally Deficient. However, there will be no ''double-counting'' of deck area as FHWA has not proposed a summation or aggregate calculation of all State DOTs' bridge performance measures or percentage of the deck area of bridges classified as Structurally Deficient into national percentages.

[104] U.S. Department of Transportation, Federal Highway Administration. Highway Performance Monitoring System, Guidance for the Functional Classification of Highways *http://www.fhwa.dot.gov/policy/ohpi/hpms/fchguidance.cfm.*

The New York DOT suggested that an exception to the bridge performance measures be established for very large or historic bridges as they would ''never be replaced'' and ''should be treated as perpetual maintenance exceptions.'' Title 23 U.S.C. 150(c)(3))(A)(ii)(III) provided no exception for certain sized or aged highway bridges. Therefore, any highway bridge that carries the NHS or ramp that connects to the NHS, and meets the section 490.405 definition of a bridge, is subject to the requirements of subparts A and C.

Discussion of Section 490.405 Definitions

To implement 23 U.S.C. 119(f)(2) and 23 U.S.C. 150(c)(3)(A)(ii)(III), FHWA proposed definitions for the terms ''bridge'' and ''structurally deficient.''

The FHWA did not receive any substantive comments regarding the definition for bridge. However, as discussed in section 490.309 (Using Structure Type to Identify and Exclude Bridges), FHWA moved the definition of bridge from this section to subpart A (*i.e.,* section 490.101) to ensure the term is used in a consistent manner throughout this rule.

The FHWA received comments from AASHTO (with support from Michigan and Maryland DOT), NYSAMPO and 12 State DOTs (Alabama, California, Connecticut, Idaho, Montana, New York, North Carolina, North Dakota, South Dakota, Texas, Washington, and Wyoming) suggesting changes to the proposed definition of the bridge classification ''structurally deficient.'' One suggestion was to lower the threshold for the NBI Items (Items 58-Deck, 59-Superstructure, 60-Substructure, and 62-Culverts) that are used to classify a bridge as structurally deficient. The suggestion was to lower the threshold from a condition rating of four—poor condition, which is described in FHWA's Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges as Poor: advanced section loss, deterioration, spalling, or scour, to three—serious condition which is described as loss of section, deterioration, spalling, or scour have seriously affected primary structural components; local failures are possible; fatigue cracks in steel or shear cracks in concrete may be present.

Additional suggested changes included removing NBI Item 58-Deck from the calculation of the classification, and changing the definition and calculation of ''Structurally Deficient'' to be the same as the performance measure ''Percentage

of NHS bridges classified as in Poor condition.''

The Missouri and New Hampshire DOTs supported the proposed definition. The Colorado DOT noted that the proposed definition is identical to the historical definition. Three other State DOTs (Connecticut, Iowa, and New Jersey) suggested discontinuing the use of the classification and developing a new term that better serves the purpose of the provisions. The Georgia DOT requested clarification on the differences between the classification of structurally deficient and the bridge performance measure of Poor. The Oregon DOT commented that the proposed definition for the classification of structurally deficient was more ''amenable to element level'' bridge data rather than bridge components (*i.e.,* deck, superstructure, substructure, and culverts). The PSRC recommended that the calculation of the bridge performance measure for Poor equate to the proposed definition and methodology for the classification of structurally deficient.

The FHWA retains the term ''structurally deficient'' in the final rule as the statutory language in MAP–21 uses it. Section 119(f)(2) of Title 23 U.S.C. requires FHWA to determine the total deck area of bridges in each State on the NHS that have been classified as structurally deficient, and to apply a penalty, when necessary, based on an established percentage of that classification. The statutory language does not grant FHWA the authority to disregard the use of the term ''structurally deficient.''

The FHWA revised the definition and methodology for the classification of structurally deficient so that it equates to the performance measure of bridges classified as in Poor condition. The revision also addresses the concern that the proposed definition was more amenable to element level bridge data rather than the NBI component level data that is used for classification. The revised definition considers only the physical condition of the bridge. As proposed in the NPRM, the classification of structurally deficient goes beyond the metrics of the bridge performance measures and physical condition. It also considers the level of service the bridge provides as compared to a bridge that is built to current standards.

Equating the classification of structurally deficient with bridges classified as in Poor condition provides consistency as it aligns the NHPP provisions for the condition of NHS bridges (23 U.S.C. 119(f)(2)), which use the classification of structurally deficient. Section 150(c)(3) of Title 23 of the U.S. Code requires the establishment of performance measures for State DOTs to use to assess the condition of bridges on the NHS and for the purpose of carrying out the NHPP.

Additionally, the differences in the population of bridges on the NHS that are classified as structurally deficient by the historical definition and method in NPRM versus in Poor condition are minimal as the calculation methods are similar. According to FHWA's NBI for the 10-year period of 2005 to 2014, the maximum difference between the methodology proposed in the NPRM and the one in the final rule by both the percentage of number of bridges and percentage of deck area of bridges is 0.2 percent. Lowering the threshold for NBI Items 58, 59, 60, and 62 from a condition rating of four to three and removing NBI Item 58 from the calculation of the classification of structurally deficient were not considered. This would represent fundamental changes to a historical classification method and would result in vastly different populations of bridges carrying the NHS, which includes on- and off-ramps connected to the NHS, than what was intended to be addressed by 23 U.S.C. 119(f)(2).

The Minnesota DOT suggested providing ''clear and concise definitions'' for the terms so that ''there is consistency in the interpretation'' of the regulations. The FHWA agrees and believes that clarity is provided in the regulations.

The Missouri DOT requested the NBI algorithms used to calculate and determine if a highway bridge is to be classified as structurally deficient. As discussed above, FHWA revised the definition and methodology for the classification of structurally deficient so that it is the same calculation used for classifying bridges as in Poor condition. The historical NBI algorithms that were used to calculate NBI Items 67 (Structural Evaluation) and 71 (Waterway Adequacy) will not be used.

Discussion of Section 490.407 National Performance Management Measures for Assessing Bridge Condition

To implement the statutory provisions under 23 U.S.C. 150(c)(3)(A)(ii)(III), FHWA proposed two performance management measures for assessing the condition of bridges on the NHS: (1) Percentage of NHS bridges classified as in Good condition; and (2) percentage of NHS bridges classified as in Poor condition.

The ASCE and the Georgia DOT supported the proposed section.

The AASHTO expressed general support of the proposed three classifications and two performance management measures for assessing the condition of bridges on the NHS. However, AASHTO, AMPO, and eight State DOTs (Idaho, Montana, Oregon, North Dakota, Rhode Island, South Dakota, Texas, and Wyoming) recommended that additional language be provided to the classifications and performance measures to communicate and focus on the needs of bridges rather than the condition. For example: (1) Good condition bridges should be described as bridges that need routine or cyclic maintenance; (2) Fair condition bridges should be described as bridges that need condition based preventative maintenance; and (3) Poor condition bridges should be described as bridges that need rehabilitation and or replacement.

While providing such additional language may be beneficial when communicating the needs of bridges, the recommended language may be interpreted as limiting the types of projects that can be performed on bridges in certain conditions. The determination of what projects or activities to perform on a bridge is at the discretion of its owner. The Federal-aid highway program provides such flexibility. Eligible bridge projects, regardless of the condition of the bridge, are defined in each of the programs. For example, under the NHPP, the list of eligible projects that includes bridge activities, can be found under 23 U.S.C. 119(d). Although flexibility exists, it should be noted that as part of performance management, recipients of Federal-aid highway funds must make transportation investments to achieve performance targets that make progress toward national goals. The national performance goal for bridges is to maintain their condition in a state of good repair.

The additional language is also inconsistent with the statutory language that requires FHWA to establish performance measures. In 23 U.S.C. 150(c)(3)(A)(ii)(III), the Secretary is required to establish measures for States to use to assess the condition of bridges on the National Highway System. A bridge condition measure describes the existing, in-place bridge's physical condition as compared to its as-built physical condition. The statute does not provide that an assessment of needs such as maintenance, rehabilitation, or replacement be used to measure the performance of bridges. Instead, ''the condition of bridges'' is the performance measure. Therefore, FHWA retains the language in the final rule for the three

classifications and two performance management measures for assessing the condition of bridges carrying the NHS, which includes on- and off-ramps connected to the NHS.

The AMPO, California DOT, California State Association of Counties, COMPASS, Metropolitan Transportation Commission, the NYMTC, and an anonymous citizen suggested that additional factors other than those proposed (NBI Items 58, 59, 60, and 62) be included in the calculation of the performance measures. Suggestions included factors that considered level of use, vehicle speed on the bridge, and seismic and scour vulnerability.

As stated above, the statute that required the establishment of performance measures for bridges on the NHS did not provide for any factors other than ''condition.'' Level of use, such as average daily traffic and vehicle speed, are not considered measures of the condition of a bridge. Instead, these factors are measures of functionality. Such measures are used to describe a bridge in relation to the level of service it provides to its highway. Similarly, seismic and scour vulnerability are not considered measures of condition. They would be considered measures of risk for certain types of extreme events. A bridge's physical condition is one of many factors (*e.g.,* bridge design, location, and others) that should be considered when determining vulnerability or risk to extreme events. However, vulnerability and risk to extreme events are not measures of condition. Therefore, FHWA retains the language for the metrics to be used in calculating the bridge performance measures.

The Connecticut DOT commented that the performance measures should not be weighted only by deck area as this may incentivize bridge owners to prioritize plans and projects for larger bridges over smaller ones. The Connecticut DOT also suggested that having an additional set of performance measures that are weighted by number of bridges instead ''will ensure that the State also addresses smaller bridges.'' This dual set of performance measures ''will be helpful for both States and FHWA to assess and report a more accurate description of the nation's infrastructure.'' The AMPO had a similar comment stating, ''There is uncertainty about the use of percent of bridge deck area instead of percent of all bridges. This is probably more of a concern for States with longer bridges (*i.e.,* Louisiana as opposed to Montana). For instance if the Lake Pontchartrain Causeway (26.2 miles) ended up rating as Poor this ends up being the approximate equivalent of 8,300 culverts being rated as Poor. The end result might force Louisiana to improve the Causeway at the expense of other work.''

Requiring additional bridge performance measures weighted by the number of bridges would be inconsistent with one of the nine principles in the NPRM preamble which were considered in the development of the proposed regulation (Minimize the Number of Measures). While performance measures weighted by the number of bridges provide an amount of bridges in certain conditions, performance measures weighted by deck area provide a greater perspective on the extent of the condition of bridges as the size of a bridge is taken into account.

Therefore, FHWA retains the language for the two performance measures for assessing the condition of bridges on the NHS, as weighting the performance measures by deck area provides more information through a minimum number of required performance measures. The FHWA recognizes that performance measures based on deck area may influence State DOTs to prioritize plans and projects for larger bridges over smaller ones so as to achieve improved conditions at a greater rate. However, FHWA is confident that this and the related asset management rulemaking to establish minimum standards for State DOTs to develop their bridge management systems and investment strategies will ensure that State DOTs choose the most efficient investments for Federal transportation funds. This final rule, in combination with the State Asset Management Plan rule (RIN 2125–AF57), will ensure that State DOTs focus on national transportation goals, increase accountability and transparency, and improve investment decisions regardless of bridge size.

The Idaho DOT recommended that a statement be provided in the final rule to clarify that States and MPOs are not precluded ''from implementing (whether already in effect or new) systems that include assets in addition to NHS assets, such as non-NHS bridges, provided that the State meets Federal requirements as to the assets that are required to be included in the Federal performance management system by the Federal rule. Moreover, as to non-NHS assets, the rule should not require a State to have to utilize the specifics of the Federal rule.'' The Oregon DOT provided a similar comment stating, ''States must consider all bridges regardless of the system when setting up maintenance, preservation, or replacement programs. State plans to use available transportation funds should be developed based on priorities that consider the system, traffic volume, and condition, but non-NHS needs must also be addressed in order to maintain economic viability and mobility across an entire transportation system. If the national measures are really intended to be used to measure system improvement resulting from investments, both NHS and non-NHS systems should be reported so a comprehensive view of a state's investment strategies will be presented.''

The applicability of subpart D is described in section 490.403. Subpart D is only applicable to bridges carrying the NHS, which includes on- and off-ramps connected to the NHS. Therefore, provided that the requirements of this final rule are met, State DOTs and MPOs may go beyond these minimum requirements when implementing a performance management system or program. (See the Final Rule for Asset Management Plan for further information on implementing a performance management program on non-NHS bridges.)

The Ohio DOT inquired about the process by which State DOT bridge performance targets will be submitted to FHWA; the criteria for changing a bridge performance target; and whether performance targets are to be approved by FHWA.

The requirements for reporting on performance targets are described in section 490.107. In general, State DOTs submit their performance targets to FHWA through an electronic template to be provided by FHWA. The process for adjusting a 4-year target is described in section 490.105 and the required reporting for that adjusted target is in section 490.107. If a State DOT decides to adjust its 4-year target, it must include a discussion in their Mid Performance Period Progress Report on the basis for the adjustment and how the adjusted target supports expectations documented in longer range plans (*e.g.,* State asset management plan and the long-range statewide transportation plan). Regarding FHWA approval of performance targets, MAP–21 did not provide FHWA the authority to approve or reject State DOT and MPO targets.

The Metropolitan Transportation Commission commented that it ''uses and supports the use of the National Bridge Investment Analysis System to analyze bridge maintenance needs.'' They also ''recommended that FHWA make the tool available and provide appropriate training.''

The NYSAMPO expressed concern that the use of performance measures for bridges (*i.e.,* Poor and Good) will

encourage the use of a ''worst-first'' approach to investment, and limit the flexibility of State DOTs to employ asset management strategies and approaches. The AMPO expressed a similar concern that ''the proposed process encourages a ''worst-first'' approach rather than focusing on strategically important facilities.''

The FHWA acknowledges that indiscriminately attempting to improve condition could lead to a ''worst-first'' approach to investment, but believes that the framework provided by MAP–21 will support a more strategic investment strategy in most cases. 23 U.S.C. 150(a) directs the NHPP to provide a means of efficient investment of Federal transportation funds by focusing on national transportation goals. These goals emphasize the importance of national routes to the economy, safety, and other concerns in the entire Nation. In a recent FHWA report to Congress (National Bridge and Tunnel Inventories Report—February 2015), it was shown that for the 10-year period of 2005–2014, the percentage deck area of bridges on the NHS classified as structurally deficient improved from 8.5 percent to 6.0 percent.[105] Therefore, even in the worst case, maintaining bridge conditions on the NHS to achieve 90 percent in Fair or better condition would likely not require the level of investment that would drive a program to a ''worst-first'' approach. On the contrary, good maintenance and preservation, as currently practiced in many State DOTs, would keep the requirements for major investment on these routes at a minimum, most likely well below the allowable 10 percent classified as structurally deficient.

The Texas DOT commented that three classifications for assessing bridge condition were presented in the NPRM: (1) Percentage of NHS bridges classified as in Good condition; (2) percentage of NHS bridges classified as in Fair condition; and (3) percentage of NHS bridges classified as in Poor condition. They recommended ''not defining the Fair condition criteria and not making the States generate and maintain a value that is not utilized in the performance measures.''

Although the classification of bridges in Fair condition and its calculation is retained in the final rule, State DOTs and MPOs are not required to establish or report on performance targets for this classification. The reason FHWA retains the language is that system-wide monitoring of assets will be done for the three classifications, not just the two bridge performance measures. The Fair classification is a simple calculation from the other two; therefore, there is no requirement for reporting on this classification.

The Colorado DOT commented that the proposed measures are ''lag'' measures focused on the percentage of structurally deficient deck area on the NHS. Therefore, they do not forecast or predict when a bridge will become structurally deficient. The Colorado DOT suggested that predictive structurally deficient performance measures should be proposed instead. Examples of these performance measures are leaking expansion joints over substructure elements, unsealed decks, failed deck seals, debris collections that accelerate deterioration, and failed steel protection systems. The Colorado DOT also commented that the proposed performance measures do not directly address the risks of bridges that are scour critical or do not meet current design standards.

As discussed in sections 490.405 and 490.411, FHWA revised the definition and methodology for the classification of structurally deficient so that it equates to the performance measure of bridges classified as in Poor condition. Also previously discussed, other than condition, the 23 U.S.C. 150 required the establishment of performance measures for bridges on the NHS but did not provide for any other factors such as forecasting or predicting. The suggested predictive performance measures go beyond describing the existing, in-place physical condition of a bridge. Forecasting or predicting bridge conditions is a bridge management tool or process rather than a measurement of performance. (See the Asset Management Plan final rule (RIN 2125–AF57), as the minimum standards for developing management systems will include forecasting deterioration.)

As for the additional factors based on risk, such as scour critical and not meeting current design standards, these are not considered a measure of condition. Therefore, FHWA retains the metrics in section 490.407 to be used in calculating the bridge performance measures.

Discussion of Section 490.409 Calculation of National Performance Management Measures for Assessing Bridge Condition

To implement 23 U.S.C. 150(c)(3)(A)(ii)(III), FHWA proposed calculation methods to carry out the bridge condition related requirements of this part and make the significant progress determination in section 490.109. The FHWA revised section 490.409(b) to provide clarity as to which highway bridges are subject to this regulation.

The Metropolitan Transportation Commission expressed support for the proposed classification approach for determining the condition of a bridge, where the lowest rating received for any component of a bridge determines the overall condition.

Three State DOTs (New York, North Carolina, and North Dakota) suggested that an alternative method to the proposed minimum of condition rating method be used for national performance measures under the NHPP. They suggested the weighted average method, which consists of calculating an overall condition rating based on a weighted average of NBI Items 58, 59, and 60. Another method that was offered was to simply not include NBI Item 58 in the calculation of the classification. An additional recommendation was to define Fair as ''a bridge that is not structurally deficient and also having at least one NBI score of 5.'' The recommendation stated that ''a Good bridge would be defined as a bridge that is not structurally deficient and also having a minimum NBI score of 6.''

As was noted in the NPRM, FHWA performed a study (Improving FHWA's Ability to Assess Highway Infrastructure Health) that evaluated five different methods (four different weighted average methods and one minimum condition rating method) to assign bridge condition based on the classifications of Good, Fair, or Poor.[106] The study concluded that for the Interstate System: (1) Percentages of bridges classified as Good, Fair, or Poor were consistent for all methods with little variation; (2) minimum condition rating method resulted in the highest percentage of bridges in Poor condition; (3) percentages of bridges classified as Good, Fair, or Poor based on the four weighted average methods are not sensitive to the weights; and (4) bridge deck conditions alone are not typically the driving factor in the Good, Fair, or Poor calculations. The FHWA further assessed the different methods and observed that the magnitude in differences between condition ratings for individual NBI items was somewhat nullified when a final average or weighted average method was

[105] U.S. Department of Transportation, Federal Highway Administration. Report to Congress, National Bridge and Tunnel Inventories Report, Fall 2015, has been posted to the Docket.

[106] FHWA (2012). Improving FHWA's Ability to Assess Highway Infrastructure Health Pilot Study Report, FHWA–HIF–12–049. *http://www.fhwa.dot.gov/asset/pubs/hif12049/hif12049.pdf.*

employed. This observation was also noted in the 2012 study.[107] The masking or obscuring of possible Poor bridge conditions is a major concern with the final average or weighted average methods. This concern also applies to the suggested method of a Fair bridge ''having at least one NBI score of 5'' and ''a Good bridge . . . having a minimum NBI score of 6.'' Although these methods could be further refined, the development, subjectivity, and complexity of such methods makes them less desirable than the simple minimum condition rating method. This is especially true because analyses indicate that a refined weighted method would result in the same general classification as the minimum condition rating method.

As for the suggested method to not include NBI Item 58 in the calculation of the classification, the deck is a critical component of a bridge as it provides the surface upon which vehicles travel. Omitting such a fundamental component of a bridge would not provide an accurate assessment of its overall condition or performance. Therefore, FHWA retains the language in section 490.409 for the calculations of the three bridge classifications and the two bridge performance measures. However, FHWA made a minor revision that provides clarity as to which highway bridges are subject to this regulation.

The South Jersey Transportation Planning Organization argued that the proposed minimum condition rating method was controlled by lowest rating of a bridge's three NBI Items (58, 59, and 60) substructure, regardless of whether any of the proposed metrics were rated the same or not. They suggested that the method ''may have a disadvantage in that some categories may be much more expensive to repair, and as such, give a distorted view of the over-all bridge repairs needed.''

As discussed above, in assessing various methods for determining the classification of a bridge, FHWA is concerned with the masking or obscuring of possible Poor bridge conditions when an average or weighted average method is used. Although these methods could be further refined, the development, subjectivity, and complexity of such methods makes them less desirable than the simple minimum condition rating method. As previously stated, analyses indicate that a refined weighted method would result in the same general classification as the minimum condition rating method. Regarding the possible distortion of estimated costs and overall bridge repair needs, other than ''condition,'' the statute did not provide for any other factors such as costs or needs.

Four State DOTs (Delaware, Idaho, North Carolina, and North Dakota) disagreed with the proposed calculation methods for the bridge classifications of Good and Fair. Suggestions included making the calculation methods flexible to allow State DOTs to define the classifications and the method of calculations for themselves and to include the NBI condition rating of six in the Good classification. The NBI zero to nine scale for condition ratings for the classifications of Good, Fair, and Poor are based on the historical practice of generalization of the scale and the logical distinctions that are made between the descriptions for the various condition ratings. For example, according to FHWA's Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, a condition rating of six is described as ''satisfactory condition, structural elements show some minor deterioration.'' While some commenters have suggested including this condition rating as Good, doing so would be an inaccurate assessment of the condition of the bridge as Good indicates that there are some minor problems, which is different than minor deterioration. Additionally, the comparative analysis study of bridge conditions conducted through NCHRP 20–24(37)E (Measuring Performance Among State DOTs, Sharing Best Practices—Comparative Analysis of Bridge Conditions), recommended defining: (1) Poor as bridges with deck, superstructure, or substructure ratings less than or equal to four; (2) Good as bridges with deck, superstructure or substructure ratings greater than or equal to seven; and (3) all other bridges as Fair condition.[108] Therefore, FHWA retains the language of the NPRM, with a minor revision that provides clarity as to which highway bridges are subject to this regulation, for the calculation of the classifications of Good, Fair, and Poor.

The Knoxville Regional Transportation Planning Organization suggested that ''reconfiguring the NBI condition rating approach from its current zero to nine rating to a Good, Fair, or Poor rating would not be favorable.'' They argued that it would be ''complicated to convert the data to fit to the new scale.'' They also suggested that ''if the Good, Fair, or Poor rating scale was still used, perhaps there could be a matrix created for the conversion that would further define the new condition rating scale.'' The FHWA retains the language of the NPRM, with a minor revision that provides clarity as to which highway bridges are subject to this regulation, for the calculation of the three bridge classifications. In section 490.409, the calculation of the classifications are provided in detail, including specific information on how to convert the numerical NBI condition rating to a classification of Good, Fair, or Poor condition (*i.e.,* a conversion matrix is provided).

The Missouri DOT argued against the use of the bridge deck area that is reported with element level bridge data, stating that no deck area for culverts is reported with element level data.

The deck area calculation for culverts and culverts where the roadway is on a fill are in sections 490.409(c)(1) and 490.409(c)(2) (see formulas and explanations for the terms ''length'' and ''width.'') In general, the deck area of a culvert is the product of NBI Items 49 (Structure Length) and 52 (Deck Width). For culvert where the roadway is on a fill, the deck area of a culvert is the product of NBI Items 49 and 32 (Approach Roadway Width).

The California and North Dakota DOTs suggested a change to the proposed calculation of deck area for culverts. The change involves replacing NBI Item 32 with the culvert element length in the calculation. The NBI does not include an item for culvert element length.

In order for such an item to be used for the calculation of deck area, an additional collection burden would be placed on State DOTs. Currently, the NBI includes Item 32, which provides an accurate measurement to calculate a deck area that is influenced by the roadway. By using the proposed alternative of culvert element length, deck area calculations may be exaggerated. For example, culverts where the roadway is on a significant amount of fill can be much longer than the width of roadway that is supported. This would result in a calculated deck area that is much larger than an area influenced only by the roadway. Therefore, FHWA retains the language of the NPRM, with a minor revision that provides clarity as which highway bridges are subject to this regulation, for calculating the deck area of bridges, including culverts.

The California DOT also stated, the proposed deck area calculation ''assumes that every bridge is rectangular in shape. This assumption

[107] Ibid.

[108] Transportation Research Board of the National Academies, National Cooperative Highway Research Program, NCHRP 20–24(37)E, Measuring Performance Among State DOTs, Sharing Best Practices, *http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-24(37)E_FR.pdf.*

ignores ramp area, curved configurations, and other irregular deck shapes. The MAP–21 requires the submission of bridge deck area in the elements that could be used to directly report bridge deck area including all irregular configurations. Use of the element deck areas would improve the accuracy of the measure.'' The MAP–21 did not require State DOTs to report a bridge deck area element as part of 23 U.S.C. 144(d)(2).

The Colorado DOT asked whether the areas of approach slabs will be included in the calculation of a bridge's deck area. The deck area of bridge will be calculated as described in section 490.409. The calculation does not include the areas of approach slabs.

The Iowa DOT suggested that a formula similar to FHWA's former Sufficiency Rating be used instead to classify bridge condition. Formulas such as the Sufficiency Rating were tools to assist in the identification and prioritization of bridge projects and needs. They are not necessarily indicators of physical condition as they included other factors such as level of service and functional obsolescence. As discussed in section 490.407, the statutory language focused the bridge performance measures on the factor of condition, with the national performance goal of maintaining bridge condition in a state of good repair. It did not provide other factors to be considered for the bridge performance measures or the national performance goal. Therefore, FHWA retains the language in section 490.409 for the metrics to be used in calculating the bridge performance measures.

The Wyoming DOT recommended that the final rule significantly scale back or modify a number of its requirements, such as additional data collection. In regards to the bridge performance measures, there is no additional data collection burden as the data that is currently collected under 23 CFR 650.305 (National Bridge Inspection Standards) will be used to meet the data requirements for this subpart.

The AMPO expressed concern that the combination of bridge data submission requirements (*e.g.,* NBI data and element level bridge data) ''will effectively require States to collect duplicative data at considerable cost.'' The comment went on to state that the rule should, ''Require States to use either the NBI or the new methodology for all bridge related reporting requirements, but not both.'' As was stated above, there is no additional data collection burden in regards to the bridge performance measures as the data that is collected under the NBIS will be used. In regards to element-level data, 23 U.S.C. 144(d)(2) requires the collection of such for bridges on the NHS. This type of data is not duplicative of the NBI data as this data provides more detailed information.

The New York City DOT commented that there is no reference to biennial inspections as the primary source of bridge related information. The commenter further stated that ''risk-based scheduling at varying intervals of up to 6 years is proposed at the discretion of the owner. Rather, one could keep the biennial inspection interval fixed, but vary the inspection scope. This would be highly appropriate in large structures with components of very different exposure to aggressive influences.'' The NPRM did not propose any such change to the NBIS which define the intervals at which highway bridges are to be inspected. The NPRM did state that the NBI is the definitive source for national bridge information and that the NBI by definition is an FHWA database containing bridge information and inspection data for all highway bridges on public roads, on and off Federal-aid highways, including tribally owned and Federally owned bridges, that are subject to the NBIS.

The California DOT questioned if a scour critical bridge should be considered ''Poor'' under the provisions of this rule. The California DOT also requested clarification if FHWA's policy directive related to the Highway Bridge Program of lowering the substructure condition rating (NBI 60) to match the scour code (NBI 113) for scour critical bridges is still in effect as MAP–21 eliminated the Highway Bridge Program. Under this rule, a highway bridge is classified as in Poor condition based on the criteria of section 490.409(b)(3). There is no FHWA policy related to the Highway Bridge Program, which directed the matching of the codes for NBI items 60—Substructure and 113 Scour Critical Bridges. However, the errata to FHWA's Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, Report No. FHWA–PD–96–001, December 1995, does state, ''The rating factor given to Item 60 should be consistent with the one given to Item 113 whenever a rating factor of 2 or below is determined for Item 113—Scour Critical Bridges.''

The Louisiana DOT requested that an example State be created and the principals of the bridge measures be applied to it, as it would better their understanding of how the practice will be used. The FHWA will issue guidance on step-by-step procedures that detail the data and the calculations for the national performance measures for 23 U.S.C. 150, which includes the bridge performance measures.

The FHWA made an editorial change in section 490.409(b)(1) through (3) to remove the phrase ''of any'' to provide clarity in the regulatory text that Good, Fair, or Poor classification of a bridge is determined based on the lowest rating of three NBI items (58, 59, and 60) for that bridge. These paragraphs in the final rule now state: ''. . . When the lowest rating of the three NBI items for a bridge (Items 58—Deck, 59—Superstructure, 60—Substructure) is . . .'' This editorial change did not alter the intent of the original text in the NPRM.

Discussion of Section 490.411 Establishment of Minimum Level for Condition for Bridges

To implement the statutory provisions under the NHPP for the condition of NHS bridges, FHWA incorporated the minimum condition level established by 23 U.S.C. 119(f)(2). The FHWA revised the NPRM language in section 490.411(a) to provide clarity as to which highway bridges are subject to this regulation.

The AASHTO, with support from six State DOTs (Idaho, Montana, North Dakota, South Dakota, Oklahoma, and Wyoming), suggested changes to the proposed methodology for the classification of structurally deficient. Their suggestion was to lower the threshold of the classification for NBI Items 58, 59, 60, and 62 from a condition rating of four (Poor condition, advanced section loss, deterioration, spalling or scour) to three (serious condition, loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present). The AASHTO and Alabama DOT also suggested removing NBI Items 67 (Structural Evaluation) and 71 (Waterway Adequacy) from the factors in the determination process.

The New Hampshire DOT ''strongly'' disagreed with AASHTO's recommendation of lowering the threshold. The New Hampshire DOT argued that the general public and elected officials currently have a good understanding of the classification of structurally deficient and changing the definition would cause confusion. Additionally, New Hampshire DOT expressed that such a change would result in having ''many thousands fewer ''Structurally Deficient'' bridges, which also implies that there are fewer bridges

that need to be replaced or substantially rehabilitated.'' The Missouri DOT recommended not using element level data as it ''is cumbersome and results in a large amount of data, which is not meaningful and is complicated to convert to a Good, Fair, or Poor condition rating.'' The Georgia DOT requested clarification on whether the NHPP penalty provision is based on the classification of structurally deficient or the bridge performance measure of Poor.

The AASHTO comment also included a suggestion, which four State DOTs supported (Connecticut, Iowa, New Jersey, and New York), that FHWA should note in the final rule that the use of current NBI data for calculating bridge performance measures and classifying bridges on the NHS as structurally deficient is temporary and that there is a transition plan to use element level bridge data.

The New York City DOT similarly commented that the ''proposed performance measures are obsolete on arrival'' as ''FHWA is adopting the AASHTO element level inspection with ratings 1–4.'' The comment also stated that the ''The AASHTO system, while element—level is not span—specific. Thus, even if updated to element level inspections, NBI will not reflect the complexity of the multi-span bridges.''

As previously discussed, FHWA revised the definition and methodology for the classification of structurally deficient so that it is the same calculation used for classifying bridges as in Poor condition. Although element level bridge data is now being reported to the NBI, the analysis and development as to how this data could be used to calculate the proposed bridge performance measures and classify bridges on the NHS as structurally deficient needs to be conducted and completed. Once completed, element level bridge data, and any other pertinent bridge information or metric that provides an improved indicator for bridge condition, may be considered in revising this regulation in the future. Additionally, it is anticipated that element level data for all of the bridges on the NHS will not be in the NBI until 2019 due to the nature of inspection intervals, which can be up to 48 months. Therefore, the current NBI, with its extensive historical data sets and availability, is the most appropriate metric for assessing the condition of bridges on the NHS and classifying them as Structurally Deficient.

Four State DOTs (Alabama, Maryland, Minnesota, and Missouri) supported the use of the current NBI Items instead of element level bridge data.

The Colorado DOT asked whether the area of approach slabs will be included in the calculation of a bridge's deck area. The deck area of bridge will be calculated as described in section 490.411. The calculation does not include the area of approach slabs.

The Georgia DOT commented that the March 15 submission date for the most current NBI data on highway bridges to FHWA would result in changes to business practices and require additional resources. The Virginia DOT recommended that the NBI data submittal date remain as April 1 of each year as currently established as it allows for all State bridges inspected in the previous year to be entered in the data base within (and is consistent with) the 90-day period established by 23 CFR 650.315(b) and (c) for Structure Inventory and Appraisal data on State bridges. The FHWA retains the March 15 submission date. Reporting by March 15 is needed in order to administer the NHS bridge minimum condition provision and issue any penalties by the next fiscal year.

Discussion of Section 490.413 Penalties for Not Maintaining Bridge Condition

To implement the penalty for not maintaining the condition of NHS bridges under the NHPP, FHWA incorporated the minimum condition level for bridges on the NHS established by 23 U.S.C. 119(f)(2). The penalty is as follows: If FHWA determines for the 3-year period preceding the date of the determination, that more than 10.0 percent of the total deck area of bridges in the State on the NHS is located on bridges that have been classified as Structurally Deficient, then during the fiscal year following the determination, the State DOT shall obligate and set aside in an amount equal to 50 percent of funds apportioned to such State for fiscal year 2009 to carry out 23 U.S.C. 144 (as in effect the day before enactment of MAP–21) from amounts apportioned to a State for a fiscal year under 23 U.S.C. 104(b)(1) only for eligible projects on bridges on the NHS. The set-aside and obligation requirement shall remain in effect for each subsequent fiscal year until such time as less than 10 percent of the total deck area of bridges in the State on the NHS is located on bridges that have been classified as Structurally Deficient as determined by FHWA.

The ASCE, a private citizen (Nicholas Cazares), and Missouri DOT expressed support for this section.

The FHWA received various comments regarding the statutory provisions under the NHPP for the penalty of not maintaining the condition of NHS bridges. The NYSAMPO and the State DOTs of Rhode Island and Texas argued that the implementation of a penalty to maintain a minimum condition is inconsistent with the principles of asset management. They argued that the penalty would promote a ''worst-first'' philosophy, delay the achievement of a state of good repair, and distort a State DOT's ability to properly invest. Additionally, the New York DOT suggested eliminating the penalty. The Connecticut DOT argued that the 10 percent threshold and 50 percent formula amount for the structurally deficient classification and the set-aside are arbitrary. They commented that the penalty provisions appear ''to have no basis in engineering principles or generally accepted asset management practices.'' Similarly, ASCE endorsed a goal of 8 percent instead of 10 percent. The Oregon and Texas DOTs suggested an alternative to the set-aside penalty. They suggested that a State DOT submit to FHWA an investment plan to reduce the percentage of deck area of bridges on the NHS classified as structurally deficient. The SCAG suggested that the penalty provisions should not be implemented without the apportionment of additional funds to locals because the penalty imposed on a State DOT would in turn reduce the availability of Federal funds for locals.

The FHWA essentially incorporated the minimum condition level for bridges on the NHS into the final rule consistent with 23 U.S.C. 119(f)(2). The MAP–21 did not provide FHWA the authority to eliminate the penalty provisions or change the threshold for structurally deficient or the set-aside amount.

Three State DOTs (Colorado, Connecticut, and New York) and AASHTO argued that October 1, 2016, the initial date of determination of compliance with the minimum condition requirements specified in 23 U.S.C. 119(f)(2), is ''too soon'' and ''State DOTs will have no time to assess their current situation and then implement reasonable projects to attempt to affect their meeting the 10 percent threshold.''

The MAP–21 and 23 U.S.C. 119(f)(2) have been in effect since July 6, 2012. The FHWA provided guidance ahead of the NPRM on the provisions of 23 U.S.C. 119(f)(2) and its implementation on September 25, 2012. In implementing the 23 U.S.C. 119(f)(2) provisions, the NPRM proposed a definition and computation for the classification of structurally deficient that was unchanged from the programmatic term that was used for

over 30 years to administer the Highway Bridge Program. Bridge owners have been aware and knowledgeable of this well-established classification of structurally deficient, which was one of three statuses used to determine eligibility and apportion funds to State DOTs from the Highway Bridge Program. The initial date of determination proposed in the NPRM provides more than 3 years for owners of NHS bridges to assess the condition of their bridges and implement projects in response to a possible penalty. This was based on data Federal agencies, State DOTs, and tribal governments were already collecting and submitting to FHWA for inclusion into the NBI and for a classification that has been well-known for decades.

However, FHWA revised NPRM implementing the statutory provisions of 23 U.S.C. 119(f)(2) in response to the comments. The revisions were also made due to the revisions to the definition and computation of the classification of structurally deficient and the new methods of calculation for the deck area of culverts and border bridges. In sections 490.405, 490.411(b), and 490.411(c), FHWA provides a transition period for implementing the statutory provisions under the NHPP for the penalty of not maintaining the condition of NHS bridges. This transition period provides State DOTs and MPOs additional time to adjust to the revised definition and computation for the classification of structurally deficient and the new calculations for deck area of culverts and border bridges. Initially, the statutory provisions will be implemented using the historical definition and method of determination for the classification of structurally deficient as used under the Highway Bridge Program, as proposed in the NPRM. Beginning in calendar year 2018 (*i.e.,* the NBI submittal for March 15, 2018), the statutory provisions will be implemented with the revised definition and computation for the classification of structurally deficient and the new methods of calculations for the deck area of culverts and border bridges.

The Mississippi and North Dakota DOTs argued that States should not be responsible for assets that are beyond their control and therefore not incur any penalties that may be due to those assets' conditions.

As discussed previously, FHWA recognizes that there is a limit to the direct impact State DOTs and the MPOs can have on performance outcomes within State and the metropolitan planning area, respectively. However, there is no such limit on the use of NHPP funds for any highway bridge that is on the NHS. Recipients of NHPP apportionments (*i.e.,* State DOTs) can provide other owners of bridges on the NHS with NHPP funds (and Surface Transportation Block Grant Program funds) to improve the condition of bridges. Therefore, FHWA encourages State DOTs to consult and coordinate with relevant entities (*e.g.,* Federal land Management agencies, MPOs, local transportation agencies, and tribal governments) as they report performance data and establish targets. This will allow the State DOTs to better assess condition of bridges on the NHS and better identify and consider factors outside of their direct control that could impact future condition/performance. (See the previous discussion of responsibility for the reporting of data, establishment of targets, asset condition, and managing of assets that are beyond the control of State DOTs and MPOs and the discussion of ownership in the discussion section for section 490.105(d).)

The FHWA retains the language in section 490.413 as the statutory language in 23 U.S.C. 119 clearly identifies State DOT's apportionment under 23 U.S.C. 104(b)(1) when implementing the penalty. Because the statutory language does not provide that the terms ''National Highway System'' or ''States,'' as used in this provision, mean anything different than the terms as defined in 23 U.S.C. 101(a)(15) and 23 U.S.C. 101(a)(25). The Missouri DOT requested clarification on the 3-year-period preceding the date of the determination. The determination of compliance with the minimum condition requirements specified in 23 U.S.C. 119(f)(2) would be carried out by FHWA for fiscal year 2017 and annually thereafter. The timing is based on an assessment of minimum condition compliance of NBI data submitted in 2014, 2015, and 2016. If for each of those years the percentage deck area of bridges on the NHS classified as structurally deficient is greater than 10.0 (*e.g.,* 12.5, 11.3, and 10.5), then the penalty would be assessed for fiscal year 2017 and annually thereafter until the percentage is less than 10.0.

VII. Rulemaking Analyses and Notices

The FHWA considered all comments received before the close of business on the extended comment closing date indicated above. The comments are available for examination in the docket (FHWA–2013–0053) at *www.regulations.gov*. The FHWA also considered comments received after the comment closing date to the extent practicable.

Responses to Public Comments on the NPRM's Regulatory Impact Analysis

The FHWA carefully considered the comments related to: (1) Underestimated costs; (2) alternate cost estimates; (3) the cost for processing additional cracking data and maintaining a data quality management program; (4) the cost of IRI-only data collection on the non-Interstate NHS; (5) the cost of historical pavement condition performance management practices; (6) estimating the cost of establishing performance targets with incomplete knowledge about the availability of tools; (7) understated benefits; (8) the need for a quantitative analysis; (9) unfunded mandates; (10) Americans with Disabilities Act (ADA) issues; and (11) right-of-way (ROW) issues. The FHWA's responses to these comments are discussed below.

Agile Assets Corporation, NYMTC, TEMPO, Transportation for America, and the State DOTs of Michigan, Mississippi, North Carolina, and Oregon commented that FHWA may have underestimated the costs of the proposed rule.

The FHWA reviewed the process used to estimate costs. To develop estimates of the costs of the proposed rule, FHWA interviewed Federal, State, and local practitioners and SMEs. The FHWA researched existing literature on bridge and pavement condition, and reviewed Federal and State agency Web sites for information on current bridge and pavement condition data collection and reporting practices. In the final rule, FHWA retains the NPRM's methodology and assumptions, which are listed in Section 3 and described in detail in Section 4 of the final rule's RIA. The original and updated RIA can be found in the docket for this rulemaking. The estimated level of effort and costs to comply with the rule represent nationwide estimates of current practices as derived from interviews with Federal, State, and local practitioners. Therefore, these estimates represent average costs for a State DOT. The FHWA understands that the actual costs incurred may be higher for some State DOTs and MPOs, and lower for others.

The Michigan and Oregon DOTs provided alternative estimates for the costs they argue were underestimated in the NPRM. Oregon DOT commented that one additional full-time employee would be needed for pavement data collection as a result of the rule, at an incremental cost of $150,000 per year. Michigan DOT argued that data collection costs would increase by $100,000 per year. Michigan DOT also

asserted that processing additional cracking data and maintaining a data quality management program would potentially double current costs but did not provide an estimate.

The FHWA compared its estimated costs from the NPRM to the estimates provided by the commenters. The FHWA estimated that the cost to collect data on the Interstate and non-Interstate would be approximately $97,000 per State DOT per year (see Sections 4.2.1 and 4.2.3 of the final RIA). After additional consultation with SMEs, FHWA revised the final rule's RIA to a cost of $150,000 per State DOT per year for data collection as recommended by commenters and SMEs.

In response to Michigan DOT's comments on the costs for processing additional cracking data and maintaining a data quality management program, FHWA reviewed the process used to estimate the cost. In the NPRM, FHWA estimated that a State DOT would incur costs of approximately $37,000 per year for a new cracking data collection program (see Sections 4.2.2 and 4.2.4 of the RIA). In addition, FHWA estimated new quality management programs would cost a State DOT approximately $62,000 per year, while upgrading an existing program would cost approximately $31,000 per year (see Section 4.2.7 of the RIA). In the final rule RIA, FHWA maintains these assumptions.

Mississippi DOT commented that the NPRM RIA incorrectly assumed that the costs of IRI-only data collection on the non-Interstate NHS would be offset by efficiencies in other areas. The FHWA reexamined and confirmed the estimated costs of IRI-only data collection on the non-Interstate NHS as presented in Section 4.2.3 of the RIA. Therefore, FHWA did not revise this portion of the RIA for the final rule.

AgileAssets Corporation commented that agencies would continue to use their historical pavement condition performance management practices in addition to new requirements in the NPRM. They also argued that State DOTs would incur additional costs associated with historical pavement condition performance management practices. The FHWA reviewed the analytical approach used in the RIA. The FHWA prepared the NPRM's RIA in accordance with the guidance provided in OMB Circular A–4, ''Regulatory Analysis.'' As such, the analysis accounts for the incremental costs of the rule; that is, those costs incurred above and beyond the costs in the absence of the rule. As discussed in Section 4.1.2 of the NPRM's RIA, FHWA estimated that State DOTs would incur $53 million for reporting on the new performance measures. Therefore, the RIA costs are maintained for this final rule.

Michigan DOT commented that estimating the cost to establish performance targets with incomplete knowledge about the availability of analytical tools to determine achievable levels of performance would be costly to develop if State DOTs did not already have them.

The FHWA notes that the requirements of this performance measure rule do not explicitly require tools to analyze alternative investment strategies and decisionmaking.[109] Therefore FHWA did not account for them.

A private citizen (Nicholas Cazares) commented that benefits were understated in the NPRM's RIA, as it does not account for the benefits to local economies that will be derived from improvements in transportation. Specifically, Mr. Cazares cited faster commutes due to widened roads or the construction of new bridges (*e.g.,* reduced travel delays and CO_2 emissions). ''The California DOT noted the benefits of pavement preservation efforts. The commenter remarked that preservation efforts extend the life of assets in Good and Fair condition and would reduce the number of pavements in the Poor condition category.''

The FHWA disagrees that the benefits were understated in the NPRM's RIA. The benefits were estimated based on a break-even analysis. The non-quantifiable benefits derived from the implementation of the rule could include improved pavement and bridge conditions, which would result in improved traffic flow. In the benefits analysis for the NPRM, FHWA also acknowledged that there may be many non-quantitative benefits derived from the implementation of the rule, such as time savings that would result from trucks no longer having to be rerouted from bridges with severe weight restrictions (see Section 5 of the RIA) and reduced traffic and emissions in the RIA for the third performance measure rulemaking (docket number FHWA–2013–0054).

The FHWA reviewed the approach taken in the NPRM's RIA. In the NPRM, FHWA prepared break-even analyses to quantify the benefits of the rulemaking. The break-even analyses provided estimates of the thresholds that must be reached in order for the rule to be cost-beneficial, an approach endorsed by OMB Circular A–4. The FHWA determined that this approach, rather than a quantifiable approach, is appropriate for evaluating the costs of the rule. For more information on the break-even analyses, agencies should refer to the benefits discussion later in this section, or Section 5 of the RIA document on this docket.

The Mississippi DOT and an anonymous commenter questioned the unfunded mandates aspect of the rulemaking. Specifically, Mississippi DOT disagreed with FHWA's determination that the rule was not an unfunded mandate.

In the final rule, FHWA did not change its determination that the rule is not an unfunded mandate. According to the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104–4, 109 Stat. 48), a rule would contain an unfunded mandate if any of its requirements result in expenditures of $151 million or more in any 1 year for either State, local, or tribal governments, in the aggregate, or by the private sector (See the discussion on UMRA in Section VII, Rulemaking Analyses and Notices, of this document). The costs in the NPRM did not meet this threshold.

An anonymous citizen argued that repaving and certain pavement maintenance activities would require bringing facilities in conformance with the ADA. The commenter argued that since the ADA, ROW, and facility upgrade costs were omitted from the cost analysis, the costs of the rule were underestimated. The commenter also warned that upgrades to bring the pavements into conformance with ADA, and the related costs, may result in the taking of private property under Executive Order (E.O.) 12630 and may violate UMRA.

The FHWA notes that the NPRM required agencies to report on the condition of pavement. The methods used for pavement maintenance are not expected to change as a result of the rule. Therefore, costs related to ADA or ROW issues, such as those called for in 23 CFR 625.4 and 49 CFR 37.9, are outside the scope of the rule, and would not have taking implications under E.O. 12630 or violate UMRA. Furthermore, current practices regarding upgrading facilities are routinely subject to efficiency determinations that qualify for exemptions on a case-by-case basis, as described in 23 CFR 625.3. The current requirements for upgrading facilities or exception practices are not impacted by the implementation of this rule.

Executive Order 12866 (Regulatory Planning and Review), Executive Order

[109] For more discussion on planned activities, please see the section ''Suggestions for how FHWA can best assist States and MPOs to maximize opportunities for successful implementation of the proposed performance measures.''

13563 (Improving Regulation and Regulatory Review), and Departments of Transportation Regulatory Policies and Procedures.

The FHWA determined that this final rule constitutes an economically significant regulatory action within the meaning of E.O. 12866 and DOT regulatory policies and procedures. This action complies with E.O.s 12866 and 13563. This action is considered ''economically significant'' because this rulemaking will result in the transformation of the Federal-aid highway program so that the program focuses on national goals, provides for a greater level of accountability and transparency, and provides a means for the most efficient investment of Federal transportation funds. The FHWA completed an RIA in support of the final rule. The RIA estimated the economic impact, in terms of costs and benefits, on Federal, State, and local governments and private entities regulated under this action, as required by E.O.s 12866 and 13563. However, the RIA did not attempt to directly quantify the changes from the improved decisionmaking. The economic impacts are measured on an incremental basis, relative to current pavement and bridge condition reporting practices.

The RIA identified the estimated costs and benefits resulting from the final rule in order to inform policymakers and the public of its relative value. The complete RIA may be accessed from the docket (docket number FHWA–2013–0053).

The cornerstone of MAP–21's highway program transformation is the transition to a performance-based program. The MAP–21 requires State DOTs to invest resources in projects to meet or make significant progress toward meeting performance targets that will make progress toward national goals. The national performance goal area established for infrastructure condition is to maintain the highway infrastructure asset system in a state of good repair. In order to carry out this mandate, MAP–21 requires FHWA to promulgate a rule to establish pavement and bridge condition performance measures and standards. As required by MAP–21, the final rule identifies the following pavement and bridge performance measures for which State DOTs and MPOs must collect and report data, establish targets for performance, and make progress toward achievement of targets:

1. Percentage of lane miles of the Interstate System in Good condition;
2. Percentage of lane miles of the Interstate System in Poor condition;
3. Percentage of lane miles of the non-Interstate NHS in Good condition;
4. Percentage of lane-miles of the non-Interstate NHS in Poor condition;
5. Percentage of NHS bridges classified as in Good condition; and
6. Percentage of NHS bridges classified as in Poor condition.

Estimated Cost of the Final Rule

To estimate costs, FHWA assessed the level of effort, expressed in labor hours and categories, and the capital needed to comply with each component of the final rule. Level of effort by labor category is monetized with loaded wage rates to estimate total costs.

Table 4 displays the total cost of the final rule for the 10-year study period (2016–2025). Total costs are estimated to be $156.0 million undiscounted, $120.1 million discounted at 7 percent, and $138.5 million discounted at 3 percent. The costs in the table assume that approximately half of the estimated 409 MPOs will establish their own targets, and the rest would adopt State DOT targets. It is assumed that State DOTs and MPOs serving Transportation Management Areas (TMA) [110] will use staff to establish performance targets. Conversely, it is assumed that MPOs not serving a TMA will agree to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT targets. Therefore, they will not incur any incremental costs. There are currently an estimated 201 MPOs serving TMAs.[111] The FHWA made this assumption because larger MPOs may have more resources available to develop performance targets. The FHWA believes that this is a conservative estimate, as larger MPOs may elect not to establish their own targets for a variety of reasons, including resource availability.

TABLE 4—TOTAL COST OF THE FINAL RULE

Cost components	10-yr total cost		
	Undiscounted	7%	3%
Section 490.105–109—General Information, Target Establishment, Reporting on Progress, and Making Significant Progress	$74,095,514	$51,535,918	$63,073,229
Coordination between State DOTs and MPOs	867,367	867,367	867,367
Establish and Update Performance Targets	31,750,717	22,897,706	27,448,308
Assess Significant Progress Toward Achieving Performance Targets	40,693,075	27,281,269	34,119,523
Reporting on Performance Targets Progress	784,356	489,576	638,032
Section 490.309—Data Requirements—Interstate IRI, Rutting, and Faulting	5,108,641	3,839,263	4,488,508
Tracking costs: Establish measurement for rutting	523,963	393,771	460,360
Tracking costs: Establish measurement for faulting	1,047,926	787,541	920,720
Data processing costs: Additional rutting data	1,964,862	1,476,639	1,726,349
Data processing costs: Additional faulting data	1,571,890	1,181,312	1,381,079
Section 490.309—Data Requirements—Interstate Cracking	16,259,029	12,671,493	14,506,400
Fully Automated State DOTs: Additional Data Quality Control Costs	1,309,908	984,426	1,150,899
Semi-Automated State DOTs: Additional Data Processing & Quality Control Costs	4,286,328	3,221,275	3,766,014
Manual & State DOTs not currently collecting: Training costs to adopt automated methods	1,820,915	1,820,915	1,820,915
Manual & State DOTs not currently collecting: Data quality control costs	8,841,879	6,644,877	7,768,571
Section 490.309—Data Requirements—Non-Interstate NHS IRI, Rutting, and Faulting	6,203,492	4,473,781	5,362,882
Data Collection costs: Increase IRI Measurement to Cover 100 percent of non-Interstate NHS miles	618,044	445,716	534,296
Data processing costs: Additional rutting and faulting data collected	681,152	491,227	588,852

[110] A TMA is an urbanized area having a population of over 200,000 or otherwise requested by the Governor and the MPO and officially designated by FHWA or FTA. 23 U.S.C. 134(k).

[111] The FHWA updated the estimated total number of MPOs to 409, which is less than the 420 MPOs used at the time that the NPRM was published. The estimated number of MPOs serving TMAs is now 201, less than the estimate of 210 in the NPRM. At the time the RIA was prepared for the NPRM, FHWA assumed that the 36 new urbanized areas resulting from the 2010 Census would have MPOs designated for them. In reality, some of the newly designated urbanized areas merged with existing MPOs, resulting in the designation of fewer new MPOs than expected.

TABLE 4—TOTAL COST OF THE FINAL RULE—Continued

Cost components	10-yr total cost		
	Undiscounted	7%	3%
Tracking costs: Establish measurement for rutting	2,724,609	1,964,910	2,355,408
Tracking costs: Establish measurement for faulting	2,179,687	1,571,928	1,884,327
Section 490.309—Data Requirements—Non-Interstate NHS Cracking	4,322,696	3,117,405	3,736,946
Additional data quality control costs for new data collection	4,322,696	3,117,405	3,736,946
Section 490.309—Data Requirements—Capital Costs	16,600,000	15,891,841	16,254,041
Profiler	9,100,000	8,391,841	8,754,041
Faulting Software	1,000,000	1,000,000	1,000,000
Cracking Video Equipment and Software Purchase	6,500,000	6,500,000	6,500,000
Section 490.313—Calculation of performance management measures	8,482,450	7,994,228	8,243,938
Reprogramming of software to allow Performance Calculations	6,517,588	6,517,588	6,517,588
FHWA's Management of Data Submissions	261,982	196,885	230,180
Filtering out Bridge Pavement from Pavement Data	1,702,880	1,279,754	1,496,169
Section 490.319—Other Requirements	17,074,492	12,843,230	15,007,381
Develop a Quality Management Program	45,688	45,688	45,688
Run New Quality Management Program	3,274,770	2,461,066	2,877,249
Improve Quality Management Program	13,754,034	10,336,476	12,084,444
Section 490.407—Calculation of bridge performance measures	6,883,091	6,792,272	6,838,723
Update Software to generate Good/Fair/Poor condition	6,517,588	6,517,588	6,517,588
FHWA's Management of Data Submissions	365,503	274,684	321,135
Total Cost of Final Rule	155,979,715	120,109,737	138,462,355

The final rule's 10-year undiscounted cost ($156.0 million in 2014 dollars) decreased relative to the proposed rule ($196.4 million in 2012 dollars). As discussed below, FHWA made a number of changes that affected cost.

General Updates

In the final rule RIA, FHWA updated all costs to 2014 dollars from the 2012 dollars used in the proposed rule RIA. In addition, FHWA updated labor costs to reflect current BLS data. These general updates increased the estimated cost of the final rule relative to the proposed rule.

The FHWA deferred the effective date from 2015 to 2016. All costs that related to activities that were scheduled to begin in 2015 will now begin in 2016. Furthermore, the start dates for the performance period, reporting cycles, and phase-in requirements will be delayed by 2 years, with the first performance period beginning in 2018 rather than 2016. The data requirements for non-Interstate NHS IRI, rutting, faulting, and cracking will be deferred 1 year to 2019. The deferment decreased the number of years State DOTs and MPOs will incur costs within the 10-year analysis period. Therefore, the estimated costs that State DOTs and MPOs will incur to comply with the requirements of this final rule have decreased relative to the proposed rule.

The FHWA also updated the estimated total number of MPOs to 409, which is less than the 420 MPOs used at the time that the NPRM was published. The estimated number of MPOs serving TMAs is now 201, less than the estimate of 210 in the NPRM. The number of non-TMA MPOs is 208, less than the estimate of 210 in the NPRM. At the time the RIA was prepared for the NPRM, FHWA assumed that the 36 new urbanized areas resulting from the 2010 Census would have MPOs designated for them. However, some of these newly designated urbanized areas merged with existing MPOs, resulting in the designation of fewer new MPOs than expected. The FHWA estimates that, on average, only the 201 larger MPOs serving TMAs will establish their own quantifiable performance targets. The FHWA also estimates that the 208 smaller MPOs serving non-TMAs will choose to agree to plan and program projects so that they contribute toward the accomplishment of State DOT pavement and bridge condition-related performance targets. Therefore, only the 201 larger MPOs serving TMAs will incur costs to reprogram and upgrade their software to be able to perform calculations of the performance measures. The reduction in the number of MPOs decreased the estimated costs to comply with the requirements of the final rule relative to the proposed rule.

Comments on Costs and Benefits in the Regulatory Impact Analysis

A number of State DOTs and MPOs took issue with the assumptions and levels of cost analysis associated with the requirements of the NPRM reflected in the benefit-cost analysis.[112] In terms of benefits, Fugro Roadware, a firm that manufactures and operates equipment that is used to measure the pavement conditions on State and municipal networks, asserted that the ''entire pavement and traffic assessment management process has been shown to improve the quality of road networks without an overall increase of funding . . .''

Need for Quantitative Analysis

The Colorado DOT argued that FHWA did not adequately justify its statement that benefits would outweigh the costs. They urged FHWA to conduct a quantitative analysis to support its claim.

This rulemaking constitutes a change to Federal regulations and was therefore subjected to an economic analyses according to E.O. 12866, (Regulatory Planning and Review) (58 FR 51735), as supplemented by E.O. 13563 (Improving Regulation and Regulatory Review) (76 FR 3821). These E.O.s direct each Federal agency to propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. The FHWA completed and included an RIA in support of this final rule on the establishment of national performance management measures for pavement and bridge conditions. The RIA summary estimates the economic impact, in terms of costs and benefits, on Federal, State, and local governments and private entities regulated under this

[112] TEMPO, Atlanta Regional Commission, Transportation for America, and State DOTs of Colorado, North Carolina, Mississippi, Oklahoma, Michigan, Georgia, Louisiana, and Oregon.

action, as required by E.O.s 12866 and 13563. The economic impacts are measured on an incremental basis, relative to current highway infrastructure condition performance reporting practices. To estimate costs for the rule, FHWA assessed the level of effort, expressed in labor hours and categories, and the capital investments needed to comply with each component of the rule. Level of effort by labor category is monetized with loaded wage rates to estimate total costs. These estimates were developed with input from State and MPO interviews. This document presents the summary of the analysis. The complete quantitative analysis can be found in the docket.

Section 490.105 Through 109 General Information, Target Establishment, Reporting on Progress, and Making Significant Progress

The RIA estimates the cost of coordination between State DOTs and MPOs, establishing and updating performance targets, reporting on performance targets progress, and assessing significant progress toward achieving performance targets under sections 490.105 through 490.109. The cost of these sections decreased from $93.3 million for the proposed rule to $74.1 million for the final rule. In addition to the general updates described above, the decrease in cost is partially offset by the additional costs of coordinating the establishment of targets in accordance with 23 CFR part 450.

Section 490.309 Data Requirements: Interstate IRI, Rutting, and Faulting

The RIA estimates the cost of data requirements for Interstate IRI, rutting, and faulting under section 490.309. The cost of this section decreased from $30.7 million for the proposed rule to $5.1 million for the final rule. In addition to the general updates described above, the decrease in costs is attributable to FHWA's response to public comments on the burden associated with pavement data collection requirements. In response to public comment, FHWA relaxed the proposed requirement that would have required State DOTs to collect IRI data both directions. The final rule requires IRI data collection in at least one direction, which results in lower data collection costs.

Break-Even Analysis

Currently, State DOTs differ in the way they measure the condition of their pavement. The FHWA does not believe their current methods are inadequate, but they are inconsistent. The differences hinder accurate analysis of infrastructure conditions at the national level. The final rule establishes uniform condition measures for the purpose of carrying out the NHPP to assess condition of pavements on the NHS (excluding the Interstate System), pavements on the Interstate System, and bridges carrying the NHS, which includes on- and off-ramps, connected to the NHS. In addition, the final rule establishes processes that: (1) State DOTs and MPOs use to report measures and establish performance targets and (2) FHWA uses to assess progress that State DOTs have made toward achieving targets.

The FHWA expects that the final rule will result in certain benefits. The final rule will yield greater accountability because the MAP–21-mandated reporting will increase visibility and transparency. In addition, the rule will help focus the Federal-aid highway program on achieving balanced performance outcomes.

These benefits resulting from the rule (*i.e.,* greater accountability and greater focus on making progress toward the national goal for infrastructure condition) will lead to improved pavement and bridge conditions. The benefits resulting from performance measurement, while real and substantial, are difficult to quantify. Therefore, FHWA quantified these benefits of the rule by performing break-even analyses, as described in OMB Circular A–4. A break-even analysis calculates the threshold a specific variable must achieve in order for benefits to equal costs, holding every other variable in the analysis constant. For pavements and bridges, FHWA focused its break-even analyses on VOC savings because users typically garner the greatest concentration of benefits from transportation projects. The FHWA estimated the number of road miles of deficient pavement that will have to be improved and the number of posted bridges that will have to be avoided in order for the benefits of the rule to justify the costs.

Table 5 presents the results from the pavement break-even analysis. The results represent the savings in VOC to automobile and truck drivers from pavement conditions that are improved from Poor to Good. The analysis shows that the rule will need to result in the net improvement of approximately 71 miles of pavement (*i.e.,* to Good condition) per year, or 710 miles over 10 years, that will otherwise not have been improved without the rule.[113] The annual break-even point represents approximately 0.3 percent of the NHS miles currently estimated to be in Poor condition. Based on recent trends in improving road condition, FHWA believes 71 miles of pavement per year or 710 miles over 10 years as a result of this rule is achievable.

TABLE 5—BREAK-EVEN IMPROVEMENT OF PAVEMENT CONDITIONS

[Improved from poor]

Annual improved VMT from poor needed	Annual poor VMT (total VMT * 11.8%)	Percent of poor VMT needing improvement	Current NHS miles estimated to be in poor condition	Approximate number of annual poor NHS miles needing improvement from poor
a	b	c = a ÷ b	d	e = c * d
562,187,982	193,346,999,390	0.29%	24,386	71

* Please refer to the Summary Report for details on the methodology used in the analysis.

[113] The estimated annual break-even point accounts for the benefit in the year the improvement is made. Although the benefit from improved pavement will extend over multiple years, the benefit declines year-to-year as the condition of the pavement declines. So, for the purposes of the analysis, we assume that 71 miles of poor pavement will need to be improved per year in order for the rule to break even (rather than 71 miles total over the 10-year period).

Table 6 presents the results from the bridge break-even analysis, which calculates the number of year-long bridge postings that will need to be reduced as a result of the rule in order for the benefits of the bridge condition requirements to justify the costs. The FHWA estimated the average cost per year of a bridge posting in column E. With the undiscounted cost of the bridge requirements and this average cost of a bridge posting, the analysis estimates the number of year-long bridge postings that need to be avoided in order to make the benefits of the rule justify the cost. The break-even analysis estimates that three separate 1-year long bridge postings need to be avoided over 10 years in order for benefits to justify costs.

As a basis for comparison, NBI data indicate that there were approximately 85 year-long NHS bridge postings for trucks in 2012. Over the 10-year period of 2003–2012, the number of NHS bridges posted for trucks declined from 145 to 85. Trends in the United States, demonstrated by bridge owners, provide evidence that posted bridges receive priority consideration in work schedules. With the increased performance requirements of the final rule, it is reasonable to assume that, at a minimum, a reduction in the posted load limit of one bridge annually nationwide would be achieved to provide the needed benefit to justify the costs of complying with this rule.

TABLE 6—BREAK-EVEN BRIDGE DETOURS

Undiscounted 10-year cost of bridge rule	Average truck user cost per VMT	Average distance per detour (miles)	Average cost of detour per trucks	Average cost per year of each bridge posting	Equivalent number of year-long posts that need to be avoided	Annual number of year-long posts that need to be avoided
a	b	c	d = b × c	e = d * 2,301 ADT * 365.25	f = a ÷ e	g = f ÷ 10 years
$43,930,849	$1.90	11	$19.86	$16,692,683	3	0.3

* Please refer to the Summary Report for details on the methodology used in the analysis.

Relative to the proposed rule, the threshold for the pavement break-even analysis decreased in the final rule. Specifically, the number of NHS miles in Poor condition needing improvement to Fair condition decreased from 435 to 71 in the final rule. The break-even point decreased due to an adjustment to the incremental maintenance and repair cost per VMT, a decrease in the undiscounted 10-year cost of the pavement rule, and an increase in the total VMT that are in Poor condition.

The threshold for the bridge break-even analysis increased in the final rule relative to the proposed rule. Specifically, the number of 1-year long bridge postings that need to be reduced increased from 2 to 3 in the final rule. The break-even point increased due to the following updates to input data:

- The average detour for bridges posted with weight limits of at least 40 percent below the legal load decreased from 20 miles to 10.45 miles, and
- The percentage of trucks of total average annual daily traffic on posted bridges decreased from 12.6 percent to 9.7 percent.

Regulatory Flexibility Act

To comply with the Regulatory Flexibility Act (Pub. L. 96–354, 5 U.S.C. 601–612), FHWA evaluated the effects of this action and determined that it would not have a significant economic impact on a substantial number of small entities. The rule affects State governments and MPOs. State DOTs are not included in the definition of small entity in 5 U.S.C. 601.

The MPOs are considered governmental jurisdictions. The small entity standard for these entities is whether the affected MPOs serve less than 50,000 people. The MPOs impacted by this rule serve urbanized areas with populations of more than 50,000. Therefore, MPOs that incur economic impacts under this rule do not meet the definition of a small entity.

The FHWA certifies that this regulatory action would not have a significant economic impact on a substantial number of small entities.

Unfunded Mandates Reform Act of 1995

The FHWA determined that this final rule would not impose unfunded mandates as defined by the UMRA. This rule does not contain a Federal mandate that may result in expenditures of $151 million or more in any 1 year (2 U.S.C. 1532) for either State, local, and tribal governments in the aggregate, or by the private sector. Additionally, the definition of ''Federal mandate'' in UMRA excludes financial assistance of the type in which State, local, or tribal governments have authority to adjust their participation in the program in accordance with changes made in the program by the Federal Government. The Federal-aid highway program permits this type of flexibility.

Executive Order 13132 (Federalism Assessment)

The FHWA analyzed this final rule in accordance with the principles and criteria contained in E.O. 13132. The FHWA determined that this action would not have sufficient federalism implications to warrant the preparation of a federalism assessment. The FHWA has also determined that this rule would not preempt any State law or regulation or affect the States' ability to discharge traditional State governmental functions.

Executive Order 12372 (Intergovernmental Review)

The regulations implementing E.O. 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program. This E.O. applies because State and local governments would be directly affected by the proposed regulation, which is a condition on Federal-aid highway funding. Local entities should refer to the Catalog of Federal Domestic Assistance Program Number 20.205 (Highway Planning and Construction) for further information.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from OMB prior to conducting or sponsoring a collection of information. The FHWA analyzed this final rule and determined that it contains collection of information requirements for the purposes of the PRA.

The final rule provides definitions and outlines processes for bridge and pavement performance measures and reporting. Some burdens in the rule will be realized in other reporting areas as described below. The PRA activities are already covered by existing OMB clearances. The reference numbers for

those clearances are: HPMS information collection, OMB No. 2125–0028 with an expiration of May 31, 2019; and NBI, OMB No. 2125–0501 with an expiration date of April 30, 2018. Any increase in PRA burdens caused by MAP–21 in these areas was addressed in PRA approval requests associated with those rulemakings.

This rule requires the submission of biennial performance reports. The FHWA analyzed this rule under the PRA and has determined the following:

Respondents: Approximately 684 applicants consisting of State DOTs, MPOs, Washington, DC, and Puerto Rico.

Frequency: Biennially.

Estimated Average Burden per Response: Approximately 416 hours to complete and submit the report.

Estimated Total Annual Burden Hours: Approximately 54,496 hours annually.

National Environmental Policy Act

The FHWA analyzed this action for the purpose of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*), and determined that it would not have any effect on the quality of the environment and meets the criteria for the categorical exclusion at 23 CFR 771.117(c)(20).

Executive Order 12630 (Taking of Private Property)

The FHWA analyzed this rule under E.O. 12630 (Governmental Actions and Interference with Constitutionally Protected Property Rights). The FHWA does not anticipate that this action would affect a taking of private property or otherwise have taking implications under E.O. 12630.

Executive Order 12988 (Civil Justice Reform)

This action meets applicable standards in sections 3(a) and 3(b)(2) of E.O. 12988 (Civil Justice Reform) to minimize litigation, eliminate ambiguity, and reduce burden.

Executive Order 13045 (Protection of Children)

The FHWA analyzed this rule under E.O. 13045 (Protection of Children from Environmental Health Risks and Safety Risks). The FHWA certifies that this action would not cause an environmental risk to health or safety that might disproportionately affect children.

Executive Order 13175 (Tribal Consultation)

The FHWA analyzed this action under E.O. 13175. The FHWA believes that the action: (1) Would not have substantial direct effects on one or more Indian tribes; (2) would not impose substantial direct compliance costs on Indian tribal governments; and (3) would not preempt tribal laws. The final rule addresses obligations of Federal funds to State DOTs for Federal-aid highway projects and would not impose any direct compliance requirements on Indian tribal governments. Therefore, a tribal summary impact statement is not required.

Executive Order 12898 (Environmental Justice)

The E.O. 12898 requires that each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minorities and low-income populations. The FHWA has determined that this rule does not raise any environmental justice issues.

Executive Order 13211 (Energy Effects)

The FHWA analyzed this action under E.O. 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use). The FHWA determined that this is not a significant energy action under E.O. 13211 and is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Therefore, a Statement of Energy Effects is not required.

Regulation Identifier Number

A 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 contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 490

Bridges, Highway safety, Highways and roads, Incorporation by reference, and Reporting and recordkeeping requirements.

Issued in Washington, DC, on January 6, 2017, under authority delegated in 49 CFR 1.85.

Gregory G. Nadeau,

Administrator, Federal Highway Administration.

In consideration of the foregoing, FHWA amends 23 CFR part 490 as follows:

PART 490—NATIONAL PERFORMANCE MANAGEMENT MEASURES

■ 1. The authority citation for part 490 continues to read as follows:

Authority: 23 U.S.C. 134, 135, 148(i), and 150; 49 CFR 1.85.

■ 2. Revise subpart A to read as follows:

Subpart A—General Information

Sec.
490.101 Definitions.
490.103 Data requirements.
490.105 Establishment of performance targets.
490.107 Reporting on performance targets.
490.109 Assessing significant progress toward achieving the performance targets for the National Highway Performance Program.
490.111 Incorporation by reference.

Subpart A—General Information

§ 490.101 Definitions.

Unless otherwise specified, the following definitions apply to this part:

Bridge as used in this part is defined in § 650.305 of this title, the National Bridge Inspection Standards.

Full extent means continuous collection and evaluation of pavement condition data over the entire length of the roadway.

Highway Performance Monitoring System (HPMS) is a national level highway information system that includes data on the extent, condition, performance, use, and operating characteristics of the Nation's highways.

Mainline highways means the through travel lanes of any highway. Mainline highways specifically exclude ramps, shoulders, turn lanes, crossovers, rest areas, and other pavement surfaces that are not part of the roadway normally travelled by through traffic.

Measure means an expression based on a metric that is used to establish targets and to assess progress toward achieving the established targets (*e.g.,* a measure for flight on-time performance is percent of flights that arrive on time, and a corresponding metric is an arithmetic difference between scheduled and actual arrival time for each flight).

Metric means a quantifiable indicator of performance or condition.

Metropolitan Planning Area (MPA) as used in this part is defined in § 450.104 of this title, Transportation Planning and Programming Definitions.

National Bridge Inventory (NBI) is an FHWA database containing bridge information and inspection data for all highway bridges on public roads, on and off Federal-aid highways, including tribally owned and Federally owned

bridges, that are subject to the National Bridge Inspection Standards (NBIS).

Non-urbanized area means a single geographic area that comprises all of the areas in the State that are not ''urbanized areas'' under 23 U.S.C. 101(a)(34).

Performance period means a determined time period during which condition/performance is measured and evaluated to: Assess condition/performance with respect to baseline condition/performance; and track progress toward the achievement of the targets that represent the intended condition/performance level at the midpoint and at the end of that time period. The term ''performance period'' applies to all proposed measures in this part, except the measures proposed for the Highway Safety Improvement Program (HSIP) in subpart B of this part. Each performance period covers a 4-year duration beginning on a specified date (provided in § 490.105).

Target means a quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by the Federal Highway Administration (FHWA).

§ 490.103 Data requirements.

(a) *In general.* Unless otherwise noted below, the data requirements in this section applies to the measures identified in subparts C and D of this part. Additional data requirements for specific performance measures are identified in 23 CFR sections—

(1) 490.309 for the condition of pavements on the Interstate System;

(2) 490.309 for the condition of pavements on the non-Interstate NHS;

(3) 490.409 for the condition of bridges on the NHS;

(4) [Reserved]

(b) *Urbanized area data*—The State DOTs shall submit urbanized area data, including boundaries of urbanized areas, in accordance with the HPMS Field Manual (incorporated by reference, see § 490.111) for the purpose of the additional targets for urbanized and non-urbanized areas in § 490.105(e). The boundaries of urbanized areas shall be identified based on the most recent U.S. Decennial Census, unless FHWA approves adjustments to the urbanized area as provided by 23 U.S.C. 101(a)(34), and these adjustments are submitted to HPMS, available at the time when the State DOT Baseline Performance Period Report is due to FHWA.

(c) [Reserved]

(d) *National Highway System data.* The State DOTs shall document and submit the extent of the NHS in accordance with the HPMS Field Manual.

§ 490.105 Establishment of performance targets.

(a) *In general.* State departments of transportation (State DOT) shall establish performance targets for all measures specified in paragraph (c) of this section for the respective target scope identified in paragraph (d) of this section with the requirements specified in paragraph (e) of this section, and the Metropolitan Planning Organizations (MPO) shall establish performance targets for all measures specified in paragraph (c) of this section for respective target scope identified in paragraph (d) of this section with the requirements specified in paragraph (f) of this section.

(b) *Highway Safety Improvement Program measures.* State DOTs and MPOs shall establish performance targets for the Highway Safety Improvement Program (HSIP) measures in accordance with § 490.209.

(c) *Applicable measures.* State DOTs and MPOs that include, within their respective geographic boundaries, any portion of the applicable transportation network shall establish performance targets for the performance measures identified in 23 CFR sections—

(1) 490.307(a)(1) and 490.307(a)(2) for the condition of pavements on the Interstate System;

(2) 490.307(a)(3) and 490.307(a)(4) for the condition of pavements on the National Highway System (NHS) (excluding the Interstate); and

(3) 490.407(c)(1) and 490.407(c)(2) for the condition of bridges on the NHS.

(d) *Target scope.* Targets established by the State DOT and MPO shall, regardless of ownership, represent the transportation network, including bridges that cross State borders, that are applicable to the measures as specified in paragraphs (d)(1) and (2) of this section.

(1) State DOTs and MPOs shall establish Statewide and metropolitan planning area wide targets, respectively, that represent the condition/performance of the transportation network that is applicable to the measures, as specified in 23 CFR sections—

(i) 490.303 for the condition of pavements on the Interstate System measures specified in §§ 490.307(a)(1) and (a)(2);

(ii) 490.303 for the condition of pavements on the National Highway System (NHS) (excluding the Interstate) measures specified in §§ 490.307(a)(3) and (a)(4); and

(iii) 490.403 for the condition of bridges on the NHS measures specified in §§ 490.407(c)(1) and (c)(2).

(2) [Reserved]

(3) For the purpose of target establishment in this section, reporting targets and progress evaluation in § 490.107 and significant progress determination in § 490.109, State DOTs shall declare and describe the urbanized area boundaries within the State boundary in the Baseline Performance Period Report required by § 490.107(b)(1). Any changes in urbanized area boundaries during a performance period would not be accounted for until the following performance period.

(e) State DOTs shall establish targets for each of the performance measures identified in paragraph (c) of this section for respective target scope identified in paragraph (d) of this section as follows:

(1) *Schedule*—State DOTs shall establish targets not later than 1 year of the effective date of this rule and for each performance period thereafter, in a manner that allows for the time needed to meet the requirements specified in this section and so that the final targets are submitted to FHWA by the due date provided in § 490.107(b).

(2) *Coordination.* State DOTs shall coordinate with relevant MPOs on the selection of targets in accordance with 23 U.S.C. 135(d)(2)(B)(i)(II) to ensure consistency, to the maximum extent practicable.

(3) *Additional targets for urbanized and non-urbanized areas.* In addition to statewide targets, described in paragraph (d)(1) of this section, State DOTs may, as appropriate, for each statewide target, establish additional targets for portions of the State.

(i) A State DOT shall declare and describe in the Baseline Performance Period Report required by § 490.107(b)(1) the boundaries used to establish each additional target. Any changes in boundaries during a performance period would not be accounted for until the following performance period.

(ii) State DOTs may select any number and combination of urbanized area boundaries and may also select a non-urbanized area boundary for the establishment of additional targets.

(iii) The boundaries used by the State DOT for additional targets shall be contained within the geographic boundary of the State.

(iv) State DOTs shall evaluate separately the progress of each additional target and report that progress as required under §§ 490.107(b)(2)(ii)(B) and (b)(3)(ii)(B).

(4) *Time horizon for targets.* State DOTs shall establish targets for a performance period as follows:

(i) The performance period will begin on:

(A) January 1st of the year in which the Baseline Performance Period Report is due to FHWA and will extend for a duration of 4 years for the measures in paragraphs (c)(1) through (c)(3) of this section; and

(B) [Reserved]

(ii) The midpoint of a performance period will occur 2 years after the beginning of a performance period described in paragraph (e)(4)(i) of this section.

(iii) State DOTs shall establish 2-year targets that reflect the anticipated condition/performance level at the midpoint of each performance period for the measures in paragraphs (c)(1) through (c)(3) of this section.

(iv) State DOTs shall establish 4-year targets that reflect the anticipated condition/performance level at the end of each performance period for the measures in paragraphs (c)(1) through (c)(3) of this section.

(5) *Reporting.* State DOTs shall report 2-year targets, 4-year targets, the basis for each established target, progress made toward the achievement of targets, and other requirements to FHWA in accordance with § 490.107, and the State DOTs shall provide relevant MPO(s) targets to FHWA, upon request, each time the relevant MPOs establish or adjust MPO targets, as described in paragraph (f) of this section.

(6) *Target adjustment.* State DOTs may adjust an established 4-year target in the Mid Performance Period Progress Report, as described in § 490.107(b)(2). State DOTs shall coordinate with relevant MPOs when adjusting their 4-year target(s).

(7) *Phase-in of new requirements for Interstate System pavement condition measures.* The following requirements apply only to the first performance period and the measures in §§ 490.307(a)(1) and (a)(2):

(i) State DOTs shall establish their 4-year targets, required under paragraph (e)(4)(iv) of this section, and report these targets in their Baseline Performance Period Report, required under § 490.107(b)(1);

(ii) State DOTs shall not report 2-year targets, described in paragraph (e)(4)(iii) of this section, and baseline condition/performance in their Baseline Performance Period Report; and

(iii) State DOTs shall update the baseline condition/performance in their Baseline Performance Period Report, with the 2-year condition/performance in their Mid Performance Period Progress Report, described in § 490.107(b)(2)(ii)(A). State DOTs may also adjust their 4-year targets, as appropriate.

(f) The MPOs shall establish targets for each of the performance measures identified in paragraph (c) of this section for the respective target scope identified in paragraph (d) of this section as follows:

(1) *Schedule.* The MPOs shall establish targets no later than 180 days after the respective State DOT(s) establishes their targets, described in paragraph (e)(1) of this section.

(i) The MPOs shall establish 4-year targets, described in paragraph (e)(4)(iv) of this section, for all applicable measures, described in paragraphs (c) and (d) of this section.

(ii) [Reserved.]

(2) *Coordination.* The MPOs shall coordinate with relevant State DOT(s) on the selection of targets in accordance with 23 U.S.C. 134(h)(2)(B)(i)(II) to ensure consistency, to the maximum extent practicable.

(3) *Target establishment options.* For each performance measure identified in paragraph (c) of this section, MPOs shall establish a target by either:

(i) Agreeing to plan and program projects so that they contribute toward the accomplishment of the relevant State DOT target for that performance measure; or

(ii) Committing to a quantifiable target for that performance measure for their metropolitan planning area.

(4) MPOs serving a multistate metropolitan planning area.—For each performance measure identified in paragraph (c)(1) through (c)(3) of this section, MPOs, with metropolitan planning areas extending across multiple State boundaries shall follow these requirements:

(i) For each measure, MPOs may choose different target establishment options, provided in paragraph (3) of this section, for each portion of the metropolitan area within each State.

(ii) If MPOs choose the option to agree to plan and program projects to contribute toward State DOT targets, in accordance with paragraph (3)(i) of this section, for a measure, then they shall plan and program projects in support of State DOT targets for each portion of the metropolitan area within each State.

(5)–(6) [Reserved]

(7) *MPO response to State DOT target adjustment.*—For the established targets in paragraph (3) of this section, if the State DOT adjusts a 4-year target in the State DOT's Mid Performance Period Progress Report and if, for that respective target, the MPO established a target by supporting the State DOT target as allowed under paragraph (f)(3)(i) of this section, then the MPO shall, within 180 days, report to the State DOT whether they will either:

(i) Agree to plan a program of projects so that they contribute to the adjusted State DOT target for that performance measure; or

(ii) Commit to a new quantifiable target for that performance measure for its metropolitan planning area.

(8) *Target adjustment.* If the MPO establishes its target by committing to a quantifiable target, described in paragraph (f)(3)(ii) of this section, then the MPOs may adjust its target(s) in a manner that is mutually agreed upon by the State DOT and MPO.

(9) *Reporting.* The MPOs shall report targets and progress toward the achievement of their targets as specified in § 490.107(c). After the MPOs establish or adjust their targets, the relevant State DOT(s) must be able to provide these targets to FHWA, upon request.

§ 490.107 Reporting on performance targets.

(a) *In general.* All State DOTs and MPOs shall report the information specified in this section for the targets required in § 490.105.

(1) All State DOTs and MPOs shall report in accordance with the schedule and content requirements under paragraphs (b) and (c) of this section, respectively.

(2) For the measures identified in § 490.207(a), all State DOTs and MPOs shall report on performance in accordance with § 490.213.

(3) State DOTs shall report using an electronic template provided by FHWA.

(b) *State Biennial Performance Report.* State DOTs shall report to FHWA baseline condition/performance at the beginning of a performance period and progress achievement at both the midpoint and end of a performance period. State DOTs shall report at an ongoing 2-year frequency as specified in paragraphs (b)(1), (b)(2), and (b)(3) of this section.

(1) *Baseline Performance Period Report*—(i) *Schedule.* State DOTs shall submit a Baseline Performance Period Report to FHWA by October 1 of the first year in a performance period. State DOTs shall submit their first Baseline Performance Period Report to FHWA by October 1, 2018, and subsequent Baseline Performance Period Reports to FHWA by October 1 every 4 years thereafter.

(ii) *Content.* The State DOT shall report the following information in each Baseline Performance Period Report:

(A) *Targets.* 2-year and 4-year targets for the performance period, as required

in § 490.105(e), and a discussion, to the maximum extent practicable, of the basis for each established target;

(B) *Baseline condition/performance.*—Baseline condition/performance derived from the latest data collected through the beginning date of the performance period specified in § 490.105(e)(4)(i) for each target, required under paragraph (b)(1)(ii)(A) of this section;

(C) *Relationship with other performance expectations.*—A discussion, to the maximum extent practicable, on how the established targets in paragraph (b)(1)(ii)(A) of this section support expectations documented in longer range plans, such as the State asset management plan for the NHS required by 23 U.S.C. 119(e) and the long-range statewide transportation plan provided in part 450 of this chapter; and

(D) *Urbanized area boundaries and population data for targets.*—For the purpose of determining target scope in § 490.105(d) and establishing additional targets for urbanized and non-urbanized areas in § 490.105(e)(3), State DOTs shall document the boundary extent for all applicable urbanized areas and the latest Decennial Census population data, based on information in HPMS.

(2) *Mid Performance Period Progress Report*—(i) *Schedule.* State DOTs shall submit a Mid Performance Period Progress Report to FHWA by October 1 of the third year in a performance period. State DOTs shall submit their first Mid Performance Period Progress Report to FHWA by October 1, 2020, and subsequent Mid Performance Period Progress Reports to FHWA by October 1 every 4 years thereafter.

(ii) *Content.* The State DOT shall report the following information in each Mid Performance Period Progress Report:

(A) *2-year condition/performance.* The actual condition/performance derived from the latest data collected through the midpoint of the performance period, specified in § 490.105(e)(4), for each State DOT reported target required in paragraph (b)(1)(ii)(A) of this section;

(B) *2-year progress in achieving performance targets.* A discussion of State DOT's progress toward achieving each established 2-year target in paragraph (b)(1)(ii)(A) of this section. The State DOT shall compare the actual 2-year condition/performance in paragraph (b)(2)(ii)(A) of this section, within the boundaries and limits documented in paragraphs (b)(1)(ii)(D) and (b)(1)(ii)(E) of this section, with the respective 2-year target and document in the discussion any reasons for differences in the actual and target values;

(C) *Investment strategy discussion.* A discussion on the effectiveness of the investment strategies developed and documented in the State asset management plan for the NHS required under 23 U.S.C. 119(e);

(D) [Reserved]

(E) *Target adjustment discussion.*—When applicable, a State DOT may submit an adjusted 4-year target to replace an established 4-year target in paragraph (b)(1)(ii)(A) of this section. If the State DOT adjusts its target, it shall include a discussion on the basis for the adjustment and how the adjusted target supports expectations documented in longer range plans, such as the State asset management plan for the NHS, and the long-range statewide transportation plan. The State DOT may only adjust a 4-year target at the midpoint and by reporting the change in the Mid Performance Period Progress Report.

(F) *2-year significant progress discussion for the National Highway Performance Program (NHPP) targets.*—State DOTs shall discuss the progress they have made toward the achievement of all 2-year targets established for the NHPP measures in § 490.105(c)(1) through (c)(3). This discussion should document a summary of prior accomplishments and planned activities that will be conducted during the remainder of the Performance Period to make significant progress toward that achievement of 4-year targets for NHPP measures;

(G) *Extenuating circumstances discussion on NHPP 2-year targets.*—When applicable, a State DOT may include a discussion on the extenuating circumstance(s), described in § 490.109(e)(5), beyond the State DOT's control that prevented the State DOT from making 2-year significant progress toward achieving NHPP target(s) in paragraph (b)(2)(ii)(F) of this section; and

(H) *NHPP target achievement discussion.*—If FHWA determines that a State DOT has not made significant progress toward the achievement of NHPP targets in a biennial FHWA determination, then the State DOT shall include a description of the actions they will undertake to better achieve NHPP targets as required under § 490.109(f). If FHWA determines under § 490.109(e) that the State DOT has made significant progress, then the State DOT does not need to include this description.

(3) *Full Performance Period Progress Report*—(i) *Schedule.* State DOTs shall submit a progress report on the full performance period to FHWA by October 1 of the first year following the reference performance period. State DOTs shall submit their first Full Performance Period Progress Report to FHWA by October 1, 2022, and subsequent Full Performance Period Progress Reports to FHWA by October 1 every 4 years thereafter.

(ii) *Content.* The State DOT shall report the following information for each Full Performance Period Progress Report:

(A) *4-year condition/performance.*—The actual condition/performance derived from the latest data collected through the end of the Performance Period, specified in § 490.105(e)(4), for each State DOT reported target required in paragraph (b)(1)(ii)(A) of this section;

(B) *4-year progress in achieving performance targets.*—A discussion of the State DOT's progress made toward achieving each 4-year target established in paragraph (b)(1)(ii)(A) or in paragraph (b)(2)(ii)(E) of this section, when applicable. The State DOT shall compare the actual 4-year condition/performance in paragraph (b)(3)(ii)(A) of this section, within the boundaries and limits documented in paragraph (b)(1)(ii)(D) and (b)(1)(ii)(E) of this section, with the respective 4-year target and document in the discussion any reasons for differences in the actual and target values;

(C) *Investment strategy discussion.*—A discussion on the effectiveness of the investment strategies developed and documented in the State asset management plan for the NHS required under 23 U.S.C. 119(e);

(D) [Reserved]

(E) *4-year significant progress evaluation for NHPP targets.*—State DOTs shall discuss the progress they have made toward the achievement of all 4-year targets established for the NHPP measures in § 490.105(c)(1) through (c)(3). This discussion shall include a summary of accomplishments achieved during the Performance Period to demonstrate whether the State DOT has made significant progress toward achievement of 4-year targets for NHPP measures.

(F) *Extenuating circumstances discussion on NHPP targets.*—When applicable, a State DOT may include discussion on the extenuating circumstance(s), described in § 490.109(e)(5), beyond the State DOT's control that prevented the State DOT from making a 4-year significant progress toward achieving NHPP targets, described in paragraph (b)(3)(ii)(E) of this section;

(G) *NHPP Target Achievement Discussion.*—If FHWA determines that a State DOT has not made significant progress toward the achievement of

NHPP targets in a biennial FHWA determination, then the State DOT shall include a description of the actions they will undertake to better achieve NHPP targets as required under § 490.109(f). If FHWA determines in § 490.109(e) that the State DOT has achieved significant progress, then the State DOT does not need to include this description.

(c) *MPO Report.* The MPOs shall establish targets in accordance with § 490.105 and report targets and progress toward the achievement of their targets in a manner that is consistent with the following:

(1) The MPOs shall report their established targets to their respective State DOT in a manner that is documented and mutually agreed upon by both parties.

(2) The MPOs shall report baseline condition/performance and progress toward the achievement of their targets in the system performance report in the metropolitan transportation plan in accordance with Part 450 of this chapter.

§ 490.109 Assessing significant progress toward achieving the performance targets for the National Highway Performance Program.

(a) *In general.* The FHWA will assess each of the State DOT targets separately for the NHPP measures specified in § 490.105(c)(1) through (c)(3) to determine the significant progress made toward the achievement of those targets.

(b) *Frequency.* The FHWA will determine whether a State DOT has or has not made significant progress toward the achievement of NHPP targets as described in paragraph (e) of this section at the midpoint and the end of each performance period.

(c) *Schedule.* The FHWA will determine significant progress toward the achievement of a State DOT's NHPP targets after the State DOT submit the Mid Performance Period Progress Report for progress toward the achievement of 2-year targets, and again after the State DOT submit the Full Performance Period Progress Report for progress toward the achievement of 4-year targets. The FHWA will notify State DOTs of the outcome of the determination of the State DOT's ability to make significant progress toward the achievement of its NHPP targets.

(d) *Source of data/information.* The FHWA will use the following sources of information to assess NHPP condition and performance progress:

(1) Data contained within the HPMS on June 15 of the year in which the significant progress determination is made that represents conditions from the prior year for targets established for Interstate System pavement condition measures, as specified in § 490.105(c)(1);

(2) Data contained within the HPMS on August 15 of the year in which the significant progress determination is made that represents conditions from the prior year for targets established for non-Interstate NHS pavement condition measures, as specified in § 490.105(c)(2);

(3) The most recently available data contained within the NBI as of June 15 of the year in which the significant progress determination is made for targets established for NHS bridge condition measures, as specified in § 490.105(c)(3).

(4) Baseline condition data contained in HPMS and NBI of the year in which the Baseline Period Performance Report is due to FHWA that represents baseline conditions for the performance period.

(e) *Significant progress determination for individual NHPP targets*—(1) *In general.* The FHWA will biennially assess whether the State DOTs has achieved or made significant progress toward each target established by the State DOT for the NHPP measures described in § 490.105(c)(1) through (c)(3). The FHWA will assess the significant progress of each statewide target separately using the condition/performance data/information sources described in paragraph (d) of this section. The FHWA will not assess the progress achieved for any additional targets a State DOT may establish under § 490.105(e)(3).

(2) *Significant progress toward individual NHPP targets.*—The FHWA will determine that a State DOT has made significant progress toward the achievement of each 2-year or 4-year NHPP target if either:

(i) The actual condition/performance level is better than the baseline condition/performance; or

(ii) The actual condition/performance level is equal to or better than the established target.

(3) *Phase-in of new requirements for Interstate System pavement condition measures.*—The following requirements shall only apply to the first performance period and the Interstate System pavement condition targets, described in § 490.105(e)(7):

(i) At the midpoint of the first performance period, FHWA will not make a determination of significant progress toward the achievement of 2-year targets for Interstate System pavement condition measures.

(ii) The FHWA will classify the assessment of progress toward the achievement of targets in paragraph (e)(3)(i) of this section as ''progress not determined'' so that they will be excluded from the requirement under paragraph (e)(2) of this section.

(4) *Insufficient data and/or information.* The FHWA will determine that a State DOT has not made significant progress toward the achievement of an individual NHPP target if:

(i) A State DOT does not submit a required report, individual target, or other information as specified in § 490.107 for the each of the measures in § 490.105(c);

(ii) The data contained in HPMS does not meet the requirements under § 490.313(b)(4)(i) by the data extraction date specified in paragraph (d)(1) of this section for the each of the Interstate System pavement condition measures in § 490.105(c)(1);

(iii) The data contained in HPMS does not meet the requirements under § 490.313(b)(4)(i) by the data extraction date specified in paragraph (d)(2) of this section for the each of the non-Interstate NHS pavement condition measures in § 490.105(c)(2);

(iv) A State DOT reported data is not cleared in the NBI by the data extraction date specified in paragraph (d)(3) of this section for each of the NHS bridge condition measures in § 490.105(c)(3); or

(v) The data was determined insufficient, as described in paragraphs (e)(4)(ii) through (iv) of this section, in the year in which the Baseline Period Performance Report is due to FHWA for the measures in § 490.105(c), and the actual condition/performance level is not equal to or better than the established target.

(5) *Extenuating circumstances.* The FHWA will consider extenuating circumstances documented by the State DOT in the assessment of progress toward the achievement of NHPP targets in the relevant State Biennial Performance Report, provided in § 490.107.

(i) The FHWA will classify the assessment of progress toward the achievement of an individual 2-year or 4-year target as ''progress not determined'' if the State DOT has provided an explanation of the extenuating circumstances beyond the control of the State DOT that prevented it from making significant progress toward the achievement of a 2-year or 4-year target and the State DOT has quantified the impacts on the condition/performance that resulted from the circumstances, which are:

(A) Natural or man-made disasters that caused delay in NHPP project delivery, extenuating delay in data

collection, and/or damage/loss of data system;

(B) Sudden discontinuation of Federal Government furnished data due to natural and man-made disasters or sudden discontinuation of Federal Government furnished data due to lack of funding; and/or

(C) New law and/or regulation directing State DOTs to change metric and/or measure calculation.

(ii) If the State DOT's explanation, described in paragraph (e)(5)(i) of this section, is accepted by FHWA, FHWA will classify the progress toward achieving the relevant NHPP target(s) as ''progress not determined,'' and those targets will be excluded from the requirement in paragraph (e)(2) of this section.

(f) *Performance achievement.* If FHWA determines that a State DOT has not made significant progress toward achieving the NHPP targets, then State DOTs shall include as part of the performance target report under sec. 150(e) [the Biennial Performance Report] a description of the actions the State DOT will undertake to achieve the targets related to the measure in which significant progress was not achieved as follows:

(1) If significant progress is not made for either target established for the Interstate System pavement condition measures, § 490.307(a)(1) and (a)(2), then the State DOT shall document the actions they will take to achieve Interstate Pavement condition targets;

(2) If significant progress is not made for either target established for the Non-Interstate System pavement condition measures, § 490.307(a)(3) and (a)(4), then the State DOT shall document the actions they will take to achieve Non-Interstate Pavement condition targets.

(3) If significant progress is not made for either target established for the NHS bridge condition measures, § 490.407(c)(1) and (c)(2), then the State DOT shall document the actions they will take to achieve the NHS bridge condition targets.

(4)–(5) [Reserved]

(6) The State DOT should, within 6 months of the significant progress determination, amend its Biennial Performance Report to document the information specified in this paragraph to ensure actions are being taken to achieve targets.

§ 490.111 Incorporation by reference.

(a) Certain material is incorporated by reference into this Part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, FHWA must publish a notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the Federal Highway Administration, Office of Highway Policy Information (202–366–4631) 1200 New Jersey Avenue SE., Washington, DC 20590, *www.fhwa.dot.gov* and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

(b) The Federal Highway Administration, 1200 New Jersey Avenue SE., Washington, DC 20590, *www.fhwa.dot.gov*.

(1) Highway Performance Monitoring System (HPMS) Field Manual, IBR approved for §§ 490.103, 490.309, 490.311, and 490.319.

(2) Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, includes: Errata Sheet for Coding Guide 06/2011, Report No. FHWA–PD–96–001, December 1995, IBR approved for §§ 490.409 and 490.411.

(c) The American Association of State Highway and Transportation Officials, 444 North Capitol Street NW., Suite 249, Washington, DC 20001, (202) 624–5800, *www.transportation.org*.

(1) AASHTO Standard M328–14, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Inertial Profiler, 2014, 34th/2014 Edition, IBR approved for § 490.309.

(2) AASHTO Standard R57–14, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Practice for Operating Inertial Profiling Systems, 2014, 34th/2014 Edition, IBR approved for § 490.309.

(3) AASHTO Standard R48–10 (2013), Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Practice for Determining Rut Depth in Pavements, 2014, 34th/2014 Edition, IBR approved for § 490.309.

(4) AASHTO Standard R36–13, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Practice for Evaluating Faulting of Concrete Pavements, 2014, 34th/2014 Edition, IBR approved for § 490.309.

(5) AASHTO Standard R43–13, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Practice for Quantifying Roughness of Pavement, 2014, 34th/2014 Edition, IBR approved for § 490.311.

■ 3. Add subpart C to read as follows:

Subpart C—National Performance Management Measures for the Assessing Pavement Condition

Sec.
490.301 Purpose.
490.303 Applicability.
490.305 Definitions.
490.307 National performance management measures for assessing pavement condition.
490.309 Data requirements.
490.311 Calculation of pavement metrics.
490.313 Calculation of performance management measures.
490.315 Establishment of minimum level for condition of pavements.
490.317 Penalties for not maintaining minimum Interstate System pavement condition.
490.319 Other requirements.

Subpart C—National Performance Management Measures for the Assessing Pavement Condition

§ 490.301 Purpose.

The purpose of this subpart is to implement the following statutory requirements of 23 U.S.C. 150(c)(3) to:

(a) Establish measures for State DOTs and MPOs to assess the condition of pavements on the Interstate System;

(b) Establish measures for State DOTs and MPOs to assess the condition of pavements on the NHS (excluding the Interstate);

(c) Establish minimum levels for pavement condition on the Interstate System, only for purposes of carrying out 23 U.S.C. 119(f)(1);

(d) Establish data elements that are necessary to collect and maintain standardized data to carry out a performance-based approach; and

(e) Consider regional differences in establishing the minimum levels for pavement conditions on the Interstate System.

§ 490.303 Applicability.

The performance measures in this subpart are applicable to the mainline highways on the Interstate System and on the non-Interstate NHS.

§ 490.305 Definitions.

The following definitions are only applicable to this subpart, unless otherwise provided:

Asphalt pavements means pavements where the top-most surface is constructed with asphalt materials. These pavements are coded in the HPMS as having any one of the following Surface Types:

Code	Surface_type
2	Bituminous.
6	Asphalt-Concrete (AC) Overlay over Existing AC Pavement.
7	AC Overlay over Existing Jointed Concrete Pavement.
8	AC (Bituminous Overlay over Existing CRCP).

Continuously Reinforced Concrete Pavements (CRCP) means pavements where the top-most surface is constructed of reinforced Portland cement concrete with no joints. These pavements are coded in the HPMS as having the following Surface Type:

Code	Surface_type
5	CRCP—Continuously Reinforced Concrete Pavement.

Cracking means an unintentional break in the continuous surface of a pavement.

Cracking Percent means the percentage of pavement surface exhibiting cracking as follows:

(1) For asphalt pavements, Cracking Percent is the percentage of the area of the pavement section, exhibiting visible cracking.

(2) For jointed concrete pavements, Cracking Percent is the percentage of concrete slabs exhibiting cracking.

(3) For CRCP, the Cracking Percent is the percentage of pavement surface with longitudinal cracking and/or punchouts, spalling or other visible defects.

Faulting means a vertical misalignment of pavement joints in Portland Cement Concrete Pavements.

International Roughness Index (IRI) means a statistic used to estimate the amount of roughness in a measured longitudinal profile. The IRI is computed from a single longitudinal profile using a quarter-car simulation, as described in the report: ''On the Calculation of IRI from Longitudinal Road Profile'' (Sayers, M.W., Transportation Research Board 1501, Transportation Research Board, Washington, DC 1995).

Jointed concrete pavements means pavements where the top-most surface is constructed of Portland cement concrete with joints. It may be constructed of either reinforced or unreinforced (plain) concrete. It is coded in the HPMS as having any one of the following Surface Types:

Code	Surface_type
3	Jointed Plain Concrete Pavement (includes whitetopping).
4	Jointed Reinforced Concrete Pavement (includes whitetopping).
9	Unbonded Jointed Concrete Overlay on PCC Pavement.
10	Bonded PCC Overlay on PCC Pavement.

Pavement means any hard surfaced travel lanes of any highway.

Pavement section means a nominally 0.1 mile-long reported segment that defines the limits of pavement condition metrics required by FHWA.

Present Serviceability Rating (PSR) means an observation based system used to rate pavements.

Punchout means a distress specific to CRCP described as the area between two closely spaced transverse cracks and between a short longitudinal crack and the edge of the pavement (or a longitudinal joint) that is breaking up, spalling, or faulting.

Rutting means longitudinal surface depressions in the pavement derived from measurements of a profile transverse to the path of travel on a highway lane. It may have associated transverse displacement.

Sampling as applied to pavements, means measuring pavement conditions on a short section of pavement as a statistical representation for the entire section. Sampling is not to be used to measure or rate NHS pavement conditions.

§ 490.307 National performance management measures for assessing pavement condition.

(a) To carry out the NHPP, the performance measures for State DOTs to assess pavement condition are:

(1) Percentage of pavements of the Interstate System in Good condition;

(2) Percentage of pavements of the Interstate System in Poor condition;

(3) Percentage of pavements of the non-Interstate NHS in Good condition; and

(4) Percentage of pavements of the non-Interstate NHS in Poor condition.

(b) State DOTs will collect data using the methods described in § 490.309 and will process this data to calculate individual pavement metrics for each section of pavement that will be reported to FHWA as described in § 490.311. State DOTs and FHWA will use the reported pavement metrics to compute an overall performance of Good, Fair, or Poor, for each section of pavement as described in § 490.313.

§ 490.309 Data requirements.

(a) The performance measures identified in § 490.307 are to be computed using methods in § 490.313 from the four condition metrics and three inventory data elements contained within the HPMS that shall be collected and reported following the HPMS Field Manual, which is incorporated by reference into this subpart (see § 490.111). State DOTs shall report four condition metrics for each pavement section: IRI, rutting, faulting, and Cracking_Percent. State DOTs shall also report three inventory data elements as directed in the HPMS Field Manual: Through Lanes, Surface Type, and Structure Type. All pavement data collected after January 1, 2018 for Interstate highways and January 1, 2020 for non-Interstate National Highway System routes shall meet the requirements of this section.

(b) State DOTs shall collect data in accordance with the following relevant HPMS requirements to report IRI, rutting (asphalt pavements), faulting (jointed concrete pavements), and Cracking percent. State DOTs will be permitted to report present serviceability rating (PSR) for specific locations in accordance with the HPMS requirements as an alternative where posted speed limits are less than 40 miles per hour.

(1) For the Interstate System the following shall apply for all the pavement condition metrics:

(i) State DOTs shall collect data—

(A) From the full extent of the mainline highway;

(B) In the rightmost travel lane or one consistent lane for all data if the rightmost travel lane carries traffic that is not representative of the remainder of the lanes or is not readily accessible due

to closure, excessive congestion, or other events impacting access;

(C) Continuously collected in a manner that will allow for reporting in nominally uniform pavement section lengths of 0.10 mile (528 feet); shorter pavement sections are permitted only at the beginning of a route, end of a route, at bridges, at locations where surface type changes or other locations where a pavement section length of 0.10 mile is not achievable; the maximum length of pavement sections shall not exceed 0.11 mile (580.8 feet);

(D) In at least one direction of travel; and

(E) On an annual frequency.

(ii) Estimating conditions from data samples of the full extent of the mainline highway is not permitted.

(iii) State DOTs may collect and report pavement condition data separately for each direction of divided highways on the Interstate System. Averaging across directions is not permitted. When pavement condition data is collected in one direction only, the measured conditions shall apply to all lanes in both directions for that pavement section for purposes of this part.

(iv) For the portions of the Interstate mainline highway pavements where posted speed limits are less than 40 MPH (*e.g.,* border crossings, toll plazas), State DOTs may collect and report the Present Serviceability Rating (PSR) as an alternative to the IRI, Cracking_Percent, rutting, and faulting in this pavement section and shall follow the following requirements:

(A) The PSR shall be determined as a value from 0 to 5 per the procedures prescribed in the HPMS Field Manual;

(B) Alternative pavement condition methods may be allowed to estimate a PSR with prior approval from FHWA of the method of correlation between their condition determination and PSR as required in the HPMS Field Manual;

(C) The PSR data shall be continuously collected in a manner that will allow for reporting in uniform pavement section lengths of 0.10 mile (528 feet); shorter pavement sections are permitted only at the beginning of a route, end of a route, at bridges, at locations where surface type changes or other locations where a pavement section length of 0.10 mile is not achievable; the maximum length of pavement sections shall not exceed 0.11 mile (580.8 feet);

(D) The PSR data shall be collected in at least one direction of travel; and

(E) The PSR data shall be collected on an annual frequency.

(2) For the non-Interstate NHS the following shall apply:

(i) For the IRI metric, State DOTs shall collect and report data:

(A) From the full extent of the mainline highway;

(B) In the rightmost travel lane or one consistent lane for all data if the rightmost travel lane is not accessible;

(C) Continuously collected in a manner that will allow for reporting in uniform pavement section lengths of 0.10 mile (528 feet); shorter pavement sections are permitted only at the beginning of a route, end of a route, at bridges, at locations where surface type changes or other locations where a pavement section length of 0.10 mile is not achievable; the maximum length of pavement sections shall not exceed 0.11 mile (580.8 feet)

(D) In one direction of travel; and

(E) On a biennial frequency.

(F) Estimating IRI metrics from data samples of the full extent of the mainline will not be permitted.

(ii) For the Cracking percent, rutting and faulting metrics, State DOTs shall collect data—

(A) On the full extent (no sampling) of the mainline highway;

(B) In the rightmost travel lane or one consistent lane for all data if the rightmost travel lane is not accessible;

(C) Continuously collected in a manner that will allow for reporting in uniform pavement section lengths of 0.10 mile (528 feet); shorter pavement sections are permitted only at the beginning of a route, end of a route, at bridges, at locations where surface type changes or other locations where a pavement section length of 0.10 mile is not achievable; the maximum length of pavement sections shall not exceed 0.11 mile (580.8 feet)

(D) In one direction of travel; and

(E) On at least a biennial frequency.

(F) Estimating conditions from data samples of the full extent of the mainline highway will not be permitted.

(iii) For the portions of mainline highways where posted speed limits of less than 40 MPH, State DOTs may collect the Present Serviceability Rating (PSR) as an alternative to the IRI, Cracking_Percent, rutting, and faulting pavement condition metrics, in paragraphs (b)(2)(i) and (ii) of this section, and shall follow the following requirements:

(A) The PSR shall be determined as a 0 to 5 value per the procedures prescribed in the HPMS Field Manual;

(B) Alternative pavement condition methods may be allowed to estimate a PSR with prior approval from FHWA of the method of correlation between their condition determination and PSR as required in the HPMS Field Manual;

(C) The PSR data shall be continuously collected in a manner that will allow for reporting in uniform pavement section lengths of 0.10 mile (528 feet); shorter pavement sections are permitted only at the beginning of a route, end of a route, at bridges, at locations where surface type changes or other locations where a pavement section length of 0.10 mile is not achievable; the maximum length of pavement sections shall not exceed 0.11 mile (580.8 feet);

(D) The PSR data shall be collected in one direction of travel; and

(E) The PSR data shall be collected on at least a biennial frequency.

(3) Data collection methods for each of the condition metrics shall conform to the following:

(i) The device to collect data needed to calculate the IRI metric shall be in accordance with American Association of State Highway Transportation Officials (AASHTO) Standard M328–14, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Equipment Specification for Inertial Profiler (incorporated by reference, see § 490.111).

(ii) The method to collect data needed to calculate the IRI metric shall be in accordance with AASHTO Standard R57–14, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Practice for Operating Inertial Profiling Systems (incorporated by reference, see § 490.111).

(iii) For highways with a posted speed limit less than 40 miles per hour, an alternate method for estimation of IRI is permitted as described in § 490.309(b)(1)(iv) or § 490.309(b)(2)(iii) may be used in lieu of measuring IRI, cracking, rutting and faulting.

(iv) The method to collect data needed to determine the Cracking_Percent metric for all pavement types except CRCP shall be manual, semi-automated, or fully automated in accordance with the HPMS Field Manual (incorporated by reference, see 490.111).

(v) For CRCP the method to collect the data needed to determine the Cracking_Percent metric is described in the HPMS Field Manual (incorporated by reference, see § 490.111) and includes longitudinal cracking and/or punchouts, spalling, or other visible defects.

(vi) For asphalt pavements, the method to collect data needed to determine the rutting metric shall either be:

(A) A 5-Point Collection of Rutting Data method in accordance with AASHTO Standard R48–10, Standard Specification for Transportation Materials and Methods of Sampling and

Testing, Standard Practice for Determining Rut Depth in Pavements (incorporated by reference, see § 490.111); or

(B) An Automated Transverse Profile Data method in accordance with the HPMS Field Manual (incorporated by reference, see § 490.111).

(vii) For jointed concrete pavements, the method to collect data needed to determine the faulting metric shall be in accordance with AASHTO Standard R36–13, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Practice for Evaluating Faulting of Concrete Pavements (incorporated by reference, see § 490.111).

(c) State DOTs shall collect data in accordance with the following relevant HPMS requirements to report Through Lanes, Surface Type, and Structure Type.

(1) State DOTs shall collect data:

(i) For the full extent of the mainline highway of the NHS;

(ii) In at least one direction of travel for the Interstate System and in one direction of travel for the non-Interstate NHS; and

(iii) On an annual frequency on the Interstate routes and on at least a biennial frequency on non-Interstate NHS routes.

(2) Estimating data elements from samples of the full extent of the mainline highway is not permitted.

§ 490.311 Calculation of pavement metrics.

(a) The condition metrics and inventory data elements needed to calculate the pavement performance measures shall be calculated in accordance with the HPMS Field Manual (incorporated by reference, see § 490.111), except as noted below.

(b) State DOTs shall calculate metrics in accordance with the following relevant HPMS requirements.

(1) For all pavements, the IRI metric:

(i) Shall be computed from pavement profile data in accordance with AASHTO Standard R43–13, Standard Specification for Transportation Materials and Methods of Sampling and Testing, Standard Practice for Quantifying Roughness of Pavement, 2014, 34th/2014 Edition, AASHTO, 1–56051–606–4 (incorporated by reference, see § 490.111);

(ii) Shall be reported for all pavements as the average value in inches per mile for each section; and

(iii) Shall not be estimated from a PSR or other observation-based method except where permitted in § 490.309(b)(3)(iii).

(2) For asphalt pavements—

(i) The Cracking_Percent metric shall be computed as the percentage of the total area containing visible cracks to the nearest whole percent in each section; and

(ii) The rutting metric shall be computed as the average depth of rutting, in inches to the nearest 0.01 inches, for the section.

(3) For CRCP, the Cracking_Percent metric shall be computed as the percentage of the area of the section to the nearest whole percent exhibiting longitudinal cracking, punchouts, spalling, or other visible defects. Transverse cracking shall not be considered in the Cracking_Percent metric.

(4) For jointed concrete pavements—

(i) The Cracking_Percent metric shall be computed as the percentage of slabs to the nearest whole percent within the section that exhibit cracking;

(ii) Partial slabs shall contribute to the section that contains the majority of the slab length; and

(iii) The faulting metric shall be computed as the average height, in inches to the nearest 0.01 inch, of faulting between pavement slabs for the section.

(5) For the mainline highways on the non-Interstate NHS with posted speed limits of less than 40 MPH—

(i) The present serviceability rating (PSR) may be used as an alternative to the IRI, Cracking_Percent, rutting, and faulting pavement condition metrics.

(ii) The PSR shall be determined as a 0 to 5 value per the procedures prescribed in the HPMS Field Manual.

(iii) Alternative pavement condition methods may be allowed to estimate a PSR with prior approval from FHWA of the method of correlation between their condition determination and PSR as required in the HPMS Field Manual.

(c) State DOTs shall report the four pavement metrics listed in § 490.309(a) as calculated following the requirements in paragraphs (a) and (b) of this section in accordance with the following relevant HPMS requirements:

(1) Pavement condition metrics shall be reported to the HPMS in uniform section lengths of 0.1 mile (528 feet); shorter sections are permitted only at the beginning of a route, the end of a route, at bridges, or other locations where a section length of 0.1 mile is not achievable; and the maximum length of sections shall not exceed 0.11 mile (580.8 feet)

(2) Each measured section shall have a single value for each of the relevant condition metrics. Sections where condition is estimated from PSR will have one value for the overall condition.

(3) The time and location reference shall be reported for each section as follows:

(i) The State_Code, Route_ID, Begin_Point, and End_Point shall be reported as specified in the HPMS field manual (incorporated by reference, see § 490.111) for each of the four condition metrics.

(ii) The Year_Record shall be reported as the four digit year for which the data represents for each of the four condition metrics; and

(iii) The Value_Date shall be reported as the month and year of data collection for each of the four condition metrics.

(4) Sections for the four condition metrics shall be reported to the HPMS for the Interstate System by April 15 of each year for the data collected during the previous calendar year.

(5) Sections for the four condition metrics shall be reported to the HPMS for the non-Interstate NHS by June 15 of each year for the data collected during the previous calendar year(s).

(d) The three inventory data elements, Through_Lanes, Surface_Type, and Structure Type shall be reported to the HPMS as directed in Chapter 4 of the HPMS Field Manual for the entire extent of the NHS.

(1) Section Lengths for the three inventory data items are not required to meet the 0.1 mile nominal length but may be any logical length as defined in the HPMS Field Manual.

(2) The three inventory data elements shall be reported to the HPMS for the Interstate System by April 15 of each year.

(3) The three inventory data elements shall be reported to the HPMS for the non-Interstate NHS by June 15 of the each year that data reporting is required.

§ 490.313 Calculation of performance management measures.

(a) The pavement measures in § 490.307 shall be calculated in accordance with this section and used by State DOTs and MPOs to carry out the pavement condition related requirements of this part, and by FHWA to make the significant progress and minimum condition determinations specified in §§ 490.109 and 490.317, respectively.

(b) The performance measure for pavements shall be calculated based on the data collected in § 490.309 and pavement condition metrics computed in § 490.311. The performance measure for pavements shall be based on three condition ratings of Good, Fair, and Poor calculated for each pavement section. The ratings are determined as follows:

(1) IRI rating shall be determined for all pavement types using the following criteria. If an IRI value of a pavement section is:—

(i) Less than 95, the IRI rating for the pavement section is Good;

(ii) Between 95 and 170, the IRI rating for the pavement section is Fair; and

(iii) Greater than 170, the IRI rating for the pavement section is Poor.

(2) Cracking condition shall be determined using the following criteria:

(i) For asphalt pavement sections—

(A) If the Cracking_Percent value of a section is less than 5 percent, the cracking rating for the pavement section is Good;

(B) If the Cracking_Percent value of a section is equal to or greater than 5 percent and less than or equal to 20 percent the cracking rating for the pavement section is Fair; and

(C) If the Cracking_Percent value of a section is greater than 20 percent the cracking rating for the pavement section is Poor.

(ii) For jointed concrete pavement sections—

(A) If the Cracking_Percent value of a section is less than 5 percent, the cracking rating for the pavement section is Good;

(B) If the Cracking_Percent value of a section is equal to or greater than 5 percent and less than or equal to 15 percent the cracking rating for the pavement section is Fair; and

(C) If the Cracking_Percent value of a section is greater than 15 percent the cracking rating for the pavement section is Poor.

(iii) For CRCP sections:

(A) If the Cracking_Percent value of a section is less than 5 percent, the cracking rating for the pavement section is Good;

(B) If the Cracking_Percent value of a section is equal to or greater than 5 percent and less than or equal to 10 percent, the cracking rating for the pavement section is Fair; and

(C) If the Cracking_Percent value of a section is greater than 10 percent, the cracking rating for the pavement section is Poor.

(3) Rutting or faulting rating shall be determined using the following criteria.

(i) For asphalt pavement:

(A) If the rutting value of a section is less than 0.20 inches, the rutting rating for the pavement section is Good;

(B) If the rutting value of a section is equal to or greater than 0.20 inches and less than or equal to 0.40 inches, the rutting rating for the pavement section is Fair; and

(C) If the rutting value of a section in is greater than 0.40 inches, the rutting rating for the pavement section is Poor.

(ii) For jointed concrete pavement:

(A) If the faulting value of a section is less than 0.10 inches, the faulting rating for the pavement section is Good;

(B) If the faulting value of a section is equal to or greater than 0.10 inches and less than or equal to 0.15 inches, the faulting rating for the pavement section is Fair; and

(C) If the faulting value of a section is greater than 0.15 inches, the faulting rating for the pavement section is Poor.

(4) The FHWA will determine that a reported section in HPMS has a missing, invalid or unresolved data on the dates specified in § 490.317(b) for Interstate System and § 490.109(d)(2) and (d)(4) for non-Interstate NHS, if a reported section does not meet any one of the data requirements specified in §§ 490.309 and 490.311(c) or that reported section does not provide sufficient data to determine its Overall Condition specified in paragraphs (c) through (f) of this section:

(i) Total mainline lane-miles of missing, invalid, or unresolved sections for Interstate System and non-Interstate NHS shall be limited to no more than 5 percent of the total lane miles less the sections excluded in § 490.313(f)(1). For each pavement section without collected its condition metrics and inventory data, State DOTs shall note in the HPMS submittal with a specific code identified in the HPMS Field Manual (incorporated by reference, see § 490.111) noting the reason it was not collected.

(ii) Calculation of overall pavement conditions in any State meeting the requirements of § 490.309(b) shall be based only on sections containing data reported in the HPMS Submittal as of the submission dates required in § 490.311(c)(4) and (5). State DOTs not meeting the requirements of § 490.309(b) will be considered as not in compliance with § 420.105(b) requiring State DOTs to submit data to the HPMS and not in compliance with § 490.107 requiring reporting on performance targets. Failure to report data meeting the requirements of § 490.309(b) by the submission dates for the Interstate System will be considered as not meeting the minimum requirements for pavement conditions on the Interstate System and that State DOT is subject to the penalties in § 490.315.

(c) The Overall condition for asphalt and jointed concrete pavement sections shall be determined based on the ratings for IRI, Cracking_Percent, rutting and faulting, as described in paragraphs (b)(1), (b)(2), (b)(3) and (b)(4) of this section, respectively, for each section as follows:

(1) A pavement section shall be rated an overall condition of Good only if the section is exhibiting Good ratings for all three conditions (IRI, Cracking_Percent, and rutting or faulting);

(2) A pavement section shall be rated an overall condition of Poor if two or more of the three conditions are exhibiting Poor ratings (at least two ratings of Poor for IRI, Cracking_Percent, and rutting or faulting).

(3) A pavement section shall be rated an overall condition of Fair if it does not meet the criteria in paragraphs (c)(1) or (c)(2) of this section.

(4) For sections on roadways where the posted speed limit is less than 40 MPH and where the State DOT has reported PSR in lieu of the IRI, Cracking_Percent, rutting, and faulting metrics the PSR condition level shall be determined using the following criteria:

(i) If the PSR of a section is equal to or greater than 4.0 the PSR rating for the pavement section is Good;

(ii) If the PSR of a section is less than 4.0 and greater than 2.0 the PSR rating for the pavement section is Fair; and

(iii) If the PSR of a section is less than or equal to 2.0 the PSR rating for the pavement section is Poor.

(d) The Overall condition for CRCP sections shall be determined based on two ratings of IRI and Cracking_Percent, as described in paragraphs (b)(1) and (b)(2) of this section or based on PSR where appropriate as described in paragraph (c)(4) of this section, respectively, for each section as follows:

(1) A pavement section shall be rated an overall condition of Good only if the section is exhibiting Good ratings for both conditions (IRI and Cracking_Percent);

(2) A pavement section shall be rated an overall condition of Poor if it exhibits Poor ratings for both conditions (IRI and Cracking_Percent);

(3) A pavement section shall be rated an overall condition of Fair if it does not meet the criteria in paragraphs (d)(1) or (d)(2) of this section.

(4) For pavement sections that are on roadways with a posted speed limit of less than 40 MPH where the State DOT reported the PSR metric in lieu of the IRI, Cracking_Percent, faulting, and rutting metrics the pavement section shall be rated an overall condition equal to the PSR condition rating as described in section (c)(4) above

(e) State DOTs shall not be subject to paragraphs (c) and (d) of this section for Pavements on the until after the data collection cycle ending December 31, 2018, for Interstate highways and December 31, 2021, for the non-Interstate NHS. During this transition period, the Overall condition for all pavement types will be based on IRI rating, as described in paragraph (b)(1) of this section, or on PSR as described in paragraphs (c)(4) or (d)(4) of this section.

(f) The pavement condition measures in § 490.307 shall be computed as described below. The measures shall be used for establishing targets in accordance with § 490.105 and reporting the conditions of the pavements in the biennial performance reporting required in § 490.107 as follows:

(1) Bridges shall be excluded prior to computing all pavement condition measures by removing the sections where the Structure_Type data item in the HPMS is coded as 1. Sections that have an unpaved surface or an ''other'' surface type (such as cobblestone, planks, brick) shall be excluded prior to computing all pavement condition measures by removing the sections where the Surface Type data item in the HPMS is coded as 1 or as 11.

(2) For § 490.307(a)(1) the measure for percentage of lane-miles of the Interstate System in Good condition shall be computed to the one tenth of a percent as follows:

$$100 \times \frac{\sum_{g=1}^{Good}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ g}}{\sum_{t=1}^{Total}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ t}}$$

Where:

Good = total number of mainline highway Interstate System sections where the overall condition is Good;

g = a section's overall condition is determined Good per paragraphs (b) or (c) of this section;

t = an Interstate System section;

Total = total number of mainline highway Interstate System sections excluding bridges, unpaved surface and ''other'' surface types, and missing data sections, described in paragraph (f)(1) and (b)(4)(i) of this section.

Begin_Point = Begin Milepost of each section *g* or *t;*

End Point = End Milepost of each section *g* or *t;* and

Through_lanes = the number of lanes designated for through-traffic represented by a section *g* or *t.*

(3) For § 490.307(a)(2) the measure for percentage of lane-miles of the Interstate System in Poor condition shall be computed to the one tenth of a percent as follows:

$$100 \times \frac{\sum_{p=1}^{Poor}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ p}}{\sum_{t=1}^{Total}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ t}}$$

Where:

Poor = total number of mainline highway Interstate System sections where the overall condition is Poor;

p = a section's overall condition is determined Poor per paragraphs (b) or (c) of this section;

t = an Interstate System section;

Total = total number of mainline highway Interstate System sections excluding bridges, unpaved surface and ''other'' surface types, and missing data sections, described in paragraph (f)(1) and (b)(4)(i) of this section;

Begin_Point = Begin Milepost of each section *p* or *t;*

End Point = End Milepost of each section *p* or *t;* and

Through_lanes = the number of lanes designated for through-traffic represented by a section *p* or *t.*

(4) For § 490.307(a)(3) the measure for percentage of lane-miles of the non-Interstate NHS in Good condition in § 490.307(a)(3) shall be computed to the one tenth of a percent as follows:

$$100 \times \frac{\sum_{g=1}^{Good}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ g}}{\sum_{t=1}^{Total}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ t}}$$

Where:

Good = total number of mainline highway non-Interstate NHS sections where the overall condition is Good;

g = a section's overall condition is determined Good per paragraphs (b), (c) or (d) of this section;

t = a non-Interstate NHS section;

Total = total number of mainline highway non-Interstate NHS sections excluding bridges, unpaved surface and ''other'' surface types, and missing data sections, described in paragraph (f)(1) and (b)(4)(i) of this section;

Begin_Point = Begin Milepost of each section *g* or *t;*

End Point = End Milepost of each section *g* or *t;* and

Through_lanes = the number of lanes designated for through-traffic represented by a section *g* or *t.*

(5) For § 490.307(a)(4) the measure for percentage of lane-miles of the non-Interstate NHS in Poor condition in § 490.307(a)(4) shall be computed to the one tenth of a percent as follows:

$$100 \times \frac{\sum_{p=1}^{Poor}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ p}}{\sum_{t=1}^{Total}\{\langle End_Point - Begin_Point\rangle \times Through_lanes\}_{section\ t}}$$

Where:

Poor = total number of mainline highway non-Interstate NHS sections where the overall condition is Poor;

p = a section's overall condition is determined Poor per paragraphs (b), (c) or (d) of this section;

t = a non-Interstate NHS section;
Total = total number of mainline highway non-Interstate NHS sections excluding bridges, unpaved surface and ''other'' surface types, and missing data sections, described in paragraph (f)(1) and (b)(4)(i) of this section;
Begin_Point = Begin Milepost of each section *p* or *t;*
End Point = End Milepost of each section *p* or *t;* and
Through_lanes = the number of lanes designated for through-traffic represented by a section *p* or *t.*

§ 490.315 Establishment of minimum level for condition of pavements.

(a) For the purposes of carrying out the requirements of 23 U.S.C. 119(f)(1), the percentage of lane-miles of Interstate System in Poor condition, as computed per § 490.313(e)(3), shall not exceed 5.0 percent except as noted in paragraph (b) of this section.

(b) For the purposes of carrying out the requirements of 23 U.S.C. 119(f)(1), the percentage of lane-miles of Interstate System in Poor condition within the State of Alaska, as computed per § 490.313(e)(3), shall not exceed 10.0 percent.

§ 490.317 Penalties for not maintaining minimum Interstate System pavement condition.

(a) The FHWA shall compute the Percentage of lane-miles of the Interstate System, excluding sections on bridges, in Poor Condition, in accordance with § 490.313(e)(3), for each State annually.

(b) Each year, FHWA shall extract data contained within the HPMS on June 15 that represents conditions from the prior calendar year for Interstate System pavement conditions to carry out paragraph (a) of this section, beginning with data collected during the 2018 calendar year.

(c) The FHWA shall determine if a State DOT is in compliance with § 490.315(a) or § 490.315(b) and 23 U.S.C. 119(f)(1) after the first full year of data collection for the Interstate System and each year thereafter.

(d) The FHWA will notify State DOTs of their compliance with 23 U.S.C. 119(f)(1) prior to October 1 of the year in which the determination was made.

(e) If FHWA determines through conduct of paragraph (d) of this section a State DOT to be out of compliance with 23 U.S.C. 119(f)(1) then the State DOT shall, during the following fiscal year:

(1) Obligate, from the amounts apportioned to the State DOT under 23 U.S.C. 104(b)(1) (for the NHPP), an amount that is not less than the amount of funds apportioned to the State for Federal fiscal year 2009 under the Interstate Maintenance program for the purposes described in 23 U.S.C. 119 (as in effect on the day before the date of enactment of the MAP–21), except that for each year after Federal fiscal year 2013, the amount required to be obligated under this clause shall be increased by 2 percent over the amount required to be obligated in the previous fiscal year; and

(2) Transfer, from the amounts apportioned to the State DOT under 23 U.S.C. 104(b)(2) (for the Surface Transportation Program) (other than amounts sub-allocated to metropolitan areas and other areas of the State under 23 U.S.C. 133(d)) to the apportionment of the State under 23 U.S.C. 104(b)(1), an amount equal to 10 percent of the amount of funds apportioned to the State for fiscal year 2009 under the Interstate Maintenance program for the purposes described in 23 U.S.C. 119 (as in effect on the day before the date of enactment of the MAP–21).

§ 490.319 Other requirements.

(a) In accordance with the HPMS Field Manual (incorporated by reference, see § 490.111), each State DOT shall report the following to the HPMS no later than April 15 each year:

(1) The pavement condition metrics specified in § 490.311 that are necessary to calculate the Interstate System condition measures identified in §§ 490.307(a)(1) and (a)(2) and;

(2) The data elements specified in § 490.309(c) for the Interstate System

(b) In accordance with the HPMS Field Manual (incorporated by reference, see § 490.111), each State DOT shall report to the HPMS no later than June 15 each year the pavement condition metrics specified in § 490.311 that are necessary to calculate the non-Interstate NHS condition measures in §§ 490.307(a)(3) and (a)(4).

(c) Each State DOT shall develop and utilize a Data Quality Management Program, approved by FHWA that addresses the quality of all data collected, regardless of the method of acquisition, to report the pavement condition metrics, discussed in § 490.311, and data elements discussed in § 490.309(c).

(1) In a Data Quality Management Programs, State DOTs shall include, at a minimum, methods and processes for:

(i) Data collection equipment calibration and certification;

(ii) Certification process for persons performing manual data collection;

(iii) Data quality control measures to be conducted before data collection begins and periodically during the data collection program;

(iv) Data sampling, review and checking processes; and

(v) Error resolution procedures and data acceptance criteria.

(2) Not later than 1 year after the effective date of this regulation, State DOTs shall submit their Data Quality Management Program to FHWA for approval. Once FHWA approves a State DOT's Data Quality Management Program, the State DOT shall use that Program to collect and report data required by §§ 490.309 to 490.311. State DOTs also shall submit any proposed significant change to the Data Quality Management Program to FHWA for approval prior to implementing the change.

■ 4. Add subpart D to read as follows:

Subpart D—National Performance Management Measures for Assessing Bridge Condition

Sec.
490.401 Purpose.
490.403 Applicability.
490.405 Definitions.
490.407 National performance management measures for assessing bridge condition.
490.409 Calculation of National performance management measures for assessing bridge condition.
490.411 Establishment of minimum level for condition for bridges.
490.413 Penalties for not maintaining bridge condition.

Subpart D—National Performance Management Measures for Assessing Bridge Condition

§ 490.401 Purpose.

The purpose of this subpart is to implement the requirements of 23 U.S.C. 150(c)(3)(A)(ii)(III), which requires the Secretary of Transportation to establish performance measures for the purpose of carrying out the NHPP and for State DOTs and MPOs to use in assessing the condition of bridges carrying the NHS which includes on- and off-ramps connected to the NHS.

§ 490.403 Applicability.

The section is only applicable to bridges carrying the NHS, which includes on- and off-ramps connected to the NHS.

§ 490.405 Definitions.

The following definitions are only applicable to this subpart, unless otherwise provided:

Structurally deficient as used in §§ 490.411 and 490.413 is a classification given to a bridge which has any component in Poor or worse condition or the adequacy of the waterway opening provided by the bridge is determined to be insufficient to the point of causing overtopping with intolerable traffic interruptions. Beginning with calendar year 2018 and

thereafter, *structurally deficient* as used in §§ 490.411 and 490.413 is a classification given to a bridge which has any component in Poor or worse condition.

§ 490.407 National performance management measures for assessing bridge condition.

(a) There are three classifications for the purpose of assessing bridge condition. They are:

(1) Percentage of NHS bridges classified as in Good condition;

(2) Percentage of NHS bridges classified as in Fair condition; and

(3) Percentage of NHS bridges classified as in Poor condition.

(b) [Reserved]

(c) To carry out the NHPP, two of the three classifications are performance measures for State DOTs to use to assess bridge condition on the NHS. They are:

(1) Percentage of NHS bridges classified as in Good condition; and

(2) Percentage of NHS bridges classified as in Poor condition.

(d) Determination of Good and Poor conditions are described in § 490.409.

§ 490.409 Calculation of National performance management measures for assessing bridge condition.

(a) The bridge measures in § 490.407 shall be calculated in accordance with this section and used by State DOTs and MPOs to carry out the bridge condition related requirements of this part and by FHWA to make the significant progress determination specified in § 490.109.

(b) The condition of bridges carrying the NHS, which includes on- and off-ramps connected to the NHS, shall be classified as Good, Fair, or Poor following the criteria specified in this paragraph. The assignment of a classification of Good, Fair, or Poor shall be based on the bridge's condition ratings for NBI Items 58—Deck, 59—Superstructure, 60—Substructure, and 62—Culverts. For the purposes of national performance measures under the NHPP, the method of assessment to determine the classification of a bridge will be the minimum of condition rating method (*i.e.,* the condition ratings for lowest rating of a bridge's 3 NBI Items, 58—Deck, 59—Superstructure, and 60—Substructure). For culverts, the rating of its NBI Item, 62—Culverts, will determine its classification. The bridges carrying the NHS which includes on- and off-ramps connected to the NHS will be classified as Good, Fair, or Poor based on the following criteria:

(1) *Good:* When the lowest rating of the 3 NBI items for a bridge (Items 58—Deck, 59—Superstructure, 60—Substructure) is 7, 8, or 9, the bridge will be classified as Good. When the rating of NBI item for a culvert (Item 62—Culverts) is 7, 8, or 9, the culvert will be classified as Good.

(2) *Fair:* When the lowest rating of the 3 NBI items for a bridge is 5 or 6, the bridge will be classified as Fair. When the rating of NBI item for a culvert is 5 or 6, the culvert will be classified as Fair.

(3) *Poor:* When the lowest rating of the 3 NBI items for a bridge is 4, 3, 2, 1, or 0, the bridge will be classified as Poor. When the rating of NBI item for a culvert is 4, 3, 2, 1, or 0, the culvert will be classified as Poor.

(c) The bridge measures specified in § 490.407(c) shall be calculated for the applicable bridges per paragraph (a) that pertain to each target established by the State DOT or MPO in §§ 490.105(e) and 490.105(f), respectively, as follows:

(1) For § 490.407(c)(1), the measure for the percentage of bridges classified as in Good condition shall be computed and reported to the one tenth of a percent as follows:

$$100 \times \frac{\sum_{g=1}^{GOOD} [\text{Length} \times \text{Width}]_{\text{Bridge g}}}{\sum_{s=1}^{TOTAL} [\text{Length} \times \text{Width}]_{\text{Bridge s}}}$$

Where:

GOOD = total number of the applicable bridges, where their condition is Good per paragraph (b)(1) of this section;

g = a bridge determined to be in Good condition per paragraph (b)(1) of this section;

Length = corresponding value of NBI Item 49—Structure Length for every applicable bridge;

Width = corresponding value of NBI Item 52—Deck Width or value of Item 32 Approach Roadway Width for culverts where the roadway is on a fill [*i.e.,* traffic does not directly run on the top slab (or wearing surface) of the culvert] and the headwalls do not affect the flow of traffic for every applicable bridge.

s = an applicable bridge per paragraph (b) of this section; and

TOTAL = total number of the applicable bridges specified in paragraph (b) of this section.

(2) For § 490.407(c)(2), the measure for the percentage of bridges classified as in Poor condition shall be computed and reported to the one tenth of a percent as follows:

$$100 \times \frac{\sum_{p=1}^{POOR} [\text{Length} \times \text{Width}]_{\text{Bridge p}}}{\sum_{s=1}^{TOTAL} [\text{Length} \times \text{Width}]_{\text{Bridge s}}}$$

Where:

POOR = total number of the applicable bridges, where their condition is Poor per paragraph (b)(3) of this section;

p = a bridge determined to be in Poor condition per paragraph (b)(3) of this section;

Length = corresponding value of NBI Item 49—Structure Length for every applicable bridge;

Width = corresponding value of NBI Item 52—Deck Width or value of Item 32 Approach Roadway Width for culverts where the roadway is on a fill [*i.e.,* traffic does not directly run on the top slab (or wearing surface) of the culvert] and the headwalls do not affect the flow of traffic for every applicable bridge.

s = an applicable bridge per paragraph (b) of this section; and

TOTAL = total number of the applicable bridges specified in paragraph (b) of this section.

(d) The measures identified in § 490.407(c) shall be used to establish targets in accordance with § 490.105 and report targets and conditions described in § 490.107.

(e) The NBI Items included in this section are found in the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, which is incorporated by reference (see § 490.111).

§ 490.411 Establishment of minimum level for condition for bridges.

(a) State DOTs will maintain bridges so that the percentage of the deck area of bridges classified as Structurally Deficient does not exceed 10.0 percent. This minimum condition level is applicable to bridges carrying the NHS, which includes on- and off-ramps connected to the NHS within a State, and bridges carrying the NHS that cross a State border.

(b) For the purposes of carrying out this section and § 490.413, a bridge will be classified as Structurally Deficient when one of its NBI Items, 58—Deck, 59—Superstructure, 60—Substructure, or 62—Culverts, is 4 or less, or when one of its NBI Items, 67—Structural Evaluation or 71—Waterway Adequacy, is 2 or less. Beginning with calendar year 2018 and thereafter, a bridge will be classified as Structurally Deficient when one of its NBI Items, 58—Deck, 59—Superstructure, 60—Substructure, or 62—Culverts, is 4 or less.

(c) For all bridges carrying the NHS, which includes on- and off-ramps connected to the NHS and bridges carrying the NHS that cross a State border, FHWA shall calculate a ratio of the total deck area of all bridges classified as Structurally Deficient to the total deck area of all applicable bridges for each State. The percentage of deck area of bridges classified as Structurally Deficient shall be computed by FHWA to the one tenth of a percent as follows:

$$100 \times \frac{\sum_{SD=1}^{\text{Structurally Deficient}} [\text{Length} \times \text{Width}]_{\text{Bridge SD}}}{\sum_{s=1}^{\text{TOTAL}} [\text{Length} \times \text{Width}]_{\text{Bridge s}}}$$

Where:

Structurally Deficient = total number of the applicable bridges, where their classification is Structurally Deficient per this section and § 490.413;

SD = a bridge classified as Structurally Deficient per this section and § 490.413;

Length = corresponding value of NBI Item 49—Structure Length for every applicable bridge;

Width = corresponding value of NBI Item 52—Deck Width

Beginning with calendar year 2018 and thereafter, Width = corresponding value of NBI Item 52—Deck Width or value of Item 32 Approach Roadway Width for culverts where the roadway is on a fill [*i.e.,* traffic does not directly run on the top slab (or wearing surface) of the culvert] and the headwalls do not affect the flow of traffic for every applicable bridge.

s = an applicable bridge per this section and § 490.413; and

TOTAL = total number of the applicable bridges specified in this section and § 490.413.

(d) The FHWA will annually determine the percentage of the deck area of NHS bridges classified as Structurally Deficient for each State DOT and identify State DOTs that do not meet the minimum level of condition for NHS bridges based on data cleared in the NBI as of June 15 of each year. The FHWA will notify State DOTs of their compliance with 23 U.S.C. 119(f)(2) prior to October 1 of the year in which the determination was made.

(e) For the purposes of carrying out this section, State DOTs will annually submit their most current NBI data on highway bridges to FHWA no later than March 15 of each year.

(f) The NBI Items included in this section are found in the Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges, which is incorporated by reference (see § 490.111).

§ 490.413 Penalties for not maintaining bridge condition.

(a) If FHWA determines for the 3-year period preceding the date of the determination, that more than 10.0 percent of the total deck area of bridges in the State on the NHS is located on bridges that have been classified as Structurally Deficient, the following requirements will apply.

(1) During the fiscal year following the determination, the State DOT shall obligate and set aside in an amount equal to 50 percent of funds apportioned to such State for fiscal year 2009 to carry out 23 U.S.C. 144 (as in effect the day before enactment of MAP–21) from amounts apportioned to a State for a fiscal year under 23 U.S.C. 104(b)(1) only for eligible projects on bridges on the NHS.

(2) The set-aside and obligation requirement for bridges on the NHS in a State in paragraph (a) of this section for a fiscal year shall remain in effect for each subsequent fiscal year until such time as less than 10 percent of the total deck area of bridges in the State on the NHS is located on bridges that have been classified as Structurally Deficient as determined by FHWA.

(b) The FHWA will make the first determination by October 1, 2016, and each fiscal year thereafter.

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DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

23 CFR Part 490

[Docket No. FHWA–2013–0054]

RIN 2125–AF54

National Performance Management Measures; Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program

AGENCY: Federal Highway Administration (FHWA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: This final rule is the third and last in a series of three related rulemakings that together establishes a set of performance measures for State departments of transportation (State DOT) and Metropolitan Planning Organizations (MPO) to use as required by the Moving Ahead for Progress in the 21st Century Act (MAP–21) and the Fixing America's Surface Transportation (FAST) Act. The measures in this third final rule will be used by State DOTs and MPOs to assess the performance of the Interstate and non-Interstate National Highway System (NHS) for the purpose of carrying out the National Highway Performance Program (NHPP); to assess freight movement on the Interstate System; and to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program. This third performance measure final rule also includes a discussion that summarizes all three of the national performance management measures