Implementation of MAP-21
Performance Provisions

An Overview of the Pavement/Bridge Performance Measures NPRM and the Asset Management Plan NPRM

WASHTO Subcommittee on Materials & Construction
San Antonio, Texas
March 23, 2015
Thomas Van, FHWA
<table>
<thead>
<tr>
<th>Performance Area</th>
<th>NPRM</th>
<th>Comments due</th>
</tr>
</thead>
<tbody>
<tr>
<td>FHWA:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highway Safety Improvement Program</td>
<td>March 28, 2014</td>
<td>Closed June 30, 2014</td>
</tr>
<tr>
<td>Statewide and Metro Planning; Non-Metro Planning</td>
<td>June 2, 2014</td>
<td>Closed October 2, 2014</td>
</tr>
<tr>
<td>Infrastructure Condition Performance Measures</td>
<td>January 5, 2015</td>
<td>Open until May 8, 2015</td>
</tr>
<tr>
<td>Highway Asset Management Plan</td>
<td>February 20, 2015</td>
<td>Open until April 21, 2015</td>
</tr>
<tr>
<td>System Performance Measures</td>
<td>Projected July 2015</td>
<td>90 days</td>
</tr>
</tbody>
</table>
Transportation Performance Management

Putting It All Together

Pavement & Bridge Measures
- Establish Consistent Performance Measures across NHS
- Set Minimum Condition Standards for Interstate Pavements and NHS Bridges
- States and MPOs Set Performance Targets
- States Collect and Report Data

Asset Management Plan
- Incorporates State Objectives, Measures, & Targets
- Perform Gap, Whole-Life Cost, & Risk Analysis
- Develop Decision-making & Investment Strategies

Performance-based Planning
- States and MPOs Focus on National Goals.
- Develop Strategy and Targets
  - Focus on Performance Areas
  - Determine Trade-Offs
- Develop Program
  - Develop STIP/TIP with Targets
- Accountability and Reporting
  - Deliver Projects and Carry Out Strategies
  - States Report on Performance
## National Performance Management Measures for Assessing Pavement Condition (490.307)

<table>
<thead>
<tr>
<th>Pavement Condition Measures</th>
<th>Interstate System</th>
<th>Non-Interstate NHS System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of pavements in “Good” condition</td>
<td>Percentage of pavements in “Good” condition</td>
<td></td>
</tr>
<tr>
<td>Percentage of pavements in “Poor” condition</td>
<td>Percentage of pavements in “Poor” condition</td>
<td></td>
</tr>
</tbody>
</table>
Relationship between Data Requirements, Pavement Metrics, and Performance Measures

**Data Requirements**
- Type of data to be collected
- Methods of data collection
- Extent and frequency of collection

**Pavement Metrics**
- Calculated using collected data
- Based on sections of highway pavement
- Reported in the HPMS

**Pavement Measures**
- Calculated using metrics reported in the HPMS
- Used by States to report the condition of Interstate System and non-Interstate NHS
HPMS Data Collection and Reporting Requirements (490.309)

Proposed Changes to HPMS

- Full Extent (All Measurements)
- 2 Directions on Interstate
- Requires 0.1 Mile Uniform Sections

IRI, Cracking, Rutting, Faulting
Proposed Changes to HPMS (continued)

- Interstate due April 15, Annually
- Non-Interstate NHS due June 15 Every 2 years
Challenge!! Missing data...

Proposal:
Missing Data = “Poor” Condition
# Pavement Condition Thresholds

<table>
<thead>
<tr>
<th>Measure</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IRI</strong> (inches/mile)</td>
<td>&lt;95</td>
<td>95-170</td>
<td>&gt;170</td>
</tr>
<tr>
<td><strong>Cracking</strong> (%)</td>
<td>&lt;5</td>
<td>5-10</td>
<td>&gt;10</td>
</tr>
<tr>
<td><strong>Rutting</strong> (inches)</td>
<td>&lt;0.20</td>
<td>0.20-0.40</td>
<td>&gt;0.40</td>
</tr>
<tr>
<td><strong>Faulting</strong> (inches)</td>
<td>&lt;0.05</td>
<td>0.05-0.15</td>
<td>&gt;0.15</td>
</tr>
</tbody>
</table>

*Urbanized Population >1M

Subpart C (490.300s)
**Calculation of Pavement Measures (490.313)**

<table>
<thead>
<tr>
<th>Overall Section Condition Rating</th>
<th>3 metric ratings (IRI, cracking and rutting/faulting)</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>All three metrics rated “Good”</td>
<td>percentage of lane-miles in “Good” condition</td>
</tr>
<tr>
<td>Poor</td>
<td>&gt; 2 metrics rated “Poor”</td>
<td>percentage of lane-miles in “Poor” condition</td>
</tr>
</tbody>
</table>
Pavement Metric Rating Example

Example for an asphalt surfaced Interstate section located in a rural area

- IRI = 180 in/mile
  - G: <95; F: 95-170; P: >170
- Cracking = 7.0%
  - G: <5%; F: 5-10%; P: >10%
- Rutting = 0.3 in
  - G: <0.2”; F: 0.2” - 0.4”; P: >0.4”

1 Poor rating and 2 Fair ratings

Overall Section Rating = Fair
Minimum Condition and Penalties for Pavements
(490.315 and 490.317)

Minimum Condition Level: Percentage of lane-miles of Interstate System in Poor condition would not exceed 5.0%

FHWA is committed to reassessing the minimum condition level after completion of the first full performance period.

Penalty: If minimum not met for two consecutive years, State must obligate NHPP & transfer STP funds.
## NHS Bridge Condition Performance Measures (490.407)

<table>
<thead>
<tr>
<th>Bridge Condition Performance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of NHS Bridges Classified as in “Good” Condition</td>
</tr>
<tr>
<td>Percentage of NHS Bridges Classified as in “Poor” Condition</td>
</tr>
</tbody>
</table>
Data Sources and Components of a Bridge

<table>
<thead>
<tr>
<th>Bridge NBI Items</th>
<th>Culvert NBI Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 58-Deck</td>
<td>Item 62- Culverts</td>
</tr>
<tr>
<td>Item 59-Superstructure</td>
<td></td>
</tr>
<tr>
<td>Item 60-Substructure</td>
<td></td>
</tr>
</tbody>
</table>
# NBI Bridge Condition Rating Thresholds for NHS Bridges

**NBI Rating Scale**

<table>
<thead>
<tr>
<th>NBI Rating Scale</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bridge Components**

- **Deck** *(Item 58)*
  - Minimum Rating: 7
  - Range: 5 or 6
  - Maximum: 4

- **Superstructure** *(Item 59)*
  - Minimum Rating: 7
  - Range: 5 or 6
  - Maximum: 4

- **Substructure** *(Item 60)*
  - Minimum Rating: 7
  - Range: 5 or 6
  - Maximum: 4

- **Culvert** *(Item 62)*
  - Minimum Rating: 7
  - Range: 5 or 6
  - Maximum: 4
Calculating NHS Bridge Condition Performance Measures (490.409)

<table>
<thead>
<tr>
<th>Structure Type</th>
<th>Bridges</th>
<th>Culverts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Bridge Condition Rating</strong></td>
<td>3 metric classification (58-Deck, 59-Superstructure, 60-Substructure)</td>
<td>1 metric classification (62-Culverts)</td>
</tr>
<tr>
<td>Good</td>
<td>All metrics rated “Good”</td>
<td>Metric rated “Good”</td>
</tr>
<tr>
<td>Poor</td>
<td>Any metric rated “Poor”</td>
<td>Metric rated “Poor”</td>
</tr>
<tr>
<td>Fair</td>
<td>Minimum rated metric “Fair”</td>
<td>Metric rated “Fair”</td>
</tr>
</tbody>
</table>

Measures:
- percentage of deck area classified as in “Good” condition
- percentage of deck area classified as in “Poor” condition
Bridge Classification Example

Example for bridge

Overall Condition Classification = Poor
**Minimum Condition and Penalty for Structurally Deficient Bridges (490.411 and 490.413)**

Minimum condition level: \( \leq 10\% \) of total deck area of NHS bridges classified as Structurally Deficient

**Calculation:**

\[
100.0 \times \frac{\text{Total Deck Area of NHS Bridges Classified as Structurally Deficient}}{\text{Total Deck Area of NHS Bridges in a State}}
\]

**Penalty:** If for 3 consecutive years the minimum condition level is not met, State must set aside and obligate NHPP funds for eligible projects on bridges on the NHS
Establishment of Performance Targets
(490.105)

Who
• All States and MPOs establish targets

What
• Targets required for every measure

Where
• Entire network or area regardless of ownership

When
• 4 year performance period to align with biennial reports

Target Reporting: Report 2-year and 4-year targets
Establishment of Performance Targets

State Targets
- Establish 2- & 4-year targets
- Target adjustment of 4-year target allowed at the midpoint of performance period
- Only Statewide targets are required
- Optional additional urbanized/non-urbanized targets

MPO Targets
- Establish 4-year targets by either committing to support the State target or setting a quantifiable target*
- If State adjusts target, any MPO adjustments must occur within 180 days
- If MPO changes target, must be agreed upon by State and documented in Metropolitan Planning Agreement

*When applicable
Assessing Significant Progress Towards Achieving the Performance Targets for the NHPP (490.109)

Who
• FHWA determines if a State has made significant progress

What
• Make determination for each NHPP target

When
• Assess significant progress every 2 years*
  * This will be phased in for Interstate pavement condition, which will not be considered in the first mid-year assessment

Consequence: If a State has not made significant progress in two consecutive determinations, then the State will document in its next Biennial Performance Report actions the State will undertake to achieve the target related to the measure in which significant progress was not achieved.
Asset Management: Overview

- Asset management plans for pavements and bridges on the NHS required; States encouraged to include all infrastructure assets within the highway right-of-way as well as non-NHS roads.
- Recertification every four years; how certification review to be administered to be set forth in rulemaking.
- Webinars and regional calls focused on asset management have been held for the past two years or longer.
- Draft Asset Management Plans from a number of States can be found on the FHWA Asset Management website.
Minimum Content
§ 515.009 (d)

1) Asset management objectives
   • Align with the agency’s mission
   • Consistent with the purpose of asset management

2) Asset management measures and targets, relating to:
   • Condition of pavements on Interstate System
   • Condition of pavements on the NHS
   • Condition of bridges on the NHS

3) Summary listing of NHS pavement and bridges, sorted by:
   • Pavements on the Interstate System
   • Pavements on the NHS (excluding the Interstate)
   • Bridges on the NHS
Minimum Content / Required Processes
§ 515.007(a) and § 515.009 (d)

4) Performance gap identification
5) Life-cycle cost analysis
6) Risk management analysis, including the results of the periodic evaluations under § 515.019
7) Financial plan covering, at a minimum, a 10-year period
8) Investment strategies – § 515.009(f)
**Penalties, § 515.015**

If State DOT has not developed and implemented a TAMP consistent with the requirements of the AM final rule by:

<table>
<thead>
<tr>
<th>Deadline</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 months after the effective date of the pavement/bridge PM final rule (the TAMP must include the performance targets required in this rule).</td>
<td>• FHWA will <strong>not approve</strong> any further projects using NHPP funds</td>
</tr>
<tr>
<td></td>
<td>• FHWA <strong>may extend</strong> the 18-month period if FHWA determines that State DOT has made a good faith effort</td>
</tr>
<tr>
<td>Start of the 2nd fiscal year after the effective date of the AM final rule and each fiscal year after</td>
<td>• The maximum Federal share for NHPP projects shall be reduced to <strong>65 percent</strong> for that fiscal year</td>
</tr>
</tbody>
</table>
Resources

Transportation Performance Management

  - Recordings of all NPRM webinars

Asset Management

- FHWA Asset Management site: [http://www.fhwa.dot.gov/asset/plans.cfm](http://www.fhwa.dot.gov/asset/plans.cfm)
  - Examples of a number of State Asset Management Plans

For clarifying questions or more information, please contact:

Francine Shaw Whitson
[FSWhitson@dot.gov](mailto:FSWhitson@dot.gov)
[PerformanceMeasuresRulemaking@dot.gov](mailto:PerformanceMeasuresRulemaking@dot.gov)
Submit comments to:

www.regulations.gov

Pavement and Bridge PM NPRM Docket Number:

 FHWA-2013-0053

https://federalregister.gov/a/2014-30085

Asset Management NPRM Docket Number:

 FHWA-2013-0052

http://www.regulations.gov/#!docketDetail;D=FHW A-2013-0052
Thank you!

Infrastructure Condition Performance Measures
Notice of Proposed Rulemaking

Asset Management Plan
Notice of Proposed Rulemaking