

## Initial State of Alaska DOT&amp;PF Performance Report

Submitted to:

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**Background**

Title 23 U.S.C. 150(e) requires State DOTs to submit reports on performance targets and progress in achieving established targets to Federal Highway Administration (FHWA) not later than October 1, 2016. On August 31, 2016, the FHWA released Implementation guidance that provides direction to States for producing their first performance report to FHWA per the requirements of 23 U.S.C. 150(e), due by October 1, 2016. FHWA recognizes that reporting State Department of Transportation (DOT) targets by October 1, 2016, is not feasible because the first performance measures final rule requiring this report will not be effective by October 1, 2016. The FHWA also recognizes that since the second and third performance measure rules will not be effective prior to October 1, 2016, State DOTs will not have a full year to establish their targets. As a result, FHWA is issuing this guidance to assist State DOTs with meeting the statutory requirement.

State of Alaska would like to point out that Title 23 U.S.C **Sec. 150(C)(1) also requires Federal Department of Transportation** in consultation with State departments of transportation, metropolitan planning organizations, and other stakeholders to promulgate rulemaking that establishes performance measures and standards by **March 2014**. It was Congress's intent to give States almost three years to develop their programs under final regulations.

Using the August 31, 2016 FHWA guidance, here are the State of Alaska responses.

- i. The condition/performance of the National Highway System (NHS) in the State;

*State of Alaska has submitted both National Bridge Inventory and the Highway Performance Monitoring System by the required due dates.*

- ii. The effectiveness of the investment strategy document in the State Asset Management plan for the NHS;

*State of Alaska has not yet completed our State Asset Management Plan for the NHS. Please see the ASSET MANAGEMENT PLAN Section.*

## **ASSET MANAGEMENT PLAN**

Alaska's first Asset Management coordination efforts began in 2012 with the full support of its FHWA Division Office. Alaska's initial intent was to establish an "enterprise wide" asset management protocol. To this end, Alaska completed a kickoff meeting in March 2013. The Enterprise Transportation Asset Management Synthesis and Work Plan (May 2013), prepared by Paul D. Thompson, guided implementation action items. This plan described the Department as being in the "awakening" stage of Asset Management maturity (AASHTO TAM Guide, 2011). This is where a basic set of capabilities are in place for a few assets, but these are not yet integrated into Department-level decision making.

Executive Management determined that the organization would "start simple and grow smart" rather than adopt an enterprise-wide approach. This means Alaska would include only bridges and pavements on the NHS in its first Asset Management Plan.

Thompson's work plan action items for Bridges and Pavements were included in a draft implementation plan along with FHWA's 2010 Asset Management Assessment. This plan was not formally approved by Executive leadership but the Asset Management Coordinator has been using these action items, along with the assistance of the FHWA Division Office, to make sure the department complies with MAP-21.

The State of Alaska also participated as an observer state in FHWA TAMP development pilot project--completed in April 2014, and approved a draft template for the TAMP. Alaska is in process of updating its Statewide Long Range Transportation Plan (LRTP), which will be used as the guiding plan for its Asset Management Plan.

In order to draft the TAMP, Alaska formed a Transportation Asset Management Plan Working Group which includes the Chief Financial Officer, the Maintenance and Operation leader, Chief of Planning and Program Development, Asset Management Engineer and FHWA Division Office Liaison. Subject Matter Experts have been brought into the discussion to establish relationships that may or may not already exist but were determined necessary for the agency to accomplish its mission effectively. Therefore, the organizational structure for TAM is less formal in nature and meant to be dynamic, where individuals come together to collaborate as needed. The four main teams that work on Asset Management efforts are Planning and Programming; Pavement; Bridges; and Data Integration.

The Planning and Programming team represents all modes and regions and includes representatives from both MPOs. This team's main tasks are: commenting on federal rulemaking; developing the long range transportation plan to include performance and asset management principles; and developing data driven project selection criteria for modernization and preservation projects.

The pavement team includes statewide and regional staff to guide developing preservation strategies and program. The Bridge Team continues to work on bridge condition inventory. We use AASHTOWare Bridge Management System (previously known as PONTIS). The current version of BMS does not perform the modeling so the bridge team has performed deterioration modeling on individual bridges and worked with the LRTP consultant on their modeling efforts. Alaska Department of Transportation and Public Facilities (AK DOT&PF) has begun Bridge Deterioration modeling to better forecast bridge preservation and reconstruction needs. The Data Integration Team helps guide all the efforts detailed in the IMPROVING DATA QUALITY AND CONNECTIONS section.

## **IMPROVING DATA QUALITY AND CONNECTIONS**

In order to make data driven decisions, quality and accessible data is necessary. AK DOT&PF's goal was to collect data once and use this data multiple times. AK DOT&PF hired Cambridge Systematics in Feb 2013 to help determine the state of data and systems in preparation for asset management needs. Cambridge accomplished the following: 1) evaluated current information systems, 2) created a framework for where the Department wants to go. 3) Performed a GAP analysis and 4) created a Proof of Concept March 2015. The final deliverable is a plan on how to build a system and what business processes need alteration.

The Cambridge Team found that AK DOT&PF had no data governance or business rules, making data and system integration difficult. They recommended the creation of the new Information Systems and Services Division (ISSD) Director to act as the Chief Information Officer. The Cambridge deliverables included a Draft Data and Information Technology (IT) Policy and Procedure, a Data Governance Manual and a Data registry tool. Cambridge also did a TAMIS proof of concept to demonstrate how high priority data could be integrated from multiple sources. As of June 2016, AK DOT&PF has a recommended Data and IT Governance Policy & Procedure draft ready for executive approval (ETA expected during Fall 2016). AK DOT&PF has also formed a Data and IT Governance Workgroup that is now finalizing a Data and IT Governance Manual to improve data and IT integration (ETA December 2016).

AK DOT&PF plans to use geographic information system based applications as the means to integrate data and business applications onto a common linear referenced network thus enabling better decision making. Since 2013, AK DOT&PF has used the same vendor to collect both road pavement condition data and centerline data thus allowing for more quality HPMS segment and pavement condition reporting. Also AK DOT&PF has been coordinating with ESRI to design and implement Roads and Highways that would improve the department's linear referenced network and allow more efficient integration with business applications. AK DOT&PF plans to have a fully functional Roads and Highways integration by March 2017.

AK DOT&PF has a new Statewide HPMS Coordinator that has led efforts to substantially improve the quality and coverage of HPMS segment reporting since the 2015 HPMS Submittal (2014 data). AK DOT&PF is dedicated to making strides in future HPMS Submittals by procuring an HPMS Integration Software that will integrate with the new ESRI Roads and Highways, pavement management system and traffic data system.

AK DOT&PF has made great strides after the MAP-21 rulemaking to move towards performance based planning and programming and is committed to this area and will continue to make strides through department policies, Data and IT Governance implementation, business application upgrades and ESRI Roads and Highways integration.

## **PAVEMENT**

Alaska is one of the only states without its own pavement management system. Instead AK DO hires a contractor to collect and analyze the data. There has been no connection between infrastructure condition and project costs and it was impossible to project needs into the future. A Request for Proposals to acquire a Pavement, Maintenance and Equipment Management Systems went out for solicitation in Fall 2014. Three proposals were received. During the proposal review, the new ISSD division recommended additional requirements, and an amendment was prepared and issued May 2015. Two proposals were received and the contract went out to Agile Assets in October 2015. The second vendor protested and this protest was resolved in March 2016, with a contract signed in May 2016. System implementation is expected to be completed by August 2017. AK DOT&PF hired Applied Pavement Technology to analyze existing data to develop the deterioration modeling need for the Agile system as well as guiding us with establishment of a pavement preservation decision matrix. We are also implementing Agile Assets Maintenance management system so maintenance activities can be planned, tracked and analyzed.

Risk and Lifecycle costing are two areas that need further development. AK DOT&PF began collecting fatigue cracking for pavement in 2014 and we have two years of data for most of the NHS.

We have involved both MPOs (Anchorage and Fairbanks) in the process commenting on both the TAMP and Bridge/Pavement Performance proposed rulemaking. We are waiting for the final rulemaking to engage the MPOs in development of our TAMP and performance measure Target setting.

## Actions ongoing:

- Approve targets for Pavement and Bridges in draft Transportation Asset Management Plan (TAMP) (executive approval pending).
- Capture project as-built plans into GIS database using Engineering Automation Group.
- Conduct Asset-level analysis for Pavement information via new Pavement Management System.
- Develop Project Selection Prioritization based on Data and Performance Goals.
- Establish regional and statewide performance goals for the selection of projects in the STIP.
- Update P&P 07.05.020 Highway Pavement Maintenance & Rehabilitation Policy.
- Develop Alaska specific Deterioration Modeling for Pavement.
- Develop Alaska specific Quantitative Forecast Modeling for Pavement need PMS.
- Develop Alaska specific Deterioration Modeling for Bridges
- Develop Alaska specific Forecast Modeling for Bridges.
- Update P&P 02.01.017 PETS (provide some additional detail about the types of condition and performance indicators to be presented).
- Develop project needs identification criteria specific to each asset type. These may include “must levels” for pavement condition, bridge action feasibility criteria, and desired levels of service. This will be based on the framework provided in the LRTP.
- Update P&P 07.05.060 for Bridges.
- Expand existing condition data items: level of service documentation, performance assessment, and additional defect types for Pavement.
- Expand existing condition data items: level of service documentation, performance assessment, and additional defect types for Bridges.

- iii. A description of State DOT's progress in establishing performance targets including coordination with MPOs and other agencies:

**NATIONAL HIGHWAY PERFORMANCE PROGRAM** goal is to maintain the highway infrastructure asset system in a state of good repair. AK DOT&PF is looking to the final rulemaking for the definition of good repair. Both MPOs (Anchorage and Fairbanks) have been involved in the process commenting of both the TAMP and Bridge/Pavement Performance proposed rulemaking. Alaska is waiting for the final rulemaking to engage the MPOs in development of the TAMP and performance measure Target setting.

At this point it is unknown whether AK DOT&PF will use different approaches for urban and rural areas. In the development and implementation of any performance target, we will further evaluate once the rulemaking is finalized.

National highway performance program. –

(A) In general. - Subject to subparagraph (B), for the purpose of carrying out section 119, the Secretary shall establish –

(i) Minimum standards for States to use in developing and operating bridge and pavement management systems;

This provision in the proposed rulemaking has not been finalized. The State of Alaska, through its comments, requested that FHWA remove this requirement. This hamstrings the transportation agency with the current technology and requires a change in regulation if better technology or methods are developed. That being said, AK DOT&PF has procured and is in the implementation phase on a new Pavement Management System that should be able to meet the minimum standards in the rulemaking. The current AASHTOWare Bridge Management System does not comply with the current proposed rulemaking. AK DOT&PF will either change vendors or perform modeling outside the system until a new version is released. The release date is outside of the department's control.

(ii) Measures for States to use to assess –

(I) The condition of pavements on the Interstate system.

State of Alaska has reported pavement International Roughness Index (IRI) and Rutting conditions on the Interstate for many years. It has analyzed over 10 years of the condition data and the condition remains flat, suggesting the State is keeping up with deterioration rates on pavement through its current project programming and development practices. Alaska began collecting pavement fatigue cracking in 2014 and has two years of data for most of the NHS. The proposed rulemaking includes the matrix of combining the three conditions to get one condition rating. Despite having only two years of that information, AK DOT&PF will be using its pavement management system to set an initial pavement condition target in coordination with local MPOs.

(II) The condition of pavements on the National Highway System (excluding the Interstate); same as above.

(III) The condition of bridges on the National Highway System;

(IV) The performance of the Interstate System; and

There are some key travel time data and process issues associated with the proposed rulemaking and without resolution AK DOT&PF is unable to describe how it will establish travel time targets in achieving performance measures. AK DOT&PF is coordinating with its MPOs and looks forward to the final rulemaking.

(V) The performance of the National Highway System (excluding the Interstate System);

There are some key travel time data and process issues associated with the proposed rulemaking and without resolution AK DOT&PF is not able to describe how it will establish targets in achieving performance measures. AK DOT&PF is coordinating with its MPOs and look forward to the final rulemaking.

(iii) Minimum levels for the condition of pavement on the Interstate System, only for the purposes of carrying out section 119(f)(1);

State of Alaska has requested an exemption to the National Interstate IRI goal of 95% fair or better. The Interstate Highway System was expanded to Alaska in 1976, by the Federal-Aid Highway Act of 1976, which defined the system for Interstates in Alaska and Puerto Rico under Title 23, Chapter 1, Section 103 (c)(1)(B)(ii) of the US Code. Title 23 provides that

"Highways on the Interstate System in Alaska and Puerto Rico shall be designed in accordance with such geometric and construction standards as are adequate for current and probable future traffic demands and the needs of the locality of the highway." By this law, Alaska was exempted from both Interstate Standards and the major federal funding push for establishing freeways similar to the lower 48. Less than thirty miles of Alaska's Interstate is controlled access and meets interstate standards. We have requested that National Goal for interstate IRI be limited to signed Interstates only or Interstates that were designed to meet interstate standards. Without this change, Alaska would be spending a great deal of money to improve IRI on Interstate that was not subject to geometric design standards associated with The Interstate System, like those in the lower 48.

(iv) The data elements that are necessary to collect and maintain standardized data to carry out a performance-based approach;

The AK DOT&PF has collected and submitted both the National Bridge inventory and Highway Performance Monitoring System by the required due dates. As mentioned above, AK DOT&PF's HPMS Submittal has substantially improved in the last two years (2014 & 2015 data). Alaska foresees even greater improvements in traffic data and roadway inventory reporting for the 2017 Submittal (2016 data). Additionally AK DOT&PF collects annual road pavement condition data and roadway inventory centerline data that supports both the pavement and HPMS reporting needs for the State.

AK DOT&PF has reviewed the FHWA provided NPMRDS datasets (travel time data) from which the measures would be derived and is deeply concerned with the initial inaccuracy of low volume roads, the lack of coverage on NHS, and the misalignment of travel time segments to Alaska's HPMS reported network. Additionally most of Alaska's Interstate and non-Interstate NHS are predominantly low volume roads, lacking congestion issues. Irrespective AK DOT&PF will continue to analyze the NPMRDS datasets monthly as FHWA continues to release more coverage of Alaska's routes. AK DOT&PF will also coordinate with the MPO's on the use of the data and in setting targets once the Final Rule is released.

As stated above, AK DOT&PF is moving towards a more robust linear reference network, the ESRI Roads and Highways, which will improve integration with key business supporting business application. Additionally since 2013 AK DOT&PF has used the same vendor to collect both road pavement condition data and centerline data thus improving the quality of HPMS segment and pavement reporting.

## **NATIONAL FREIGHT MOVEMENT**

Freight movement and economic vitality. - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development. The Notice of Proposed Rulemaking was published on April 22, 2016 and closed for comments on August 20, 2016. State of Alaska submitted its comments.

National freight movement - The Secretary shall establish measures for States to use to assess freight movement on the Interstate System.

As documented in AASHTO and state comments to Docket No. FHWA-2013-0054, there are some key data and process issues associated with the proposed rulemaking, and without resolution Alaska is not able to describe how it will establish targets in achieving performance measures.

AK DOT&PF is coordinating with our MPOs and developing a freight element to be adopted as part of the Statewide Long Range Transportation Plan. We look forward to the final rulemaking.

## **CONGESTION MITIGATION AND AIR QUALITY PROGRAM**

To achieve a significant reduction in congestion on the National Highway System.

Congestion mitigation and air quality program (CMAQ) - For the purpose of carrying out section 149, the Secretary shall establish measures for States to use to assess –

- (A) Traffic congestion; and
- (B) On-road mobile source emissions.

The Notice of Proposed Rulemaking was published on April 22, 2016 and closed for comments on August 20, 2016. State of Alaska and Fairbanks Metropolitan Planning Organization submitted their comments.

The State of Alaska does not have urban area with a population over 1,000,000 million, therefore the traffic congestion performance measures do not apply to Alaska.

Alaska has areas of non-attainment or maintenance areas and uses CMAQ funds for air quality improvement projects. The majority CMAQ funded projects are within the Fairbanks PM2.5 Non-attainment area.

There are some key data and process issues associated with the proposed rulemaking. Without resolution to these issues, it is unclear how Alaska can establish targets and achieve performance measures.

We are coordinating with our MPOs and look forward to the final rulemaking.



## **HIGHWAY SAFETY IMPROVEMENT PROGRAM**

MAP-21 includes National Safety Goals to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The final rulemaking was published March 2016. The State of Alaska will set targets and report on safety performance via the Highway Safety Improvement Program Annual Report and the Highway Safety Plan (HSP).

In accordance with 23 CFR 490, Alaska will set safety targets for (a) serious injuries and fatalities per vehicle mile traveled; and (b) the number of serious injuries and fatalities. Specifically, the required five performance measures will be implemented. Optional performance measures will not be implemented. AK DOT&PF has initiated coordination with Municipal Planning Organizations (MPOs).

At this point, we will not be using different performance measures for urban and rural areas or a different performance target for urbanized and rural areas.

To date, AK DOT has initiated the process to meet all requirements. Activities identified for action and cooperative effort include:

- Introduce Safety Performance Measures and process to AK DOT&PF management
  - Recommended limiting PMs to the five required PMs
- Introduced Safety Performance Measures and process to MPOs
  - Continue informing/requesting input on target development
- Take advantage of training opportunities for target setting (Sep 20 FHWA webinar, etc.)
- Perform sensitivity analysis, prepare initial targets
  - Assemble data (2000 to present)
  - Prepare charts/test sensitivity of proposed targeting methods
  - Consider other effects on crash experience (economic, population, etc.)
- Communicate with Alaska Highway Safety Office on targets and timing
  - Understand NHTSA and FHWA expectations
- Enlist DOT/PF management support of targets
  - Recommended targets and information on target sensitivity
  - Share target development process and cost of failure
- Report Targets
  - AHSO reports three targets July 1, 2017
  - HSIP reports five targets Aug 31, 2017

The first five bullet items have been initiated. Initial reporting to management on targets and sensitivity could occur before January 2017. Internal agreement of targets is scheduled for May 15, 2017, in order to provide the Alaska Highway Safety Office time to prepare the HSP.

- iv. A description of the ways in which the State DOT is addressing congestion at freight bottlenecks. (<https://www.transportation.gov/freight/NFSP>). *This is not applicable to State of Alaska.*