Findings From a Peer Exchange on Performance-Based Investment Decisions in Maintenance

Presented at the AASHTO MAC Meeting

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APTech
The Vitals


• September 18-20, 2018 in Nashville, TN

• Hosted by the Tennessee DOT

• Total of 45 participants from 27 state DOTs, industry, and TRB
The Team

- Mark McConnell, Volkert (Chair)
- Dale Doughty, Maine DOT
- Laura Mester, Michigan DOT
- Rudy Powell, Florida DOT
- Tony Sullivan, Arkansas DOT (retired)
- Thomas Van, FHWA
- Katie Zimmerman, APTech (SME)
- Harry Capers & Melissa Jiang, Arora & Assoc. – Planning & logistics
- Greg Waidley, CTC & Assoc. - Implementation support
Our Goals

• Share best practices
• Re-institute the Maintenance Quality Assurance (MQA) document library
• Establish a state directory of contacts for MQA programs
• Prepare a summary report
Peer Exchange Organization

- Organized around components identified during the 2015 domestic scan from agencies with strong performance-based programs for maintenance
  - Collecting & maintaining inventory & condition assessment data
  - Selecting performance measures & targets
  - Using data to evaluate funding needs & allocate funding
  - Building an organization culture
  - Using technology effectively
Example Session – Part 1

• 8:45 – 10:30 AM Session 1: Collecting & Maintaining Inventory & Condition Assessment Data (15-min presentations)
  – Washington State DOT
  – Mississippi DOT
  – Tennessee DOT
  – Maine DOT
  – Nevada DOT
  – Montana DOT
Example Session – Part 2

• Session 1 Facilitated Discussions
  – What are some of the biggest challenges you face in collecting & maintaining inventory & condition information?
  – How do you keep your asset inventory current?
  – What steps have you taken to ensure the quality of the data?
  – How are you using the information now? What’s holding you back from doing more with the data?
Great Forum for Sharing Practices

• Agencies learned from peers & could ask follow-up questions “This discussion re-invigorated me”

• Everyone got something out of the presentation – whether they had a mature system or not “I thought this stuff was stupid until I came here.”

• Many of the participants were new to Maintenance & didn’t understand the reasons for collecting the data “We’re just getting started so it helped to hear what others have been through.”
Interesting Findings

- **Pre-Peer Exchange Survey**
  - 21 out of 27 agencies had a MMS in place
  - Only 10 agencies have used the results for needs-based budgeting

- **Data**
  - Amount of data is not sufficient to confidently report LOS
  - Several are moving to central office data collection teams &/or forming partnership
  - Continuous inventory updates show promise

- Only 8 of 27 agencies collect data on 5% or more of their network
Example: Washington State DOT

- Number of samples down from 2200 to 420
- Can only use the results for statewide reporting; no longer can do regional reporting
- 1200 of 1500 FTEs have iPads to access & report info using a map-based app

Get the right information into the right peoples hands in a format that allows them to quickly understand and make decisions.
More Interesting Findings

• **Processes**
  − Historical budgeting or formulas are the norm
  − The cost of moving from one LOS to another and the benefits to performance-based budget are not well understood

• **Staffing**
  − There are skill gaps among Maintenance workers
  − MQA culture is not at the forefront nationally & many champions have retired
Example Colorado DOT

- Steps to Create a Maintenance Culture That is Data Driven
  - Developed an optimization analysis that created awareness and allowed input into the process
  - Developed systems that focus on providing the field the data to make decisions

- Found range of production from 15.4 to 38.3 average lane mile per FTE, with average of 25.8
- Found the asset inventory is not current
Example Colorado DOT

Striping Example

<table>
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<tr>
<th>Asset Group</th>
<th>Asset Feature</th>
<th>Current LOS</th>
<th>Target LOS</th>
<th>Yrs to Target</th>
<th>Description</th>
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3 Year Target

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1 Year Target

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A Few More Interesting Findings

• Technology
  – There is another MQA evolution underway due to improved technology
  – iPads are common, but the extent to which they are used varies considerably
  – Map-based interfaces & touch-screen apps are becoming common
  – Data analysts & IT staff are being placed in Maintenance
  – Data integration is important
Example Arizona DOT

• LOS Remote Data Entry
Example Arizona DOT

Excel Report

Quick Reference Map

GIS File Format
Recommendations For Action

- Improve the Understanding of MQA Programs & Raise Its Profile
  - Outreach
  - Integrate MQA into the MAC committee structure
  - Incorporate results into the NHI Maintenance Leadership Academy training
Recommendations For Action

- Help Improve MQA Program Effectiveness
  - Develop guidance
  - Conduct a technology showcase
  - Establish & pilot peer-to-peer mentoring
  - Develop case studies showcasing Maintenance & IT partnerships
  - Scope a research effort to evaluate the benefits to using technology for MQA activities
Recommendations For Action

• Develop Tools & Resources to Support the Increased Use of MQA Data in State DOTs
  – Develop a Primer
  – Work with MAC to establish standard terminology & performance measures for Maintenance
  – Develop condition grading cost models
  – Continue supporting the MQA document library
MQA Document Library Re-Establishment

- [www.highwaymqa.com](http://www.highwaymqa.com)

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Find the report here:

Any questions?

Thank you!
Katie Zimmerman, APTech
(217) 398-3977