



NHS Performance Metrics: MAP-21 Transportation Performance Management

**Assessing Pavement and Bridge Condition for
the National Highway Performance Program**

May 20, 2015
Russ Dudley
VDOT - Local Assistance Division

May 20, 2015
Todd Halacy
VDOT - Local Assistance Division

National Highway System (NHS)

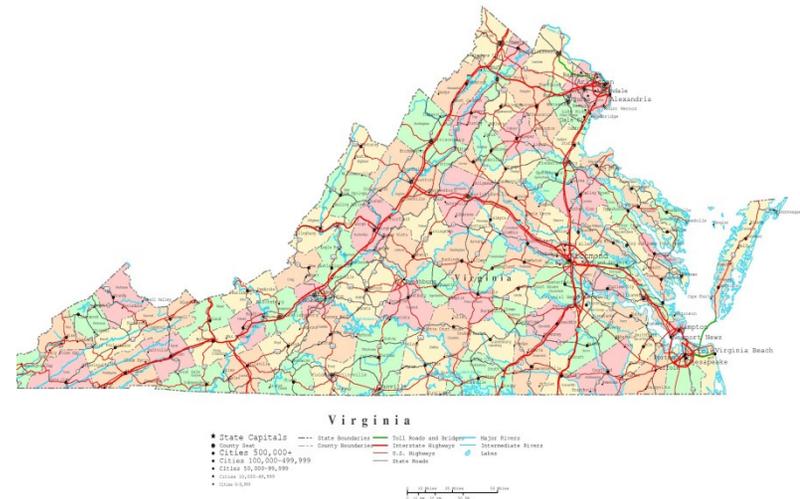
- Expanded by MAP-21
 - Interstate System and Other Principle Arterials
 - Intermodal Connectors
- Facts
 - 223,000 miles
 - 771,000 lane-miles
 - 88% State owned miles
 - 143, 165 bridges
 - 94% State owned bridges
 - 5.4% US mileage
 - 58.0% total travel



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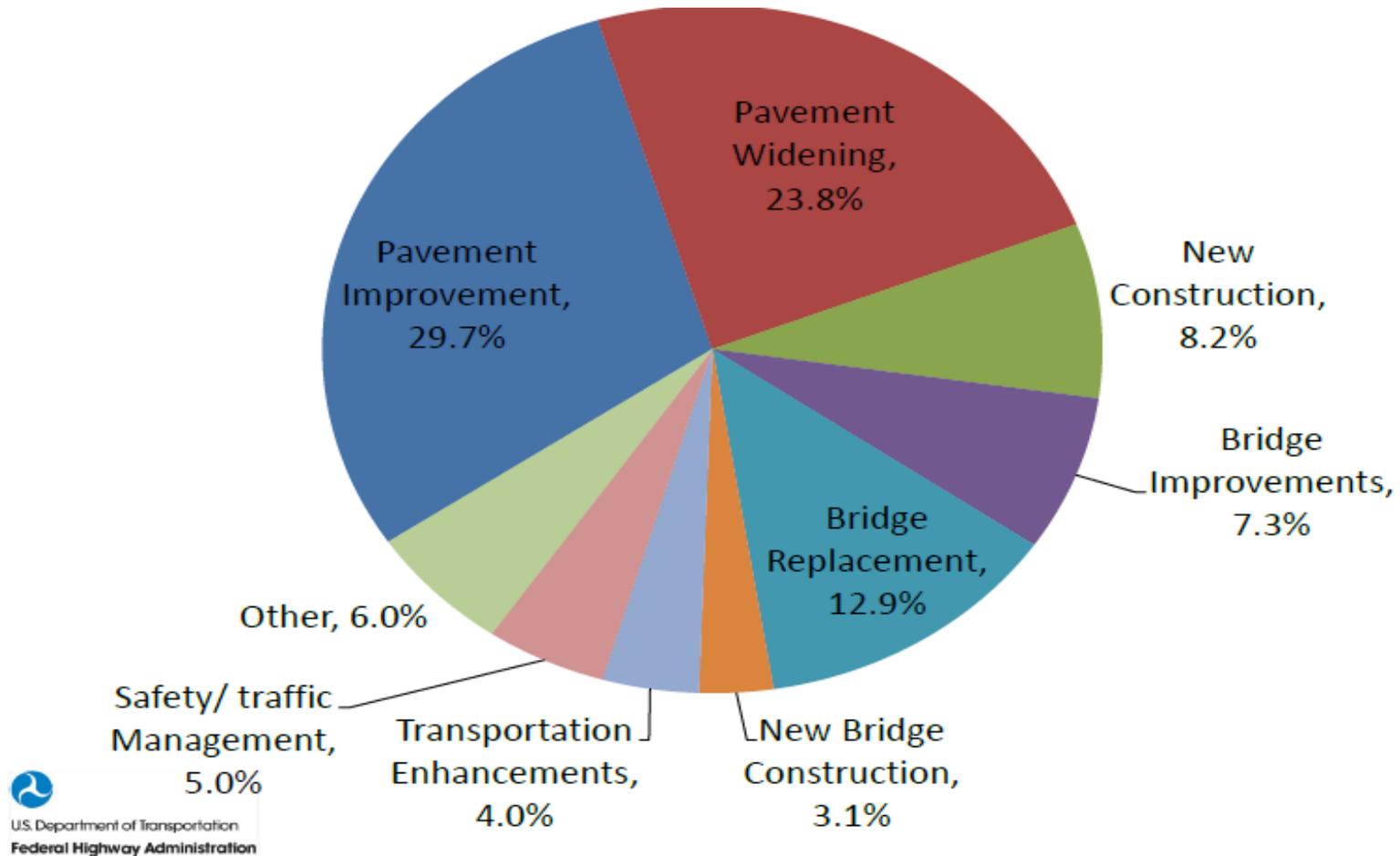
NHS Routes in Virginia

- Approximately 4,700 miles NHS
(Total miles not yet approved by FHWA)
- Added 900 - 1,000 from Map-21
(Number not yet approved by FHWA)
- Large % Locally Maintained
- VDOT will provide maps of NHS routes to localities



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2014 NHS Improvement Types by Federal Funding



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Importance of Preservation and Improvement of the NHS

- Preserving and improving the NHS' pavements and bridges through a risk based asset management approach keeps America's infrastructure safer, increases mobility, improves the U.S. economy and improves U.S. competitiveness in world trade
- The implementation of MAP-21 performance measures will focus federal transportation investments on the NHS leading to improved bridge and pavement conditions

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National Highway Performance Program Measure Areas

- **Proposed in this Rulemaking**
 - Pavement Condition
 - Interstate
 - Non-Interstate National Highway System
 - Bridge Condition
 - National Highway System
- **Proposed in next Performance Measure Rulemaking**
 - System Performance
 - Interstate
 - Non-Interstate National Highway System

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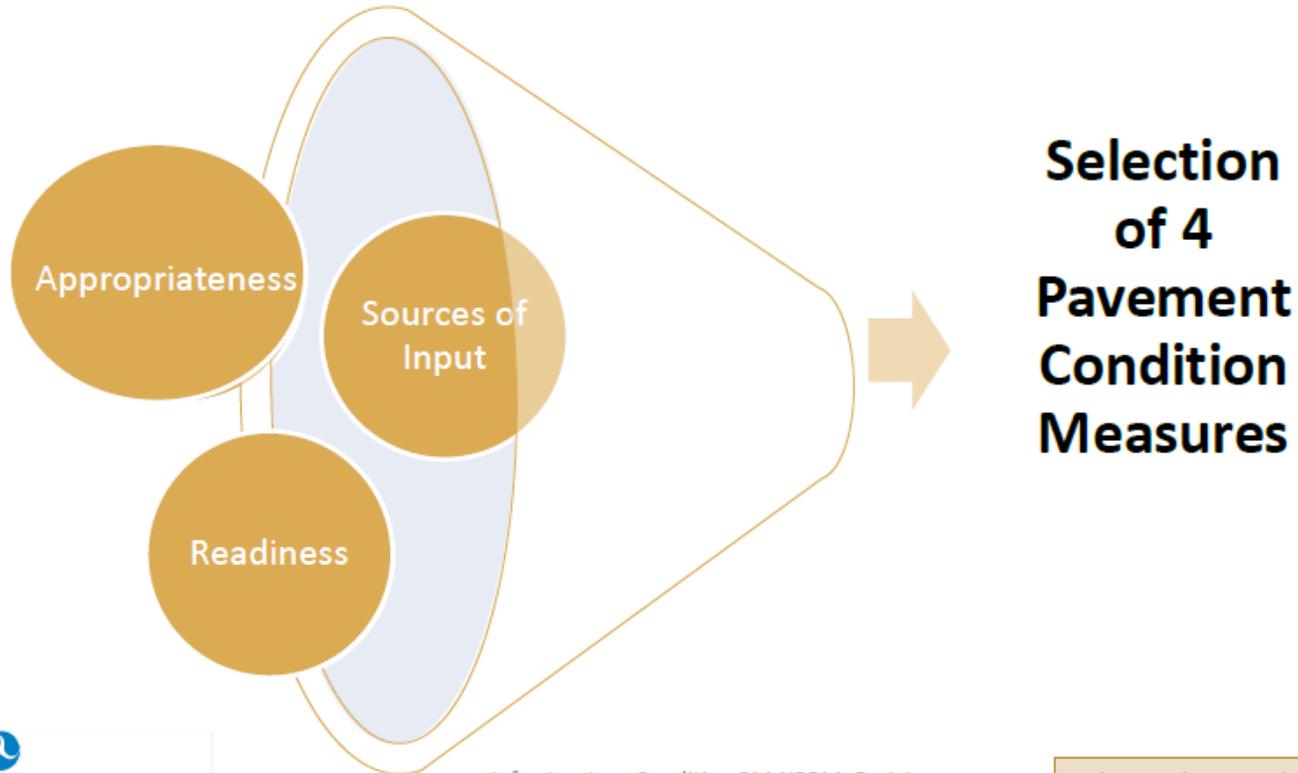
Why is this important to you?

- Map 21 requires performance measures for the entire NHS system
- FHWA will make no distinction between Local and State maintained
- VDOT will be responsible for reporting to the FHWA
- All States will be reporting using the same format
- If targets are not met, the FHWA can redirect federal funding to areas they determine as necessary
- There are additional penalties
- Nationwide reporting could be used to rank performance of individual states
- VDOT is proposing to modify the Weldon Cooper Survey to account for the costs associated with NHS routes

National Performance Management Measures for Assessing Pavement Condition

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Pavement Condition Performance Measures – Selection Process



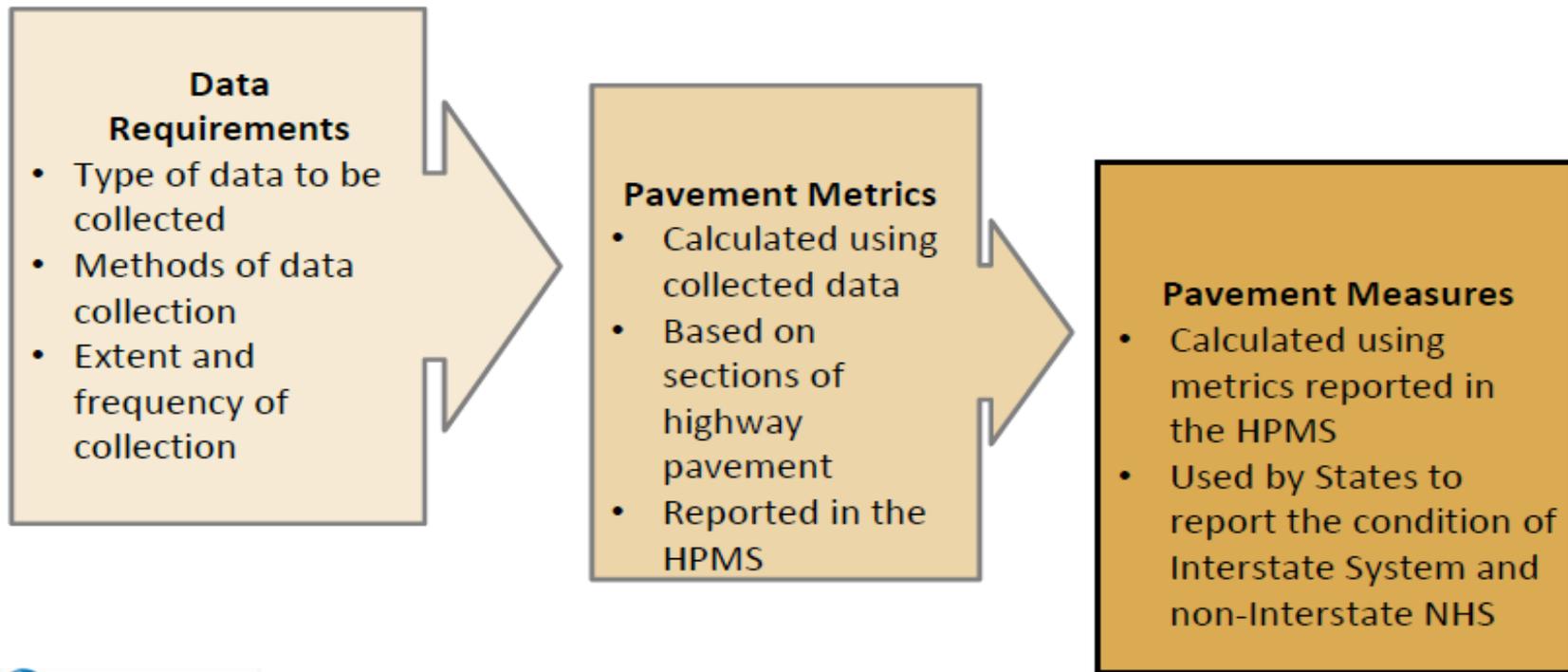
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National Performance Management Measures for Assessing Pavement Condition (490.307)

Pavement Condition Measures	
Interstate System	Non-Interstate NHS System
Percentage of pavements in "Good" condition	Percentage of pavements in "Good" condition
Percentage of pavements in "Poor" condition	Percentage of pavements in "Poor" condition

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Relationship between Data Requirements, Pavement Metrics, and Performance Measures



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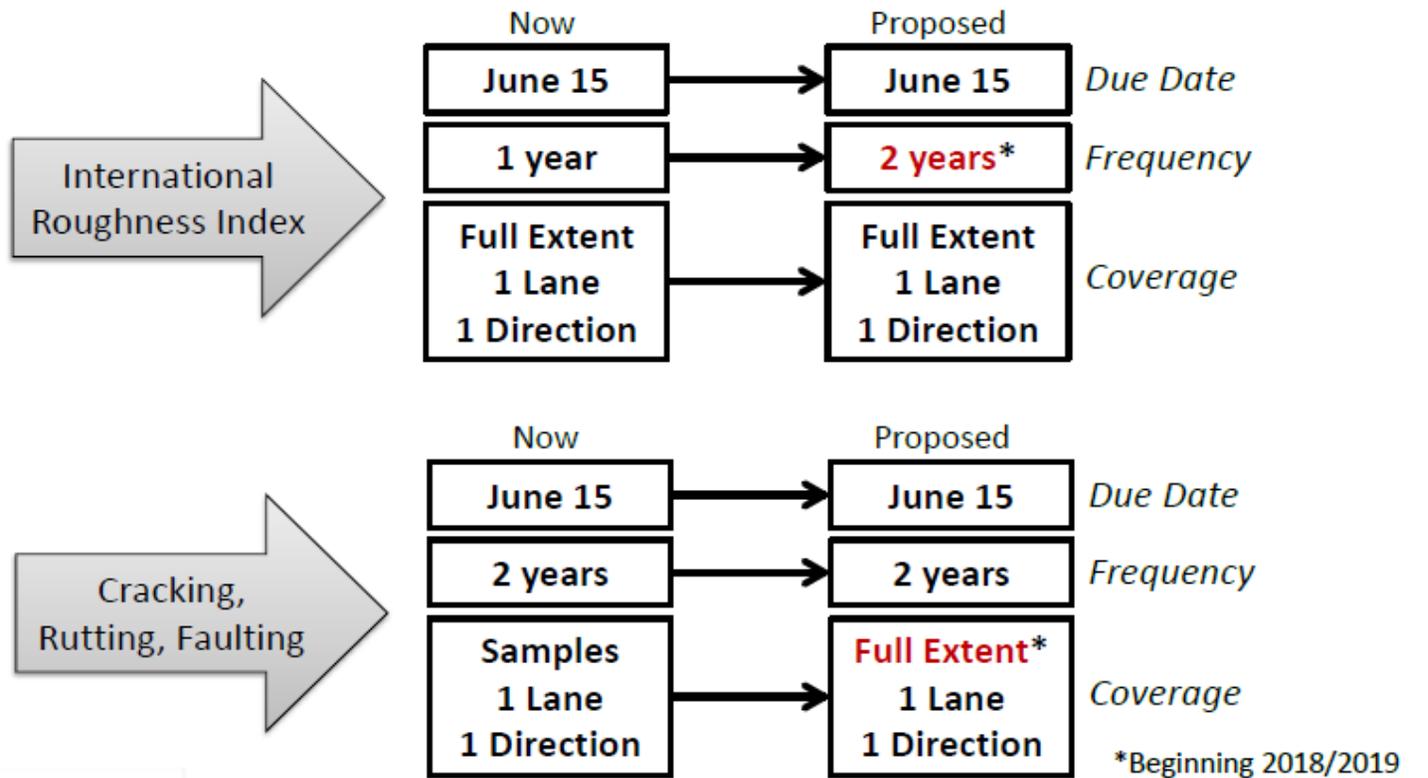
Highway Performance Management System (HPMS)

- National Program that includes inventory information for all of the Nation's public road mileage
- Federal government source data on the extent, condition, performance, use, and operating characteristics of the nation's highways
- States' Governor certifies to FHWA on an annual basis
- Data includes; length, lane-miles, and vehicle miles traveled
- Used in the apportionment of Federal-aid highway funds
- Covers the NHS in greater detail

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HPMS Data Collection and Reporting Requirements (490.309)

Non-Interstate NHS Pavements



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Pavement Condition Thresholds

	Good	Fair	Poor
IRI <i>(inches/mile)</i>	<95	95-170 95-220*	>170 >220*
Cracking <i>(%)</i>	<5	5-10	>10
Rutting <i>(inches)</i>	<0.20	0.20-0.40	>0.40
Faulting <i>(inches)</i>	<0.05	0.05-0.15	>0.15

*Population >1M

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Calculation of Pavement Measures (490.313)

Overall Section Condition Rating	3 metric ratings (IRI, cracking and rutting/faulting)	Measures
Good	All three metrics rated "Good"	percentage of lane-miles in "Good" condition
Poor	≥ 2 metrics rated "Poor"	percentage of lane-miles in "Poor" condition

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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



**National Performance Management
Measures for Assessing Bridge
Condition**

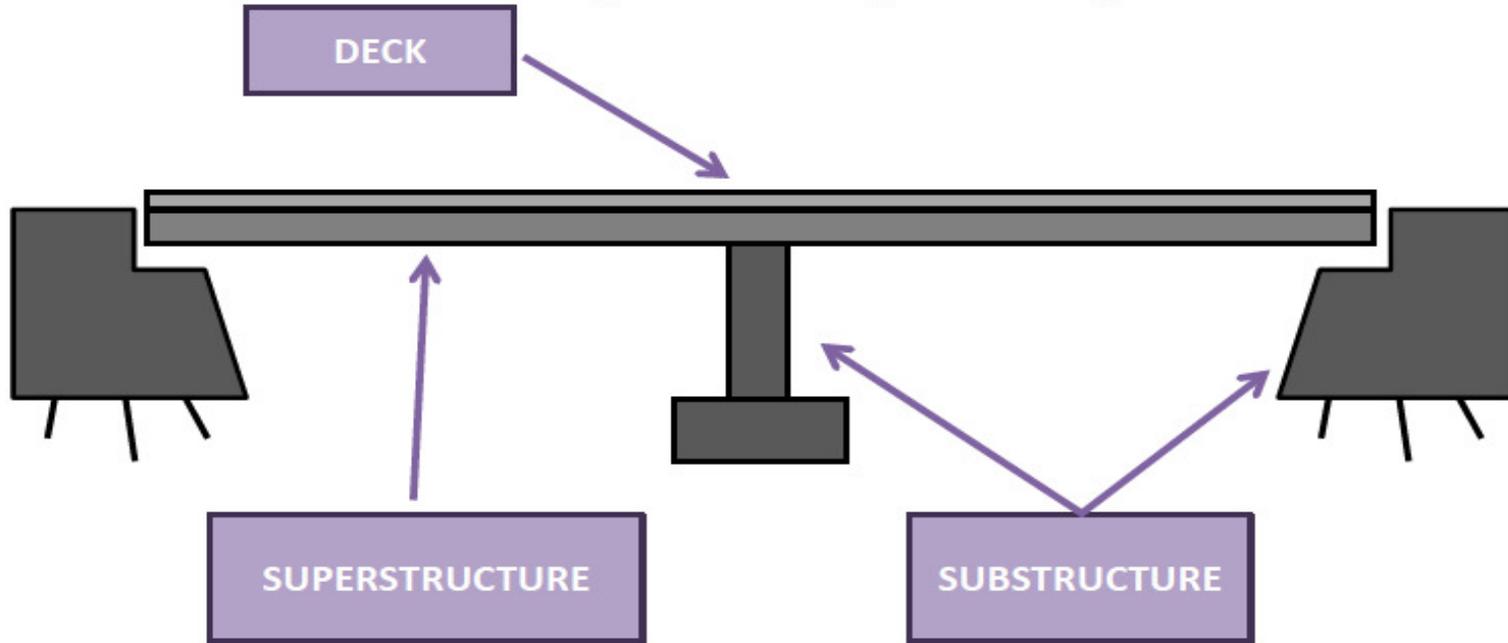
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NHS Bridge Condition Performance Measures (490.407)

Bridge Condition Performance Measures
Percentage of NHS Bridges Classified as in "Good" Condition
Percentage of NHS Bridges Classified as in "Poor" Condition

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Data Sources and Components of a Bridge



Bridge NBI Items		
Item 58- Deck	Item 59- Superstructure	Item 60- Substructure

Culvert NBI Item
Item 62- Culverts

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NBI Bridge Condition Rating Thresholds for NHS Bridges

NBI Rating Scale <i>(from 0 – 9)</i>		9 8 7	6 5	4 3 2 1 0
		Good	Fair	Poor
Bridge	Deck <i>(Item 58)</i>	≥ 7	5 or 6	≤ 4
	Superstructure <i>(Item 59)</i>	≥ 7	5 or 6	≤ 4
	Substructure <i>(Item 60)</i>	≥ 7	5 or 6	≤ 4
	Culvert <i>(Item 62)</i>	≥ 7	5 or 6	≤ 4



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Calculating NHS Bridge Condition Performance Measures (490.409)

Overall Bridge Condition Rating	Structure Type		Measures
	Bridges	Culverts	
	3 metric classification (58-Deck, 59-Superstructure, 60-Substructure)	1 metric classification (62-Culverts)	
Good	All metrics rated "Good"	Metric rated "Good"	percentage of deck area classified as in "Good" condition
Poor	Any metric rated "Poor"	Metric rated "Poor"	percentage of deck area classified as in "Poor" condition
Fair	Minimum rated metric "Fair"	Metric rated "Fair"	

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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

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**Target
Establishment/Reporting/NHPP
Significant Progress**

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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



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Establishment of Performance Targets

State Targets

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

MPO Targets

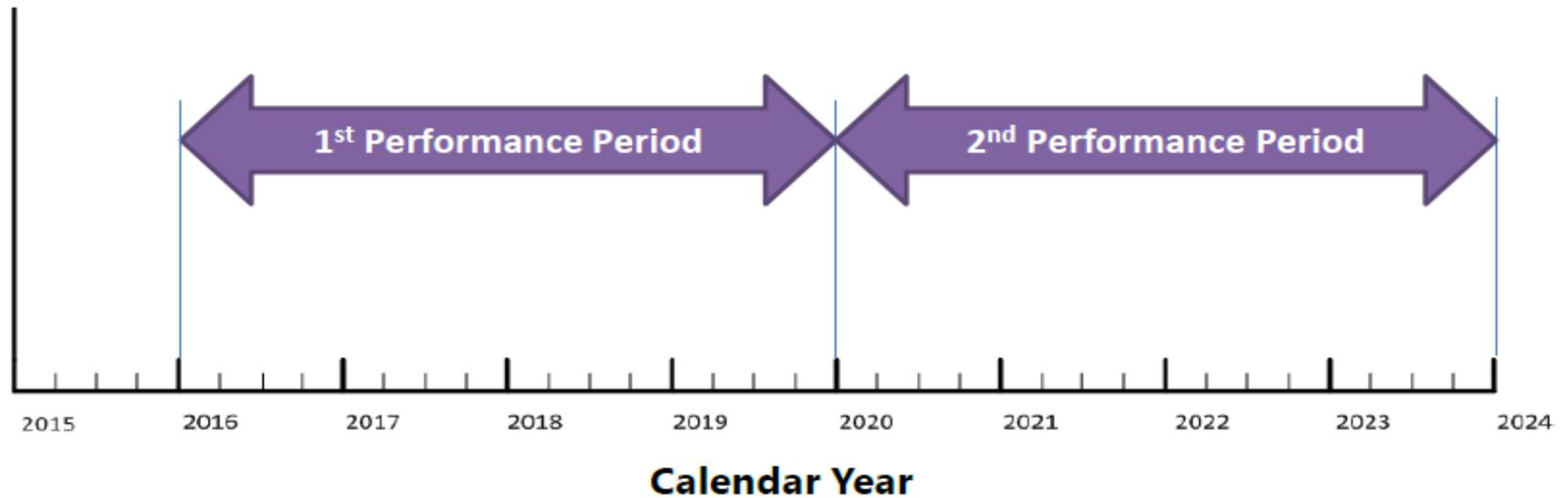
- Establish 4-year targets by either committing to support the State target or setting a quantifiable target*
- If State adjusts target, any MPO adjustments must occur within 180 days
- If MPO changes target, must be agreed upon by State and documented in Metropolitan Planning Agreement

*When applicable



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Performance Periods



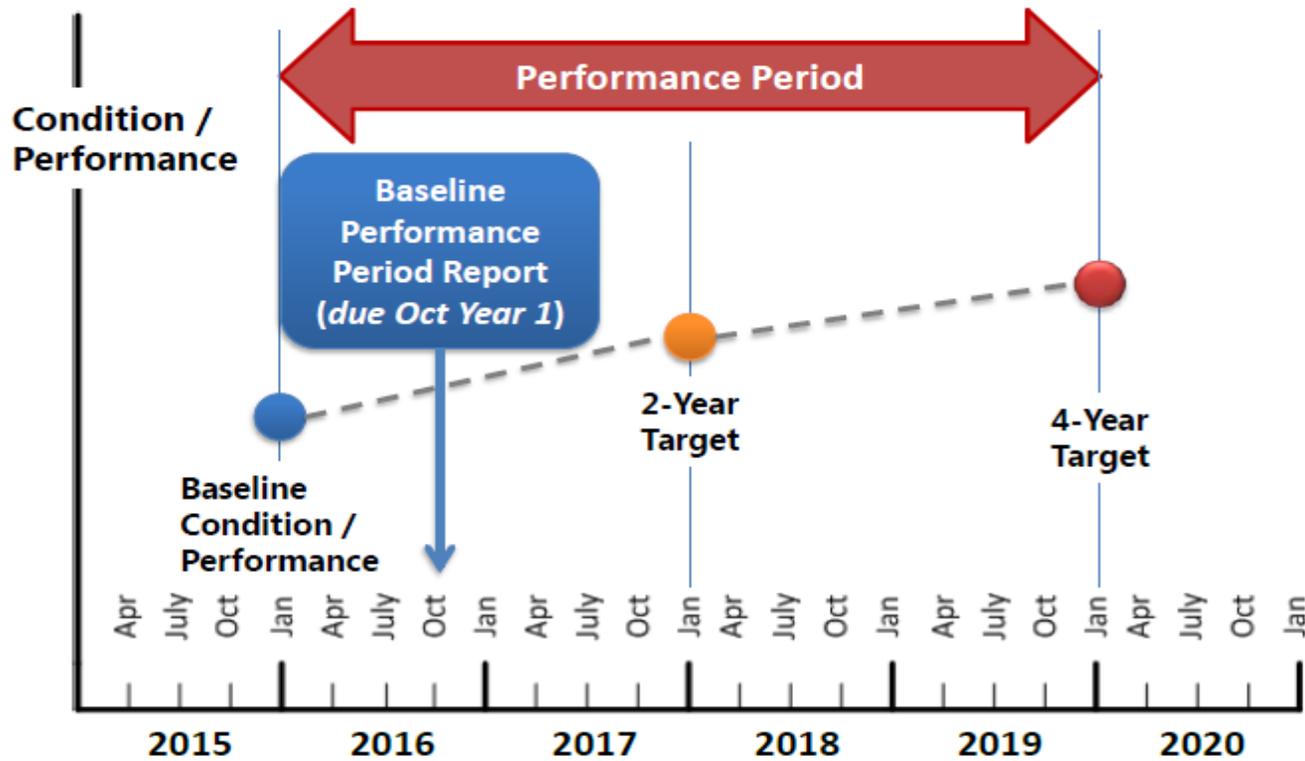
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State Reporting on Performance Targets (490.107)

Baseline Performance Period Report	Mid Performance Period Progress Report	Full Performance Period Progress Report
<ul style="list-style-type: none"> • 2-year and 4-year targets • Baseline condition/performance • Urbanized area boundaries and population data • NHS limits • Relationship with other performance expectations 	<ul style="list-style-type: none"> • 2-year condition/performance • Investment strategy effectiveness • Progress discussion • Target adjustment (optional)* • Extenuating circumstances* • Target achievement discussion* <div style="background-color: #4a7ebb; color: white; padding: 5px; text-align: center;"> *Only include when applicable </div>	<ul style="list-style-type: none"> • Same content as Mid Performance Period Progress Report, but reporting on 4-year targets

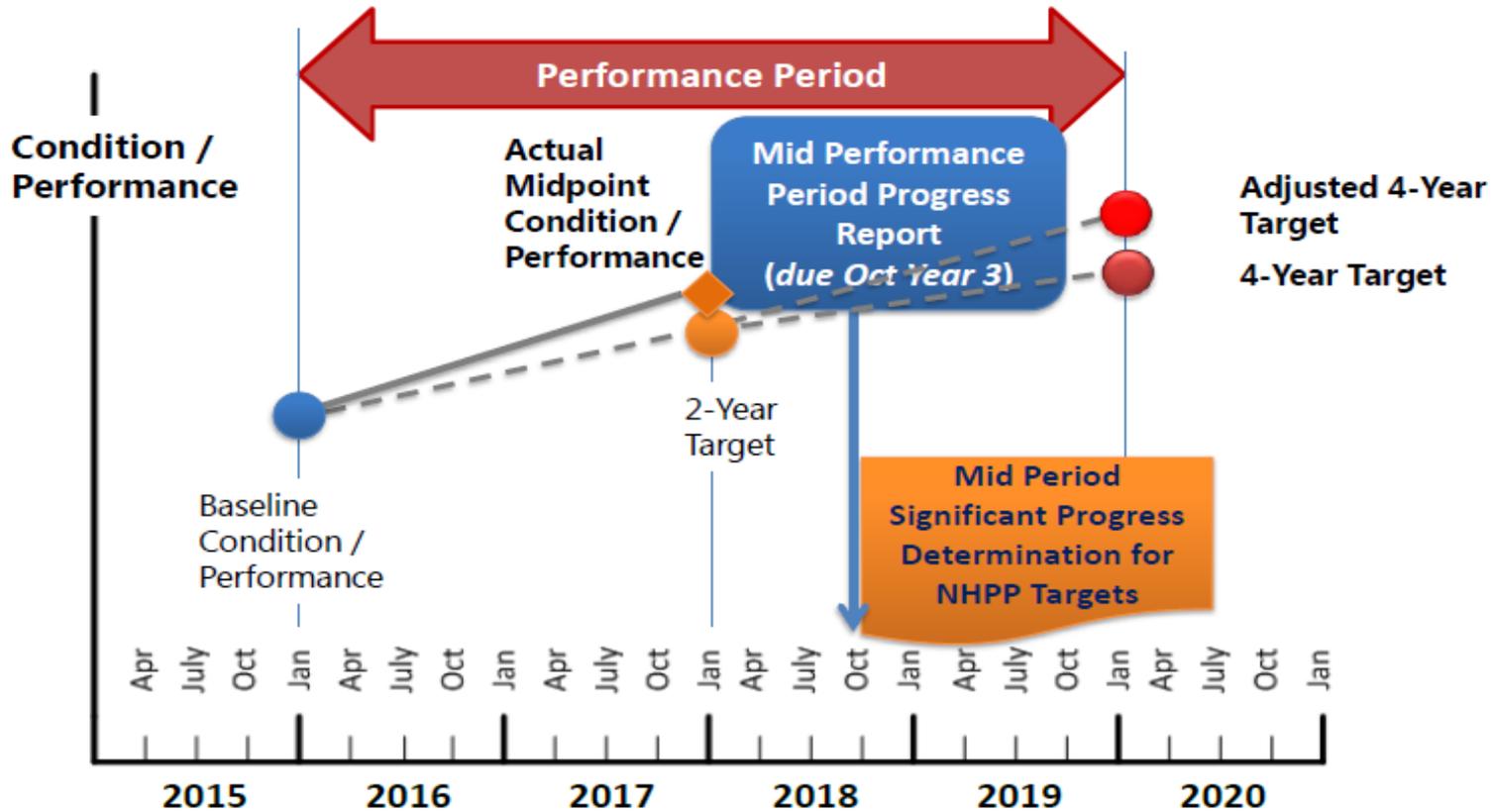
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Targets and Target Reporting



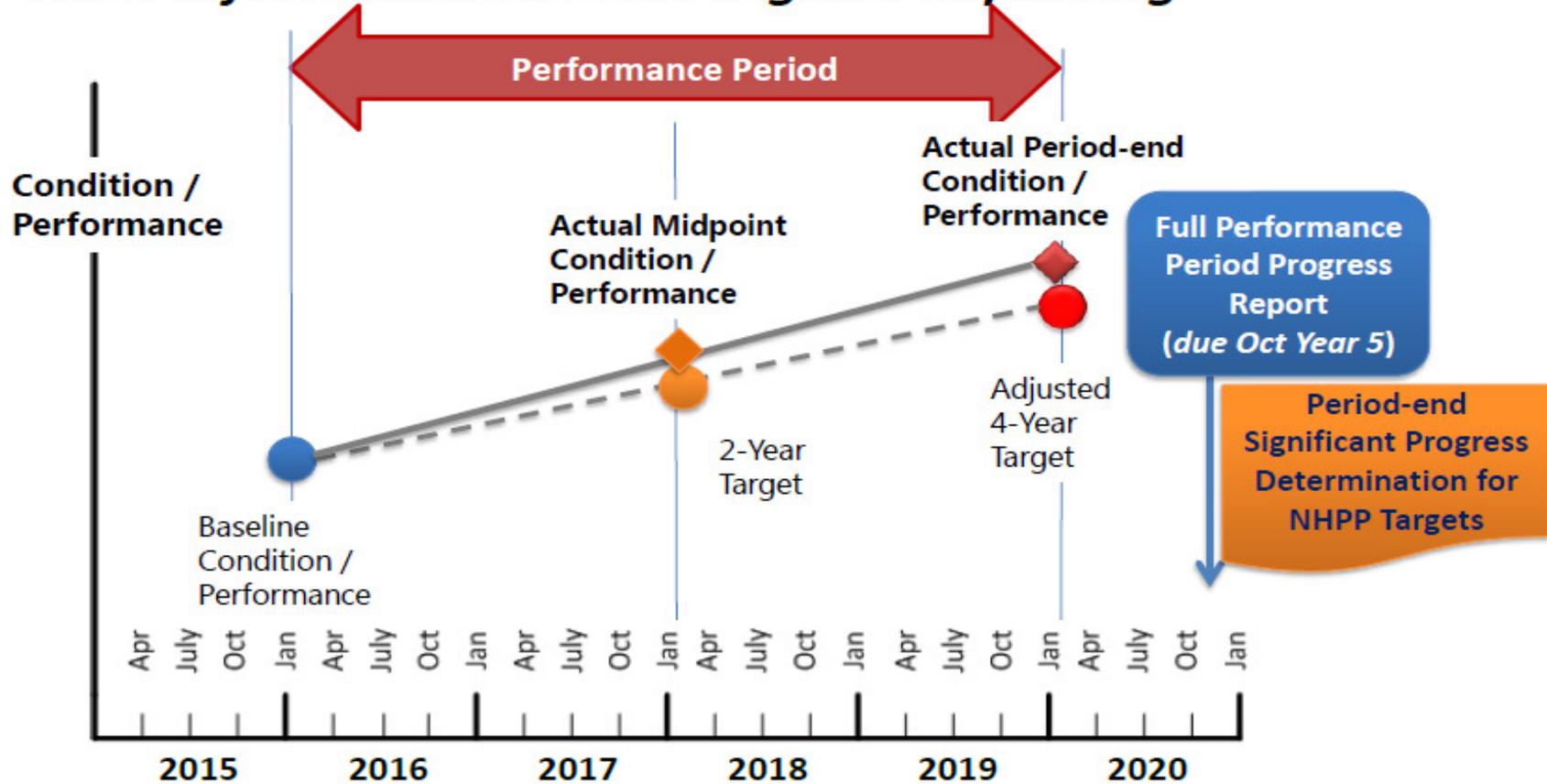
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Mid Performance Period Progress Reporting



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Full Performance Period Progress Reporting



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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

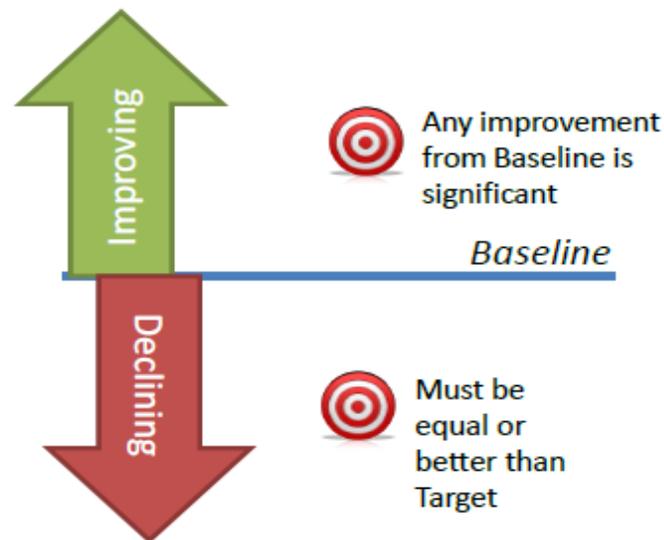
When

- 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

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Determining Significant Progress Toward the Achievement of NHPP Performance Targets



- Actual meet target?
- If not, actual better than baseline?

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FHWA > Transportation Performance Management

MAP-21 Putting Performance into Action

MAP-21 Putting Performance into Action
 The U.S. Department of Transportation (USDOT) is implementing the new MAP-21 performance requirements through ten rulemakings released in several phases. (.pdf, 0.3 mb)

- 
MAP-21 Putting Performance into Action
- 
Notice of Proposed Rulemaking (NPRM)
- 
DVRPC Utilizing Investment Scenarios
- 
TPM Digest

TPM and MAP-21

- [What is TPM?](#)
- [National Goals](#)
- [MAP-21 Performance Requirements Summary](#)
- [MAP-21 Putting Performance into Action](#) (.pdf, 1.3 mb)
- [Implementation Schedule](#)
- [Notices of Proposed Rulemaking](#)

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- [Rulemaking Stakeholder Engagement](#)
- [Readiness Stakeholder Engagement](#)
- [Reporting](#)
- [TPM Community of Practice](#)

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- [Data Palooza Session Recordings \(May 9, 2013\)](#)
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Questions and Answers



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