

FHWA SCOM 2015 Update

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Objectives

- ▶ **MAP-21 and Preservation and Maintenance**
 - ▶ Preservation and Maintenance Eligibility
 - ▶ Asset Management
 - ▶ Performance Management
- ▶ **What is FHWA doing with Maintenance**
 - ▶ Program
 - ▶ Research
 - ▶ Training



MAP-21 and Preservation A

▶ **Sec. 119. National highway performance program**

(2) for 1 or more of the following purposes:

(A) Construction, reconstruction, resurfacing, restoration, rehabilitation, **preservation**, or operational improvement of segments of the National Highway System.

(B) Construction, replacement (including replacement with fill material), rehabilitation, **preservation**, and protection (including scour countermeasures, seismic retrofits, impact protection measures, security countermeasures, and protection against extreme events) of bridges on the National Highway System.

(C) Construction, replacement (including replacement with fill material), rehabilitation, **preservation**, and protection (including impact protection measures, security countermeasures, and protection against extreme events) of tunnels on the National Highway System.



MAP-21 and Preservation B

▶ **Sec. 133. Surface transportation program**

(1) Construction, reconstruction, rehabilitation, resurfacing, restoration, **preservation**, or operational improvements for highways, including construction of designated routes of the Appalachian development highway system and local access roads under section 14501 of title 40.

(2) Replacement (including replacement with fill material), rehabilitation, **preservation**, protection (including painting, scour countermeasures, seismic retrofits, impact protection measures, security countermeasures, and protection against extreme events) and application of calcium magnesium acetate, sodium acetate/formate, or other environmentally acceptable, minimally corrosive anti-icing and deicing compositions for bridges (and approaches to bridges and other elevated structures) and tunnels on public roads of all functional classifications, including any such construction or reconstruction necessary to accommodate other transportation modes.



MAP-21 and Maintenance

▶ **Sec. 116. Maintenance**

(b) It shall be the duty of the State transportation department or other direct recipient to maintain, or cause to be maintained, any project constructed under the provisions of this chapter or constructed under the provisions of prior Acts.

(e) Preventive Maintenance. - A preventive maintenance activity shall be eligible for Federal assistance under this title if the State demonstrates to the satisfaction of the Secretary that the activity is a cost-effective means of extending the useful life of a Federal-aid highway.



What is Asset Management?

- ▶ It is a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, **preservation**, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the lifecycle of the assets at minimum practicable cost. (23 U.S.C. 101(a)(2), MAP-21 § 1103)



Does MAP-21 Require Asset Management

- ▶ Each State is required to develop a risk-based asset management plan for the National Highway System (NHS) to improve or **preserve** the condition of the assets and the performance of the system. (23 U.S.C. 119(e)(1), MAP-21 § 1106)
- ▶ Contact info: Stephen.Gaj@dot.gov 202-366-1336
- ▶ FAQ on Website for more info:
 - ▶ www.fhwa.dot.gov/map21/qandas/qaassetmgmt.cfm
- ▶ Comments
 - ▶ <https://federalregister.gov/a/2015-03167>



The MAP-21 Charge

(23 USC 150(a) - Declaration of Policy)

Performance Management

Will:

- transform the Federal-aid highway program
- provide a means to the most efficient investment of funds

By:

- refocusing on national transportation goals,
 - increasing accountability & transparency, and
 - improving project decision making
-
- 

MAP-21 FHWA TPM Rulemaking Schedule

Performance Area	NPRM	Comments due	Anticipated Final Rule
Safety Performance Measures	March 11, 2014	<u>Closed</u> June 30, 2014	September 2015
Highway Safety Improvement Program	March 28, 2014	<u>Closed</u> June 30, 2014	August 2015
Statewide and Metro Planning; Non-Metro Planning	June 2, 2014	<u>Closed</u> October 2, 2014	Fall 2015
Pavement and Bridge Performance Measures	January 5, 2015	<u>Closed</u> May 8, 2015	TBD
Highway Asset Management Plan	February 20, 2015	<u>Closed</u> May 29, 2015	TBD
System Performance Measures	Projected September 2015	120 days	TBD

Asset Management and Performance Management

- ▶ **Asset Management plans must:**
 - ▶ Improve or preserve the condition of the assets and the performance of the system (Sec. 119(e)(1))
 - ▶ Include all infrastructure assets within the right-of-way corridor for the NHS (Sec. 119(e)(4))
 - ▶ Include strategies leading to a program of projects that would make progress toward achievement of the State targets for asset condition and performance of the NHS (Sec. 119(e)(2))
- ▶ **Performance Management requires:**
 - ▶ Targets be established for each performance measure to assess the condition of:
 - ▶ Pavements on the Interstate system and non-Interstate NHS
 - ▶ Bridges on the NHS



Performance Measures and Targets

- ▶ Purpose of performance measures (and associated targets)
 - ▶ Clarify the definition of goals
 - ▶ Monitor and report toward implementation of plan goals and objectives
 - ▶ Identify performance needs or deficiencies
 - ▶ Evaluate potential impacts of scenarios, programs, and projects
 - ▶ Required by MAP-21



Proposed Safety Performance Measures

- ❑ Number of fatalities
- ❑ Rate of fatalities
- ❑ Number of serious injuries
- ❑ Rate of serious injuries

Proposed Pavement and Bridge Performance Measures

□ Pavement Condition

- Percentage of pavements of the Interstate System in Good condition
- Percentage of pavements of the Interstate System in Poor condition
- Percentage of pavements of the non-Interstate NHS in Good condition
- Percentage of pavements of the non-Interstate NHS in Poor condition.

□ Bridge Condition

- Percentage of NHS bridges classified as in Good condition
 - Percentage of NHS bridges classified as in Poor condition.
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Proposed Measure Areas for PM3

- ❑ Performance of the Interstate System
- ❑ Performance of the non-Interstate NHS
- ❑ Freight Movement
- ❑ Traffic Congestion
- ❑ On-Road Mobile Source Emissions

Maintenance Program 1 of 4

▶ Snow and Ice

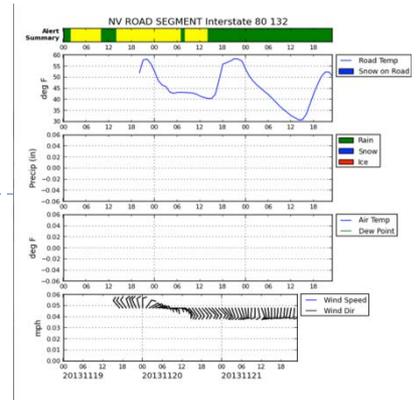
▶ Connected Vehicles and Related Work:

- ▶ The Weather Data Environment and Vehicle Data Translator (VDT)
- ▶ The Enhanced Maintenance Decision Support System (EMDSS)
- ▶ The Motorist Advisories and Warnings (MAW) / Weather Traveler Information System (WxTINFO)

▶ Automation & Weather

▶ Other (with S&I Implications):

- ▶ Pathfinder
- ▶ Roadway Salt BMP's
- ▶ Winter Maintenance Performance Measures Tool
- ▶ Integrated Modeling Travel Conditions Prediction Tool



US-36 between NW Parkway and I-25		
6pm	●	No advisories
7pm	●	No advisories
8pm	●	No advisories
9pm	●	No advisories
10pm	●	No advisories
11pm	●	No advisories
12am	●	No advisories
1am	●	Yellow Advisory: Slick roads
2am	●	Yellow Advisory: Slick roads
3am	●	Yellow Advisory: Slick roads
4am	●	Yellow Advisory: Slick roads
5am	●	Red Warning: Slick roads and poor visibility
6am	●	Red Warning: Slick roads and poor visibility
7am	●	Red Warning: Slick roads and poor visibility

For more information contact: Gabriel Guevara, 202-366-0754 or gabriel.guevara@dot.gov

Maintenance Program 2 of 4

- ▶ **Updating Maintenance DRAFT Definition**
 - ▶ Maintenance consists of work that is planned and performed to maintain the condition of the transportation system or to respond to specific conditions or events that restore the highway system to a functional state of operation. Maintenance is a critical component of an agencies asset management plan that is comprised of both routine and preventive maintenance.
 - ▶ Routine maintenance is typically performed in reaction to an event, season, or over all deterioration of the transportation asset that needs correction on a routine basis.
 - ▶ Preventive Maintenance is a cost-effective means of extending the useful life of the Federal-aid highway (23 U.S.C. § 116 (e)).



Maintenance Program 3 of 4

- ▶ **Updating Preservation DRAFT Definition**
 - ▶ Preservation consists of work that is planned and performed via contracted work to improve or sustain the condition of the transportation facility in a state of good repair. Preservation activities generally do not add structural value, but do enhance the overall condition of the transportation facility.



Maintenance Program 4 of 4

- ▶ **Pavement**

- ▶ Micro Surfacing, Slurry Seal, and Chip Seal – Construction Specifications and Quality Assurance Best Practices – Nevada DOT
- ▶ Pavement Preservation ETG



Research Underway 1 of 3

▶ Best Practices for Pavement Utility Cuts

- ▶ Analyze the effectiveness of various approaches to repair/replace pavements that have been, or will be subject to utility cuts. Provide guidance on strategies that will allow agencies to specify utility cut performance requirements so that they suffer minimal damage to their roadways and ensure efficient and lasting replacements.

▶ Flooded Pavement Assessment

- ▶ Examine methods to assess highway infrastructure that have experienced flooding and/or that are in a flooded condition. This project will recommend methods to assess the capacity of the roadway to carry emergency traffic while it is flooded as well as methods to assess the long term impacts of flooding.

Research Underway 2 of 3

Low Cost Snowplow Visual Guidance

Install visual sensor array on snowplows...

Lidar



Thermal Camera



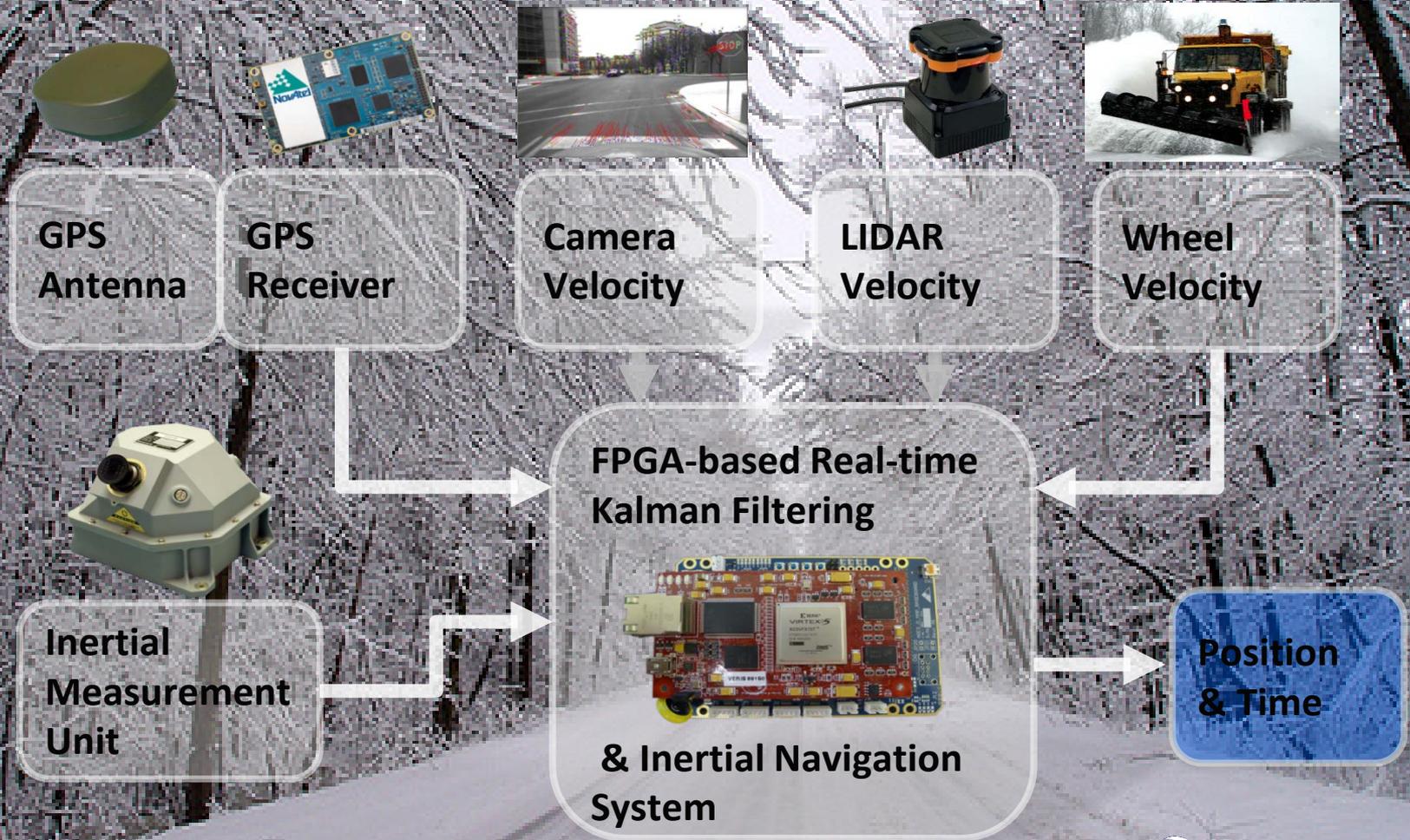
Radar



▶ Contact: Morgan Kessler, 202-493-3187 or morgan.kessler@dot.gov

Solution: Determine Position

Install an array of guidance sensors on snowplows...



Solution: Operator's View

...to display hidden highway features on windshield in Winter



Audio Alerts



Research Underway 3 of 3

- ▶ Cost/benefit impact of systems performance of the amount/type of assets tracked in an agency's Transportation Asset Management Plan (TAMP)
 - ▶ With the establishment of system performance criteria within an agency's asset management plan additional resources will be allocated to activities that will impact the measures. With this change in resource allocation, what highway elements will be deemed less important and receive less resources. What will be the overall cost/benefit impact of this change in resource allocation?



Research 1 of 2 (unfunded projects)

- ▶ **Incorporation of Emergency Response Processes with Maintenance Management Systems (MMS)**
 - ▶ Maintenance personnel and equipment are typically the first responders to emergency events. Existing MMS are built to manage resources based upon reoccurring events. This research project would investigate the opportunity to modify MMS to include contingency scenarios to manage resources during emergency events.
- ▶ **Case Studies of MMS Integration with other systems**
 - ▶ Case Studies of leading State DOTs integration of Maintenance Management Systems with other State DOTs systems. Delivering of findings at regional and national meetings.

▶ Contact: Morgan Kessler, 202-493-3187 or morgan.kessler@dot.gov

Research 2 of 2 (Unfunded projects)

- ▶ **Case Studies of Transportation Corridor Strategies**
 - ▶ Case study of 4 road sections and 2 bridges regarding their long-term (30 - 50 year) costs and strategies (reconstruction, rehabilitation, preservation, and maintenance costs) to maintain the transportation facility in a state of good repair.
- ▶ **Construction Quality Assurance**
 - ▶ 3 Case Studies of leading states regarding the Quality Assurance procedures and specifications for contracting and constructing micro surface, slurry seal, and chip seal pavement treatments for asphalt pavements.
 - ▶ 3 Case Studies of leading state regarding the Quality Assurance procedures and specifications for contracting and constructing spall repair, concrete grinding, panel repair, stitching for concrete pavements.

▶ Contact: Bryan Cawley, 202-366-1333, bryan.cawley@dot.gov

Training 1 of 3

- ▶ In partnership with International Slurry Surfacing Association
 - ▶ Available
 - ▶ How to Construct High Quality Slurry Seal and Micro Surfacing Treatments
 - ▶ How to Construct High Quality Chip Seal Treatments
 - ▶ Under Development
 - ▶ Best Construction Practices for Operating a Spreader Box used with Slurry/Micro Surfacing Materials (English and Spanish)
 - ▶ Best Construction Practices for Crack Sealing of Asphalt and Concrete Pavements (English and Spanish)



<http://slurry.org/>



Training 2 of 3

- ▶ In partnership with the Society for Protective Coatings
 - ▶ Available
 - ▶ Safety During Bridge Preservation Activities
 - ▶ Coating and Painting Bridge Superstructures
 - ▶ Sealing and Waterproofing Bridge Decks



<http://www.sspc.org/training/Training-Bridge-Preservation/>



Training 3 of 3

- ▶ Maintenance Leadership Academy (NHI-134063)
 - ▶ 8 – Weeks of Blended Learning
 - ▶ Describe the use of maintenance administration in achieving highway agency goals.
 - ▶ Describe how various treatments fit into an overall system preservation program and when to implement them.
 - ▶ Identify appropriate drainage maintenance and roadside management techniques.
 - ▶ Describe the maintenance manager's roles and responsibilities for developing, implementing, and managing a comprehensive plan for dealing with weather-related events.
 - ▶ Explain the maintenance and use of traffic control devices (including work zone plans, work zone traffic control devices, signs, striping, guardrails, and median barriers) in maintenance operations.
 - ▶ Describe how environmental protection issues, regulations and control measures affect highway maintenance activities.
 - ▶ TX – June 25, 2015
 - ▶ AZ – July 13, 2015
 - ▶ To request contact NHI at 877-558-6873 or nhicustomerservice@dot.gov

Conclusion

- ▶ **MAP-21 and Preservation and Maintenance**
 - ▶ Preservation and Maintenance Eligibility
 - ▶ Asset Management
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- ▶ **What is FHWA doing with Maintenance**
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