Effective Communication of Budget Impacts to Highway Maintenance and Preservation Programs

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2015 AASHTO SCOM Maintenance Conference
## 20 Years of Communicating with MAP

### Maintenance Accountability Process
Activity Service Level Targets and Service Levels Delivered
**CY 2014 - Statewide**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Group - 1 Roadway Maintenance and Operations</th>
<th>Group - 2 Drainage Maintenance and Slope Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1.0</td>
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<tr>
<td></td>
<td></td>
<td>+ A</td>
</tr>
<tr>
<td>1A1 Pavement Patching, Repair &amp; Crack Seal*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1A3 Shoulder Maintenance</td>
<td>Integrated with Pavement Management reporting - 93.3% of pavement in fair or better condition</td>
<td></td>
</tr>
<tr>
<td>1A4 Sweeping and Cleaning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A1 Maintain Ditches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A2 Maintain Culverts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A3 Maintain Catch Basins and Inlets***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2A4 Maintain Stormwater Facilities</td>
<td></td>
<td></td>
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<tr>
<td>2A5 Slope Repair</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What Drives the Condition of Highway Assets?

**Preservation Program**
- Major Repair and Rehabilitation
- Replace assets at end of useful life

**Maintenance Program**
- Operate the system
- Repair the system when it breaks
- Perform Preventive maintenance
- Deliver small, non-programmed projects

**Improvement Program**
- Add new assets to improve mobility and safety

**Condition of Highway Assets**
- Measured deficiencies in highway assets
- Level of Service Ratings

**Wear and tear from extended and prolonged use**

**General deterioration over time (i.e. weather, corrosion)**

**Damage from natural events (i.e. storms, earthquake)**

**System Additions (Inventory)**

**Damage from motor vehicle collisions**
## Integrated Bridge Asset Management

**Shared Goal:**
Structural condition goal of at least 97% in fair or good condition

### Everyone (I, P, M) at the same table, at the same time, talking about the same thing:

**Bridge Inventory**
- Changes from new construction (I)
- Average bridge age
- Inventory composition

**Bridge Inspections**
- Condition Inspections (P)
- Maint. Inspections (M)

Percent completed/backlog?

**Structural Repairs/Rehab**
- Major repairs/rehab (P)
- Minor repairs (M)

Percent completed/backlog?

**Deck Repairs/Rehab**
- Major repairs/rehab (P)
- Minor repairs (M)

Percent completed/backlog?

**Coatings on Steel Bridges**
- Re-painting (P)
- Annual washing and spot painting (M)

Percent completed/backlog?

**Other**
- Seismic retrofit
- Innovations
- Key accomplishments
Complete maintenance program or backlogs?

• Documenting and tracking maintenance accomplishments and comparing to maintenance schedule and operational/repair needs
  – Cable Barrier
    • Annual PM
    • Repair when damaged
  – Signals
    • Pay the electricity bills
    • Monthly and annual PMs
    • Repair when damaged or malfunction
  – Guideposts?
  – RPMs?
## Work Completion and Asset Condition

<table>
<thead>
<tr>
<th>Activity or Asset</th>
<th>Performance Measure</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable Barrier</td>
<td>% of total inspection and PM completed</td>
<td>103%</td>
<td>96%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Asset condition rating</td>
<td>A-</td>
<td>A+</td>
<td>A+</td>
</tr>
<tr>
<td>Traffic Signals</td>
<td>% of total PM tasks completed</td>
<td>88%</td>
<td>84%</td>
<td>76%</td>
</tr>
<tr>
<td></td>
<td>Asset condition rating</td>
<td>C+</td>
<td>B-</td>
<td>B-</td>
</tr>
<tr>
<td>Intelligent Transp. Systems</td>
<td>% of total PM tasks completed</td>
<td>51%</td>
<td>47%</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>Asset condition rating</td>
<td>A-</td>
<td>A-</td>
<td>A-</td>
</tr>
</tbody>
</table>
I-5 Port of Tacoma to King County Line HOV

WSDOT built a new HOV lane in each direction of I-5 through Pierce County from Port of Tacoma to the King County line.

Additional highway miles and maintenance needs include:
- Eight additional lanes on I-5
- Stormwater and highway runoff drainage features
- 23,100 more square feet of bridge deck
- More guardrail and concrete barriers
- New Intelligent Transportation System (ITS) features such as:
  - Traffic cameras
  - Highway Advisory Radio (HAR) transmitter

The construction project improves traffic mobility and reduces congestion. It also requires an additional $153,667 to maintain in 2011-13 for:
- Sweeping
- Striping
- Culvert maintenance
- Landscaping
- Bridge cleaning

The I-5 Port of Tacoma to King County Line HOV project reduced costs for:
- Noise and weed control
- Vegetation control and mowing

<table>
<thead>
<tr>
<th>Maintenance Activity</th>
<th>Added Infrastructure</th>
<th>11-13 Cost</th>
<th>13-15 Cost</th>
<th>15-17 Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadway Maintenance and Operations</td>
<td>8 lane miles</td>
<td>$0</td>
<td>$14,009</td>
<td>$6</td>
</tr>
<tr>
<td>Sound Walls</td>
<td>750 linear feet</td>
<td>$165</td>
<td>$365</td>
<td>$365</td>
</tr>
<tr>
<td>Drainage Maintenance and Slope Repair</td>
<td>7</td>
<td>$1,400</td>
<td>$1,400</td>
<td>$1,400</td>
</tr>
<tr>
<td>Maintain Culverts</td>
<td>188</td>
<td>$28,200</td>
<td>$28,200</td>
<td>$28,200</td>
</tr>
<tr>
<td>Maintain Detention and Retention Basins</td>
<td>1 stormwater facility</td>
<td>$0</td>
<td>$4,420</td>
<td>$4,420</td>
</tr>
<tr>
<td>Landscape Maintenance</td>
<td>10 acres</td>
<td>$28,000</td>
<td>$28,000</td>
<td>$28,000</td>
</tr>
<tr>
<td>Noise/Water Control</td>
<td>(20) acres</td>
<td>$0</td>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td>Nuisance Vegetation Control</td>
<td>(20) acres</td>
<td>$11,800</td>
<td>$11,800</td>
<td>$11,800</td>
</tr>
<tr>
<td>Landscape Maintenance</td>
<td>10 acres</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Snow and Ice Control Operations</td>
<td>8 lane miles</td>
<td>$14,880</td>
<td>$14,880</td>
<td>$14,880</td>
</tr>
<tr>
<td>Traffic Control and Maintenance</td>
<td>8 lane miles</td>
<td>$4,600</td>
<td>$4,600</td>
<td>$4,600</td>
</tr>
<tr>
<td>Raised/Recessed Pavement Markers</td>
<td>40</td>
<td>$0</td>
<td>$6,600</td>
<td>$6,600</td>
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<tr>
<td>Regulatory Signs Maintenance</td>
<td>14</td>
<td>$560</td>
<td>$560</td>
<td>$560</td>
</tr>
<tr>
<td>Guide Sign Maintenance</td>
<td>7</td>
<td>$504</td>
<td>$504</td>
<td>$504</td>
</tr>
<tr>
<td>Guardrail Maintenance</td>
<td>11,000 linear feet</td>
<td>$11,564</td>
<td>$11,564</td>
<td>$11,564</td>
</tr>
<tr>
<td>Beam Guardrail</td>
<td>3,600 linear feet</td>
<td>$4,422</td>
<td>$4,422</td>
<td>$4,422</td>
</tr>
<tr>
<td>Concrete Barrier</td>
<td>13,000 linear feet</td>
<td>$21,300</td>
<td>$21,300</td>
<td>$21,300</td>
</tr>
<tr>
<td>Atwater</td>
<td>1</td>
<td>$458</td>
<td>$458</td>
<td>$458</td>
</tr>
</tbody>
</table>

Intelligent Transportation System Operations
- Ramp Meter | 4 | $6,456 | $6,456 | $6,456 |
- Closed Circuit Television | 3 | $4,200 | $4,200 | $4,200 |
- Variable Message/Changeable Sign | 3 | $7,158 | $7,158 | $7,158 |
- Highway Advisory Radio Transmitter/Sign | 1 | $1,634 | $1,634 | $1,634 |
- Data Station System | 8 | $12,912 | $12,912 | $12,912 |
- J/HUB | 1 | $1,228 | $1,228 | $1,228 |

Other
- 3rd Party unknown Damages | 8 lane miles | $6,424 | $6,424 | $6,424 |

Total Additional Cost | $153,667 | $175,307 | $171,687

Note: ( ) indicates a maintenance cost credit.
## Projecting Impacts of a Budget Reduction

<table>
<thead>
<tr>
<th>MAP Activity</th>
<th>2013-15 M2 Spending Plan (not including 2014 supplemental budget)</th>
<th>2013-15 Level of Service Baseline for Reductions</th>
<th>Estimated Maintenance Costs to be absorbed by the Program in 2015-17</th>
<th>Projected MAP Level of Service from system addition impact</th>
<th>Maintenance Impacts resulting from Preservation Shortfall</th>
<th>Funds reduced from selected activities to cover agency-proposed reduction</th>
<th>Projected MAP Level of Service from funding reduction</th>
<th>Impact on expected results or project delivery: 2015-17 and beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A3 Shoulder Maintenance</td>
<td>4,172,188</td>
<td>C-</td>
<td>C</td>
<td>(800,000)</td>
<td>D+</td>
<td>(800,000)</td>
<td>F+</td>
<td>0</td>
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<tr>
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<td></td>
<td>Reductions in preservation funding to replace and rehabilitate pavements will extend paved shoulder surfaces beyond their useful lifespan. Additional reductions in shoulder maintenance will result in less repairs made to paved road shoulders. Maintenance will become more reactive to reported problems rather than proactive. Shoulders will become more hazardous for driving with higher edge drop-off and more pavement deficiencies.</td>
</tr>
<tr>
<td>6A5 Guide Signs</td>
<td>4,491,245</td>
<td>C+</td>
<td>B</td>
<td>(400,000)</td>
<td>B-</td>
<td>(400,000)</td>
<td>C</td>
<td>0</td>
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<td>Reductions in preservation funding to replace traffic signs will extend many signs beyond their useful lifespan. Additionally, washing and repair of guide signs will be significantly cut back resulting in less readable signs and slower response to damaged signs. This will result in difficulty for drivers reading and making travel decisions while on the highway. An increase in complaints is anticipated.</td>
</tr>
<tr>
<td>2A4 Stormwater Facility Maintenance</td>
<td>5,943,882</td>
<td>C</td>
<td>C</td>
<td>0</td>
<td>C</td>
<td>(200,000)</td>
<td>C-</td>
<td>0</td>
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<td>There will be a slight reduction in maintenance of storm water treatment facilities. It is anticipated that the program will remain in compliance with NPDES permit requirements but efforts are reduced to the bare minimum to get by with no margins for error or unexpected circumstances.</td>
</tr>
<tr>
<td>4A3 Bridge Cleaning</td>
<td>4,221,304</td>
<td>B</td>
<td>B</td>
<td>0</td>
<td>B-</td>
<td>(2,000,000)</td>
<td>D</td>
<td>0</td>
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<td>Reductions in preservation funding for painting steel bridges will extend the presence of coatings beyond their useful lifespan. This will result in an increased need for maintenance to do spot painting and possibly more structural repairs as steel bridges will become vulnerable to increased corrosion due to poor condition coatings. The OFM carry forward adjustment eliminates the funding for bridge washing. This will compromise a formal agreement with FHWA regarding our bridge condition inspection program.</td>
</tr>
</tbody>
</table>
Guide Signs

Total Biennial Budget (2013-15): $4.5 m

Budget Impacts
• Portion of absorbing system additions: $400,000
• Preservation Program funding shortfall will impact roadway signing assets
• Portion of $15 m reduction: $400,000

Program Impacts
The preservation shortfall and reduced maintenance funding will result in:
• Extending the use of signs beyond their life span
• Driver confusion when signing is not readable
• Slower response time to replace damaged or non-functional signs
• More user complaints

Guide signs assist in directing public to destinations and services

Lower level of service decreases sign readability
Guide Signs

How This Activity is Measured

Percentage of guide signs that are unreadable at night

Deficiencies may include:
- Missing signs
- Damaged or marred signs
- Signs that are dirty due to weather or maintenance reduction
- Signs that are no longer reflective

LOS A: 0 – 2%
LOS B: 2.1% - 5%
LOS C: 5.1% - 10%
LOS D: 10.1% - 15%
LOS F: more than 15%

Current Level of Service: B
Projected Level of Service: C

Guide signs assist in directing public to destinations and services

Lower level of service decreases sign readability
The “asset condition” LOS of ditch maintenance is based on the percentage of ditch that is obstructed due to debris or sediment build-up. For “task completion” LOS, Maintenance cleans out and re-shapes ditches. The Preservation Program has no direct bearing on sweeping LOS.
We use an integrated approach between Maintenance and Preservation where the “asset condition” LOS is the percentage of pavements in fair or better condition. For “task completion” LOS, Maintenance completes minor pavement repairs (i.e. patching potholes, digouts, sealing cracks) with our state workforce while Preservation periodically replaces or rehabilitates pavement surfaces with contractors.
WSDOT Contact Information

• Pasco Bakotich, Director of Maintenance & Operations
  Email: BAKOTIP@wsdot.wa.gov
  Phone: (360) 705-7851

• MAP Web page
  http://www.wsdot.wa.gov/Maintenance/Accountability/default.htm

• WSDOT Gray Notebook
  http://www.wsdot.wa.gov/Accountability/GrayNotebook/navigateGNB.htm