Data Collection and Performance Measures

Rocky Mountain West Pavement Preservation Partnership (RMWPPP)
10/20/15
ODOT’s Key Performance Measures

This is the pavement one
Pavement Condition KPM

Pavement Condition

Pavement condition: Percent of pavement centerline miles rated “fair” or better out of total centerline miles in the state highway system

Our strategy
The goal of the ODOT pavement preservation program is to keep highways in the best condition possible, at the lowest cost, by taking a preventive approach to maintenance. The most cost-effective strategy is to resurface highways while they are still in “fair” or better condition, which extends pavement life at a reduced resurfacing cost.

About the target
A higher percentage of miles in good condition translates to smoother roads and lower pavement and vehicle repair costs.

Funding allocations to the pavement program are set to maintain pavement conditions at a target of 78 percent “fair” or better over the long term. The legislature increased the target to 87 percent for 2014 and 2015. Currently, pavement conditions are above target but are forecast to drop in the future.

How we are doing and how we compare
The last several years, pavement condition has exceeded the target. However, reduced funding will cause pavement conditions to drop below target in a few years. Our pavement programs resurface less than one-half the need, and higher cost projects can’t be completed with available funds.

Pavement Condition – Percent of miles rated “fair” or better out of total miles on ODOT highway system

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>51%</td>
<td>78%</td>
</tr>
<tr>
<td>2006</td>
<td>53%</td>
<td>78%</td>
</tr>
<tr>
<td>2007</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2008</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2009</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2010</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2011</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2012</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2013</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2014</td>
<td>55%</td>
<td>78%</td>
</tr>
<tr>
<td>2015</td>
<td>55%</td>
<td>78%</td>
</tr>
</tbody>
</table>

Fact
Our pavement programs resurface less than one-half the need, and higher cost projects can’t be completed with available funds.

Percent “Fair” or Better $\iff$ 100% minus Percent “Poor”

Pavement Condition, cont.

A consequence, pavement conditions are forecast to drop below the target by the end of the decade, impacting safety and mobility. Over time, as road conditions deteriorate, thicker paving and/or complete replacement (eg, reconstruction) will become necessary at a higher cost than what would be required to simply maintain them in fair or better condition. No standardized system exists for classifying the pavement condition of all highways nationwide. Each state uses a unique procedure for classifying pavement defects and assessing structural and functional pavement conditions. However, pavement smoothness, which is one indicator of pavement condition, is collected by all states using standardized procedures. A smoothness comparison between Oregon and our neighboring states of California, Idaho, Washington, and Nevada based on 2012 Highway Statistics data shows that Oregon’s interstate pavements are in better condition than the surrounding states, while Oregon’s remaining arterial and primary highways are mid-pack compared with the neighboring states but better than the nationwide average.

Factors affecting results and what needs to be done
Lower than anticipated federal revenues may result in major funding reductions to the Preservation program, which is the primary program for resurfacing work. Other factors impacting the program are standards, mobility, and access management requirements. Often, paving work is conducted in conjunction with other enhancements which can impact project costs and timelines. The funding shortfall is most acute in urban areas. We look several steps to help offset some of the declines, including use of more low-cost chip seal treatments, and implementing a 28-year paving (pave only) program which focuses preservation investments in the pavement surface when only minor deterioration exists.

About the data
Pavement conditions are measured via a combination of automated equipment and visual assessment. Rigorous checks are made on the data to ensure integrity. Conditions are measured and reported every two years or even numbered years. Our Pavement Condition Report provides detailed pavement condition data and statistical summaries across various parts of the highway system and is available online at http://www.oregon.gov/ODOT/WAY/CONSTRUCTION/pavm_repdmreports.cfm.

Contact information
Core Multis
ODOT Highways Division, Construction Section, Pavement Services Unit
503-986-3115

Data source
ODOT Highway Division, Pavement Services Unit
How we collect condition

2 year cycle

AUTOMATED

WINDSHIELD

OREGON DEPARTMENT OF TRANSPORTATION
AUTOMATED PAVEMENT DATA COLLECTION
Condition Index

- Distress based (not IRI)
- 0 to 100 scale
- Each 0.1 mile:
  - Compute composite score = (cracking, patching, raveling, etc.)
  - Compute rutting score
  - whichever is lower sets condition for that 0.1 mile
- Weighted average across entire pavement management section (typically 1 to 10 miles)
- Aggregated section score and length used for %”Fair” or better mileage calculation

Example 0.5 mile Pavement Management Section

Aggregated Overall Score = 76 (Good)  So, count as 0.5 miles of “fair” or better
Differences from MAP-21

• MAP-21 requires annual interstate collection
• MAP-21 includes IRI in the measure
• MAP-21 *definition* of and *calculation* of %cracking is different
• MAP-21 doesn’t care about crack severity
• MAP-21 doesn’t include patching, potholes, raveling, etc.
• MAP-21 thresholds are different
• MAP-21 uses rigid 0.1 mile boundaries that don’t break at pavement type changes or bridges
• MAP-21 counts 0.1 mile segments with missing data as “poor”
• MAP-21 aggregates at the network level, not at the section level
• MAP-21 includes all NHS roads regardless of jurisdiction, does not include non-NHS state roads
• MAP-21 rounds to the nearest 0.1%
• MAP-21 uses lane miles
Will the Public Understand?

<table>
<thead>
<tr>
<th></th>
<th>ODOT</th>
<th>MAP-21</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interstate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%Good</td>
<td>71.0</td>
<td>37.3</td>
</tr>
<tr>
<td>%Poor</td>
<td>1.6</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Non-Interstate NHS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%Good</td>
<td>65.3</td>
<td>27.1</td>
</tr>
<tr>
<td>%Poor</td>
<td>14.2</td>
<td>2.3</td>
</tr>
</tbody>
</table>

- 2014 data
- State highways only (off system NHS not included)

**ODOT Report**
86% of Oregon’s state highway pavements are “fair” or better

**MAP-21 Report**
2.9% of Oregon Interstate is “poor”
2.3% of Oregon Non-Interstate NHS is “poor”
## How does Pavement Preservation affect the measures?

<table>
<thead>
<tr>
<th>Treatment</th>
<th>ODOT’s Measure</th>
<th>MAP-21’s Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crack Seal</td>
<td>Short Term: No change</td>
<td>Little to none</td>
</tr>
<tr>
<td></td>
<td>Long Term: Slows decline</td>
<td>May make worse if rater couldn’t see the cracks before</td>
</tr>
<tr>
<td>Seal Coat</td>
<td>Short Term: Little to none</td>
<td>May increase %Good</td>
</tr>
<tr>
<td></td>
<td>Long Term: Slows decline</td>
<td></td>
</tr>
<tr>
<td>Pave</td>
<td>Improve</td>
<td>Improve</td>
</tr>
<tr>
<td>PCC Patching</td>
<td>Will improve, as long as patches hold and no new</td>
<td>JCP – improve</td>
</tr>
<tr>
<td></td>
<td>distresses appear</td>
<td>CRCP – still considered as cracking</td>
</tr>
<tr>
<td>PCC Diamond</td>
<td>Will improve, since mostly we use for rut mitigation</td>
<td>Will not improve if it was just a faulting issue (no cracking issue)</td>
</tr>
<tr>
<td>Grinding</td>
<td>on CRCP</td>
<td></td>
</tr>
</tbody>
</table>
What’s Missing?

A Cost Effectiveness Measure
ODOT Rulemaking Comments

- “The NPRM pavement performance measures are relatively insensitive to pavement performance parameters actually used to cost-effectively manage pavement networks for local routes.”

- “One of the problems with the pavement performance measures as they are currently written is that they discourage proven, cost effective, pavement preservation techniques such as crack sealing or surface seals. For example, a crack seal or chip seal won’t improve IRI or rutting, and may only provide a temporary reduction in cracking percent if the sealed cracks are visible through the chip seal. Pavement preservation treatments will provide significant life extension to road segments rated as fair, without having an impact on the percent good or percent poor performance measures currently defined. Under pressure to meet performance targets, an agency may instead opt for paving roads in a “worst first” approach and ignore the necessary pavement preservation techniques that cost effectively extend life of fair roads.”
Why do we collect and report data?

A. Accountability to system users (taxpayers)
B. Monitor system health and trends
C. Make more informed decisions around pavement investments
D. Monitor effects of pavement design, materials, or policy decisions
E. Because the feds require us to
F. All of the above (Correct answer!)