Transportation Performance Management

*National Performance Management Measures: Pavement and Bridge Condition to Assess the National Highway Performance Program*

Nebraska Concrete Paving Workshop

January 17, 2017

**Agenda**

- Introduction
- Pavement Condition Assessment
- Bridge Condition Assessment
- Target Establishment and Reporting
- Resources

**Elements of the TPM Framework**

1. National Goals
2. Measures
3. Targets
4. Plans
5. Reports
6. Accountability and Transparency
PM Benefits

- Transform the Federal-aid Highway Program and provide a means to the most efficient investment of Federal funds
- Refocus on national transportation goals
- Increase accountability and transparency
- Improve decision-making

National Transportation Goals

1. Safety
2. Infrastructure Condition
3. Congestion Reduction
4. System Reliability
5. Freight Movement and Economic Vitality
6. Environmental Sustainability
7. Reduce Project Delivery Delays

Rulemaking Dates

- Safety Performance/HSIP: States report 1st targets by August 31 for CY18; MPOs 180 days later
- Asset Management: 1st plan due April 30, 2018
- Pavement, Bridge and System Performance Measures: Baseline Period Report due October 1, 2018

New 23 CFR Part 490

- **Subpart A**: General Information (Target Establishment; Reporting; NHPP and NHFP Significant Progress Determination)
- **Subpart B**: Highway Safety Improvement Program (HSIP) Measures
- **Subpart C**: Pavement Condition Measures
New 23 CFR Part 490
• Subpart D: Bridge Condition Measures
• Subpart E: System Performance Measures
• Subpart F: Freight Movement Measures
• Subpart G: CMAQ Program Measures—Traffic Congestion
• Subpart H: CMAQ Program Measures—On-Road Mobile Source Emissions

§ 490.307 Performance Measures

<table>
<thead>
<tr>
<th>Interstate System</th>
<th>Non-Interstate NHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Good condition</td>
<td>% Good condition</td>
</tr>
<tr>
<td>% Poor condition</td>
<td>% Poor condition</td>
</tr>
</tbody>
</table>

What Stayed the Same?
• Performance measures
• Applicability and definitions
• Data Quality Management System
• Data Sources
What Changed?

- Data requirements and missing data
- Minimum condition requirements
- Pavement condition thresholds
- Data collection options for low speed routes
- HPMS data collection and submittal requirements

§ 490.309 Data Requirements: Interstate

<table>
<thead>
<tr>
<th>NPRM</th>
<th>Final Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRI, Cracking %, Rutting, Faulting</td>
<td>IRI, Cracking %, Rutting, Faulting</td>
</tr>
<tr>
<td>Missing, invalid, unresolved data = Poor</td>
<td>Missing, invalid, unresolved data ≤5%</td>
</tr>
<tr>
<td>Two directions</td>
<td>One direction</td>
</tr>
<tr>
<td>Annual</td>
<td>Annual</td>
</tr>
</tbody>
</table>

§ 490.309 Data Requirements: Non-Interstate NHS

<table>
<thead>
<tr>
<th>NPRM</th>
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<tbody>
<tr>
<td>IRI, Cracking %, Rutting, Faulting</td>
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</tr>
<tr>
<td>Missing, invalid, unresolved data = Poor</td>
<td>Missing, invalid, unresolved data: ≤5%</td>
</tr>
<tr>
<td>One direction</td>
<td>One direction</td>
</tr>
<tr>
<td>Biennial</td>
<td>Biennial</td>
</tr>
</tbody>
</table>

§ 490.315 Minimum Interstate Condition Requirements, Penalties

<table>
<thead>
<tr>
<th>NPRM</th>
<th>Final Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor condition: &lt;5%</td>
<td>Poor condition or missing, invalid, unresolved data: &lt;5% (Alaska 10%)</td>
</tr>
<tr>
<td>Penalties if not met for 2 consecutive determinations</td>
<td>Apply in any year minimum condition not met</td>
</tr>
</tbody>
</table>
§ 490.311, 313 Thresholds/Data Collection Options

<table>
<thead>
<tr>
<th></th>
<th>NPRM</th>
<th>Final Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSR</td>
<td>NA</td>
<td>Routes posted &lt;40mph</td>
</tr>
<tr>
<td>IRI</td>
<td>Poor: 220 in/mi urbanized areas; 170 in/mi most roads</td>
<td>Poor: 170 in/mi for all roads</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thresholds/Data Collection Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NPRM</strong></td>
</tr>
<tr>
<td>Cracking</td>
</tr>
<tr>
<td>Faulting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>§ 490.311 Final Interstate Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair: CRCP: 5-10% Jointed PCC: 5-15% Asphalt: 5-20%</td>
</tr>
<tr>
<td>Poor: CRCP: &gt;10% Jointed PCC: &gt;15% Asphalt: &gt;20%</td>
</tr>
<tr>
<td>Cracking (%)</td>
</tr>
<tr>
<td>Faulting (inches)</td>
</tr>
<tr>
<td>Rutting (inches)</td>
</tr>
<tr>
<td>PSR only on routes posted &lt;40 mph!!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Collection and Submittal Requirements: Interstate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Due</strong></td>
</tr>
<tr>
<td>Frequency</td>
</tr>
<tr>
<td>IRI</td>
</tr>
<tr>
<td>IRI</td>
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</tbody>
</table>

*Data collection begins in 2018
Data Collection and Submittal Requirements: Interstate

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Final Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cracking %,</strong> Rutting, Faulting</td>
<td>June 15</td>
<td>April 15</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>2 years</td>
<td>1 year</td>
</tr>
<tr>
<td><strong>Coverage</strong></td>
<td>Samples</td>
<td>Full Extent*</td>
</tr>
<tr>
<td></td>
<td>1 Lane</td>
<td>1 Lane</td>
</tr>
<tr>
<td></td>
<td>1 Direction</td>
<td>1+ Directions</td>
</tr>
</tbody>
</table>

*Data collections begin in 2018

§ 490.309 Collection/Submittal Requirements: Non-Interstate NHS

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Final Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IRI</strong></td>
<td>June 15</td>
<td>June 15</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>1 year</td>
<td>2 years*</td>
</tr>
<tr>
<td><strong>Coverage</strong></td>
<td>Full Extent</td>
<td>Full Extent*</td>
</tr>
<tr>
<td></td>
<td>1 Lane</td>
<td>1 Lane</td>
</tr>
<tr>
<td></td>
<td>1 Direction</td>
<td>1 Direction</td>
</tr>
</tbody>
</table>

*Data submittal occurs annually

In Summary
- **June 15, 2018**: IRI data for Interstate and non-Interstate NHS due
- **2019**: Interstate IRI, Rutting, Cracking, Faulting due **April 15**, and each April 15 thereafter; non-Interstate NHS IRI due **June 15**
- **June 15, 2020**: Non-Interstate IRI due
- **June 15, 2021**, and each June 15 thereafter: non-Interstate IRI, Rutting, Cracking, Faulting due
Assessing Bridge Condition

Background

• MAP-21 legislation as incorporated in 23 U.S.C. 150
  o the US Secretary of Transportation shall establish performance measures for carrying out the National Highway Performance Program (NHPP) and for State DOTs and MPOs to use in assessing the condition of bridges carrying the NHS

Classifications and Measures

• Three classifications by deck area:
  o % in Good condition
  o % in Fair condition
  o % in Poor condition
• Performance measures by deck area:
  o % in Good condition
  o % in Poor condition

Background

Applies to bridges carrying the NHS
  • under the jurisdiction of and maintained by a public authority and open to public travel
  • includes bridges connecting on- and off-ramps
  • Includes bridges crossing State borders
Classifications

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
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<tbody>
<tr>
<td>9</td>
<td>Excellent</td>
</tr>
<tr>
<td>8</td>
<td>Very Good</td>
</tr>
<tr>
<td>7</td>
<td>Good</td>
</tr>
<tr>
<td>6</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>5</td>
<td>Fair</td>
</tr>
<tr>
<td>4</td>
<td>Poor</td>
</tr>
<tr>
<td>3</td>
<td>Serious</td>
</tr>
<tr>
<td>2</td>
<td>Critical</td>
</tr>
<tr>
<td>1</td>
<td>“Imminent” Failure</td>
</tr>
<tr>
<td>0</td>
<td>Failed</td>
</tr>
</tbody>
</table>

Classifications and Measures

- Minimum condition rating method
  - The lowest rating of Deck, Superstructure, and Substructure determines classification
  - Culvert rating determines culvert classification

- Bridge classification...
  - Good when lowest rating is 7, 8, or 9
  - Fair when lowest rating is 5 or 6
  - Poor when lowest rating is 0, 1, 2, 3, or 4

Calculation

- Percent deck area Good = total deck area of Good bridges divided by total deck area of all bridges. Precision is 0.1%

\[
\frac{\sum_{g=1}^{GOOD} \text{[Length} \times \text{Width}]_{\text{Bridge } g}}{100} \times \frac{\sum_{s=1}^{TOTAL} \text{[Length} \times \text{Width}]_{\text{Bridge } s}}
\]

- Percent poor calculated similarly

§ 490.411 Minimum Condition and § 490.413 Penalty Provision

- Minimum condition level: ≤ 10% of total deck area of NHS bridges classified as Structurally Deficient
- Penalty: If minimum condition level not met for 3 consecutive years, State must obligate and set aside NHPP funds for eligible projects on NHS bridges
In Summary

• Condition-based performance measures and minimum condition level requirements

• Measures to be used for NHS asset management investment strategy decision support and reporting

§ 490.107 Initial State Performance Report

Thank you!

§ 490.105 Establishing Targets

- Establish 2-year and 4-year targets
- May adjust 4-year target at 2-year mid-point
- May include additional urbanized/non-urbanized targets
§ 490.105 Establishing Targets

- Commit to support State DOT 4-year target or establish quantifiable target
- Action within 180 days of State DOT target setting
- If State DOT adjusts target, any MPO adjustments must occur within 180 days

MPOs

§ 490.107 Target Reporting

State DOT:
- **Baseline Report:**
  - Baseline condition/performance
  - 2- and 4-year targets
- **Mid Period Report:**
  - 2-year condition/performance
  - Adjusted 4-year targets, etc.
- **Full Period Report:**
  - 4-year condition/performance;
  - Discussion of plans and programs

§ 490.107 & § 490.109: Phase-In Requirement for Interstate Pavement Condition Measure Reporting

- **First Baseline Report** (due October 1, 2018)
  - State DOTs establish and report their 4-year targets.
  - State DOTs are not required to report baseline condition/performance, nor 2-year targets
- **First Mid Period Report** (due October 1, 2020)
  - State DOTs report the 2-year condition/performance as the baseline condition/performance
  - State DOTs may adjust their 4-year targets.

Significant Progress Determination

- 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

Biennial Reporting

1st Performance Period Due Dates
- Oct. 1, 2018: Baseline report
- Oct. 1, 2020: Mid-performance progress report
- Oct. 1, 2022: Full period progress report

2nd Performance Period Due Dates
- Oct. 1, 2022: Baseline report
- Oct. 1, 2024: Mid-performance progress report
- Oct. 1, 2026: Full period progress report
Resources

- **Your Role and Reporting Requirements**
  - Role of State DOTs and MPOs in implementing Final Rules
    - Coordination with other agencies
    - Data collection and submittal
    - Coordinated target establishment
    - Asking questions of FHWA when you don’t understand a provision in the final rule.

- **Final Rule -- Public Webinars**
  - Pavement and Bridge Condition Performance
    - 1/25/2017 at 1:00-2:30 pm CST
  - System Performance/Freight/CMAQ
    - 1/26/2017 at 1:00-2:30 pm CST

- **Resources**
    - Links to final rules
    - Webinars, fact sheets, FAQs, and other resources
  - Training courses
Questions?