

# The Gray Notebook

WSDOT's quarterly performance report on transportation systems, programs, and department management  
Quarter ending December 31, 2016 • Published February 2017

Roger Millar, Secretary of Transportation, PE AICP

## Always on our minds

WSDOT working hard  
to promote safe and  
healthy habits among  
its employees

*p. 12*

## Driving toward a smoother ride

WSDOT continues efforts  
to preserve and maintain  
pavement statewide

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## Making tracks across the state

WSDOT's freight rail  
program definitely  
pulling its weight

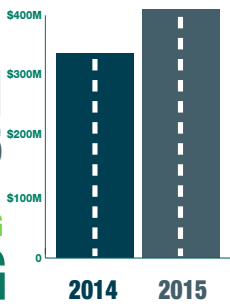
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### Performance Highlights reported for the quarter ending December 31, 2016

**WSDOT'S PAVEMENT PRESERVATION BACKLOG INCREASED BY 14.8% BETWEEN 2014 & 2015 BUT WILL DECREASE WITH COMING FUNDING**



**2%** of WSDOT's 675 active construction projects in 2016 had **environmental violation**

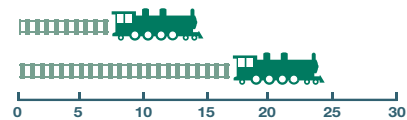
**42%** of WSDOT employees participate in **Smart Health** wellness activities

**3,300** WSDOT employees have received formal introductory **Lean training** to date

**\$24.2 million** in economic benefit was provided by WSDOT's **Incident Response** program during the fourth quarter of 2016

**736** **DBE firms** certified to work on federally-funded projects in the state in 2016, which is 8% more than in 2015

**FREIGHT RAIL PROJECTS in CONSTRUCTION or CLOSE OUT increased 60% FROM 2015 TO 2016**



**93%** of **highway maintenance** asset condition targets were achieved in 2016

**377** of 404 **Nickel and Transportation Partnership Account** funded construction projects have been completed

**673,000** active **Good to Go!** tolling accounts during fiscal year 2016

*On the cover: WSDOT remembers its fallen workers during the annual Worker Memorial event. The event, part of National Work Zone Awareness Week, encourages employees to think about safety improvements and wear orange as the agency promotes the safest work environment possible. See [p. 12](#) for more information on worker safety.*

Results WSDOT is the agency's strategic plan for 2014-2017. The plan directs WSDOT's work with partners and communities and includes three Agency Emphasis Areas (AEA) for 2016-2017:



**Workforce Development** - addressing recruitment and retention issues, employee training and development, and succession planning for WSDOT's future



**Inclusion** - making sure there are fair and equal opportunities to participate in WSDOT employment, contracts and decision making, and that every voice is heard



**Practical Solutions** - improving the performance of the multimodal transportation system at the least cost; funding for future preservation and emergent needs makes this another critical focus area

WSDOT's strategic plan focuses on how the agency makes investments and delivers projects with limited resources.

To date, all strategies are on track to achieve their desired results. For a copy of Results WSDOT, go to [bit.ly/ResultsWSDOTStrategicPlan](http://bit.ly/ResultsWSDOTStrategicPlan). Implementation plans define the actions and deliverables needed to achieve WSDOT's goals from 2014 through 2017.

Results WSDOT is based on six goals: Strategic Investments, Modal Integration, Environmental Stewardship, Organizational Strength, Community Engagement, and Smart Technology. Goals are defined in the table below, and are supported by strategies and tasks. Articles in this issue, indicated by a box with a goal logo, show how the plan's goals are being implemented.

## Results WSDOT sets agency direction 2014 through 2017 Strategic Plan

## Recent *Gray Notebook* articles linked to goals and Agency Emphasis Areas (AEA)



### Goal 1: STRATEGIC INVESTMENTS

Effectively manage system assets and multimodal investments on corridors to enhance economic vitality

- Aviation: [GNB 63, pp. 16-19](#)
- Bridges: [GNB 62, pp. 14-22](#)
- Capital facilities: [GNB 63, p. 13-15](#)
- Ferries preservation: [GNB 62, pp. 23-28](#)
- Highway maintenance: [GNB 64, pp. 21-22 \(AEA<sup>1,2</sup>\)](#)
- Multimodal assets: [GNB 64, pp. 6-7](#)
- Pavement conditions: [GNB 64, pp. 13-20 \(AEA<sup>2</sup>\)](#)



### Goal 2: MODAL INTEGRATION

Optimize existing system capacity through better interconnectivity of all transportation modes

- Ferries: [GNB 64, pp. 24-25](#)
- Freight: [GNB 64, pp. 32-34](#)
- Highway system safety: [GNB 62, pp. 10-13](#)
- Pedestrian and bicyclist safety: [GNB 61, pp. 10-12](#)
- Public transit: [GNB 63, pp. 11-12](#)
- Rail: Amtrak Cascades: [GNB 63, pp. 22-23](#)
- Trip reduction: [GNB 60, pp. 22-24](#)



### Goal 3: ENVIRONMENTAL STEWARDSHIP

Promote sustainable practices to reduce greenhouse gas emissions and protect natural habitat and water quality

- Air quality: [GNB 61, pp. 22-23](#)
- Environmental compliance: [GNB 64, pp. 30-31](#)
- Fish passage barriers: [GNB 62, pp. 35-36](#)
- General permitting: [GNB 62, p. 38](#)
- Water quality: [GNB 63, pp. 28-30](#)
- Wetlands protection: [GNB 61, pp. 26-28](#)



### Goal 4: ORGANIZATIONAL STRENGTH

Support a culture of multi-disciplinary teams, innovation and people development through training, continuous improvement and Lean efforts

- Lean: [GNB 64, p. 40 \(AEA<sup>1</sup>\)](#)
- Worker safety and health: [GNB 64, p. 12 \(AEA<sup>1</sup>\)](#)
- Workforce levels and training: [GNB 61, p. 33](#)



### Goal 5: COMMUNITY ENGAGEMENT

Strengthen partnerships to increase credibility, drive priorities and inform decision making

- Disadvantaged Business Enterprise: [GNB 64, p. 38-39 \(AEA<sup>2</sup>\)](#)
- Local programs: [GNB 62, p. 37](#)



### Goal 6: SMART TECHNOLOGY

Improve information system efficiency to users and enhance service delivery by expanding the use of technology

- Commercial Vehicle Information Systems and Networks: [GNB 61, p. 29](#)
- Tolling: [GNB 64, p. 35-37](#)
- Travel information: [GNB 61, p. 21](#)

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: **1** = Workforce Development. **2** = Practical Solutions. **3** = Inclusion.

Results Washington, the state's performance management system, outlines Gov. Jay Inslee's priorities. This strategic framework sets the state's vision and mission, as well as the foundational expectations for state agencies to achieve goals collaboratively. Results Washington has five focus areas: World Class Education; Prosperous Economy; Sustainable Energy and a Clean Environment; Healthy and Safe Communities; and Efficient, Effective and Accountable Government. For more information, visit <http://www.results.wa.gov/>.

| Results Washington measures by goal area <sup>1</sup>  | Previous period   | Current period     | On target <sup>2</sup> | Current trend | Desired trend |
|--|---|--------------------|------------------------|---------------|---------------|
| <b>Annual measures for which WSDOT is the lead agency</b>  |   |                    |                        |               |               |
| <b>Goal 2: Prosperous Economy</b>  |   |                    |                        |               |               |
| Based on current funding levels, maintain the percent of Washington infrastructure assets in satisfactory condition at 2013 baseline levels through 2020 (2013 & 2014)   | 86% <sup>3</sup>  | 85%                | No                     | ↓             | ↑             |
| Based on current funding levels, control the percent of state and local bridges <sup>4</sup> in poor condition from increasing over 10% by 2017 (Fiscal years 2015 & 2016)   | 8.8%  | 9.3%               | Yes                    | ↑             | ↓             |
| Based on current funding levels, control the percent of state and local pavement <sup>4</sup> in poor condition from increasing over 10% by 2017 (2014 & 2015)   | 6%  | 7%                 | Yes                    | ↑             | ↓             |
| Based on current funding levels, control the percent of ferry terminal systems that are past due for replacement from increasing over 6% by 2020 (Fiscal years 2015 & 2016)  | 3.7%  | 5.4% <sup>3</sup>  | Yes                    | ↑             | ↓             |
| Based on current funding levels, control the percent of ferry vessel systems that are past due for replacement from increasing over 10% by 2020 (Fiscal years 2015 & 2016)   | 8.3%  | 10.9%              | No                     | ↑             | ↓             |
| Maintain percentage of transit fleet that exceeds the Federal Transit Administration's minimum useful life at 25% or below through 2020 (2014 & 2015)  | 37.3% <sup>5</sup>  | 34.6% <sup>5</sup> | No                     | ↓             | ↓             |
| Increase the percentage of Washingtonians using alternative transportation commute methods to 29% by 2020 (2014 & 2015)  | 27.6%   | 27.6%              | No                     | ↔             | ↑             |
| Ensure travel and freight reliability (impacted by economic growth) on strategic corridors does not deteriorate beyond 5% from 2012 levels through 2017 (2014 & 2015)  | 6.6%  | 8.1%               | No                     | ↑             | ↓             |
| Operate strategic corridors at 90% efficiency or higher through 2017 (2014 & 2015)   | 94.6%   | 93.4%              | Yes                    | ↓             | ↑             |
| Reduce the number of pedestrian and bicyclist fatalities on public roadways from 84 in 2012 to zero in 2030 (2014 & 2015)  | 85 <sup>3</sup>   | 100                | No                     | ↑             | ↓             |
| <b>Annual measures for which WSDOT is not the lead agency, but has an interest</b>   |   |                    |                        |               |               |
| <b>Goal 2: Prosperous Economy</b>  |   |                    |                        |               |               |
| Increase state agency and educational institution utilization of state-certified small businesses in public works and other contracting and procurement by 2017 to: Minority-owned businesses, 10%; Women-owned businesses, 6%; Veteran-owned businesses, 5% | <i>Measure is under development. Expected to report in the first quarter of 2017.</i> |                    |                        |               |               |
| <b>Goal 3: Sustainable Energy and a Clean Environment</b>  |   |                    |                        |               |               |
| Reduce transportation related greenhouse gas emissions from 44.9 million metric tons/year (projected 2020) to 37.5 million metric tons/year (1990) by 2020 (2012 & 2013)   | 42.4  | 40.4 <sup>3</sup>  | Yes                    | ↓             | ↓             |
| Reduce the average emissions of greenhouse gases for each vehicle mile traveled in Washington by 25% from 1.15 pounds in 2010 to 0.85 pounds by 2020 (2012 & 2013)   | 1.11 <sup>3</sup>   | 1.11               | No                     | ↔             | ↓             |
| Increase the average miles traveled per gallon of fuel for Washington's overall passenger and light duty truck fleet (private and public) from 19.2 mpg in 2010 to 23 mpg in 2020 (2014 & 2015)  | 20.6  | 21.0               | No                     | ↑             | ↑             |
| Increase the number of plug-in electric vehicles registered in Washington from approximately 8,000 in 2013 to 50,000 by 2020 (2014 & 2015)   | 12,351  | 16,529             | No                     | ↑             | ↑             |
| Increase miles of stream habitat opened from 350 to 450 (per year) by 2016 (2014 & 2015) <sup>6</sup>  | 599 <sup>3</sup>  | 365                | No                     | ↓             | ↑             |
| Increase number of fish passage barriers corrected per year from 375 to 500 by 2016 (2014 & 2015) <sup>6</sup>   | 424 <sup>3</sup>  | 479                | No                     | ↑             | ↑             |
| <b>Goal 4: Healthy and Safe Communities</b>  |   |                    |                        |               |               |
| Decrease number of traffic-related fatalities on all roads from 454 in 2011 to zero in 2030 (2014 & 2015)  | 462   | 566 <sup>3</sup>   | No                     | ↑             | ↓             |

Data sources: WSDOT Office of Strategic Assessment and Performance Analysis and Results Washington's Open Performance Program.

Notes: **1** In addition to the measures listed in the table, WSDOT contributes performance information that is combined and reported with data from all state agencies in Goal 5: Efficient, Effective and Accountable Government. **2** "On target" is defined as currently meeting the goal or making enough progress to meet the goal by the target date. Some measures may be trending in the desired direction but are not on track. **3** Data has been corrected from previous *Gray Notebook* editions. **4** This measures assets on the National Highway System. **5** Values differ from previous editions. To better align with the FTA, WSDOT has updated its method for calculating useful life; it is now based on age or mileage instead of just age. **6** Includes work completed by all state agencies.

# Statewide Transportation Policy Goals

# 64

| Statewide policy goal/<br>WSDOT performance measure   | Previous period      | Current period       | Goal               | Goal met | Five-year trend (unless noted)          | Desired trend  |
|---|----------------------|----------------------|--------------------|----------|---|----------------|
| <b>Safety</b>   |                      |                      |                    |          |   |                |
| Rate of <b>traffic fatalities</b> per 100 million vehicle miles traveled statewide<br><small>(Annual measure: calendar years 2014 &amp; 2015)</small>   | 0.80                 | 0.95 <sup>1</sup>    | <1.00              | ✓        |   | ↓              |
| Rate of <b>recordable incidents</b> for every 100 full-time WSDOT workers<br><small>(Annual measure: calendar years 2015 &amp; 2016)</small>  | 4.3                  | 4.6                  | <5.0               | ✓        |   | ↓              |
| <b>Preservation</b>   |                      |                      |                    |          |   |                |
| Percentage of state <b>highway pavement</b> in fair or better condition by vehicle miles traveled<br><small>(Annual measure: calendar years 2014 &amp; 2015)</small>  | 93.3%                | 93.0%                | ≥ 90.0%            |          |   | ↑              |
| Percentage of <b>state bridges</b> in fair or better condition by bridge deck area<br><small>(Annual measure: fiscal years 2015 &amp; 2016)</small>   | 92.1%                | 91.2%                | ≥ 90.0%            | ✓        |   | ↑              |
| <b>Mobility (Congestion Relief)</b>   |                      |                      |                    |          |   |                |
| <b>Highways:</b> Annual (weekday) vehicle <b>hours of delay</b> statewide relative to <b>maximum throughput speeds</b> <sup>2</sup><br><small>(Annual measure: calendar years 2014 &amp; 2015)</small>                            | 32.3 million         | N/A                  | N/A                | N/A      | <br><small>(Four-year trend)</small>    | ↓              |
| <b>Highways:</b> Average <b>incident clearance times</b> for all Incident Response program responses<br><small>(Calendar quarterly measure: Q3 2016 &amp; Q4 2016)</small>  | 12.0 minutes         | 12.6 minutes         | N/A                | N/A      | <br><small>(Five-quarter trend)</small> | ↓              |
| <b>Ferries:</b> Percentage of trips departing on time <sup>3</sup><br><small>(Fiscal quarterly measure: year to year Q2 FY2016 &amp; Q2 FY2017)</small>   | 95.4%                | 95.9%                | ≥ 95%              | ✓        |   | ↑              |
| <b>Rail:</b> Amtrak Cascades on-time performance <sup>4</sup><br><small>(Annual measure: fiscal years 2015 &amp; 2016)</small>  | 72.1%                | 74.8%                | ≥ 80%              | —        |   | ↑              |
| <b>Environment</b>  |                      |                      |                    |          |   |                |
| Number of WSDOT <b>stormwater management facilities</b> constructed<br><small>(Annual measure: fiscal years 2015 &amp; 2016)</small>  | 130                  | 151                  | N/A                | N/A      |   | Not applicable |
| Cumulative number of WSDOT <b>fish passage improvement projects</b> constructed<br><small>(Annual measure: calendar years 2014 &amp; 2015)</small>  | 291                  | 301                  | N/A                | N/A      |   | ↑              |
| <b>Stewardship</b>  |                      |                      |                    |          |   |                |
| Cumulative number of Nickel and TPA <b>projects completed</b> <sup>5</sup> and <b>percentage on time</b> <sup>6</sup><br><small>(Calendar quarterly measure: Q3 2016 &amp; Q4 2016, trendline for percentage on time)</small>     | 374/<br>87%          | 377/<br>87%          | ≥ 90% on time      | —        | <br><small>(Five-quarter trend)</small> | ↑              |
| Cumulative number of Nickel and TPA <b>projects completed</b> <sup>5</sup> and <b>percentage on budget</b> <sup>6</sup><br><small>(Calendar quarterly measure: Q3 2016 &amp; Q4 2016, trendline for percentage on budget)</small> | 374/<br>92%          | 377/<br>91%          | ≥ 90% on budget    | ✓        | <br><small>(Five-quarter trend)</small> | ↑              |
| Variance of total project costs <sup>5</sup> compared to <b>budget expectations</b> <sup>6</sup><br><small>(Calendar quarterly measure: Q3 2016 &amp; Q4 2016)</small>  | Under budget by 2.2% | Under budget by 2.2% | On or under budget | ✓        | <br><small>(Five-quarter trend)</small> | Not applicable |

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: N/A = not available; goal has not been set. Dash (—) = goal was not met in the reporting period. For the Economic Vitality Policy Goal, see [p. 4](#) for Results Washington Goal 2: Prosperous Economy measures. **1** Traffic fatality data for 2015 was finalized January 1, 2017. **2** Compares the average travel time to the travel time associated with “maximum throughput,” the speed which allows the greatest number of vehicles to pass by a location on the highway in a given time (70-85% of the posted speed limits). **3** WSDOT Ferries’ on-time departures include any trip recorded by automated tracking as leaving the terminal within 10 minutes of scheduled time. **4** Amtrak Cascades’ on-time performance includes any trip arriving within 10-15 minutes, depending on the route, of scheduled arrival time. **5** Construction projects only. **6** Budget and schedule expectations are defined in the last approved State Transportation Budget. See [p. 41](#) for more information.

| WSDOT performance measure  | Previous period | Current period       | Goal    | Goal met | Five-year trend (unless noted) | Desired trend |
|--|-----------------|----------------------|---------|----------|--------------------------------|---------------|
| <b>Highway Assets</b>  |                 |                      |         |          |                                |               |
| <b>Bridges</b> <span style="float: right;">53.5 million square feet of bridge deck</span>  |                 |                      |         |          |                                |               |
| Percentage of WSDOT-owned bridges in fair or better condition by bridge deck area<br><small>(Fiscal years 2015 &amp; 2016, <a href="#">GNB 62, p. 14</a>)</small>  | 92.1%           | 91.2%                | ≥90.0%  | ✓        |                                | ↑             |
| Number of WSDOT-owned bridges load restricted or load posted<br><small>(Fiscal years 2015 &amp; 2016, <a href="#">GNB 62, p. 18</a>)</small>   | 120             | 126                  | *       | N/A      |                                | ↓             |
| Current WSDOT-owned steel bridge painting backlog; Millions of dollars<br><small>(Fiscal years 2015 &amp; 2016, <a href="#">GNB 62, p. 20</a>)</small>   | \$394.0         | \$414.5              | *       | N/A      |                                | ↓             |
| Projected 10-year WSDOT owned steel bridge painting backlog; Millions of dollars<br><small>(Fiscal years 2015-2025 &amp; 2016-2026, <a href="#">GNB 62, p. 20</a>)</small>   | \$684.0         | \$706.6              | *       | N/A      |                                | ↓             |
| Current WSDOT-owned bridge deck area due or past due for replacement; Millions of dollars<br><small>(Fiscal years 2015 &amp; 2016, <a href="#">GNB 62, p. 19</a>)</small>  | \$70.8          | \$115.6              | *       | N/A      |                                | ↓             |
| Projected 10-year WSDOT owned bridge deck area due or past due for replacement; Millions of dollars<br><small>(Fiscal years 2015-2025 &amp; 2016-2026, <a href="#">GNB 62, p. 19</a>)</small>                                    | \$71.5          | \$726.5 <sup>1</sup> | *       | N/A      |                                | ↓             |
| Structurally deficient local and WSDOT-owned NHS bridges; Percentage of deck area<br><small>(MAP-21 criteria, see <a href="#">p. 9</a>)<br/><small>(Fiscal years 2015 &amp; 2016, <a href="#">GNB 62, p. 15</a>)</small></small> | 8.8%            | 9.3%                 | ≤10.0%  | ✓        |                                | ↓             |
| <b>Pavement</b> <span style="float: right;">18,679 lane miles of pavement</span>   |                 |                      |         |          |                                |               |
| Percentage of WSDOT-owned pavement <sup>2</sup> in fair or better condition;<br><small>(Calendar years 2014 &amp; 2015, <a href="#">GNB 64, p. 13</a>)</small>   | 93.3%           | 93.0%                | ≥90.0%  | ✓        |                                | ↑             |
| Highway Pavement Asset Sustainability Ratio; Long term service replenishment rate <sup>3</sup><br><small>(Calendar years 2014 &amp; 2015, <a href="#">GNB 64, p. 13</a>)</small>   | 0.53            | 0.57                 | ≥0.90   | —        |                                | ↑             |
| Highway Pavement Deferred Preservation Liability (backlog); Millions of dollars<br><small>(Calendar years 2014 &amp; 2015, <a href="#">GNB 64, p. 13</a>)</small>  | \$351           | \$403                | \$0     | —        |                                | ↓             |
| Highway Pavement Remaining Service Life as percentage of total useful life<br><small>(Calendar years 2014 &amp; 2015, <a href="#">GNB 64, p. 13</a>)</small>   | 46.9%           | 47.1%                | 45%-55% | ✓        |                                | ↑             |
| Percentage of lane miles of interstate pavement in poor condition (MAP-21 criteria, see <a href="#">p. 9</a> )<br><small>(Calendar years 2014 &amp; 2015)</small>  | 3.9%            | 4.0%                 | ≤5.0%   | ✓        |                                | ↓             |
| <b>Safety Rest Areas</b> <span style="float: right;">47 safety rest areas</span>   |                 |                      |         |          |                                |               |
| Safety rest area score <sup>4</sup> through the Maintenance Accountability Process<br><small>(Calendar years 2014 &amp; 2015, <a href="#">GNB 61, p. 13</a>)</small>   | B               | B                    | B       | ✓        |                                | ↑             |
| Total visitors at safety rest areas; Millions of visitors<br><small>(Calendar years 2014 &amp; 2015, <a href="#">GNB 61, p. 13</a>)</small>  | 22.5            | 23.1                 | *       | N/A      |                                | N/A           |
| <b>Highway Maintenance</b>   |                 |                      |         |          |                                |               |
| Percentage of funded maintenance condition targets achieved <sup>5</sup> ;<br><small>(Calendar years 2015 &amp; 2016, <a href="#">GNB 64, p. 21</a>)</small>   | 85%             | 93%                  | 100%    | —        |                                | ↑             |

Continued on [p. 7](#)

# Multimodal Asset Performance Dashboard *(continued)*

| WSDOT performance measure  | Previous period   | Current period    | Goal   | Goal met | Five-year trend <i>(unless noted)</i>   | Desired trend |
|--|-------------------|-------------------|--------|----------|---|---------------|
| <b>Ferry Assets</b>  |                   |                   |        |          |   |               |
| <b>Vessels and Terminals</b> <span style="float: right;">22 vessels, operating out of 20 terminals</span>  |                   |                   |        |          |   |               |
| Ferry vessel systems past due for replacement <sup>6</sup><br><small>(Fiscal years 2015 &amp; 2016, <a href="#">GNB 62, p. 24</a>)</small>   | 8.3%              | 10.9%             | ≤10.0% | —        | <br><small>(Three-year trend)</small>   | ↓             |
| Ferry terminal systems past due for replacement <sup>7</sup><br><small>(Fiscal years 2014 &amp; 2015, <a href="#">GNB 62, p. 27</a>)</small>   | 3.7%              | 5.3%              | ≤6.0%  | ✓        | <br><small>(Three-year trend)</small>   | ↓             |
| Ferry vessel preservation needs as percentage backlog of total vessel value<br><small>(Fiscal years 2015 &amp; 2016, <a href="#">GNB 62, p. 27</a>)</small>                                  | 26.1%             | 30.6%             | *      | N/A      | <br><small>(Three-year trend)</small>   | ↓             |
| Ferry terminal preservation needs as percentage backlog of total terminal assets<br><small>(Calendar years 2014 &amp; 2015, <a href="#">GNB 62, p. 26</a>)</small>                           | 11.3%             | 12.8%             | *      | N/A      | <br><small>(Three-year trend)</small>   | ↓             |
| <b>Multimodal Assets</b>   |                   |                   |        |          |   |               |
| <b>Aviation</b> <span style="float: right;">16 airports managed, nine owned, 137 public use</span>   |                   |                   |        |          |   |               |
| Airport combined (federal, state, local) grant funding <sup>8</sup> ; Millions of dollars<br><small>(Fiscal years 2016 &amp; 2017, <a href="#">GNB 63, p. 16</a>)</small>                    | \$40.7            | \$59.7            | *      | N/A      | <br><small>(Three-year trend)</small>   | ↑             |
| Percentage of airport inspections conducted by WSDOT <sup>8</sup><br><small>(Calendar years 2015 &amp; 2016, <a href="#">GNB 63, p. 17</a>)</small>  | 76%               | 100%              | 100%   | ✓        | <br><small>(Three-year trend)</small>   | ↑             |
| <b>Other Assets</b>  |                   |                   |        |          |   |               |
| <b>Facilities</b> <span style="float: right;">3.59 million square feet</span>  |                   |                   |        |          |   |               |
| Facilities <sup>9</sup> Preventive Maintenance Plan Completion Rate <sup>10</sup><br><small>(Biennial measure: 2013-2015 &amp; 2015-2017, <a href="#">GNB 59, p. 9</a>)<sup>11</sup></small> | 74% <sup>12</sup> | 88% <sup>12</sup> | 71%    | ✓        | <br><small>(Two-biennium trend)</small> | ↑             |
| Percentage of primary buildings <sup>9</sup> in fair or better condition<br><small>(Biennial measure: 2013-2015 &amp; 2015-2017, <a href="#">GNB 59, p. 9</a>)<sup>11</sup></small>          | 60%               | 58%               | *      | N/A      | <br><small>(Two-biennium trend)</small> | ↑             |
| 10-year forecast of unmet needs (backlog) <sup>13</sup> ; Millions of Dollars<br><small>(Biennial measure: 2013-2015 &amp; 2015-2017, <a href="#">GNB 59, p. 9</a>)<sup>11</sup></small>     | \$473.0           | \$475.5           | *      | N/A      | <br><small>(Two-biennium trend)</small> | ↓             |

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: N/A = not available or not applicable. Asterisk(\*)= goal has not been set. Dash (—) = goal was not met in the reporting period. **1** The significant increase in projected liabilities is due to the deterioration of physical assets and changes in accounting. Since 2009, many concrete overlays could not be adequately maintained as a result of budget constraints and are now coming due for rehabilitation. A change in accounting for projected asset deterioration to more accurately capture future needs was also implemented in FY2016. **2** Data includes only conditions for asphalt and concrete pavement; budget constraints prohibited data collection for chip seal pavement. Condition data is weighted by vehicle miles traveled. **3** Years of service life replenished through rehabilitation divided by service life consumed on an annual basis (long-term measure). **4** Safety rest areas are assigned a score according to the Maintenance Accountability Process on a level of service (LOS) scale, A through F. **5** Maintenance activities are assigned asset condition targets based upon an A through F level of service scale and funding levels; actual conditions are compared to funded asset condition levels on the LOS scale. See [GNB 32, p. 19](#) for additional information on LOS standards. **6** WSDOT Ferries vessels uses a risk assessment matrix, which combines the probability of system component failure with information on the failure's impact on ferry operations to gauge when ferry systems are past due for replacement; systems in condition rating 3 are past due for replacement. **7** WSDOT Ferries use an economic-based model for assessing terminal needs; the model has been updated each subsequent year to improve accuracy and is not directly comparable to previous data. **8** Asset condition data is not currently available for the WSDOT aviation programs; grant funding and inspections for the Airport Master Record are being used as stand-in measurements until data is available. Both measurements apply to public-use non-primary commercial airports. **9** Data is unavailable prior to 2012. **10** The Preventive Maintenance Plan is developed biennially and ranks maintenance activities based upon a criticality assessment scale. Funding is insufficient to complete all activities; completion rate is measured only for funded work categories. **11** Calibration of a newly deployed facility condition and maintenance tracking software made data unavailable at the time of the *Gray Notebook 64* publication. **12** Reporting of the Facilities Preventive Maintenance Plan Completion Rate was changed from annually in *Gray Notebook 63* to biennially in *Gray Notebook 64*. **13** Measured as backlog of unmet needs over the next 10 years as identified by the capital facilities strategic plan.

| WSDOT performance measure  | Previous period | Current period | Goal           | On track/<br>meets goal | Five-year trend (unless noted) | Desired trend |
|--|-----------------|----------------|----------------|-------------------------|--------------------------------|---------------|
| <b>Highway</b>   |                 |                |                |                         |                                |               |
| Total number of fatalities on Washington state public roads <sup>1</sup><br>(Calendar years 2014 & 2015, <a href="#">GNB 62, p. 10</a> )                                 | 462             | 551            | 0 <sup>2</sup> | —                       |                                | ↓             |
| Total number of serious injuries on Washington state public roads <sup>1</sup><br>(Calendar years 2014 & 2015, <a href="#">GNB 62, p. 10</a> )                           | 2006            | 2099           | 0 <sup>2</sup> | —                       |                                | ↓             |
| Number of fatalities per 100 million vehicle miles travelled on Washington state public roads <sup>1</sup><br>(Calendar years 2014-2015, <a href="#">GNB 62, p. 10</a> ) | 0.80            | 0.95           | 0 <sup>2</sup> | —                       |                                | ↓             |
| Serious injuries per 100 million vehicle miles travelled on Washington state public roads <sup>1</sup><br>(Calendar years 2014 & 2015, <a href="#">GNB 62, p. 10</a> )   | 3.46            | 3.52           | 0 <sup>2</sup> | —                       |                                | ↓             |
| <b>Non-motorist</b>  |                 |                |                |                         |                                |               |
| Number of pedestrian and bicyclist combined fatalities and serious injuries <sup>1</sup><br>(Calendar years 2013 & 2014, <a href="#">GNB 61, p. 10</a> )                 | 491             | 492            | 0 <sup>2</sup> | —                       |                                | ↓             |
| <b>Ferries</b>   |                 |                |                |                         |                                |               |
| Passenger injuries per million passenger miles traveled<br>(Fiscal years 2015 & 2016, <a href="#">GNB 64, p. 23</a> )  | 0.93            | 0.42           | <1.0           | ✓                       |                                | ↓             |
| OSHA recordable crew injuries per 10,000 revenue service hours <sup>3</sup><br>(Fiscal years 2015 & 2016, <a href="#">GNB 64, p. 23</a> )                                | 6.2             | 5.6            | <8             | ✓                       |                                | ↓             |
| <b>Rail</b>  |                 |                |                |                         |                                |               |
| Total number of train-related fatalities in Washington state<br>(Calendar years 2015 & 2016)   | 27 <sup>4</sup> | 13             | *              | N/A                     |                                | ↓             |
| <b>Aviation</b>  |                 |                |                |                         |                                |               |
| General aviation fatalities in Washington state <sup>5</sup><br>(Calendar years 2014 & 2015, <a href="#">GNB 63, p. 16</a> )   | 10              | 9              | *              | N/A                     |                                | ↓             |
| <b>Public Transit</b>  |                 |                |                |                         |                                |               |
| Fatalities involving Washington state public transportation<br>(Calendar years 2014 & 2015, <a href="#">GNB 63, p. 11</a> )  | 3               | 3              | *              | N/A                     |                                | ↓             |
| Injuries involving Washington state public transportation<br>(Calendar years 2014 & 2015, <a href="#">GNB 63, p. 11</a> )  | 234             | 295            | *              | N/A                     |                                | ↓             |

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: N/A = not available or not applicable. Asterisk (\*) = goal has not been set. Dash (—) = goal was not met or is not on track in the reporting period. **1** Fatality and serious injury data was finalized in January 2017. **2** The goal of zero fatalities and serious injuries on Washington public roadways is established under the state's Strategic Highway Safety Plan, [Target Zero](#). **3** OSHA = Occupational Safety and Health Administration. **4** There was a large increase in trespassing incidents on tracks in 2015. As a result, more than 80% (22 of 27) of fatalities in 2015 were due to trespassing. **5** General aviation includes all non-commercial passenger aviation.



# Moving Ahead for Progress in the 21st Century (MAP-21)

## FHWA releases final two MAP-21 rules

The Federal Highway Administration (FHWA) released Moving Ahead for Progress in the 21st Century (MAP-21) final performance management rules for pavement and bridges; and for system performance, freight movement, congestion mitigation and air quality in January 2017.

The two final rules are currently pending a review ordered by the new White House administration following a nationwide regulatory freeze. The minimum 60-day freeze

gives designated federal reviewers' time to determine whether to lift or continue the regulation freeze. If the freeze for a final rule is lifted, there will be one year for state DOTs to establish targets and 180 additional days for MPOs. Once FHWA approves and finalizes state targets, state DOTs may incur federal penalties and held accountable for not showing significant progress for specific performance measures.

The final rule for pavement and bridges as released by FHWA is detailed below. The pavement and bridges measures went largely unchanged from the Notice of Proposed Rulemaking (NPRM) stage to the final rule.

| MAP-21 measures by program area  | Federal threshold/benchmark <sup>1</sup>                               | MAP-21 target <sup>2</sup> | WSDOT penalty <sup>3</sup> (Yes/No) | Rule release date          | Existing WSDOT performance measures for this program area   |
|--|--|----------------------------|-------------------------------------|----------------------------|---|
| <b>Combined Rule – FINAL RULE</b>  |  |                            |                                     |                            |   |
| <b>Federal Register Vol. 81, No. 78</b>  |  |                            |                                     |                            |   |
| <b>- System Performance (Congestion)</b>   |  |                            |                                     |                            |   |
| Percent of the Interstate System providing for reliable travel   | No   | TBD (To be determined)     | No                                  | Final 1/18/17 <sup>4</sup> | The <a href="#">2016 Corridor Capacity Report</a> details highway travel times and congestion trends in Washington state  |
| Percent of the non-Interstate National Highway System (NHS) providing for reliable travel                | No   | TBD                        | No                                  | Final 1/18/17 <sup>4</sup> | The <a href="#">2016 Corridor Capacity Report</a> details highway travel times and congestion trends in Washington state  |
| Percent change in tailpipe CO <sub>2</sub> emissions on the NHS compared to the calendar year 2017 level | No   | TBD                        | No                                  | Final 1/18/17 <sup>4</sup> | Fuel sales data is reported to FHWA on a monthly basis for Washington state   |
| <b>- National Freight Movement Program</b>   |  |                            |                                     |                            |   |
| Truck travel time reliability index  | No   | TBD                        | No                                  | Final 1/18/17 <sup>4</sup> | A truck travel time reliability measure was established as part of the 2014 Washington State Freight Mobility Plan  |
| <b>- Congestion Mitigation and Air Quality Program</b>   |  |                            |                                     |                            |   |
| Annual hours of peak hour excessive delay per capita   | No   | TBD                        | No                                  | Final 1/18/17 <sup>4</sup> | The <a href="#">2016 Corridor Capacity Report</a> details highway travel times and congestion trends in Washington state  |
| Percent of non-SOV travel  | No   | TBD                        | No                                  | Final 1/18/17 <sup>4</sup> | Data is available from the United States Census Bureau's American Community Survey  |
| Two- and four-year total emission reductions for each applicable criteria pollutant and precursor        | No   | TBD                        | No                                  | Final 1/18/17 <sup>4</sup> | CMAQ project emissions reductions are reported to FHWA annually   |
| <b>National Highway Performance Program – FINAL RULE</b>   |  |                            |                                     |                            |   |
| <b>Federal Register Vol. 80, No. 2</b>   |  |                            |                                     |                            |   |
| National Highway System interstate pavement in good and poor condition                                   | % of interstate pavement lane miles in poor condition not to exceed 5% | TBD                        | Yes                                 | Final 1/18/17 <sup>4</sup> | See <a href="#">p. 20</a> for an update on MAP-21 implications for pavement. On October 24, 2016, the Asset Management Plan final rule was released which is linked to the final rule for pavement and bridge performance measures. |
| National Highway System bridges classified in good and poor condition                                    | % of SD <sup>5</sup> bridges not to exceed 10%                         | TBD                        | Yes                                 | Final 1/18/17 <sup>4</sup> | Several measures of bridge condition including good/fair/poor condition rating and structural deficiency rating; see <a href="#">GNB 62, p. 14</a> and <a href="#">p. 22</a>  |

Continued on [p. 10](#)

# WSDOT adapting to changes in MAP-21 rules

The combined rule for system performance, freight movement, and congestion mitigation and air quality was changed to reflect person miles traveled instead of system miles. The final rule also had the following changes during FHWA’s review and analysis prior to releasing the final rule:

## System Performance

FHWA will not seek performance information based on the percent of interstate system where peak hour travel times meet expectations, or the percent of non-interstate National Highway System where peak hour travel times meet expectations. Instead, states will measure the percent change in tailpipe CO<sub>2</sub> emissions on the NHS compared to the calendar year 2017 level.

## National Freight Movement

FHWA will not seek information based on the percent of interstate system mileage providing for reliable truck travel time, or the percent of interstate system mileage that is uncongested. Instead, states will report on a Truck Travel Time Reliability Index.

## Congestion Mitigation and Air Quality

FHWA added a performance measure to require states to measure the percent of non-single occupancy vehicle travel.

For additional information on WSDOT’s Initial State Performance Report and how it ties into MAP-21, visit [www.wsdot.wa.gov/Accountability/MAP-21](http://www.wsdot.wa.gov/Accountability/MAP-21).

| MAP-21 measures by program area   | Federal threshold/benchmark <sup>1</sup> | MAP-21 target <sup>2</sup> | WSDOT penalty <sup>3</sup> (Yes/No) | Rule release date | Existing WSDOT performance measures for this program area   |
|---|--|----------------------------|-------------------------------------|-------------------|---|
| <b>Highway Safety Improvement Program – FINAL RULE</b>  |  |                            |                                     |                   | <b>Federal Register Vol. 79, No. 60</b>   |
| Number of traffic fatalities on all public roads  | No                                       | TBD                        | Yes                                 | Final 3/15/16     | Traffic fatalities using the NHTSA <sup>6</sup> methodology; see <a href="#">GNB 62, p. 10</a>  |
| Number of serious traffic injuries on all public roads  | No                                       | TBD                        | Yes                                 | Final 3/15/16     | Serious injuries using the NHTSA <sup>6</sup> methodology; see <a href="#">GNB 62, p. 10</a>  |
| Rate of traffic fatalities per 100 million vehicle miles traveled (VMT) on all public roads     | No                                       | TBD                        | Yes                                 | Final 3/15/16     | Traffic fatality rates using the NHTSA <sup>6</sup> methodology; see <a href="#">GNB 62, p. 13</a>  |
| Rate of serious traffic injuries per 100 million VMT on all public roads                        | No                                       | TBD                        | Yes                                 | Final 3/15/16     | WSDOT does not currently track the data or metrics for this measure as it is proposed in this Final Highway Safety Rule                               |
| Number of combined non-motorized (bicyclist/pedestrian) traffic fatalities and serious injuries | No                                       | TBD                        | Yes                                 | Final 3/15/16     | Non-motorized (pedestrian/bicyclist) fatalities and serious injuries using the NHTSA <sup>6</sup> methodology; see <a href="#">GNB 61, p. 10</a>      |
| Rate of per capita traffic fatalities for drivers and pedestrians 65 or older                   | No                                       | TBD                        | No                                  | Final 3/15/16     | The rate of traffic fatalities for pedestrians (65 or older) is part of Washington’s <a href="#">Target Zero</a> <sup>7</sup> traffic safety campaign |
| Rate of fatalities on high-risk rural roads   | No                                       | TBD                        | Yes                                 | Final 3/15/16     | Traffic fatality rates on high-risk rural roads as part of <a href="#">Target Zero</a> <sup>7</sup>   |
| Highway-railway crossing fatalities   | No                                       | TBD                        | No                                  | Final 3/15/16     | Number of fatalities at highway-railway crossings   |

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.

Notes: **1** Minimum threshold or benchmark to be established by the U.S. Department of Transportation, Secretary of Transportation. **2** Performance targets to be set for each performance measure by WSDOT in coordination with Metropolitan Planning Organizations (MPOs) statewide. **3** Penalties apply for some measures if WSDOT or the MPO does not attain the target within a given time frame. Penalties apply only to WSDOT and include minimum allocations of federal funding toward programs to progress toward the desired target. **4** A 60-day freeze has been placed on the effective date by the new White House administration **5** SD = structurally deficient. **6** NHTSA = National Highway Traffic Safety Administration. **7** Washington state’s strategic highway safety plan.

## WSDOT celebrates 15 years of the *Gray Notebook*

Continuing WSDOT's celebration marking 15 years of the *Gray Notebook*, editions reporting on 2016 include a look back at articles from 2001, 2006 and 2011 to provide insight on how the report, agency and state have changed since the *Gray Notebook's* inception as *Measures Markers and Mileposts* in 2001.

### Pavement conditions see decreases from levels reported by state in 2001

*Measures, Markers and Mileposts* reported on pavement conditions in its June 2001 edition and showed that in 2000 the vast majority of all pavement (by type) was in good condition. WSDOT reported that 87% of chip seal, 93% of asphalt and 90% of concrete was in good condition, with the remainders of each considered as being in poor condition.

In this 64th edition of the *Gray Notebook*, WSDOT provides a more comprehensive look at pavement conditions, including five-year trends, projected condition levels and 2015 conditions by lane miles and by vehicle miles traveled (VMT):

- Good/very good 76.4% (75.2% by VMT)
- Fair 16.7% (17.8% by VMT)
- Poor 5.1% (5.4% by VMT)
- Very poor 1.8% (1.6% by VMT)

The pavement conditions for 2015 are for asphalt and concrete. WSDOT removed chip seal from the condition ratings because of funding constraints and because, while it comprises 33% of all state-owned roadways, it accounts for only 6% of vehicle miles traveled. See [pp. 13-20](#) for more information.

### Percent of WSDOT maintenance targets met increases from 2006

*Measures, Markers and Mileposts* noted in its December 2006 edition that WSDOT had met 30 of its 33 (91%) its maintenance targets for the year. The agency's Maintenance Accountability Process, used to evaluate Washington's infrastructure, has evolved since then. WSDOT replaced the "pass" and "fail" designations used in 2006 with letter grades (A

through F) to provide a clearer picture of just how well it is performing in each maintenance activity. In *Gray Notebook* 64, WSDOT reported that the agency met 25 of 27 targets (93%). See [pp. 21-22](#) for details.

### WSDOT's environmental compliance continues to improve since 2011

*Gray Notebook* 44 stated that WSDOT had 21 reportable environmental events in 2011. Of these, 10 dealt with stormwater permits and the remaining 11 ranged from water quality violations to improper storage of hazardous materials.

*Gray Notebook* 44 also noted that in 2011, "WSDOT's efforts to improve environmental compliance include collaborating with the Washington State Department of Fish and Wildlife to develop three new training courses addressing techniques for habitat improvement, planning for and installing temporary stream bypasses, and designing permanent fish passage structures."

In *Gray Notebook* 64, WSDOT reports 16 total environmental compliance violation notices for 2016. It also notes that the State Route 92 Pilchuck River Chronic Environmental Deficiency project was nominated for an environmental award as it exemplified WSDOT's efforts to protect the travelling public while providing long-term solutions to reduce impacts to fish and fish habitat. See [pp. 30-31](#) for details.

### Statewide transportation policy goals

Laws enacted in 2007 established policy goals for transportation agencies in Washington (RCW 47.04.280). The six statewide transportation policy goals are:

- **Safety:** To provide for and improve the safety and security of transportation customers and the transportation system;
- **Preservation:** To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services;
- **Mobility (Congestion Relief):** To improve the predictable movement of goods and people throughout Washington, including congestion relief and improved freight mobility;
- **Environment:** To enhance Washington's quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment;
- **Economic Vitality:** To promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy; and
- **Stewardship:** To continuously improve the quality, effectiveness, and efficiency of the transportation system.

## Notable results

- *The agency-wide recordable incident rate improved 16% from 2012 through 2016*
- *WSDOT had 42% of its employees participate in Smart Health activities in 2016*

## Safety improves since 2012

WSDOT's agency-wide recordable incident rate (RIR) increased from 4.3 in 2015 to 4.6 in 2016, indicating an increase in the number of Occupational Health and Safety Administration (OSHA) recordable injuries per 100 workers at agency worksites. The state-wide "days away, restricted or transferred," or DART rate, also increased from 1.8 in 2015 to 2.2 in 2016. The DART rate is a subset of the RIR where the injuries sustained result in days away, restricted or transferred duties. Despite the increases in 2016, both the RIR and DART rate decreased significantly (improved) in the last five years. The agency-wide RIR improved 16% between 2012 and 2016, and the DART rate improved 19% in the same time period.

## Safety inspection and incident reporting system launched

WSDOT launched a new web-based Safety Inspection and Incident Reporting System (SIIRS) in October 2016, replacing a paper-based system. Now, any safety-related incidents and all equipment accidents, employee injuries, and facility and worksite inspections will be reported through SIIRS. With SIIRS, management is notified electronically when a new incident is reported. Another benefit is improved data access for both safety staff and organizational unit managers. SIIRS also allows for easy tabulation of efforts and identification of issues that need to be addressed. WSDOT



was involved in developing SIIRS and is teaching use of the system across the agency while completing worksite, facility and shop inspections. WSDOT expects the value of SIIRS to increase as employees at every level gain knowledge of and comfort with its use. Launching



### Strategic Plan Goal 4:

#### ORGANIZATIONAL STRENGTH

Strategy 4.1 (Workforce) - Implement various strategies that foster a safe, capable, engaged and valued workforce. WSDOT implemented "Our journey to injury free" in January 2015 and conducted 979 safety inspections in 2016 to accelerate progress toward a goal of zero recordable incidents.

**WSDOT's agency-wide recordable incident and DART rates<sup>1</sup> increase in 2016; Show five year improvement 2012 through 2016; Average number of recordable incidents and DART rate for every 100 full-time employees per year**

| Incident rate            | 2012 | 2013 | 2014 | 2015 | 2016 | 5-year % change <sup>2</sup> |
|--------------------------|------|------|------|------|------|------------------------------|
| WSDOT <sup>3</sup>       | 5.4  | 5.5  | 5.7  | 4.2  | 4.3  | -20%                         |
| Ferries <sup>3</sup>     | 5.5  | 6.1  | 4.5  | 4.8  | 5.4  | -2%                          |
| Agency-wide <sup>3</sup> | 5.5  | 5.7  | 5.4  | 4.3  | 4.6  | -16%                         |
| <b>DART rate</b>         |      |      |      |      |      |                              |
| WSDOT <sup>3</sup>       | 2.4  | 2.6  | 2.5  | 1.6  | 1.6  | -33%                         |
| Ferries <sup>3</sup>     | 3.5  | 4.2  | 3.1  | 2.4  | 3.6  | +3%                          |
| Agency-wide <sup>3</sup> | 2.7  | 3.0  | 2.7  | 1.8  | 2.2  | -19%                         |

Data source: WSDOT Office of Human Resources and Safety.

Notes: **1** The recordable incident rate is calculated as the number of recordable incidents multiplied by 200,000 hours and divided by the total hours worked. The "days away" or DART rate is the count of recordable incidents involving days away, restricted duty, or job transfer, multiplied by 200,000 hours, and divided by the total hours worked. **2** Rates: (-%) = improve; (+%) = worsen. **3** Ferries is separate due to its marine work environment; agency-wide includes Ferries and the rest of WSDOT.

the SIIRS system was a task in Results WSDOT, the agency's strategic plan, and was part of the plan's strategy to foster a safe, capable, engaged and valued workforce. See related task in Strategic Plan box at bottom left.

## Employees participate in wellness activities and assessments

WSDOT's Wellness Program developed statewide challenges and hosted Smart Health-related activities in which 42% of WSDOT employees participated in 2016, up 2% from 2015. In addition, 35% of employees completed well-being assessments compared to 40% in 2015. For participating in Smart Health-related activities in 2016, 28% of WSDOT employees earned sufficient points to receive a \$125 credit toward their health insurance deductible in 2017, the same percentage as in 2015. In addition to the annual deductible incentive, WA Wellness has added incentives to encourage Public Employees Benefits Board (PEBB) members to complete their well-being assessment in 2017. WSDOT and WA Wellness are working together to increase Smart Health participation.

Contributors include Marlo Binkley, Wayne Frudd, Kathy Radcliff, Ernst Stahn, Ed Stevens, Zach Mason and Yvette Wixson

## Notable results

- *WSDOT pavement lane miles in fair or better condition held steady, going from 93.4% in 2014 to 93.1% in 2015*
- *WSDOT's Pavement Asset Sustainability Ratio improved from 2014 to 2015 and is expected to continue improving*
- *The preservation backlog was up 14.8% from 2014 to 2015, but is expected to decrease in 2016 with Connecting Washington funding*
- *WSDOT used strategic maintenance to extend pavement life by up to four years before resurfacing*

## Pavement conditions remain stable from 2014 to 2015

In 2015, 93.1% of WSDOT-managed pavement lane miles were in fair or better condition, holding fairly steady from the 93.4% reported in 2014.

WSDOT determined that 93.0% of vehicle miles traveled (VMT) in 2015 were driven on pavement in fair or better condition, a slight decrease from 93.3% in 2014. Weighting measures by VMT allows WSDOT to better capture the experience of the typical road user.



WSDOT sustained pavement conditions statewide from 2014 to 2015 by actively monitoring conditions and employing Practical Solutions such as strategic maintenance and chip seal conversion

(see [p. 16](#) for details), which enable the agency to improve system performance at the least cost.

The agency evaluates the condition of asphalt and concrete pavement on state-managed roadways annually using three indicators:

- Surface cracking (an indicator of structural deterioration);
- Rutting (which is monitored for safety and structural reasons); and,
- Smoothness (measured using the International Roughness Index).

These criteria are used to classify pavement conditions into five categories: very good, good, fair, poor and very poor.

The categories very good, good and fair show pavement conditions that are considered adequate. Pavement

## Most pavement performance measures hold relatively steady; Deferred Preservation Liability increases 2014 compared to 2015

| Pavement annual performance measures <sup>1</sup> |   | 2014                | 2015                       | Agency goal <sup>2</sup> | Goal met <sup>3</sup> | Trend | Desired Trend |
|---|---|---------------------|----------------------------|--------------------------|-----------------------|-------|---------------|
| Short term  | <b>Percent of pavement in fair or better condition</b> measured for asphalt and concrete pavement (chip seal data was not collected in 2014 or 2015 due to budget constraints). Condition is shown by lane miles as well as weighted by the vehicle miles traveled to reflect road use. | Lane miles<br>93.4% | 93.1%                      | 90%                      | ✓                     | ↓     | ↑             |
|   |   | VMT<br>93.3%        | 93.0%                      |                          |                       |       |               |
|   | <b>Asset Sustainability Ratio<sup>4</sup></b> measures the years of pavement service life added to the pavement network through rehabilitation in a given year, divided by the service life consumed in that same year.   | 0.53                | 0.57 <sup>5</sup>          | 0.9                      | —                     | ↑     | ↑             |
| Long term   | <b>Remaining Service Life<sup>4</sup></b> average percentage of original total useful life remaining before rehabilitation or replacement is needed, and average years remaining before rehabilitation or replacement is needed.  | 46.9%<br>(7.37 yrs) | 47.1%<br>(7.40 yrs)        | 45%<br>to 55%            | ✓                     | ↑     | ↑             |
|   | <b>Deferred Preservation Liability (backlog)</b> estimates the accumulated cost in current dollars to fund the backlog of past-due (deferred) pavement rehabilitation work.   | \$351 million       | \$403 million <sup>6</sup> | \$0                      | —                     | ↑     | ↓             |

Data source: WSDOT Pavement Office.

Notes: **1** Calculations for all measures, excluding percent of pavement in fair or better condition, include all pavement types (asphalt, chip seal and concrete). **2** Agency also has goals for Results Washington and the Governmental Accounting Standards Board—see [p. 19-20](#) for more information. **3** Check indicates goal met, dash indicates goal not met **4** Measure is weighted by vehicle miles traveled to better capture the typical road user's experience. **5** Asset Sustainability Ratio goal not met in 2015—see [p. 14](#) for more information. **6** Deferred Preservation goal not met in 2015—see [p. 16](#) for more information.

# Connecting Washington improves pavement outlook

in poor condition is deficient and needs repair, while very poor condition indicates failure and the need for substantial restoration and possibly reconstruction.

These short-term condition indicators provide a snapshot of the current state of the pavement network, but they do not inform WSDOT about long-term trends or capture the impacts of long-term investments on the pavement network.

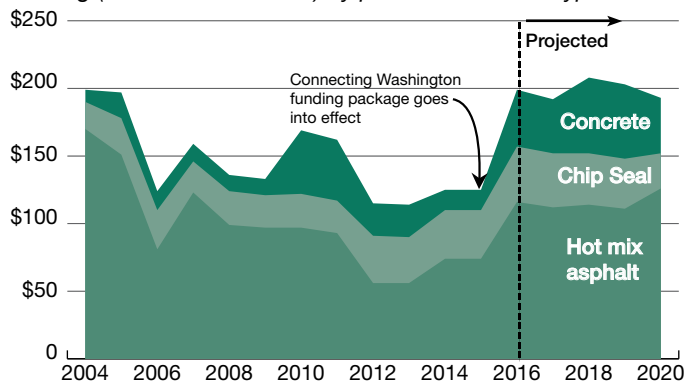
For example, patching and resurfacing might both take a section of asphalt pavement from poor to fair or better condition. However, while patching can increase service life by up to four years, resurfacing typically adds about 15 years. Unlike the short-term condition ratings, long-term pavement performance indicators reflect this difference, with resurfacing resulting in a larger increase in Remaining Service Life than patching. Resurfacing would also impact the Asset Sustainability Ratio and the Deferred Preservation Liability, while patching would not.

## Funding package will support pavement projects statewide

In 2015, the Washington state legislature enacted Connecting Washington, a 16-year transportation revenue package that provides \$1.225 billion for highway preservation and improves the long-term outlook for pavement performance. The effects of increased spending will start to be seen in 2016 data, and will be reported in *Gray Notebook* 68.

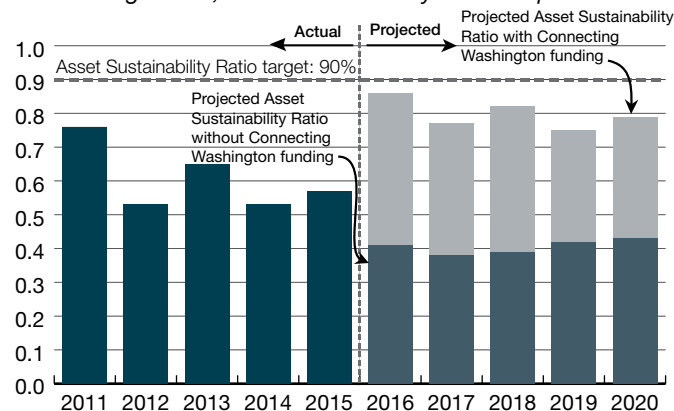
### Connecting Washington increases funding for pavement preservation for several years

*Fiscal years 2004 through 2020; Pavement preservation funding (in millions of dollars) by pavement surface type*



Data source: WSDOT Pavement Office.  
Note: Each stripe on the graph represents a share of annual pavement funding allocated to each pavement type in 2014 dollars.

## WSDOT Asset Sustainability Ratio expected to improve with Connecting Washington funding 2011 through 2020; Asset Sustainability Ratio for pavements



Data source: WSDOT Materials Lab.  
Notes: The Asset Sustainability Ratio is calculated by dividing the years of pavement service life added to the network in a given year by the years of pavement service life consumed in that same year.

## Asset Sustainability Ratio improves but does not reach goal in 2015

The Asset Sustainability Ratio (ASR) is the ratio between years of pavement life added to the pavement network in a given year and years of pavement life used up in that same year. It indicates whether the annual level of investment in the pavement network is sustainable. If the ASR is below 1.0 for a particular year, then fewer years of service life were added to the pavement network in that year than were consumed. The ASR in 2015 was 0.57, indicating that for each year of pavement life consumed in 2015, 0.57 years were added. This represents an improvement from 2014, when the ASR was 0.53. Connecting Washington is expected to significantly improve the ASR, with a value of 0.86 forecasted for 2016. While this is a substantial increase, it is below the target value of 0.90.

## Remaining Service Life holds steady


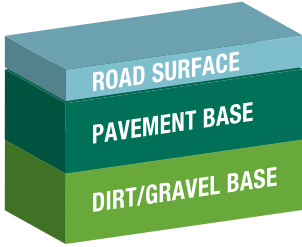

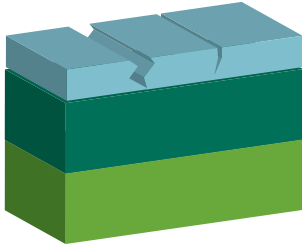

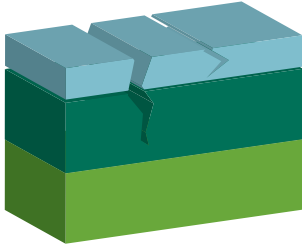

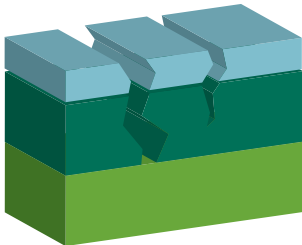
The Remaining Service Life (RSL) of state-owned pavement remained fairly steady, going from 46.9% in 2014 to 47.1% in 2015 (see chart on [p. 16](#) for details).

Remaining Service Life is a measure of the average remaining pavement life across the roadway network. It is calculated by first estimating the number of years remaining before the condition of a pavement section is expected to become unacceptable (poor or very poor), and then dividing by the pavement section's total

# Five-year trends for pavement condition are positive

Percentage of WSDOT's pavement in good condition increases; percentage in poor condition declines

Actual values for 2011 and 2015; Projected 2020; Percent of lane miles and vehicle miles traveled (VMT) by condition category; Characteristics of pavement at each condition

| WHAT DRIVERS SEE   | WHAT IS HAPPENING  | 2011  | 2015  | Projected 2020 <sup>1</sup> | Trend <sup>2</sup> | Desired trend |
|--|--|-------|-------|-----------------------------|--------------------|---------------|
| <p><b>GOOD/VERY GOOD</b></p>  | <p><b>GOOD/VERY GOOD</b></p>  <p>By lane miles</p> <p>By VMT<sup>3</sup></p> <p>This pavement is in good condition with minimal deterioration</p> <p><i>Motorists experience a smooth road with minimal cracks, ruts or potholes</i></p>  | 75.6% | 76.4% | 74.2%                       | ↑                  | ↑             |
| <p><b>FAIR</b></p>            | <p><b>FAIR</b></p>  <p>By lane miles</p> <p>By VMT<sup>3</sup></p> <p>Managing pavement by lowest life cycle cost (LLCC) means choosing the most cost-effective time to resurface or repair a road – when the surface shows wear, but before the underlying structure is damaged</p> <p><i>Preventive preservation (maintenance) repairs at this stage can maximize the road's service life</i></p> | 14.9% | 16.7% | 23.3%                       | ↓                  | ↔             |
| <p><b>POOR</b></p>          | <p><b>POOR</b></p>  <p>By lane miles</p> <p>By VMT<sup>3</sup></p> <p>Waiting to repair a road until it is in poor condition costs more, because damage to the underlying structure requires more expensive pavement restoration (1.5 to 2 times the LLCC)</p> <p><i>Poor and very poor roads cause more wear on vehicles and higher fuel use</i></p>   | 5.4%  | 5.1%  | 1.7%                        | ↓                  | ↓             |
| <p><b>VERY POOR</b></p>     | <p><b>VERY POOR</b></p>  <p>By lane miles</p> <p>By VMT<sup>3</sup></p> <p>Delaying rehabilitation of pavement in poor condition can lead to deep pavement failure which requires more expensive reconstruction (3 to 4 times the LLCC)</p> <p><i>This road requires reactive repairs to hold it together until reconstruction, not a good long-term cost saving strategy</i></p>                 | 4.1%  | 1.8%  | 0.8%                        | ↓                  | ↓             |

Data source: WSDOT Materials Lab.

Notes: Percents may not add to 100 due to rounding. Condition figures do not include chip seal pavement, also known as Bituminous Surface Treatments (BST), which has not been evaluated since 2010 due to budget reductions. Chip seal pavement accounts for 33% of lane miles on the state's highway network (up from 32% in 2014), yet because chip seal roads have less traffic than asphalt or concrete, they account for only 6% of the vehicle miles traveled on WSDOT's roadway network. <sup>1</sup> Projections take into account the Connecting Washington transportation revenue package, and therefore do not match the 2020 projections published in [Gray Notebook 56, p. 9](#). <sup>2</sup> Trends are based on observed condition trends between 2011 and 2015. <sup>3</sup> When pavement condition is weighted by VMT, roadways with more traffic are weighted more heavily than less traveled roads. Weighting pavement condition by VMT better accounts for the higher costs to maintain and preserve roads with more traffic.

# Revenue package funds expected to decrease backlog

expected lifetime. This number is then averaged over all of the pavement sections in the network to yield the statewide RSL. Due to Connecting Washington funding, RSL is expected to remain within WSDOT's target range (45% to 55%) into the future (see graph at right).

## Preservation backlog increases, but is expected to decrease in 2016

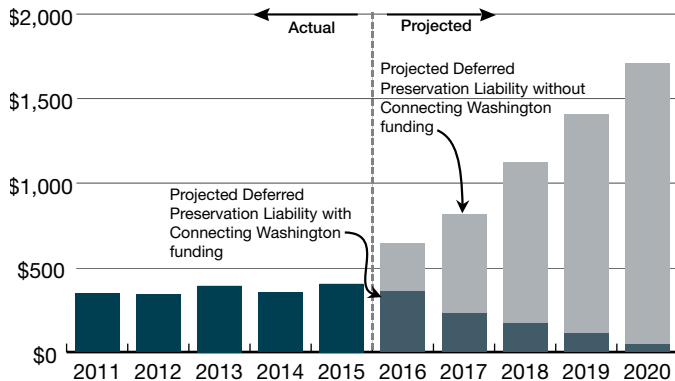
WSDOT uses Deferred Preservation Liability, an estimate of the accumulated cost of performing all past-due pavement rehabilitation work, to track how much investment is needed to restore the entire pavement network to an adequate condition.

WSDOT's goal is to have a Deferred Preservation Liability of \$0. The Deferred Preservation Liability increased from \$351 million in 2014 to \$403 million in 2015. WSDOT uses Practical Solutions approaches such as strategic maintenance to keep pavement condition and RSL within acceptable ranges (see chart at left for RSL target, p. 13 for condition targets), but the lack of long-term investment results in an increased backlog. Connecting Washington funding is expected to substantially decrease the Deferred Preservation Liability beginning in 2016 (see chart below).

## WSDOT maintains roads through strategic asset management

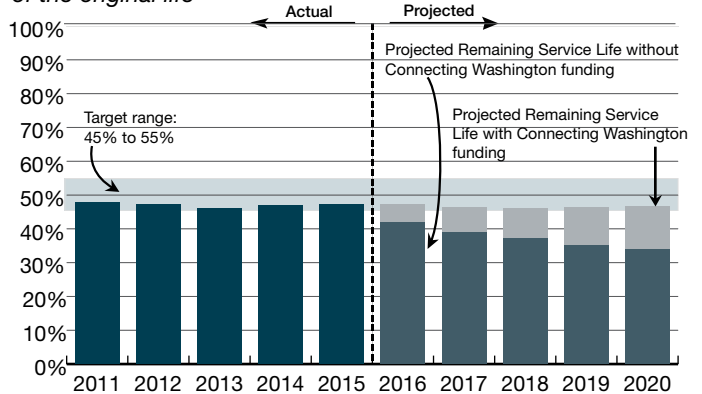
WSDOT manages almost 18,500 lane miles of highway pavement (excluding bridge decks), as well as just over 2,000 lane miles of ramps and special use lanes and about

### WSDOT's Deferred Preservation Liability expected to decline with Connecting Washington funding 2011 through 2020; Dollars in millions; Projections based on agency budget assumptions for pavement



Data source: WSDOT Materials Lab.  
Notes: Deferred Preservation Liability is defined as the funding necessary to address past due pavement rehabilitation for all pavement types. WSDOT's goal is to have \$0 in Deferred Preservation Liability.

### Remaining Service Life of WSDOT pavements projected to remain steady through 2020 2011 through 2020; Remaining Service Life shown as a percent of the original life

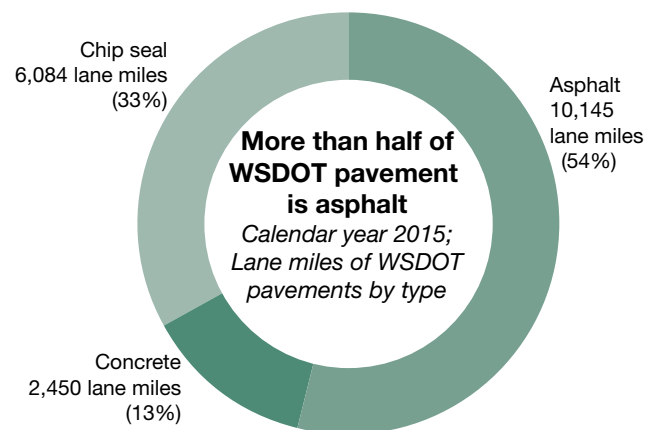


Data source: WSDOT Materials Lab.  
Notes: For 2015, the Remaining Service Life of 47.1% is equivalent to 7.4 years remaining before rehabilitation is needed.

7,500 lane miles of shoulders. These pavement assets have a replacement value of approximately \$19 billion.

WSDOT uses a Practical Solutions approach to managing its pavement assets by focusing on lowest life cycle cost (LLCC), which aims to achieve the highest benefit at the lowest cost over the life of the pavement.

Pavement treatments are divided into three categories: maintenance, rehabilitation, and reconstruction. Maintenance treatments, such as crack sealing, are the least expensive, but are also the shortest-lived. WSDOT's policy is to not program any large-scale pavement resurfacing projects without first using a maintenance treatment. This policy started in 2014 and has been



Data source: WSDOT 2015 State Highway Log.  
Notes: Figures include bridge decks. Figures do not include pavement on ramps, collector/distributor lanes or on a variety of special-use lanes, including chain-up lanes, two-way turning lanes, bicycle lanes, transit lanes, and truck climbing lanes.



# WSDOT uses cost-effective pavement management

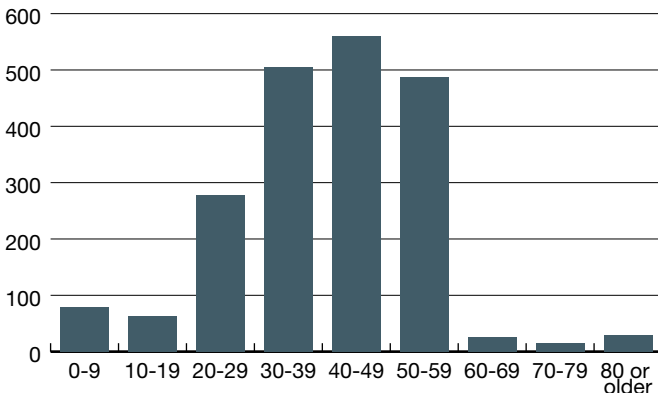
more successful than anticipated, with maintenance treatments extending pavement life by up to four years.

Pavement rehabilitation is more expensive than maintenance but can extend pavement life by 10 to 20 years depending on surface type. Reconstruction, the most expensive option, provides the longest extension of pavement life (15 to 50 years, depending on surface type).

## Majority of WSDOT concrete pavement in use for twice original design life

While only 2,080 lane miles of the state’s highway network (excluding bridge decks) is concrete, this pavement makes up 50% of interstate highway pavements in Washington and carries 28% of statewide vehicle miles traveled. Much of this pavement was constructed as part of the interstate highway construction program in the 1960s and 1970s, when concrete roadways were constructed without dowels and were expected to last for about 20 years.

**Over half of concrete pavement over 40 years old 2016; Lane miles of state-owned concrete pavement in Washington grouped by age (in years)**



Data source: WSDOT Pavement Office.

Note: Data in graph does not include concrete bridge decks.

## WSDOT reduces reconstruction costs by using Crack and Seat with Asphalt Overlay (CSOL)

WSDOT began experimenting with using CSOL to reconstruct concrete roads in 2011, and has completed a small number of projects since then using the technique. Recently, WSDOT used CSOL to reconstruct a three-mile section of Interstate 5 near Federal Way. The project, which was WSDOT’s first use of CSOL in an urban area, was completed for significantly less than the cost of traditional concrete replacement.

Currently, 1,200 lane miles of WSDOT-managed concrete pavement are more than 40 years old (see chart at left). WSDOT has extended the life of 45% of its concrete pavement using a variety of rehabilitation treatments such as dowel bar retrofit, diamond grinding and selective slab replacement. However, opportunities for further life-extending treatments are limited, and WSDOT currently expects that no more than 10% of its concrete pavement will remain in acceptable condition beyond the age of 60 years.

Treatments for concrete pavement fall into two major categories: rehabilitation and reconstruction. Rehabilitation, described above, typically costs \$400,000 to \$500,000 per lane mile. Reconstruction costs between \$600,000 and \$2.5 million per lane mile, and can be accomplished using one of four methods:

- **Crack and Seat with Asphalt Overlay (CSOL)** involves fracturing the existing concrete pavement in order to turn it into a stable base for a thick layer of asphalt pavement. Leaving the existing structure in place results in substantial reductions in both costs (due to the reduced need for material removal and replacement) and construction time. CSOL projects typically cost between \$600,000 and \$900,000 per lane mile.
- **Asphalt Replacement** is typically used when the condition of the ground under the road makes long-term concrete slab stability difficult. It involves removing the concrete slab and subbase, and then replacing them with asphalt pavement. This method typically costs \$1 million per lane mile.
- **Unbonded Concrete Overlay** is a process in which a thin layer of asphalt is placed on top of the existing roadway, followed by a full-depth concrete overlay on top of the new asphalt. This reconstruction method typically costs \$1.5 million to \$2 million per lane mile.
- **Concrete Replacement** involves removing the existing concrete slab and subbase, and replacing it with a new, thicker slab to allow for increased traffic levels. Construction costs are typically \$2.5 million per lane mile.

Asphalt replacement and CSOL are generally expected to last for 15 to 20 years before needing resurfacing, which adds to the cost but can also extend useful life substantially (see [p. 19](#)). Concrete replacement and unbonded concrete overlay are expected to last for 50 years with minor rehabilitation treatments.

# WSDOT developing 10- and 30-year plans for concrete

## WSDOT using Practical Solutions approach in Concrete Pavement Plan

To address the problem of Washington’s aging concrete roadways, WSDOT has drafted 10- and 30-year plans for the rehabilitation and reconstruction of the state’s concrete pavement network. Both plans will be refined over time, with the goal of minimizing overall costs using Practical Solutions.

For the 10-year plan, which covers the years 2016 through 2025, a detailed list of proposed projects was developed, and the rehabilitation or reconstruction strategy that provided the longest pavement life for the lowest annual cost was selected for each project. The 30-year plan, which extends through 2045, is primarily based on pavement age and rehabilitation history.

WSDOT estimates that between 2016 and 2045 a total of 1,350 lane miles of concrete pavement will need rehabilitation, and 1,493 lane miles will need reconstruction (see table, below left). Some sections of pavement will need both rehabilitation and reconstruction during this period.

If rehabilitation and reconstruction are spread evenly over the 30-year period, WSDOT expects costs to be \$95 million

## Rehabilitation and reconstruction needs for WSDOT concrete pavements

| Years                    | Rehabilitation<br>(lane miles) | Reconstruction<br>(lane miles) |
|--------------------------|--------------------------------|--------------------------------|
| 2016-2025                | 366                            | 515                            |
| 2026-2035                | 567                            | 474                            |
| 2036-2045                | 417                            | 504                            |
| <b>Total (2016-2045)</b> | <b>1,350</b>                   | <b>1,493</b>                   |
| <b>Annual Average</b>    | <b>45</b>                      | <b>50</b>                      |

Data source: WSDOT Pavement Office.

annually. This estimate does not include possible cost increases due to cost inflation or to changes in scope such as adding capacity or repairing shoulders or ramps.

## WSDOT uses mill-and-inlay technique to lower cost of asphalt rehabilitation

Fifty percent of WSDOT hot mix asphalt pavement currently has a structure life of more than 50 years. WSDOT achieved this result, as well as saving approximately \$14,000 per lane mile annually, by taking advantage of the fact that resurfacing asphalt is much more cost-effective than reconstructing it. Resurfacing typically has an average annual cost of \$15,000 per lane mile over the lifetime of the pavement, while reconstruction followed by resurfacing costs \$29,000 per lane mile annually.

WSDOT has been using thicker asphalt pavements (greater than six inches) since the 1950s. Thicker

## Hot seal process speeds up construction

Approximately 33% of WSDOT pavement is chip seal, which consists of a thin layer of asphalt covered with gravel chips bonded to the surface. WSDOT has begun experimenting with a new type of chip seal process, called hot seal, which reduces road closures and traffic slowdowns during construction.

In a traditional chip seal, an emulsified asphalt is used. For the chips to completely bond to the asphalt, the water must evaporate, which can take multiple hours. Until the chips are fully bonded and excess chips are swept from the road, traffic speeds must be kept below 25 mph to avoid vehicle damage from loose chips.

In the new hot seal process, which uses hot paving-grade asphalt, the chips are typically bonded within 30 minutes.

WSDOT has placed 300 lane miles of hot seal since 2014, and has plans for 208 lane miles in 2017.

## FHWA Mobile Concrete Lab visits Washington

The Federal Highway Administration’s (FHWA) Mobile Concrete Laboratory (MCL) visited Washington state in late September 2016. The MCL travels the nation every year making stops at state construction projects.

This year, WSDOT invited the MCL to Washington to introduce WSDOT and local agency personnel, local contractors, and consultants to new and emerging concrete technologies in materials selection, mixture design, field and laboratory testing, and pavement evaluation.

While at WSDOT’s Unbonded Concrete Overlay project on Interstate 90 near Cle Elum, the MCL conducted tests alongside WSDOT personnel, providing demonstrations of and training in new concrete technologies. Some of the new technologies have the potential to reduce costs associated with testing and construction; increase safety; and increase the quality, performance and durability of concrete pavements. This training aligns with WSDOT’s Workforce Development emphasis area.

# WSDOT meets pavement performance targets

asphalt pavement tends to crack from the top down (as illustrated in the graphic on [p. 15](#)), which allows WSDOT to resurface asphalt roads by milling off the top two inches of pavement and replacing it with a new layer of hot mix asphalt of the same thickness.

Pavement that has been resurfaced by milling and inlaying will be the same thickness after rehabilitation as it was before, unlike pavement resurfaced by adding a layer of asphalt on top of the existing pavement. This often makes it possible to use milling and inlaying to resurface only those lanes in immediate need of preservation without creating an uneven road surface. In many areas, inlaying allows WSDOT to pave less-used lanes (such as shoulders and turn lanes) less often, reducing the cost of the asphalt pavement preservation program.

Additionally, resurfacing thick pavements while the pavement is still in fair condition preserves the underlying structure of the pavement. While WSDOT currently designs hot mix asphalt pavement to last 50 years (with resurfacing every 15 years), the agency's experience has been that resurfacing by mill and inlay can extend the life of the road even further.

## Results Washington progresses

Results Washington, Gov. Jay Inslee's performance management system for the state, includes a measure for pavement conditions for state and local roads on the National Highway System (NHS). The target for this measure is to have no more than 10% of pavements (weighted by vehicle miles traveled) on state and local NHS roads in poor condition by 2017. In 2015, 7% of NHS pavements were in poor or very poor condition—a one percentage-point increase from 2014.

### The National Highway System (NHS)

The National Highway System (NHS) is a network of strategic highways within the United States, and includes both state and local highways as well as roads serving major airports, ports, rail and/or truck terminals, and other transport facilities. Washington's NHS network includes 14,718 lane miles of pavement, of which 78% is state-owned roadway and 22% is owned by local agencies. The pavement performance targets in both Results Washington and MAP-21 (see [p. 20](#)) apply specifically to pavement on the NHS.



## Results Washington Leading Indicator

Based on current funding levels, control the percent of state and local pavements in poor condition from increasing over 10% by 2017.

**Status:** On plan (green)

### Strategies:

#### 1. Convert asphalt surfaces to chip seal

The life-cycle annual cost for a chip seal surfaced pavement is approximately one-third the cost of an asphalt surface. By 2016, it is expected that the cumulative six-year cost reduction due to chip seal conversion will be \$100 million.

#### 2. Implement practical solutions

WSDOT uses the practical design approach to make project decisions that focus on the specific problem that the project is intended to address. This performance-based approach looks for lower cost solutions in order to meet specific performance criteria.

#### 3. Strategic pavement maintenance

Performing maintenance treatments at the appropriate time (before rehabilitation is needed) extends pavement life and results in lower annual cost. WSDOT's policy is that no pavement rehabilitation takes place until strategic maintenance has been used to extend pavement life. WSDOT has found that strategic pavement maintenance can extend pavement life by as much as four years. This treatment, which is not yet fully implemented, is currently being used on 40% of asphalt pavement and saving WSDOT about \$6.7 million each year.

#### 4. Prioritize cost effective projects

The WSDOT prioritization process avoids reconstruction, emphasizes lower annual cost, and takes traffic volume into consideration.

### Percent of National Highway System pavement (by VMT) in poor condition

|                     |     |
|---------------------|-----|
| State-owned roads   | 5%  |
| Locally-owned roads | 13% |
| Total               | 7%  |



### Strategic Plan Goal 1: STRATEGIC INVESTMENTS

Strategy 1.1 (Strategic Investments) - Create a process to identify strategic preservation and maintenance investments and strategic operational and multimodal capacity improvement investments in corridors to achieve performance levels.

WSDOT developed a policy for planning, programming and managing asphalt and chip seal pavements in order to improve the agency's effective management of these assets in a declining revenue climate. The policy, called the Integrated Approach for Pavement Preservation, was implemented in 2014. The instructional letter for this policy was renewed in 2015 and again in 2016. For more detailed information related to these efforts, see [Gray Notebook 60 p. 15](#).

# WSDOT prepares to implement federal regulations

## WSDOT follows Governmental Accounting Standards Board

The state is also required to follow Generally Accepted Accounting Principles, which include pronouncements from the Governmental Accounting Standards Board (GASB). This board governs the financial reporting of infrastructure assets, and requires WSDOT to maintain an up-to-date inventory of assets and to document condition assessments.

For the purpose of GASB reporting, WSDOT has a pavement condition goal of 85% of state-owned lane miles in fair or better condition. WSDOT exceeded this goal in 2015 with 93.1% of lane miles in fair or better condition. Pavement conditions for GASB are evaluated based on roughness (assessed using the International Roughness Index), cracking and rutting.

## Updates on MAP-21 requirements

The Federal Highway Administration (FHWA) recently released two rules under the Moving Ahead for Progress in the 21st Century Act (MAP-21) that apply to pavement. On October 24, 2016, the FHWA released the final rule requiring states to develop and implement a risk-based asset management plan, referred to as the Transportation Asset Management Plan (TAMP). The TAMP covers a 10-year period and includes all roadways on the National Highway System (NHS). The rule requires an initial TAMP to be submitted by the state by April 30, 2018, and a final plan (following a review process) to be submitted by June 30, 2019.

A second final rule related to pavement was announced on January 9, 2017, and finalized on January 18, 2017; it documents the methods and minimum acceptable criteria to be used to measure pavement condition on the NHS. The rule also requires the state to coordinate

### WSDOT's Pavement Notebook

WSDOT's Pavement Notebook is a series of detailed performance reports on the Washington state pavement network. One of those reports, Pavement Asset Management, is a comprehensive overview of how WSDOT systematically manages its pavement, is also available. The Pavement Notebook can be accessed at: <http://www.wsdot.wa.gov/Business/MaterialsLab/Pavements/PavementNotebook.htm>

### Pavement condition reporting requirements

Condition targets by performance reporting system

| Reporting system   | Target  | Included pavement                          |
|--|---|--|
| Moving Ahead for Progress in the 21st Century Act (MAP-21) | Not yet established                                       | All NHS pavement (WSDOT and locally owned) |
| Results Washington   | Less than 10% of pavement (by VMT) in poor condition      | All NHS pavement (WSDOT and locally owned) |
| Governmental Accounting Standards Board                    | 85% of state-owned lane miles in fair or better condition | All WSDOT-owned pavement (NHS and non-NHS) |

Data source: WSDOT Office of Strategic Assessment and Performance Analysis.  
Note: NHS = National Highway System

with local agencies to set pavement performance targets for both interstate and non-interstate roadways.

In anticipation of this rule, WSDOT collaborated with Washington state Metropolitan Planning Organizations (MPOs) to set up a series of teams to work on setting targets for MAP-21. These teams will analyze proposed targets and their implications for WSDOT, MPOs, and the 102 cities and counties with pavement on the NHS; they will also make recommendations based on their analyses.

For more information on MAP-21, see [pp. 9-10](#).

*Contributors include David Luhr, Ruth McIntyre, Tim Rydholm, Jeff Uhlmeier, Kim Willoughby, Helen Goldstein and Joe Irwin*

## Notable results

- **WSDOT met 93% of highway maintenance asset condition targets in 2016, up from 85% in 2015**
- **Maintenance crews processed 167,887 maintenance records in 2016 using the new Highway Activity Tracking System (HATS)**

## Highway condition target achievement trends up

WSDOT met 93% of highway maintenance asset condition targets in 2016, an eight percentage point increase from the 85% achieved in 2015.

WSDOT measures the annual performance of 27 maintenance activities using two metrics: asset condition level of service (LOS) and task completion. LOS condition for each asset is measured using data collected from site surveys or operational assessments which evaluate the performance of the asset. For example, an operational assessment might measure how many traffic signal repairs were needed in a given period of time.

WSDOT evaluates task completion by comparing the number of tasks planned each year for a specific maintenance activity to how many of those tasks were completed. To see a table that shows both LOS and task completion percentages for select assets, go to [bit.ly/GNB64-MaintenanceTaskCompletion](http://bit.ly/GNB64-MaintenanceTaskCompletion).

The table to the right lists maintenance activities, ordered from highest to lowest priority; LOS scores; and funded levels, condition targets for WSDOT. LOS scores use a letter grading scale, with A being the best and F being the worst. To bring all maintenance categories up to or near 100% task completion, WSDOT would need to address an estimated funding backlog of \$90 million (unchanged from 2015).

## Maintenance uses Practical Solutions in managing aging highway infrastructure



Practical Solutions is a data-driven, performance-based approach to transportation decision making which seeks to lower costs, engage the community and maximize transportation benefits. Practical Solutions' methodologies aid WSDOT in selecting the appropriate maintenance methods at the right time. WSDOT uses

### WSDOT meets 93% of asset condition targets Funded level asset condition target and score achieved

|   | Funded level | 2015 results | 2016 results   |
|---|--------------|--------------|----------------|
| Special Bridges and Ferry Operations <sup>1</sup> | A            | A            | A              |
| Traffic Signal System Operations                  | C            | B            | C              |
| Snow and Ice Control Operations                   | A            | A            | A              |
| Bridge Cleaning                                   | B            | B            | B              |
| Urban Tunnel System Operations                    | B            | B            | B              |
| Regulatory/Warning Sign Maintenance               | C            | D            | C              |
| Intelligent Transportation Systems                | A            | A            | B              |
| Slope Repairs                                     | A            | B            | A              |
| Catch Basins and Inlets Maintenance               | B            | A            | B              |
| Guardrail Maintenance                             | A            | B            | A              |
| Pavement Striping Maintenance                     | B            | A            | B              |
| Raised/Recessed Pavement Marking Maintenance      | C            | C            | C              |
| Vegetation Obstruction Control                    | C            | C            | A <sup>2</sup> |
| Rest Area Operations                              | B            | B            | B              |
| Sweeping and Cleaning                             | A            | A            | A              |
| Highway Lighting Systems                          | A            | B            | B              |
| Ditch Maintenance                                 | B            | B            | A              |
| Guidepost Maintenance                             | D            | D            | D              |
| Stormwater Facility Maintenance                   | B            | A            | A              |
| Culvert Maintenance                               | D            | D            | B <sup>3</sup> |
| Pavement Marking Maintenance                      | D            | D            | C              |
| Shoulder Maintenance                              | C            | C            | C              |
| Noxious Weed Control                              | B            | B            | B              |
| Guide Sign Maintenance                            | C            | C            | C              |
| Nuisance Vegetation Control                       | D            | C            | D              |
| Landscape Maintenance                             | D            | D            | C              |
| Litter Pickup                                     | D            | D            | D              |
| <b>Percent of targets achieved or exceeded</b>    |              | <b>85%</b>   | <b>93%</b>     |
| <b>Percent of targets missed</b>                  |              | <b>15%</b>   | <b>7%</b>      |

Data source: WSDOT Maintenance Office.

Notes: The 27 maintenance activities are listed in prioritized order. Highlighted boxes indicate failing scores. Asset condition Level of Service (LOS) is affected by maintenance activity, rehabilitation/reconstruction of highway infrastructure, third party damage, disaster events and new construction projects. LOS assessments occur throughout the reporting year, and scores are based on the asset condition at the time of assessment. WSDOT met 25 maintenance asset condition targets in 2016. <sup>1</sup> This activity now includes the Keller Ferry. <sup>2</sup> A new mowing policy was implemented, shifting the emphasis from nuisance vegetation toward controlling vegetation obstructions. <sup>3</sup> The increase in Culvert Maintenance LOS is being actively monitored to determine if it is a one-time effect from site sampling or a long-term trend.

preventive maintenance to extend the useful life of its assets while keeping them operating effectively. This strategy helps defer costly rehabilitation or reconstruction

# WSDOT implements strategic bridge repair investments

projects. When the number of WSDOT preservation projects declines, maintenance activities must increase to care for aging assets. In conjunction with preservation activities and Practical Solutions, WSDOT is incorporating timely maintenance into an asset management plan which reflects the costs and benefits of assets.

**Intelligent Traffic Systems (ITS)** missed its target of A, receiving a B rating. WSDOT's inventory of electrical infrastructure is both increasing and aging while maintenance has remained steady. This reduces WSDOT's ability to complete necessary preventive maintenance, resulting in increased malfunctions over time. Continued copper wire theft translates to crews spending more time repairing damaged ITS systems and less time completing preventive maintenance.

**Highway Lighting Systems** missed its target of A, receiving a B rating. Highway Lighting Systems' LOS is measured by the average number of repairs needed per lighting system and related electrical services during the year. Malfunctions in lower-priority lighting (compared to traffic signal system operations or ITS) can go for longer periods of time without causing significant impacts and are often deferred to accommodate increased workloads in other areas.

## Strategic bridge preservation seeks to address funding shortfall

While 91.2% of WSDOT bridges are in fair or better condition, the statewide bridge network faces several risks over the next 10 years (e.g., bridge scour, element deterioration, and seismic activity). Current and projected bridge preservation needs total \$2.7 billion over the next 10 years, and planned preservation and maintenance funding is insufficient to meet this need. For a more comprehensive look at the condition of the statewide bridge network, risks and funding, see the [Annual Bridge Report](#) in *Gray Notebook* 62.

For the 2017-2019 biennium, WSDOT will employ a Practical Solutions strategy of performing approximately \$5 million of small, cost-effective bridge repairs. Funding for these investments is made available by reallocating funds that could have been used for more capital intensive projects, such as rehabilitating bridge decks. Practical Solutions calls for the efficient delivery of projects with fewer resources,



### WSDOT completes 100% of cable barrier inspections in 2016

Cable barrier inspections are an important subset of the Guardrail Maintenance activity. Cable barriers help prevent vehicles from crossing over medians. To remain effective, cable barriers must be regularly inspected to ensure proper tensioning. To view the interactive map of cable barrier inspections, visit [bit.ly/GNBCablebarriermap](http://bit.ly/GNBCablebarriermap).

and these small preservation activities allow WSDOT to cost-effectively maximize bridge performance until funding is available for critical bridge infrastructure work.

## Workforce development continues with maintenance activity tracking

The Highway Activities Tracking System (HATS), a tool designed to support staff in documenting maintenance activities, has become integral in many maintenance tasks. Maintenance personnel can access HATS at the worksite via tablets and record information about field work as it is completed in real time. For example, as cable barrier inspections are performed, maintenance technicians can immediately record the data in the appropriate form. As the use of HATS is refined and employees become comfortable and proficient with the system, data entry times decrease, making WSDOT more effective and efficient at tracking maintenance activities.

During 2016, 59,211 existing features were added to asset inventories via HATS. During the same time period, maintenance crews created 167,887 HATS records with details of maintenance work completed. WSDOT employees are now averaging over 300 maintenance records entered per day statewide.

HATS has expanded capabilities compared to the previous maintenance tracking system, including improved accuracy and details for performance management data, as well as resources needed for task completion. The data collected is building a strong information baseline which can be leveraged by maintenance program managers to create a more efficient and effective program. By better understanding the current condition of highway assets and the impact maintenance has, program managers will be better equipped to target maintenance activities where they are most needed and effective.

*Contributors include Rico Baroga, Kelly Shields, Todd Lamphere and Zach Mason*

## Ferries meets majority of Legislative performance goals

| Policy goal/Performance measure                      |   | Prior (FY2015)         | Current (FY2016)       | Goal                | Goal met | Comments  |
|--|---|------------------------|------------------------|---------------------|----------|---|
| <b>Maintenance and Capital Program Effectiveness</b> |   |                        |                        |                     |          |   |
| <b>1</b>   | Percent of terminal projects <sup>1</sup> completed on time   | 50%                    | 100%                   | 90%                 | ✓        | Two of two terminal projects were completed on time in FY2016; increased from FY2015  |
| <b>2</b>   | Percent of terminal projects <sup>1</sup> completed on budget   | 100%                   | 100%                   | 90%                 | ✓        | Two of two terminal projects were completed on budget in FY2016; no change from FY2015  |
| <b>3</b>   | Percent of vessel projects completed on time<br>A) Existing vessels <sup>1</sup><br>B) New vessels  | 50% <sup>2</sup><br>0% | 100%<br>N/A            | 75%<br>100%         | ✓<br>N/A | A) All five vessel contracts completed on time in FY2016; increased from FY2015<br>B) No new vessels were scheduled in FY2016                     |
| <b>4</b>   | Percent of vessel contracts completed on budget<br>A) Existing vessels <sup>1</sup><br>B) New vessels   | 75%<br>100%            | 60%<br>N/A             | 75%<br>100%         | —<br>N/A | A) Three of five vessel contracts were on budget; a decrease from FY2015<br>B) No new vessels were budgeted in FY2016                             |
| <b>14</b>  | Preliminary engineering costs <sup>2</sup><br>A) As a percent of terminal capital project costs<br>B) As a percent of existing vessel capital project costs | 12%<br>7% <sup>1</sup> | 8%<br>12% <sup>1</sup> | <11.5%<br><17%      | ✓<br>✓   | A) Engineering costs for terminal capital projects met the goal in FY2016 B) Engineering costs for vessel capital projects met the goal in FY2016 |
| <b>15</b>  | Average vessel out of service time  | 9.4 weeks              | 9.5 weeks              | <8 weeks            | —        | Missed vessel out of service time due to vessel mechanical issues; increased from FY2015  |
| <b>Safety Performance</b>                            |   |                        |                        |                     |          |   |
| <b>5</b>   | Passenger injuries per million passenger miles  | 0.93                   | 0.42                   | <1.0                | ✓        | Passenger injury rate was within the goal of less than one in one million; decreased from FY2015  |
| <b>6</b>   | OSHA <sup>3</sup> recordable crew injuries per 10,000 revenue service hours   | 6.2 <sup>4</sup>       | 5.6                    | <8 <sup>5</sup>     | ✓        | Met the goal for reduced OSHA recordable crew injuries; decreased from FY2015   |
| <b>Service Effectiveness</b>                         |   |                        |                        |                     |          |   |
| <b>7</b>   | Passenger satisfaction with Ferries' staff customer service   | 94% <sup>6</sup>       | 95% <sup>6</sup>       | 90%                 | ✓        | Exceeded passenger satisfaction for customer service goal; slightly higher than FY2015  |
| <b>8</b>   | Passenger satisfaction with cleanliness and comfort of Ferries terminals, facilities and vessels  | 89% <sup>6</sup>       | 89% <sup>6</sup>       | 90%                 | —        | Dissatisfaction with cleanliness of terminal bathrooms resulted in missed goal; no change from FY2015; within 1% of goal                          |
| <b>9</b>   | Passenger satisfaction with service requests made via telephone or Ferries website  | 92% <sup>6</sup>       | 91% <sup>6</sup>       | 90%                 | ✓        | Exceeded goal for passenger satisfaction with service requests; slight decrease from FY2015   |
| <b>16</b>  | On-time performance level (percent of trips departing within 10 minutes of the scheduled departure time)  | 94.5%                  | 93.9%                  | 95%                 | —        | Missed the on-time performance level goal; decrease from FY2015   |
| <b>17</b>  | Service reliability level (percent of scheduled trips completed)  | 99.4% <sup>4</sup>     | 99.5%                  | 99%                 | ✓        | Exceeded service reliability level goal; slight increase from FY2015  |
| <b>Cost Containment Measures</b>                     |   |                        |                        |                     |          |   |
| <b>10</b>  | Annual operating cost estimate per passenger mile compared to budgeted cost   | -4.45%                 | -0.48%                 | Within 5% of budget | ✓        | Met goal for annual operating cost per passenger mile; better than FY2015   |
| <b>11</b>  | Annual operating cost estimate per revenue service mile compared to budgeted cost   | 0.60%                  | 1.00%                  | Within 5% of budget | ✓        | Met goal for annual operating cost per revenue service mile; slightly worse than FY2015   |
| <b>12</b>  | Overtime hours as a percentage of straight time hours compared to budgeted overtime hours   | +0.45%                 | +0.75%                 | Within 1% of budget | ✓        | Met goal for annual overtime as a percentage of straight time; slightly worse than FY2015   |
| <b>13</b>  | Gallons of fuel consumed per revenue service mile compared to budgeted fuel consumption   | -4.08%                 | -2.28%                 | Within 5% of budget | ✓        | Met goal for fuel consumption per revenue service mile; better than FY2015  |

Data source: WSDOT Ferries.

Notes: Goals above are out of sequence to better show what categories they are under. All reporting periods are based on fiscal years. Prior reporting period is FY2015 (July 2014 through June 2015) and current reporting year is FY2016 (July 2015 through June 2016). < means the goal is less than percent or number indicated. **1** Includes preservation and improvement projects. **2** Measure 14 goal varies annually depending on project type as defined in the Cost Estimating Manual for WSDOT Projects. **3** OSHA = Occupational Safety and Health Administration. **4** Numbers were adjusted based on updated data and now match the 2015 WSDOT Ferries Annual Performance Report. **5** As part of a five-year plan through 2016, the goal decreases annually toward the industry standard of 7.6 or fewer injuries per 10,000 revenue service hours. **6** Percentages include neutral responses from customers and are based on the number of respondents to the customer surveys.

## Notable results

- *Ferries' on-time performance was 95.9% in the second quarter of fiscal year (FY) 2017, exceeding its annual goal of 95%*
- *Ferries' ridership was more than 5.3 million in the second quarter of fiscal year 2017, about 34,000 less than the second quarter of FY2016*

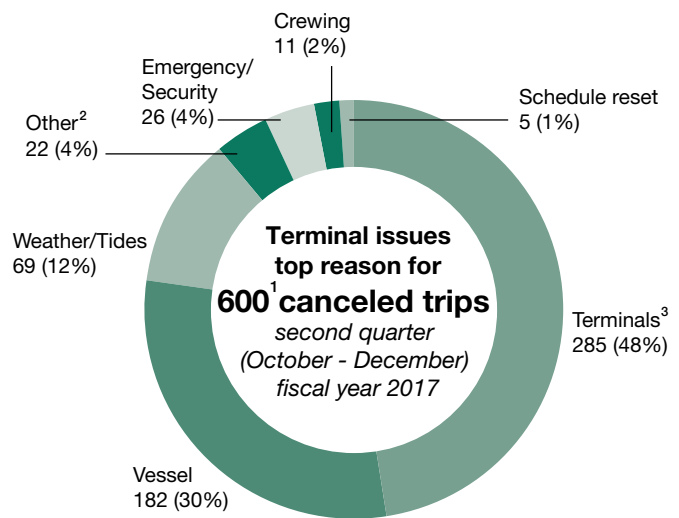
## Ferries exceeds annual on-time performance goal

On-time performance for WSDOT Ferries increased slightly in the second quarter of fiscal year (FY) 2017 to 95.9% from 95.4% in the second quarter of FY2016. The quarterly rate for the period from October 1 through December 31, 2016, meets Ferries' annual on-time performance goal of 95%. On average in the second quarter of FY2017, 18 out of 437 daily trips did not leave the terminal within 10 minutes of the scheduled departure time, a decrease from an average of 20 out of 439 trips for the same quarter last year. On-time performance declined on five of nine routes compared to the second quarter of FY2016.

During the quarter, the Anacortes/Friday Harbor – Sidney, B.C., route (international) had the biggest decline compared to the second quarter of FY2016, decreasing from 97.6% to 94.0% in the same quarter in FY2017. Heavy traffic and procedural issues on the international route were the primary reasons for the overall decrease in on-time performance. Because this route had 184 scheduled departures during the second quarter of FY2017, small changes in the number of late or on-time departures can create larger fluctuations in the on-time performance percentage compared to other routes.

The Mukilteo – Clinton route experienced a similar drop in on-time performance in the second quarter, decreasing from 99.2% in FY2016 to 96.0% in FY2017. Reduced vessel speed due to engine performance on the Motor/Vehicle (M/V) *Kittitas* put pressure on the route to stay on time for three days in November, affecting on-time performance.

The largest improvement in on-time performance was on the Seattle – Bainbridge Island route, which increased from 91.7% in the second quarter of FY2016 to 96.2% in the corresponding quarter in FY2017. This on-time increase is due mainly to less construction impacts from projects in the vicinity of the Seattle terminal than last



Data source: WSDOT Ferries.

Notes: Fiscal years run from July 1 through June 30. Percentages may not add to 100 due to rounding. **1** Ferries replaced 59 of the 600 canceled trips, for a total of 541 net missed trips. **2** "Other" includes events like disabled vehicles, environmental reasons or non-ferries related incidents that can impact operations. **3** During the quarter, a ferry damaged the loading apron at the Point Defiance terminal, resulting in more than six days of cancellations on the Point Defiance - Tahlequah route.

year. On-time performance has averaged about 96.2% in the second quarter over the last five years on this route.

## Ferries reliability decreases

There were 40,710 regularly scheduled ferry trips during the second quarter of FY2017. WSDOT Ferries completed 98.7% (40,169) of them, missing its annual reliability performance goal of 99% and coming in 0.7 percentage points lower than the same quarter in FY2016 (see table on p. 25). In the second quarter of FY2017, Ferries canceled 600 trips and was able to replace 59 of them, resulting in 541 net missed trips. This was 282 more net trips missed compared to the same quarter in FY2016.

A medical emergency at Point Defiance resulted in damage to the apron that connects the dock to the vessel, closing the Point Defiance – Tahlequah route for seven days in late December and resulting in 232 missed sailings.



# Farebox revenue increases from same quarter in FY2016

A planned weekend route closure also on the Point Defiance – Tahlequah route in early November accounted for another 40 cancelations. Subsequently the route completed 92.1% of its trips in the second quarter of FY2017, a 7.9% drop from the 100% trip reliability in the same quarter in FY2016. System wide, five of the nine routes experienced increases in reliability. The international route had the largest increase at 1.1% finishing the quarter at 100% compared to 98.9% in the second quarter of FY2016. Additionally, both the Edmonds – Kingston route and the Fauntleroy – Vashon – Southworth route had high reliability numbers, completing 99.9% of their scheduled trips in the second quarter of FY2017.

## Ridership decreases 34,000 from same quarter in FY2016

WSDOT Ferries' ridership was more than 5.34 million during the second quarter of FY2017. This was about 132,000 (2.4%) lower than WSDOT projected for the quarter and approximately 34,000 (0.6%) less in total ridership than the corresponding quarter in FY2016. The decrease in ridership during the quarter can be mostly attributed to planned and unplanned closures on the Point Defiance – Tahlequah route, and on a system-wide drop associated with a forecasted major storm event in November.

## Passenger injuries increase, employee injuries decrease

The rate of passenger injuries per million riders increased from 0.37 in the second quarter of FY2016 to 0.56 in the second quarter of FY2017, representing a slight jump from two to three total passenger injuries. The rate of Occupational Safety and Health Administration recordable crew injuries per 10,000 revenue service hours decreased from 9.5 in the second quarter of FY2016 to 6.4 in during the same period in FY2017. This represents 10 less injuries compared to the same quarter in FY2016, and remains below Ferries' annual goal of having a rate of less than 7.6 crew injuries per 10,000 revenue service hours.

## Revenue trends up for the quarter

Ferries farebox revenue continued its upward trend, coming in at about \$38 million for the second quarter of FY2017. Farebox revenue was about \$311,000 (0.8%) more than the same quarter in FY2016, but was about \$1 million (2.6%) below projections. In the last five years, the second quarter has been below Ferries' projections four times. The other three quarters combined over those same five years have missed projections twice, indicating variability in ridership and fare type.

*Contributors include Matt Hanbey, Kynan Patterson and Joe Irwin*

## Ferries' on-time performance up slightly, trip reliability decreases for the second quarter of fiscal year 2017

*October through December FY2016 and FY2017; Annual on-time goal = 95%; Annual reliability goal = 99%*

| Route                                  | On-time performance (second quarter) |              |                     |          | Trip reliability (second quarter) |              |                     |          |
|--|--------------------------------------|--------------|---------------------|----------|-----------------------------------|--------------|---------------------|----------|
|  | FY2016                               | FY2017       | Status <sup>1</sup> | Trend    | FY2016                            | FY2017       | Status <sup>1</sup> | Trend    |
| San Juan Domestic                      | 93.8%                                | 95.1%        | +1.3%               | ↑        | 99.4%                             | 99.5%        | +0.1%               | ↑        |
| Anacortes/Friday Harbor – Sidney, B.C. | 97.6%                                | 94.0%        | -3.6%               | ↓        | 98.9%                             | 100.0%       | +1.1%               | ↑        |
| Edmonds – Kingston                     | 98.6%                                | 98.0%        | -0.6%               | ↓        | 99.5%                             | 99.9%        | +0.4%               | ↑        |
| Fauntleroy – Vashon – Southworth       | 92.0%                                | 93.6%        | +1.6%               | ↑        | 99.1%                             | 99.9%        | +0.8%               | ↑        |
| Port Townsend – Coupeville             | 93.6%                                | 96.2%        | +2.6%               | ↑        | 96.2%                             | 94.5%        | -1.7%               | ↓        |
| Mukilteo – Clinton                     | 99.2%                                | 96.0%        | -3.2%               | ↓        | 99.9%                             | 99.0%        | -0.9%               | ↓        |
| Point Defiance – Tahlequah             | 99.4%                                | 99.3%        | -0.1%               | ↓        | 100.0%                            | 92.1%        | -7.9%               | ↓        |
| Seattle – Bainbridge Island            | 91.7%                                | 96.2%        | +4.5%               | ↑        | 99.8%                             | 99.2%        | -0.6%               | ↓        |
| Seattle – Bremerton                    | 98.7%                                | 98.2%        | -0.5%               | ↓        | 99.5%                             | 99.8%        | +0.3%               | ↑        |
| <b>Total system</b>                    | <b>95.4%</b>                         | <b>95.9%</b> | <b>+0.4%</b>        | <b>↑</b> | <b>99.4%</b>                      | <b>98.7%</b> | <b>-0.7%</b>        | <b>↓</b> |

Data source: WSDOT Ferries.

Notes: FY = fiscal year (July 1 through June 30). A trip is considered delayed when a vessel leaves the terminal more than 10 minutes later than the scheduled departure time. Ferries operates 10 routes but combines the Anacortes – Friday Harbor route with the San Juan Interisland route as the San Juan Domestic for on-time performance and service reliability. Due to unique fare collection methods in the San Juan Islands, and similar origin and destination legs on both routes, some statistics cannot be separated between the two routes. <sup>1</sup> Status is measured in percentage points.

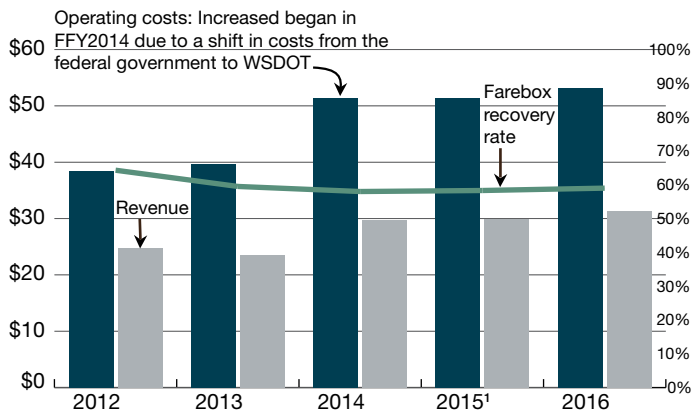
## Notable results

- Ticket revenues covered 59.0% of state-funded Amtrak Cascades operating costs in federal fiscal year 2016
- Fourteen federally-funded rail projects were complete and six were in construction as of December 31, 2016

## Farebox recovery rate increases slightly to 59%

Ticket revenues covered 59.0% of WSDOT-funded Amtrak Cascades operating costs in federal fiscal year 2016 (FFY2016; October 1, 2015, through September 30, 2016). This percentage, called the farebox recovery rate, increased slightly from FFY2015, when it was 58.3%. The improvement resulted from an increase in ticket revenue (up 4.8%) that was larger than the increase in operating costs (up 3.5%).

**Farebox recovery rate rises to 59.0%**  
Federal fiscal years 2012 through 2016; Dollars in millions



Data source: WSDOT Rail, Freight and Ports Division.  
Notes: Farebox recovery rate is defined as the percentage of operating costs covered by ticket revenues. The above revenues, operating costs and farebox recovery rates are for Washington-funded trains only. Operating costs and farebox recovery rate for 2015 have been updated since publication of [Gray Notebook 60](#).

The increase in ticket revenue, which went from \$29.9 million in FFY2015 to \$31.4 million in FFY2016, is primarily attributable to a 5.5% increase in ridership over the same time frame. The ridership increase follows an enhanced marketing campaign which targeted specific audiences and included

partnerships with community groups, sports teams, and destinations such as cities and local attractions.

Operating costs increased from \$51.4 million in FFY2015 to \$53.1 million in FFY2016 due to increases in the costs of labor and goods necessary to operate the service.

Continuing to raise the farebox recovery rate helps reduce passenger rail costs to the state. WSDOT is working toward this goal by developing relationships with marketing partners to boost ridership and by keeping operating costs as low as possible while maintaining a high-quality service.

When all of the current rail capital construction improvements (see [p. 27](#)) are completed in 2017, the target for Amtrak Cascades on-time reliability will increase from 80% to 88%, and travel times between Seattle and Portland are expected to decrease by 10 minutes. There will also be two more daily round trips between Seattle and Portland. These steps will enable WSDOT to:

- Maximize ticket revenue;
- Provide viable alternative transportation options for Washington’s citizens and visitors;
- Reach the under-served market of businesspeople traveling between Seattle and Portland; and
- Minimize per-rider costs to the state by operating the system in the most efficient manner possible.

### Amtrak Cascades intercity passenger rail funded by ticket revenue, WSDOT and ODOT

The Amtrak Cascades intercity passenger rail service is owned and administered by WSDOT and the Oregon Department of Transportation (ODOT). The two states pay for operating expenses not covered by ticket revenue (which includes food and beverage sales and other related fees). The revenues, operating costs and farebox recovery rates reported in this article are for Washington-funded trains only.

# WSDOT completes fourteenth rail improvement project

## WSDOT collaborates on environmental mitigation for passenger rail project

WSDOT recently completed the Kelso Martin's Bluff–Toteff Siding Extension project, adding 7,400 feet of railroad at the Port of Kalama to reduce congestion. The project updated switches and signals, and improved a railroad crossing at Toteff Road. This brings the number of completed high-speed rail projects (see box below right) to 14.

Two additional Kelso Martin's Bluff projects (located between Kalama and Longview) are still under construction, including a new siding project that required environmental mitigation. The original plan to replace a salmon stream culvert was altered when WSDOT determined the project would provide minimal environmental improvements due to additional barriers upstream. Working with the Washington Department of Fish and Wildlife and the Cowlitz Tribe, WSDOT identified a restoration project to improve fish spawning on Otter Creek Island (for which the tribe had existing plans but no available funding) as a better mitigation project.

Starting the mitigation work after the two or three years it typically takes to obtain the necessary permits would have caused the rail project to miss its federally-mandated completion deadline in 2017. WSDOT and BNSF worked closely with the tribe, the Washington Department of Fish and Wildlife, the U.S. Army Corps of Engineers, the Federal Railroad Administration (which oversees the federal grant), the Washington Department of Ecology, the National Marine Fisheries Service and Tacoma Power to expedite the permit process and get the permits approved in only six months.

Work on Otter Creek Island, which is outside the area covered by the March 2013 federal injunction on fish passage barriers (see [Gray Notebook 62](#)), was completed in October of 2016 for \$1.8 million—less than the estimated cost of the originally planned culvert replacement. Salmon and steelhead have already begun using the improvements, which include redirected river flow, an improved shoreline, new fish pools, and log jams and additional wood-covered habitat. The project also strengthened relationships among the partners, building a foundation for future collaborations.

WSDOT's Rail, Freight and Ports Division and BNSF Railways received a 2016 WSDOT Environmental Excellence Award for their work on this project.



Work continues on the King Street Station track upgrades in Seattle; the project is expected to be completed in spring 2017.

## Work continues at King Street Station

Construction continues on new tracks, signals and a new passenger platform at King Street Station in Seattle. The station, the busiest in the Pacific Northwest, continues to operate during construction. Most of the new tracks and signals have been installed, and the new platform and canopy work is underway. The project is expected to be finished in spring 2017. This work will complete the upgrades to the station that began with the King Street Station Seismic Retrofit project (completed in 2013).

*Contributors include Jason Biggs, Chris Dunster, Teresa Graham, Barbara LaBoe, Janet Matkin, David Smelser and Helen Goldstein*

## WSDOT continues to make progress on its 20 federally funded passenger rail projects

As of December 31, 2016, WSDOT had six passenger rail projects in construction and 14 projects completed. Work includes purchasing new locomotives, adding tracks to handle increased passenger train traffic, and upgrading tracks, signals and stations. More than 96% (\$767 million) of federal funding for these projects is from the American Recovery and Reinvestment Act of 2009.

When the program is completed in 2017, passengers are expected to benefit from two additional daily round trips between Seattle and Portland, with an expected travel time reduction of 10 minutes. In addition, WSDOT, Amtrak, Sound Transit and BNSF are committed to achieving an average of 88% on-time performance for trains traveling from Portland to Seattle and Seattle to Vancouver, British Columbia. To view the interactive map of the federally funded rail projects, visit [bit.ly/GNBrailmap](http://bit.ly/GNBrailmap).

## Notable results

- **WSDOT responded to 15,388 incidents during the quarter, providing an estimated \$24.2 million in economic benefits**
- **WSDOT cleared incidents in 12 minutes and 36 seconds on average, reducing traffic delay and the risk of secondary incidents**

## Incident Response teams help at 15,388 incidents

WSDOT's Incident Response teams assisted at 15,388 incidents during the fourth quarter (October through December) of 2016. WSDOT IR teams responded to an incident scene roughly every nine minutes during the quarter. The agency responded to 2,632 more incidents—about a 21% increase—during the fourth quarter of 2016 than during the same period in 2015. Data for the quarter is considered preliminary.

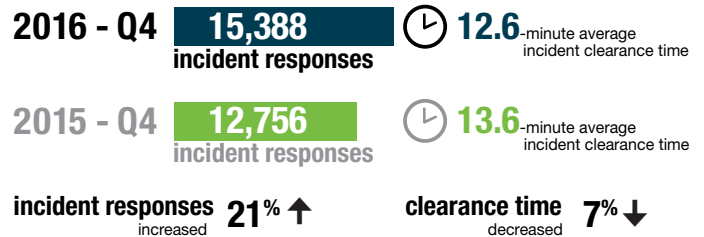
WSDOT IR teams cleared incidents in an average of 12 minutes and 36 seconds. This was about a minute faster than the average incident clearance time for the same quarter in 2015. The proportion of incidents which blocked at least one lane was 24.1% during the quarter compared to 26.7% last year. There was also a 13.6% increase (23 incidents) in incidents lasting more than 90 minutes.

WSDOT focuses on safety when clearing incidents, working to reduce incident-induced delay as well as the potential for secondary incidents to occur. Secondary incidents happen

The mission of WSDOT's Incident Response program is to clear traffic incidents safely and quickly, minimizing congestion and the risk of secondary incidents. The statewide program has a biennial budget of \$12 million. This increase from \$9 million reported in previous editions of the *Gray Notebook* is due to new funding passed by the Legislature and Governor for additional IR trucks and drivers. The IR program now has roughly 59 full-time equivalent positions and 69 dedicated vehicles. Teams are on-call 24/7 and actively patrol approximately 1,300 centerline miles of highway on major corridors around the state such as Interstate 5 (I-5), I-205, I-90 or State Route 167 during peak traffic hours. This covers approximately 18% of all state-owned centerline miles statewide.

**WSDOT responds to 21% more incidents while average clearance times go down by 7%**

Fourth quarter (October through December) 2015 and 2016



Data source: Washington Incident Tracking System.

Notes: Data above only account for incidents to which an IR unit responded. IR data reported for the current quarter (Q4 2016) are considered preliminary. In the previous quarter (Q3 2016), WSDOT responded to 15,102 incidents, clearing them in an average of 12.0 minutes. These numbers have been confirmed and are now finalized.

in the congestion resulting from a primary incident and may be caused by distracted driving, unexpected slowdowns or debris in the roadway. The IR teams help alert drivers about incidents and clear the roadway to reduce the likelihood of secondary incidents. A table summarizing the IR program's performance and benefits for the quarter is on [p. 29](#).

WSDOT's assistance at incident scenes provided an estimated \$24.2 million in economic benefits during the fourth quarter of 2016 by reducing the impacts of incidents on drivers. These benefits are provided in two ways. First, by clearing incidents quickly, WSDOT reduces the time and fuel motorists waste in incident-induced traffic delay. About \$13.7 million of IR's economic benefits for the quarter is from reduced traffic delay. Second, by proactively managing traffic at incident scenes, WSDOT helps prevent secondary incidents. About \$10.5 million of IR's economic benefit results from preventing an estimated 2,921 secondary incidents and resulting delay. This figure is based on Federal Highway Administration data that there are 20% more secondary incidents on the highway system due to primary incidents. Based on WSDOT's budget for IR (see box at left), every \$1 spent on the program this quarter provided drivers roughly \$16.16 in economic benefit.

## WSDOT's Incident Response prevents \$24.2 million in traffic delays and secondary incidents

October through December 2016; Incidents by duration; Times in minutes; Costs and benefits in millions of dollars

| Incident duration                              | Number of incidents <sup>1</sup> | Percent blocking <sup>2</sup> | Average roadway clearance time <sup>3</sup> (blocking only) | Average roadway clearance time <sup>3</sup> (all incidents) | Average incident clearance time <sup>4</sup> (all incidents) | Cost of incident-induced delay | Economic benefits from IR program <sup>5</sup> |
|--|----------------------------------|-------------------------------|---|---|--|--------------------------------|--|
| Less than 15 min.                              | 11,751                           | 13.5%                         | 5.0   | 0.7   | 4.8  | \$14.2                         | \$6.6  |
| Between 15 and 90 min.                         | 3,445                            | 57.2%                         | 25.9  | 14.3  | 30.4   | \$30.0                         | \$13.1   |
| Over 90 min.                                   | 192                              | 86.5%                         | 157.4   | 136.1   | 166.7  | \$10.7                         | \$4.5  |
| <b>Total</b>                                   | <b>15,388</b>                    | <b>24.1%</b>                  | <b>22.6</b>   | <b>5.4</b>  | <b>12.6</b>  | <b>\$54.9</b>                  | <b>\$24.2</b>                                  |
| <b>Percent change from fourth quarter 2015</b> | <b>↑ 21%</b>                     | <b>↓ 3%</b>                   | <b>↓ 4%</b>   | <b>↓ 13%</b>  | <b>↓ 8%</b>  | <b>↑ 10%</b>                   | <b>↑ 10%</b>                                   |

Data source: Washington Incident Tracking System.

Notes: Some numbers do not add up due to rounding. **1** Teams were unable to locate 782 of the 15,388 incidents. Because an IR team attempted to respond, these incidents are included in the total incident count, but are not factored into other performance measures. **2** An incident is considered blocking when it shuts down one or more lanes of travel. **3** Roadway clearance time is the time between the IR team's first awareness of an incident (when a call comes in or the incident is spotted by a patrolling IR unit) and when all lanes are available for traffic flow. **4** Incident clearance time is the time between an IR team's first awareness of an incident and when the last responder has left the scene. **5** Estimated economic benefits include benefits from delay reduction and prevented secondary incidents. See [WSDOT's Handbook for Corridor Capacity Evaluation 2nd edition, pp. 45-47](#), for WSDOT's methods for calculating IR benefits.

## WSDOT teams' proactive work reduces incident-related delay

Incident-induced traffic delay on state highways cost motorists an estimated \$54.9 million in wasted time and fuel during the fourth quarter of 2016. This is about \$5.1 million more than in the same quarter of 2015. Without WSDOT's assistance, this economic impact would have been roughly \$79.1 million (\$24.2 million in prevented delay and secondary incidents plus \$54.9 million in actual delay).

For more information on how WSDOT calculates these figures and all IR performance metrics, see [WSDOT's Handbook for Corridor Capacity Evaluation 2nd edition, pp. 45-47](#).

### WSDOT teams respond to 192 over-90-minute incidents

WSDOT Incident Response units provided assistance at the scene of 192 incidents that lasted more than 90 minutes during the fourth quarter of 2016. This is 23 more incidents—roughly 13.6%—than the same quarter in 2015. While these over-90-minute incidents accounted for 1.2% of all incidents, they resulted in 19.5% of all incident-related delay costs.

Eleven of the 192 over-90-minute incidents took six hours or more to clear (referred to as extraordinary incidents). The 11 extraordinary incidents took an average of seven hours and 40 minutes to clear, accounting for about 3% of all incident-induced delay

costs for the quarter. This is two fewer extraordinary incidents than the same quarter in 2015.

The average clearance time for all over-90-minute incidents was about two hours and 47 minutes. This is about 15 minutes faster than the same quarter in 2015. Excluding the 11 extraordinary incidents, WSDOT's average clearance time for over-90-minute incidents was two hours and 29 minutes. Performance data reported in this article is from WSDOT's Washington Incident Tracking System, which tracks incidents to which a WSDOT IR team responded.

Contributors include Vince Fairhurst, Ida van Schalkwyk, Bradley Bobbitt and Sreenath Gangula

**Customer feedback: Incident Response there when travelers need them in the fourth quarter**  
WSDOT IR teams give comment cards to drivers they help. Below are samples of the comments received from drivers WSDOT assisted during the fourth quarter of 2016:

- Had a flat on my 35-foot fifth wheel. Shane stopped to assist us within 10 minutes of the incident. He was helpful and professional.
- Frank was very nice, helpful and friendly. He showed up within 10 minutes of my tire going flat.
- Made a 911 call and within five minutes Richard was on scene. Thank you!

## Notable results

- *WSDOT and its contractors received 16 environmental violation notices in 2016, a decrease of 36% from 25 in 2015*
- *Of 675 active construction projects during 2016, less than 2% received environmental violation notices*

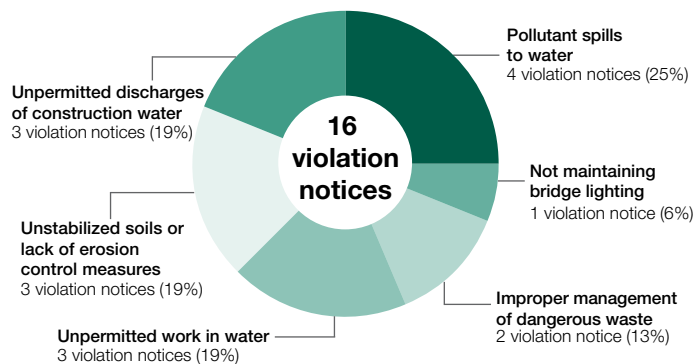
## WSDOT prioritizes environmental compliance

WSDOT made 162,000 ferry sailings, had 675 active construction projects and completed 2.6 million maintenance work hours in 2016. For these activities, WSDOT and its contractors received 16 environmental violation notices. This is nine fewer than the agency received in 2015, a 36% decrease. The decrease is attributable to the continued efforts of WSDOT and its contractors to improve compliance throughout the asset management and project delivery processes.

Nine of the 16 notices were issued solely to WSDOT, of which seven were associated with construction projects, one with maintenance activities and one with ferries operations. Five notices were issued to WSDOT's contractors because regulatory agencies determined they were solely responsible for the violation or because the contractor was the permit holder. Two notices were jointly issued to WSDOT and the contractor because the regulatory agency determined both parties were responsible. The most common activities that resulted in

### WSDOT activities receive 16 violation notices in 2016

Number of notices by environmental violation category



Data source: WSDOT Environmental Services Office.

Note: Percentages may not add to 100 due to rounding.

a violation notice in 2016 were pollutant spills into water, which accounted for four of the 16 notices (25%). This is a 20% reduction in pollutant spills to water violations from 2015. WSDOT's contractors prepare and implement a Spill, Prevention, Control, and Countermeasure Plan to minimize the risk of spills into water.

In 2016, WSDOT began transferring its Construction Stormwater General Permits (CSWGP) to its contractors, giving them more responsibility for environmental compliance. As a result, three of the five violation notices issued to WSDOT's contractors were associated with the CSWGP. For more information about CSWGP compliance and turbidity benchmarks, refer to [Gray Notebook 63, pp. 28-30](#).

## WSDOT receives three monetary penalties in 2016

WSDOT's violation notices included three monetary penalties, an increase of one from 2015. The total amount of monetary penalties in 2016 was \$25,000, an increase of \$24,250 from 2015. The City of Seattle issued two monetary penalties to WSDOT for discharging prohibited substances into the city's stormwater system. One penalty was \$1,000 for the discharge of turbid construction water into Lake Union from the State Route (SR) 99 Tunnel Alternative North Access Construction Project. The second penalty was \$2,000 for the discharge of fire suppression foam that occurred when WSDOT was testing a new system installed within the Interstate 90 Mount Baker Tunnel.

A third penalty in the amount of \$22,000 was jointly issued to WSDOT and its contractor by the Department of Ecology for several unpermitted discharges of shaft drilling slurry and one discharge of hydraulic fluid to Lake Washington during construction of the SR 520 West Approach Bridge North Project in 2015 and 2016. The contractor is currently appealing this penalty.

# WSDOT teams compete for annual environmental award

WSDOT's contractors received two monetary penalties in 2016, a decrease of five (71%) from 2015. One of these was jointly issued to both WSDOT and the contractor and is described above. The other contractor penalty was issued by the Department of Ecology for spilling excavated material from the SR 99 Tunnel Boring Project from a barge into Elliott Bay.

## SR 92 Pilchuck River project nominated for award

WSDOT received 16 nominations from staff for teams or individuals dedicated to environmental stewardship in 2016. While all of the nominations demonstrated commitment to improving environmental conditions (see the Results WSDOT Environmental Stewardship goal on [p. 3](#)), many of the projects also supported WSDOT's other strategic goals, including Modal Integration, Organizational Strength, Community Engagement and Strategic Investments.

The SR 92 Pilchuck River Chronic Environmental Deficiency (CED) project exemplified WSDOT's efforts to protect the traveling public while providing long-term solutions to reduce impacts to fish and fish habitat. Extensive erosion of the Pilchuck's riverbank seriously threatened the safety of SR 92; since 2009 degradation of the shoreline resulted in the loss of a private residence and several buildings, as well as more than 175 feet of riverbank. Collaborative partnerships across design, construction and environmental offices at WSDOT allowed for innovative strategies to protect

the traveling public, stabilize the bank, maintain access to the nearby town of Granite Falls, and address the deteriorating environmental conditions of the site.

The project was completed ahead of schedule and satisfied all regulatory commitments despite continued erosion and multiple high flow events during design and construction. This project, however, avoided an emergency situation. The team also made efforts to address significant tribal and public concerns. Compliance efforts by the project team included:

- Excluding over 10,000 fish from the work area during temporary stream diversion efforts;
- Installing approximately 100 pieces of large woody material, creating significant habitat gain for aquatic species;
- Completing in-water work within the approved work window a full month early, reducing environmental impact and danger to aquatic species; and,
- Improving hydrologic conditions, thus significantly decreasing the threat of damage to SR 92.

The project team received positive accolades from the Tulalip Tribe, U.S. Fish and Wildlife Service, National Marine Fisheries Service and Washington Department of Fish and Wildlife. The project demonstrates WSDOT's commitment to maintaining safe roadways while providing environmental benefits, employing innovative problem-solving, and building collaborative partnerships for improved decision making that will benefit future projects.

*Contributors include Gretchen Coker, Eric Wolin and Zach Mason*



WSDOT crews stabilized the Pilchuck River banks and added woody material to the stream, resulting in increased habitat for aquatic species and protection of SR 92 from erosion.

## Notable results

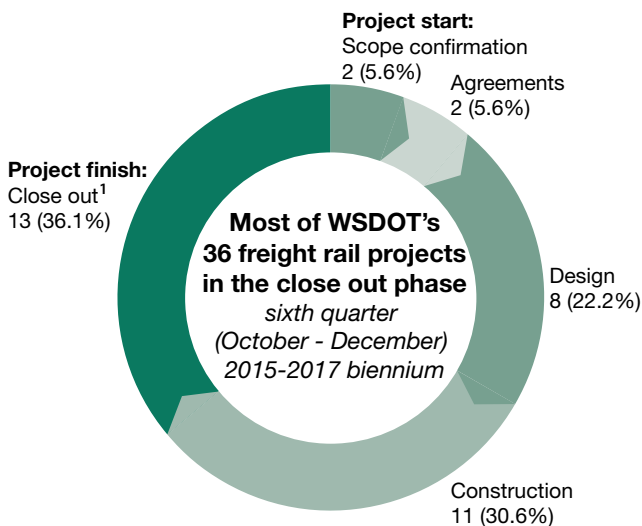
- *The majority of WSDOT's freight rail projects (24 of 36) are currently in either the construction or close out stage*
- *All 14 of WSDOT's Connecting Washington freight rail improvement projects were underway by the end of 2016*

## WSDOT gets 36 freight rail projects rolling in state

WSDOT had 36 projects to improve freight rail structures and freight movement in Washington underway or completed at the end of the sixth quarter of the 2015-2017 biennium (July 2015 through June 2017). The ongoing work includes Connecting Washington projects as well as state grant and loan programs (see chart on [p. 34](#)).

Of the 36 total freight rail projects, 13 (36.1%) were being closed out, 11 (30.6%) were in construction, eight (22.2%) were in design, two (5.6%) were in the agreement stage and two (5.6%) were in the scope confirmation stage.

WSDOT had 46 projects underway one year ago. Of these projects, 17 (37.0%) were in the initial review or scope confirmation stage, and another five (10.9%) were in the agreement stage. These two categories represent the earliest phases of progress on these projects and accounted for 47.9% of all projects one year ago, compared to 11.2% this year.



Data source: WSDOT Rail, Freight and Ports Division.

Notes: The 2015-2017 biennium runs from July 1, 2015, through June 30, 2017. Percentages may not add to 100 due to rounding.  
1 Close out includes capturing final records and closing the corresponding work orders.

## Connecting Washington

The Legislature funded 14 freight rail improvement projects totalling \$11.9 million in the 2015-2017 biennium through the Connecting Washington transportation package. All were in progress by the end of 2016, with statuses ranging from scoping to close out. Work includes interchange improvements, projects at several ports, and rehabilitation of existing rail lines. Connecting Washington also provides an additional \$970,000 for the Freight Rail Assistance Program.

### Freight Rail Assistance Program

More than \$6.6 million in state freight rail grant programs were underway in 2016. Two of the projects were 2013-2015 biennium work that was completed in 2016. Another 12 projects, funded with 2015-2017 dollars, address rail and tie replacements, rail safety and preservation works.

### Freight Rail Investment Bank

More than \$4.5 million in freight rail loan program dollars funded construction during 2016. Two projects were carryovers from the 2013-2015 biennium while six more are funded with 2017-2019 dollars. The Legislature-funded loan program helps deliver projects that improve the state's long-term economic vitality by improving freight movement. Work includes improvements to transfer yard connections, crossover rehabilitation and marine terminal rail improvements.

### Freight rail projects see progress in the biennium 2015-2017 biennium; second and sixth quarter updates

| Program phase      | Second quarter (Fall 2015) |                     | Sixth quarter (Fall 2016) |                     |
|--------------------|----------------------------|---------------------|---------------------------|---------------------|
|                    | Number                     | Funding             | Number                    | Funding             |
| Scope confirmation | 17                         | \$14,897,687        | 2                         | \$1,158,000         |
| Agreements         | 5                          | \$1,935,153         | 2                         | \$778,441           |
| Design             | 9                          | \$4,199,242         | 8                         | \$9,234,300         |
| Construction       | 4                          | \$3,610,121         | 11                        | \$5,114,796         |
| Close out          | 11                         | \$7,249,794         | 13                        | \$6,870,944         |
| <b>Totals</b>      | <b>46</b>                  | <b>\$31,891,997</b> | <b>36</b>                 | <b>\$23,156,481</b> |

Data source: WSDOT Rail, Freight and Ports Division.



# WSDOT helping commercial truckers find parking spots

## Palouse River & Coulee City Railway

Work continues on several repair and preservation projects on the state-owned Palouse River & Coulee City Railway (PCC) in eastern Washington.

Connecting Washington and state loan and grant programs will fund eight 2015-2017 biennium projects. Six of these projects are in construction with the remaining two in the design phase. A total of \$4.4 million in construction is funded for this biennium. The projects will repair, maintain and modernize the 297-mile freight rail system, which primarily serves the agricultural market.

Continued state investment in the rail line has attracted private investments in projects, including the \$25 million Highline Grain shuttle facility west of Spokane that opened in 2016. It is now able to handle heavier modern trains traveling at faster speeds, which is more attractive to producers.

## WSDOT finalizing results of 2016 Truck Parking Study

In December 2016, WSDOT completed research and analysis for the agency's Truck Parking Study. The study was conducted to better understand the issues facing the trucking industry since the last survey was completed in 2008. The study assessed supply and demand for truck parking, and identified issues and trends affecting truck parking as well as opportunities for improvement. The study, which supports WSDOT's Strategic Plan goals for community engagement and modal integration, included a survey of 1,118 truck drivers and trucking industry representatives, a roundtable discussion and interviews.

The agency will publish the results in early 2017, including a truck parking map to help truck drivers find parking locations. The next steps identified in the study will be used to develop strategies in the 2017 Freight System Plan, which is currently underway.

## WSDOT completes Critical Urban and Rural Freight Corridors designation

WSDOT worked with Metropolitan Planning Organizations and Regional Transportation Planning Organizations in 2016 to designate critical urban and rural freight corridors on the federally-defined National Highway Freight Network.

Washington was the first state in the nation to complete the new federal designation requirements.

## Washington's freight system helps pull state's economic weight

Washington is the nation's most trade-dependent state on a per capita basis. In 2015, the value of all state imports and exports totalled \$137.5 billion, and freight-dependent industries supported 1.4 million Washington jobs while generating \$550 billion in gross business income.

The freight system plays three important roles in Washington's economy:

- **Global gateway:** Washington is a gateway state, connecting the state's economy to Asia, Canada, Alaska and beyond. Washington's 2015 exports to Asia were \$44.6 billion, employing 81,000 workers in transportation and warehousing industries, and producing \$1.4 billion in gross business income.
- **Made in Washington:** Manufacturers and farmers rely on the freight system to ship Washington-made products to customers in the state and abroad. In 2015, approximately 609,000 employees worked in agriculture, construction, and manufacturing industries, producing \$235.3 billion in gross business income.
- **Delivering goods:** The freight transportation system supports retail and wholesale supply chains for consumer goods purchased all across the state. Approximately 717,000 employees work in the retail/wholesale sector in Washington, which produced over \$302 billion in gross business income in 2015.

The state was limited by a mileage cap that required significant evaluation of every mile within the state's freight network to determine designation on this new network. The designations serve as primary criteria for National Highway Freight Program funding and eligibility for federal Fostering Advancements in Long-term Achievement of National Efficiencies grant funding.

WSDOT's work with the Puget Sound Regional Council on the designation resulted in the agencies being invited to share their plan at the national 2017 Transportation Research Board's annual meeting. This work is a key component of the Freight Investment Plan, which is expected to be completed in late 2017.

*Contributors include Barbara LaBoe, Janet Matkin, Matt Pahs, Mark Nickerson, Cameron Harper, Jason Beloso, Matt Clark and Joe Irwin*

## New freight rail capital project enters construction phase

Project status as of December 31, 2016; Projects by funding type

|  | Stage of Projects |        |              | Funding     |
|--|-------------------|--------|--------------|-------------|
|  | Agreements        | Design | Construction |             |
| <b>Grants</b>  |                   |        |              |             |
| Palouse River and Coulee City (PCC) RR <sup>1</sup> – Rehabilitation           |                   |        |              | \$855,000   |
| Highline Grain LLC – PCC Central Washington Branch <sup>2</sup>                |                   |        |              | \$1,467,000 |
| Yakima Central – Branchline Safety & Preservation <sup>2</sup>                 |                   |        |              | \$201,645   |
| Port of Columbia – Prescott to Dayton Rail Improvements <sup>2</sup>           |                   |        |              | \$270,300   |
| Cascade & Columbia – Wenatchee to Entiat Rehabilitation <sup>2</sup>           |                   |        |              | \$498,441   |
| Mount Vernon – Terminal Railway – Mt. Vernon Yard Expansion <sup>2</sup>       |                   |        |              | \$392,000   |
| Columbia Basin RR – Schrag Rail & Tie Replacement Phase II <sup>2</sup>        |                   |        |              | \$206,109   |
| Snohomish Co. – 240th St./SR 9 Grade Crossing Improvements <sup>2</sup>        |                   |        |              | \$184,000   |
| Tidewater Transportation – Pasco Rail-to-Barge Transload <sup>2</sup>          |                   |        |              | \$346,412   |
| Kennewick Terminal – Industrial Rail Rehabilitation <sup>2</sup>               |                   |        |              | \$268,042   |
| Watco Inc. – PCC Rail Bridge Repairs <sup>2</sup>                              |                   |        |              | \$367,000   |
| <b>Loans</b>   |                   |        |              |             |
| Tacoma Rail – East Lead Low Side Rebuild <sup>3,4</sup>                        |                   |        |              | \$405,744   |
| Tacoma Rail West Lead High Side Rebuild <sup>3</sup>                           |                   |        |              | \$369,518   |
| Tacoma Rail – Transfer Yard Connection <sup>3</sup>                            |                   |        |              | \$150,000   |
| Tacoma Rail – Edwards Crossover Rehabilitation <sup>3,4</sup>                  |                   |        |              | \$121,119   |
| Tacoma Rail – Taylor Way Wye Rehabilitation <sup>3</sup>                       |                   |        |              | \$311,457   |
| Port of Everett – Marine Terminal Rail Improvements – Phase III <sup>3,4</sup> |                   |        |              | \$1,350,000 |
| <b>Connecting Washington Projects</b>  |                   |        |              |             |
| Palouse River and Coulee City RR – Rehabilitation – New Law                    |                   |        |              | \$345,000   |
| Washington & Idaho RR – P&L Bridge Repair: Milepost 36-59 <sup>2</sup>         |                   |        |              | \$221,545   |
| West Whitman Railroad Improvement Project                                      |                   |        |              | \$280,000   |
| Palouse Rail Loadout Improvements  |                   |        |              | \$300,000   |
| Port of Columbia – Blue Mountain Station – Phase I <sup>2</sup>                |                   |        |              | \$230,000   |
| Port of Moses Lake   |                   |        |              | \$1,000,000 |
| West Vancouver Freight Access  |                   |        |              | \$475,000   |
| Port of Warden Rail Infrastructure Expansion                                   |                   |        |              | \$250,000   |
| Point Defiance Rail Bypass – Lakewood Safety                                   |                   |        |              | \$2,000,000 |
| Connell Rail Interchange   |                   |        |              | \$5,000,000 |
| Kettle Falls International Railway – Bartstow to Laurier Phase I <sup>2</sup>  |                   |        |              | \$383,455   |
| Central Washington Railroad – Rail Rehab – Union Gap <sup>2,4</sup>            |                   |        |              | \$135,000   |
| [Clark County] Bridge 12 (Salmon Creek) Replacement                            |                   |        |              | \$300,000   |

Data source: WSDOT Rail, Freight and Ports Division.

Notes: Four projects funded with 2013-2015 fund, and two projects in the scope confirmation stage are not shown in the chart above. **1** RR = Railroad. **2** Projects funded by a Freight Rail Assistance Program grant. **3** Projects funded by a Freight Rail Investment Bank loan. **4** Projects are currently in the close-out phase with final records being captured and corresponding work orders being closed.

## Notable results

- Toll transactions increased to 46.6 million in fiscal year 2016, up 24% from 36.6 million transactions in fiscal year 2015
- Drivers paid 78% of tolls using Good To Go! –WSDOT’s all-electronic tolling system– through roughly 673,000 active accounts
- Drivers made approximately 15 million trips on the Interstate 405 express toll lanes in the first year of operation
- WSDOT helped more than 70,000 customers resolve their toll bill issues with new rules that allow one-time forgiveness of late fees

## Toll transactions increase 24% in fiscal year 2016

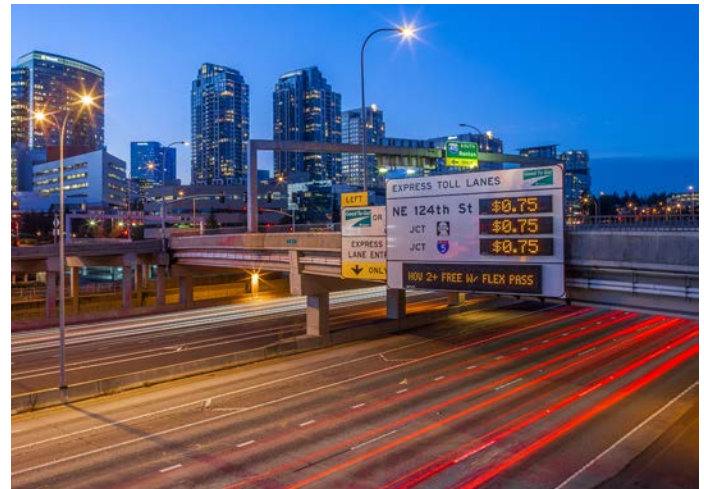
WSDOT tolling facilities processed 46.6 million toll transactions in fiscal year (FY) 2016 (July 2015 through June 2016), a 24% increase from the 37.6 million transactions in FY2015. Gross toll revenue increased along with transactions. WSDOT collected \$161.3 million in gross toll revenue in FY2016, a 21% increase from the \$133.8 million collected in FY2015. The average toll collected was \$3.46 with an average collection cost of 51 cents, down 4% and 14% from FY2015, respectively.

The dramatic growth in transactions and revenue is largely due to the addition of the Interstate (I-405) express toll lanes (ETL). Without the addition of the I-405 ETL, transactions and revenues would have increased 4% and 11%, respectively.

WSDOT’s tolling facilities in FY2016 included the State Route (SR) 520 bridge between Seattle and Bellevue, the eastbound SR 16 Tacoma Narrows Bridge between Gig Harbor and Tacoma, the SR 167 High Occupancy Toll (HOT) lanes between Auburn and Renton, and the new I-405 ETL between Bellevue and Lynnwood.

In FY2016, 80% of the tolling revenues collected on the SR 520 Bridge, 86% of the Tacoma Narrows Bridge and 67% of the I-405 ETL revenue went to dedicated funds to support the ongoing preservation, financial obligations, and improvements on the corridors which they were collected. This allows for expedited project delivery resulting in more efficient and reliable construction and operation of the facilities and increased transportation benefits.

For more information on WSDOT tolling operations see the WSDOT Toll Division Annual Report at <http://wsdot.wa.gov/Tolling/publications.htm>.



The I-405 express toll lanes, which opened on September 27, 2015, let drivers choose faster, more reliable trips by paying a toll, carpooling with three or more people or taking transit.

### Tolling transactions and revenues increase

Fiscal years 2015 and 2016 (July through June); Transactions and revenues in millions

| Facility transactions              | FY2015           | FY2016             | Percent change |
|------------------------------------|------------------|--------------------|----------------|
| SR 520 Bridge                      | 22.0             | 23.2               | +5%            |
| Tacoma Narrows Bridge              | 14.4             | 14.8               | +3%            |
| SR 167 HOT Lanes                   | 1.2              | 1.1 <sup>1</sup>   | -8%            |
| I-405 Express Toll Lanes           | n/a <sup>2</sup> | 7.5                |                |
| <b>Total</b>                       | <b>37.6</b>      | <b>46.6</b>        | <b>+24%</b>    |
| Facility revenues <sup>3</sup>     |                  |                    |                |
| SR 520 Bridge                      | \$64.0           | \$69.4             | +8%            |
| Tacoma Narrows Bridge <sup>4</sup> | \$68.2           | \$78.2             | +15%           |
| SR 167 HOT Lanes                   | \$1.7            | \$1.4 <sup>1</sup> | -18%           |
| I-405 Express Toll Lanes           | n/a              | \$12.3             |                |
| <b>Total</b>                       | <b>\$133.8</b>   | <b>\$161.3</b>     | <b>+21%</b>    |

Data source: WSDOT Toll Division.

Note: Numbers and percentages have been rounded. <sup>1</sup> Toll collection system malfunctions on the SR 167 HOT lanes resulted in lower transactions and revenues in FY2016, see p. 37 for more information. <sup>2</sup> I-405 ETL opened September 2015, no data is available for FY 2015 <sup>3</sup> Facility revenues only includes funds from tolls on vehicles. <sup>4</sup> Toll rates on the Tacoma Narrows Bridge increased 50 cents in FY2016.

# New SR 520 floating bridge opens as demand grows

WSDOT opened the new SR 520 Floating Bridge in April 2016, providing two single-occupant vehicle (SOV) lanes and an HOV lane for drivers in each direction. The new, safer bridge replaced its four-lane predecessor which was built in the early 1960s and was structurally vulnerable to windstorms and strong waves. The new bridge also has a pedestrian and bike path that will connect Evergreen Point on the east side of Lake Washington and Montlake Boulevard near the University of Washington in fall 2017.

WSDOT processed 23.2 million transactions at the SR 520 bridge toll facilities in FY2016, a 5% increase from FY2015. The main objective of SR 520 tolling is to generate \$1.2 billion of funding for the new bridge's construction. Revenue generated from the facility is on track to meet that goal by FY2032. WSDOT collected \$69.4 million in gross toll revenue in FY2016.

The Washington State Transportation Commission increased SR 520 tolls approximately 2.5% in July 2015 to cover operation and maintenance costs and make debt payments. The increase affected all toll rates, raising the peak weekday *Good To Go!* pass rate for a two-axle vehicle from \$3.80 to \$3.90 and \$5.40 to \$5.55 for Pay By Mail.

Traffic demand on the SR 520 bridge has increased steadily since tolling began in December 2011 on the old bridge. On a typical weekday 77,000 vehicles used the bridge in FY2016, up from 74,000 vehicles in FY2015. Despite increases in demand, travel times on SR 520 remained stable in FY2016.



WSDOT reached a major milestone, opening the new SR 520 floating bridge. More than 50,000 people helped celebrate the grand opening on the new bridge in April 2016.

## Drivers choose I-405 express toll lanes for 11 million faster, more reliable trips in first year

In the first nine months of operations (October 2015 through June 2016), drivers made about 11 million trips on the I-405 express toll lanes (ETL) system. The I-405 ETL provided faster, more reliable trips each weekday for 36,500 toll paying customers, 13,500 toll-exempt carpools and motorcycles, and more than 8,000 bus riders. ETL users saved an average of 12 minutes during peak commute times compared to traffic in the single occupant vehicle (SOV) lanes, and paid an average toll of \$2.35.



Despite regional growth and capacity constraints north of SR 522, the I-405 ETL generally provided users faster speeds, reduced travel times and more reliable trips. The previous HOV lanes maintained speeds 45 mph or faster 59% of the time during peak commute periods. Between October 2015 and June 2016, the ETL maintained speeds 45 mph or faster 90% of the time during peak periods. At the same time, more drivers are choosing to use the express toll lanes, causing toll rates to reach the \$10 maximum more often, and for longer periods. Speeds drop below 45 mph frequently at the maximum toll rate if drivers continue to choose to pay the maximum rate to enter the lane. WSDOT is continuing to monitor this trend and make adjustments as necessary.

WSDOT is looking at a variety of operational strategies to improve performance on I-405 between Bothell and Lynnwood. Tolling revenues from the I-405 ETL will be used for improvements such as a peak-use shoulder lane project which will add new general purpose capacity in the northbound I-405 segment between Bothell and Lynnwood. This new lane is expected to open in spring 2017. Additionally, the Connecting Washington transportation package identified \$215 million in toll revenue for funding the I-405 express toll lanes between Renton and Bellevue.

For the most up-to-date information on I-405 ETL performance, go to [bit.ly/I405ETLLibrary](http://bit.ly/I405ETLLibrary).

# Good To Go! grows to more than 673,000 accounts

## More transactions on Narrows Bridge, toll rates increased by 50 cents

On average, 43,000 drivers crossed the Tacoma Narrows Bridge each weekday in FY2016. WSDOT processed 14.8 million transactions on the bridge in FY2016, 400,000 more transactions than in FY2015. This 3% increase in transactions helped revenues grow, generating a total of \$78.2 million in gross toll revenue. Roughly 70% of transactions were paid using *Good To Go!* accounts. Revenue met projected totals and expenses were 10% less than forecasted. The facility is on track to meet its primary goal of repaying the debt from the bridge's construction by FY2032.

The Washington State Transportation Commission increased toll rates for the Tacoma Narrows Bridge by 50 cents for all toll categories on July 1, 2015. The commission approved the increase to ensure that the bridge will generate enough revenue to cover costs required under law. The commission repealed an additional toll hike before it went into effect in July 2016 in light of a \$2.5 million appropriation from the Legislature for debt service on the bridge and higher than forecasted bridge transactions that would allow the toll facility to meet its debt obligations without increasing the toll.

## State Route 167 toll lanes expand, aging collection system replaced

The SR 167 HOT lanes pilot project has reduced congestion and travel times for all users of the corridor since it opened in May 2008. Despite regional traffic growth, the HOT lanes provided faster, more reliable trips for 4,600 paying customers and 2,200 bus riders each weekday in FY2016. Drivers saved an average of six minutes during peak commute times compared to traffic in the SOV lanes for an average toll of \$2.16. WSDOT processed 1.1 million transactions on the SR 167 HOT lanes in FY2016, generating roughly \$1.4 million in revenue.

WSDOT planned to replace the aging SR 167 toll collection systems in June 2016. However, equipment



**7 MINUTES** southbound | northbound **6**

**TRAVEL TIME SAVINGS**  
in SR 167 HOT LANES

for peak commute times, fiscal year 2016

began to fail in February 2016, before the upgrade was scheduled. WSDOT replaced the system in May 2016. While WSDOT was able to correctly charge all trips in February, the agency estimates about 80,000 trips were not processed due to reduced processing capacity between March and May. In planning for its facilities, WSDOT has built in costs and additional time to replace equipment to prevent this from happening again.

WSDOT opened six new miles of HOT lane on southbound SR 167 in December 2016, ahead of schedule and on budget. The new lane is designed to improve congestion around the SR 18 interchange. Southbound drivers can now use the HOT lanes for 14 continuous miles between the cities of Renton and Pacific.

## Good To Go! use grows, WSDOT improves customer service

WSDOT's *Good To Go!* electronic tolling system served more than 673,000 customers in FY2016. About 133,000 new *Good To Go!* accounts were created in FY2016, a 20% increase from

FY2015, and 256,000 new passes were purchased.

As new users join the system, more transactions are being paid through *Good To Go!*—the most efficient

method to collect tolls. In FY2016, roughly 78% of all toll payments were made through *Good To Go!* accounts.

The agency introduced new customer service rules in July 2015, which help customers resolve their toll billing issues and offer forgiveness of late fees and penalties. This program helped 70,000 customers in FY2016. WSDOT has collected \$4.3 million in previously unpaid tolls as of January 2017 since implementing the new customer services rules and collection rates for unpaid toll bills have doubled. Requests for administrative adjunction hearings are down 82% since FY2015, saving the state money on collection costs.

**Tolls paid with Good To Go! pass most efficient collection process**  
*Fiscal year 2016; Average WSDOT cost to collect per toll transaction*

| Payment method          | Average collection cost <sup>1</sup> |
|-------------------------|--------------------------------------|
| <i>Good To Go!</i> Pass | \$0.40                               |
| Pay By Plate            | \$0.44                               |
| Pay By Mail             | \$0.98                               |
| Tollbooths <sup>2</sup> | \$1.02                               |

Data source: WSDOT Toll Division.  
Notes: 1 Costs averaged across all facilities operating in FY2015. 2 Tollbooths are only used on the Tacoma Narrows Bridge.

Contributors include Ethan Bergerson, Meredith McNamee, Bradley Bobbitt and Matthew Clark

## Notable results

- In federal fiscal year 2016, WSDOT exceeded its overall DBE goal of 11.6% in Awards and Commitments by 3.5%
- The number of DBE firms certified to do business on federally-funded projects in Washington increased 8% to 736 in 2016

## WSDOT continues strong progress on DBE goals

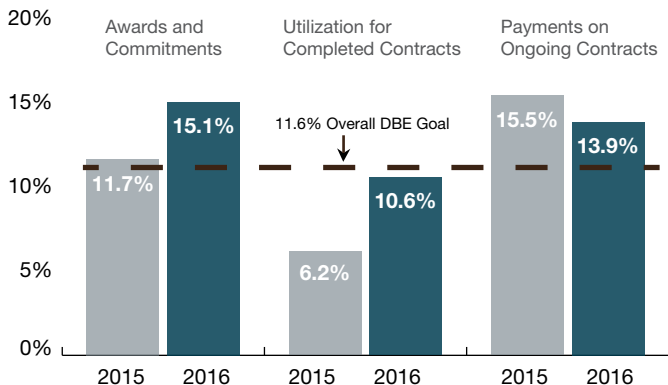
WSDOT exceeded two of three Disadvantaged Business Enterprise (DBE) performance goals during federal fiscal year 2016 (October 1, 2015 through September 30, 2016). The overall goal for each measure is 11.6%. As shown in the graph below, payments for ongoing contracts were at 13.9% in FFY2016 compared to 15.5% for FFY2015. Awards and commitments were 15.1% in FFY2016 compared to 11.7% in FFY2015. While WSDOT did not meet the goal in utilization of completed contracts, its performance of 10.6% in FFY2016 is a 4.4 percentage point improvement above the 6.2% achieved in FFY2015.



The DBE program is an important component of both Results WSDOT and the agency's Inclusion emphasis area (see [p. 3](#)). WSDOT is demonstrating an increased commitment, both internally and externally, to diversity and inclusion in the agency's planning, operations and services. For more information on how DBE goals are set, see [Gray Notebook 53, p. 27](#).

### WSDOT FHWA Disadvantaged Business Enterprise program meets goal on most measures in FFY2016

Comparing federal fiscal year (FFY) 2016 to FFY2015



Data source: WSDOT Office of Equal Opportunity.

Note: 1 Utilization for completed contracts refers to those complete in the federal fiscal year.

### What is a Disadvantaged Business Enterprise?

According to the United States Department of Transportation, "DBEs are for-profit small business concerns where socially and economically disadvantaged individuals own at least a 51% interest and also control management and daily business operations. African Americans, Hispanics, Native Americans, Asian-Pacific and Subcontinent Asian Americans, and women are presumed to be socially and economically disadvantaged. Other individuals can also qualify as socially and economically disadvantaged on a case-by-case basis."

## More DBE firms certified to do business with WSDOT

The number of DBE firms certified to do business on federally-funded projects in Washington state grew from 680 to 736, 8% between 2015 and 2016, as shown in the table below. During the same time period, the number of non-minority women-owned certified DBE firms increased from 263 to 285, while the percentage remained steady at 38.7%.

### Number of certified DBE firms increases; percent of DBE firms by race/gender changes little

December 2016 compared to December 2015

| Race/gender of DBE owner           | 2015       |               | 2016       |             |
|------------------------------------|------------|---------------|------------|-------------|
|                                    | Number     | Percent       | Number     | Percent     |
| Non-minority women                 | 263        | 38.7%         | 285        | 38.7%       |
| Minority women                     | 79         | 11.6%         | 94         | 12.8%       |
| Minority or other men <sup>1</sup> | 338        | 49.7%         | 357        | 48.5%       |
| <b>Total DBE firms</b>             | <b>680</b> | <b>100.0%</b> | <b>736</b> | <b>100%</b> |

Data source: WSDOT Office of Equal Opportunity.

Note: Of the DBE firms certified in 2015, 507 listed Washington as their home state, while 174 were out of state. In 2016, those numbers were 530 and 206, respectively. <sup>1</sup> Owner is a minority male, or is male and otherwise socially and economically disadvantaged as certified by FHWA.

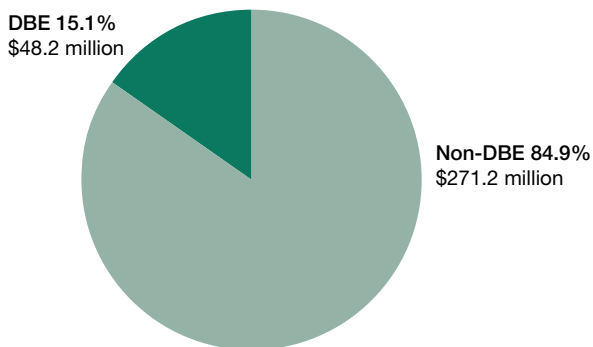
# More DBE firms doing business with WSDOT

The number of minority women-owned certified DBE firms grew from 79 in 2015 to 94 in 2016, increasing from 11.6% to 12.8%. While the total number of minority or other men-owned certified DBE firms grew from 338 in 2015 to 357 in 2016, the percent dropped from 49.7% to 48.5%. WSDOT has conducted numerous outreach events to improve DBE participation, including a networking event called “Business After Hours.”

## WSDOT commits federally-funded work to DBE firms

WSDOT continues to make progress improving its DBE program as evidenced by overall growth. Across the agency, 15.1% of federally-funded work on WSDOT projects is committed to DBE firms. During FFY2016, WSDOT awarded \$48.2 million in federal funds to DBEs through 545 different contracts. More than \$8 million was awarded to DBEs voluntarily and the remainder, \$39.8 million, was achieved through project DBE goals.

### WSDOT DBE awards and commitments at 15.1% Federal fiscal year 2016; federally-funded projects



Data source: WSDOT Office of Equal Opportunity.  
Note: Percentage determined by value of contracts.

## Study underway with goal of ensuring equal access to opportunities

WSDOT is in the process of conducting a DBE Program Disparity Study anticipated to be completed by June 2017. It will determine the availability versus utilization of minority-and women-owned businesses. The study also evaluates WSDOT’s implementation of the DBE program and recommends areas for improvement and additional race and gender equality measures WSDOT should consider adopting to improve DBE participation.



WSDOT Secretary Roger Millar (right) presented Robert Adams of Atkinson Construction with the Champion of Inclusion Award on Nov. 9, 2016 during “Business After Hours” at the Museum of Flight in Seattle.

Upon study completion, WSDOT will work with stakeholders to evaluate study recommendations with an intent of implementing the most equitable overall DBE goal.

The DBE Program Disparity Study may also contain recommendations for improving the DBE Program and contracting with WSDOT in general.

## Program looks to increase state-funded work opportunities

WSDOT is working to implement a mentor/protégé program. The program intends to increase opportunities, capacity, and participation in state-funded projects for minority, small, veteran and women owned firms. For more detailed information, please visit WSDOT’s State Funded Diversity Roadmap at [bit.ly/WSDOTDiversityRoadmap](http://bit.ly/WSDOTDiversityRoadmap).

## New software tracks diversity efforts

In November 2016, WSDOT executed a contract with B2GNow, a diversity tracking software vendor. This system is expected to monitor DBE participation more closely than the current one and to enhance project goal and payment oversight by WSDOT’s Office of Equal Opportunity. Additionally, the system is intended to enhance DBE prompt payment monitoring. WSDOT anticipates this system will allow the agency to more effectively implement many aspects of the DBE Program. The system is anticipated to be fully implemented on WSDOT, Local Programs and Consulting Services agreements in summer 2017.

Contributors include Jackie Bayne, Earl Key, Olga Peterman, Matt Clark and Yvette Wixson

## Notable results

- WSDOT supports Agency Emphasis Areas with three new Lean projects in the fourth quarter of 2016
- WSDOT trained a total of 304 employees in Lean problem solving in 2016, with 45 trained this quarter

## WSDOT Lean projects target emphasis areas



WSDOT's Lean Office has initiated a new process improvement project for each of WSDOT's three Agency Emphasis Areas (see [p. 3](#)). For Workforce Development, the project team is working to reduce the time required to recruit new employees. For Inclusion, the team is improving the process of auditing contractors for compliance with federal diversity regulations. For Practical Solutions, the group aims to reduce rework and unnecessary costs of projects that involve a Value Engineering review, the National Environmental Policy Act, or those that consider new highway interchanges.

Additionally, WSDOT's Lean practitioners launched one new Lean improvement project this quarter. It seeks to improve the quality, timeliness and thoroughness of Project Scoping and Engineering (PS&E) reviews (see table below for details).

### WSDOT Lean training grows

WSDOT developed a curriculum to train and certify select employees as Lean Six Sigma Green Belts. This third level of Lean training enables WSDOT to address more complex projects and to focus on measurable improvements. WSDOT Green Belt candidates are expected to begin their process improvement projects in the first quarter of 2017.

WSDOT continues to train its employees in-house on Lean tools and practices. WSDOT provided Introduction



### Strategic Plan Goal 4: ORGANIZATIONAL STRENGTH

Workforce Strategy – Implement various strategies that foster a safe, capable, engaged and valued workforce.

WSDOT set calendar year 2016 goals for the number of Lean process improvement projects, as well as training targets for two of the in-house Lean classes that WSDOT offers, to have been achieved by November 2016. The table below shows progress toward these goals.

#### WSDOT's 2016 goals for Lean efforts

| Measure  | As of Dec 2016 | Goal for Nov 2016 |
|--|----------------|-------------------|
| Total Lean process improvement projects <sup>1</sup>   | 84             | 100               |
| Employees trained through Intro to Lean <sup>2</sup>   | 3,300          | 2,600             |
| Employees trained in Lean Problem Solving <sup>2</sup> | 304            | 500               |

Data source: WSDOT Lean Process Improvement Office.

Notes: <sup>1</sup> Includes new, in progress and completed projects.

<sup>2</sup> In-house course offered by WSDOT.

to Lean training to 154 WSDOT employees during the fourth quarter of 2016 (October through December). Since the class began in January 2015, 3,300 active (current) employees have received introductory Lean training—47% of the WSDOT workforce. This exceeds the goal of training 2,600 employees by November 2016. WSDOT also offers Lean Problem Solving training. In the fourth quarter of 2016, 45 employees participated in the problem solving class. As of December 31, 2016, a total of 304 active WSDOT employees have received this half-day training.

Contributors include Russell Burgess, Amber Sander, Sam Wilson, Matt Clark and Yvette Wixson

### WSDOT's Lean project aims to improve quality, timeliness and thoroughness of reviews

October through December 2016; Progress reported on a sample project

| Project, program  | Changes to process  | Measuring success   | Results  |
|---|---|---|--|
| <p>Goal: Improve the quality, timeliness and thoroughness of PS&amp;E reviews</p> <p>Status: Ongoing</p> <p>Program: Southwest Region</p> | <ul style="list-style-type: none"> <li>■ Introduced "targeted reviews" so that the right reviewer takes responsibility for specific subsections of the review</li> <li>■ Standardized the format and content of review comments, and centralized review tools and expectations for easier access</li> </ul> | <ul style="list-style-type: none"> <li>■ Will assess the review completion rate of projects advertised in spring 2017 compared to the reviews of 2015-2016</li> <li>■ Will identify the technical, bidability, and constructability reviews completed as well as the percentage of projects reviewed by the Southwest Region Maintenance workgroup</li> </ul> | <ul style="list-style-type: none"> <li>■ WSDOT anticipates a 20% to 30% increase in the completion rate for technical, constructability, and bidability reviews. WSDOT expects to increase the percentage of projects reviewed by the Southwest Region Maintenance workgroup from 7% to 90%</li> </ul> |

Data sources: WSDOT Southwest Region, WSDOT Lean Process Improvement Office.



## Notable results

- WSDOT reported three TPA projects and one Connecting Washington project as complete this quarter
- WSDOT added one project and removed four from the Watch List, leaving it with one project on the list as of December 31, 2016

## WSDOT completes three additional TPA projects

WSDOT completed two additional Transportation Partnership Account (TPA) construction projects in the sixth quarter of the 2015-2017 biennium (October through December 2016) and reported a third TPA project as operationally complete that was completed in a previous quarter. To date, WSDOT has completed 377 Nickel and TPA construction projects, with 87% on time and 91% on budget.

The cost at completion for the 377 Nickel and TPA construction projects is \$6.83 billion, 2.2% less than the baseline cost of \$6.98 billion. As of December 31, 2016, WSDOT has 22 projects that have yet to be completed. These remaining projects have a total value of more than \$8.52 billion.

WSDOT reconciled its total count of Nickel and TPA construction projects in *Gray Notebook 63* (p. 35), reducing the total number from 421 to 404 projects. The agency currently has nine Nickel and TPA projects underway; see p. 47 for details.

WSDOT has completed 11 Nickel and TPA construction projects so far in the 2015-2017 biennium on time and on budget when compared to the last legislatively approved schedules and budgets. The cost at completion for these 11 projects is \$777.7 million, 4.0% less than the baseline cost of \$809.9 million.

WSDOT is tracking Connecting Washington projects as they progress. See p. 44 and p. 47 for more details.

## Nickel, TPA funding remains short of original 2003, 2005 projections

Fuel tax collections show that the revenue forecasts from 2003 and 2005, which were used to determine the project lists, did not anticipate the economic recession



Data source: WSDOT Capital Program Development and Management.

Notes: Construction projects complete are cumulative since July 2003. A project is “on time” if it is operationally complete within the quarter planned in the last approved schedule, and “on budget” if the costs are within 5% of the last approved budget. The goal for both measures is 90% or higher. <sup>1</sup> The count of total completed projects (including non-construction) is 382 out of the originally planned 421 projects.

in projecting future growth in fuel tax revenues. The 2003 Nickel and 2005 TPA gas taxes that fund projects are based on a fixed tax rate per gallon and do not change with the price of fuel. As a result, reduced gasoline and diesel consumption leads to reduced tax revenue.

The 2003 Nickel transportation package was originally a 10-year plan, with revenues forecasted to total \$1.9 billion from 2003 through 2013. Fuel tax revenues collected during this period came in 10.2% less than the original March 2003 projections. Fuel tax funding from the 2005 TPA package is also less than the original March 2005 projections. The original projection for the TPA account was \$4.9 billion over a 16-year period from 2005 through 2021. The current projections through 2021 are estimated to be \$4 billion, roughly \$900 million less (18.2%) than the original 2005 projection.

Nickel and TPA gas tax revenues are used to pay the debt on the bonds sold to finance the planned projects. Once all the bonds are sold, revenues collected will be used to pay the debt.

Beige Page contributors include Mike Ellis, Mitzi Frick, Penny Haeger, Heather Jones, Thanh Nguyen, Theresa Scott, Aaron Ward, Matt Clark and Joe Irwin



### Strategic Plan Goal 1: STRATEGIC INVESTMENTS

Project Delivery – Deliver transportation projects that are on time and on budget.

WSDOT continues to deliver its Nickel and TPA program funded projects with a high rate of success. Of the total 377 construction projects completed to date, 87% have been on time and 91% have been on budget.

# WSDOT has 22 Nickel, TPA projects left to complete

**Highway construction performance summary shows about \$8.5 billion in projects remain to be completed**  
Current Legislative Evaluation and Accountability Program as of December 31, 2016; Dollars in millions

| Combined Nickel and TPA programs  | Number of projects                             | Value of program          |
|---|--|---------------------------|
| <b>Subtotal of completed projects<sup>1</sup></b>   | <b>377</b>                                     | <b>\$6,976.8</b>          |
| <i>Non-construction projects that have been completed or otherwise removed from Nickel/TPA lists<sup>2,3</sup></i>  | 5  | \$74.4                    |
| Projects included in the current transportation budget but not yet complete   | 22   | \$8,523.8                 |
| <i>Projects that have been deferred indefinitely or deleted and removed from Nickel/TPA lists<sup>2,4</sup></i>   | 13   | \$499.2                   |
| <i>Projects now funded by Connecting Washington and removed from Nickel/TPA lists (see <a href="#">GNB 63, p. 35</a>)</i>                                       | 4  | \$101.7                   |
| <b>Total number of projects<sup>4</sup> in improvement and preservation budget</b>  | <b>421</b>                                     | <b>\$16,175.9</b>         |
| <b>Schedule and budget summary Nickel &amp; TPA combined:</b> Results of completed projects in the current Legislative Transportation Budget and prior budgets. | <b>Completed in 2015- 2017 biennium budget</b> | <b>Cumulative program</b> |
| Number of projects completed  | 11   | 377                       |
| Percent completed early or on time  | 91%  | 87%                       |
| Percent completed under or on budget  | 82%  | 92%                       |
| Baseline cost at completion   | \$809.9  | \$6,976.8                 |
| Current cost at completion  | \$777.7  | \$6,826.5                 |
| Percent of total program over or under budget   | 4.0% under                                     | 2.2% under                |
| <b>Advertisement record:</b> Results of projects entering into the construction phase or under construction, detailed on <a href="#">p. 47</a> .                | <b>Combined Nickel &amp; TPA</b>               |                           |
| Total current number of projects in construction phase as of December 31, 2016  |  | 9                         |
| Percent advertised early or on time   |  | 78%                       |
| Total number of projects advertised for construction in the 2015-2017 biennium (July 1, 2015, through June 30, 2017)  |  | 2                         |
| Percent advertised early or on time   |  | 50%                       |
| <b>Projects to be advertised:</b> Results of projects now being advertised for construction or planned to be advertised, detailed below.                        | <b>Combined Nickel &amp; TPA</b>               |                           |
| Total projects being advertised for construction bids (January 1 through June 31, 2017)   |  | 0                         |
| Percent on target for advertisement on schedule or early  |  | 0%                        |
| <b>Budget status for the 2015-2017 biennium:</b>  | <b>WSDOT biennial budget</b>                   |                           |
| Budget amount for 2015-2017 biennium  |  | \$1,769.7                 |
| Actual expenditures in 2015-2017 biennium to date (July 1, 2015, through December 31, 2016)   |  | \$1,174.2                 |
| <i>Total 2003 Transportation Funding Package (Nickel) expenditures</i>  |  | \$71.1                    |
| <i>Total 2005 Transportation Partnership Account expenditures</i>   |  | \$625.0                   |
| <i>Total Pre-existing Funds expenditures<sup>5</sup></i>  |  | \$478.1                   |

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers have been rounded. This chart was updated in GNB 63 to reflect reconciled Nickel and TPA project counts, and as a result it does not exactly match Current Legislative Evaluation and Accountability Program charts from previous editions. **1** Cumulative projects completed from July 1, 2003, to September 30, 2016. **2** Non-construction projects include commitments for engineering and right of way work. **3** Projects that have been deferred indefinitely or deleted include projects that have no funding available, projects that have been halted by the Legislature and those for which other entities (e.g., cities and counties) are now serving as the lead agency. **4** The project total has been updated to show “unbundled” projects which may have been previously reported in programmatic construction groupings (such as Roadside Safety Improvements or Bridges Seismic Retrofit). See [Gray Notebook 38, p. 55](#) for more details. **5** For full details of the Pre-existing Funds program, see [pp. 49-50](#).

# WSDOT completes 19 rail and 22 ferries project to date

WSDOT did not complete any new Legislative Evaluation and Accountability Program rail or ferry projects this quarter. WSDOT has used the 2003 (Nickel) and 2005 (TPA) funding packages to complete 19 rail projects and 22 ferries projects since 2003. Approximately \$524.2 million in ferries projects have been funded by the Nickel, TPA

and multimodal accounts. The multimodal account has also funded approximately \$103.3 million in rail projects. WSDOT advertised three multimodal account rail projects, with awards amounting to \$146.7 million. An additional new \$123 million ferry vessel, funded with Nickel cash and bond proceeds, is also currently under construction.

## WSDOT finishes 12 Nickel rail projects since 2003

Current Legislative Evaluation and Accountability Program as of December 31, 2016; Dollars in millions

|  | 2003 Nickel Package | 2005 TPA Package | Combined Nickel & TPA |
|--|---------------------|------------------|-----------------------|
| <b>Schedule, scope, and budget summary:</b> Completed LEAP projects                          |                     |                  |                       |
| Cumulative to date (July 1, 2003, through December 31, 2016)                                 | 12                  | 7                | 19                    |
| Percent completed early or on time <sup>1</sup>  | 100%                | 100%             | 100%                  |
| Percent completed within scope <sup>1</sup>  | 100%                | 100%             | 100%                  |
| Percent completed under or on budget <sup>1</sup>  | 100%                | 100%             | 100%                  |
| Baseline cost at completion  | \$72.6              | \$41.0           | \$113.6               |
| Current cost at completion   | \$72.6              | \$41.0           | \$113.6               |
| Percent of total program on or under budget <sup>1</sup>                                     | 100%                | 100%             | 100%                  |
| <b>Advertisement record:</b> LEAP projects under construction or entering construction phase |                     |                  |                       |
| Cumulative to date (July 1, 2003, through December 31, 2016)                                 | 1                   | 2                | 3                     |
| Total advertised   | 1                   | 2                | 3                     |
| Percent advertised early or on time  | 100%                | 100%             | 100%                  |
| Total award amounts to date  | \$119.6             | \$27.1           | \$146.7               |

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers may not total 100% due to rounding. The rail projects are primarily delivered through master agreements with BNSF, which administers construction activities on the projects. The data above is unchanged from the previous quarter because no additional rail projects were completed. **1** Rail projects are commitments delivered by BNSF, Sound Transit, ports and operators. Master agreements between WSDOT and lead agencies become the documents that govern the delivery of the project including budget, scope and schedule. The administrative process allows for amendments enabling the projects to be delivered within the parameters of the new amended agreement (on time, and on budget).

## WSDOT finishes 12 Nickel ferries projects since 2003

Current Legislative Evaluation and Accountability Program as of December 31, 2016; Dollars in millions

|  | 2003 Nickel Package | 2005 TPA Package | Combined Nickel & TPA |
|--|---------------------|------------------|-----------------------|
| <b>Schedule, scope, and budget summary:</b> Completed LEAP projects <sup>1</sup>             |                     |                  |                       |
| Cumulative to date (July 1, 2003, through December 31, 2016)                                 | 12                  | 10               | 22                    |
| Percent completed early or on time <sup>2</sup>  | 100%                | 100%             | 100%                  |
| Percent completed within scope <sup>2</sup>  | 100%                | 100%             | 100%                  |
| Percent completed under or on budget <sup>2</sup>  | 100%                | 100%             | 100%                  |
| Baseline cost at completion  | \$180.7             | \$343.5          | \$524.2               |
| Current cost at completion   | \$180.7             | \$343.5          | \$524.2               |
| Percent of total program on or under budget <sup>2</sup>                                     | 100%                | 100%             | 100%                  |
| <b>Advertisement record:</b> LEAP projects under construction or entering construction phase |                     |                  |                       |
| Cumulative to date (July 1, 2003, through December 31, 2016)                                 | 1                   | 0                | 1                     |
| Percent advertised early or on time <sup>2</sup>   | 100%                | N/A              | 100%                  |
| Total award amounts to date  | \$123.0             | \$0              | \$123.0               |

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers may not total 100% due to rounding. **1** Ferries completed projects record includes two 144-car vessels: the Motor/Vessel *Samish*, which started service in June 2015, and the M/V *Tokitae*, which started service in June 2014. It also includes three 64-car vessels: the M/V *Chetzemoka*, which started service in November 2010, the M/V *Salish*, which started service in July 2011, and the M/V *Kennewick*, which started service in February 2012. **2** The Legislature funds Ferries' projects at a grouped-project or Budget Identification Number (BIN) level for terminals and vessels; however, the delivery of construction projects requires that each of these BIN groups be broken into sub-projects with specific scopes, budgets and schedules. The list of sub-projects is updated as the project progresses into the design phase and the budget and schedule are better defined. This process enables WSDOT to deliver the projects within the updated budget amounts and milestones (on time, and on budget).

# WSDOT completes four projects during the quarter

WSDOT completed two Transportation Partnership Account (TPA) projects during the sixth quarter of the 2015-2017 biennium (October through December 2016). During the quarter, it also completed a Connecting Washington (CWA) project and finished a project that is part of the larger North Spokane Corridor project (NSC). Additionally, two projects completed in earlier quarters are now being reported, one of which is also a subset of a larger project.

## SR 167/SR 18 Interchange, West-North Ramp, North-East Ramp Overcrossing – Seismic Retrofit (TPA) King County

■ Completed in fourth quarter of 2016

This work modified the existing State Route (SR) 167/SR 18 overcrossing to bolster its resilience in the event of seismic activity.

**Project benefits:** The improved overcrossing will contribute to motorist and pedestrian safety.

**Budget performance:** This project was not completed on budget. Actual costs of \$332,920 exceeded the last legislatively approved budget of \$308,614 by 7.9%. The original budget allocated \$278,115 for the project in 2007.

**Schedule performance:** The project was completed on time in December 2016—six months ahead of the last legislatively approved schedule. The original 2007 schedule anticipated completion of the project in March 2010.

**Highlights/challenges:** The delivery of this project was timed to coincide with the delivery of the next project described below.

## SR 167/8th St. East vicinity to South 277th St. vicinity – Southbound Managed Lane (TPA) King County

■ Completed in fourth quarter of 2016

The southbound SR 167 High Occupancy Toll (HOT) lane was constructed between 37th Street Northwest in King County and the vicinity of 8th Street East in Pierce County. The bridge at the SR 18 interchange was widened. Ramp meters and noise walls were installed at various sites along the route. A twin set of culverts at Jovita Creek were replaced with ones that allow fish passage. A third fish-blocking culvert was altogether removed to restore a creek channel. Environmental and stormwater management facilities were also constructed.

**Project benefits:** This project contributes to improved mobility, traffic operation, and safety by reducing congestion on SR 167. Additionally, replacement of the culverts improves access to 3.75 miles of habitat for populations of chum and coho salmon, rainbow trout, and steelhead.

**Budget performance:** This \$84 million project was completed on budget compared to both the original 2006 and last legislatively approved budgets.

**Schedule performance:** The project was completed on time in December 2016—six months ahead of the last legislatively approved schedule. The original 2006 schedule anticipated completion of the project in June 2011.

**Highlights/challenges:** WSDOT conducted an in-depth design evaluation and risk assessment of the project in May 2008. In February 2009, the project design was changed to designate the newly constructed managed lane as a HOT lane (instead of High Occupancy Vehicle) after observing the outcomes of the HOT lanes pilot project.

## US 12/Schouweiler Rd. – Intersection Improvements (CWA) Grays Harbor County

■ Completed in fourth quarter of 2016

This project updated travel lanes on US 12 to meet current design criteria, allowing more space to accelerate and decelerate when entering and exiting highway lanes.

**Project benefits:** Construction is expected to accommodate the anticipated growth in the area, and improve traffic mobility and safety.

**Budget performance:** The project was completed on budget for \$1.5 million, aligning with both the original 2015 and last legislatively approved budgets.

**Schedule performance:** The project was completed on time in December 2016, four months ahead of the original 2015 and last legislatively approved schedules.

**Highlights/challenges:** The previous intersection served a mix of slow-moving commercial vehicles entering and exiting US 12. WSDOT gathered feedback through community outreach as part of its Practical Solutions approach which indicated the desire to continue developing the area commercially. With this in mind, WSDOT eliminated several design alternatives from consideration, and realized cost savings by utilizing the existing shoulder in constructing the westbound acceleration lane.

# WSDOT reports two projects completed last quarter

## US 395/NSC Wellesley Ave./Freya St. – Intersection Improvements (TPA) *Spokane County*

- Completed in fourth quarter of 2016
- Part of a larger project

This project, which is part of the work comprising the NSC project, converted a four-way stop to a roundabout at the intersection of Wellesley Avenue and Freya Street. Related erosion control, drainage, curb and sidewalk, lighting and permanent signage work was also completed.

**Project benefits:** These intersection improvements support the future Wellesley Avenue Interchange and the development of a high-capacity north-south transportation corridor for the efficient movement of freight, goods and people.

**Budget performance:** The project was completed on budget for \$1.9 million, the amount allocated in the last legislatively approved budget. The original 2014 budget allocated \$2.1 million.

**Schedule performance:** The project was completed on time in October 2016. Both the original 2014 schedule approved by the legislature and the most recently approved schedule called for project completion in that month.

**Highlights/challenges:** Completion of this project facilitated other projects associated with the NSC. Improvements to the intersection will help mitigate traffic impacts to arterial routes and neighborhoods during upcoming NSC projects.

## I-90/Oakes Ave. Interchange to Peoh Rd. Bridge vicinity – Replace/Rehab Concrete (TPA) *Kittitas County*

- Completed in third quarter of 2016
- Part of a larger project

This project was finished in a previous quarter and is now being reported. The project—part of the larger Interstate 90/Concrete Rehabilitation project—placed a concrete overlay on both westbound lanes of I-90 to repair aging pavement, and replaced asphalt shoulders. It also restored lane striping and delineation.

**Project benefits:** The work extends the service life of the pavement, and contributes to motorist safety.

**Budget performance:** This project was not completed on budget. Costs were 5.3% over the last legislatively approved budget of \$16.3 million. The original 2011 budget allocated \$52.3 million for a larger scope of work.

**Schedule performance:** The project was completed on time in August 2016, three months ahead of the last legislatively approved schedule. The original 2011 schedule anticipated completion in November 2017.

**Highlights/challenges:** Work along the first three miles of the project generated high traffic impacts because of the close spacing of narrow bridges over Peoh Point Road and the Yakima River.

## SR 502/I-5 to Battle Ground – Add Lanes – Stage 2 (TPA) *Clark County*

- Completed in third quarter of 2016

This project was completed in a previous quarter and is now being reported. State Route 502 was widened to four lanes east from Interstate 5 into the city of Battle Ground, and intersections were improved. The first stage of the project constructed stormwater facilities and wetland mitigation sites.

**Project benefits:** Added highway capacity will help reduce congestion, and intersection improvements will contribute to safety.

**Budget performance:** The project was completed on budget for \$84.3 million compared to the last legislatively approved budget. The original 2003 budget allocated a total of \$15 million to the project, intended for right-of-way acquisition only. The subsequent 2006 budget totalled \$57.8 million and addressed some construction costs.

**Schedule performance:** This project was completed on time in June 2016, which is four months ahead of the last legislatively approved schedule. The 2006 schedule anticipated project delivery in December 2013.

**Highlights/challenges:** The schedule for this project was impacted by complications in acquiring right-of-way, both because of the large number of parcels to acquire and because the 2007 recession significantly altered the underlying property values.

# One project remains on WSDOT's Watch List

WSDOT added one new project to its Watch List this quarter (October through December 2016) and removed four, leaving a single project on the Watch List as of December 31. See the table below for this quarter's Watch List projects.

WSDOT maintains the Watch List to deliver on the agency's commitment to "No Surprises" reporting. The agency continuously monitors its projects' performance to ensure issues affecting schedule or budget are brought to the attention of legislators, executives and the public. The Watch List provides information on issues that have the potential to impact the schedules and budgets

of projects funded by Pre-existing Funds (PEF), and the Nickel, Transportation Partnership Account (TPA), and Connecting Washington revenue packages.

The Watch List helps track projects by providing status reports, and by explaining the factors affecting delivery and what the agency is doing to address them. Projects are removed from the Watch List when these issues are resolved.

See [Gray Notebook 51, p. 40](#), for a list of common issues that might put projects on the Watch List. To read more about the Watch List items, visit: [bit.ly/WSDOTWatchList](http://bit.ly/WSDOTWatchList).

## WSDOT's Watch List projects with schedule or budget concerns

Quarter ending December 31, 2016

| Project (County)   | Revenue Package | Date added | Date removed | Watch List issue  |
|--|-----------------|------------|--------------|---|
| <b>Projects no longer on Watch List</b>  |                 |            |              |   |
| SR 161/24th St. East to Jovita – Add Lanes (Pierce)                              | Nickel          | Sep-2014   | Nov-2016     | This project was operationally complete in August 2014 but incurred cost increases because of a claim by the contractor. A settlement has been reached and the project has been removed from the Watch List.                      |
| SR 112/Nordstrom Creek – Remove Fish Barrier (Clallam) <sup>1</sup>              | PEF             | Mar-2016   | Dec-2016     | WSDOT has concluded negotiations with the property owner to secure a temporary construction easement. Construction is anticipated to begin in 2017. The project has been removed from the Watch List.                             |
| SR 16/Anderson Creek Tributary to Sinclair Inlet – Remove Fish Barriers (Kitsap) | TPA             | Dec-2016   | Dec-2016     | Unfavorable weather conditions delayed the project's paving and landscape work. Project completion is now anticipated in June 2017. The project has been removed from the Watch List.   |
| SR 524/Yew Way – Railroad Crossing improvements (Snohomish) <sup>2</sup>         | PEF             | Jun-2015   | Dec-2016     | Delays obtaining a construction easement have delayed the advertisement date have affected the construction schedule. Construction completion is now anticipated for fall 2017. The project has been removed from the Watch List. |
| <b>Projects remaining on Watch List</b>  |                 |            |              |   |
| SR 99/South King St. vicinity to Roy St. – Viaduct Replacement (King)            | Nickel, TPA     | Dec-2013   |              | The project completion date has been delayed. The project's contractor, Seattle Tunnel Partners, updated the projected tunnel opening date to early 2019 <sup>3</sup> .   |

Data sources: WSDOT Capital Program Development and Management and WSDOT Regions.

Notes: **1** This project was originally added to the Watch List in March 2016. It was removed in May 2016. Further delays in the project's advertisement date occurred and it was added again in September 2016. **2** This project was originally added to the Watch List in June 2015. It was removed in February 2016. Further delays in the project's advertisement date occurred and it was added again in December 2016. **3** The schedule for this project changes frequently and WSDOT cannot verify the contractor's schedule.

# WSDOT progresses on Connecting Washington projects

## Two Connecting Washington projects completed, two in construction phase

Through December, 2016; Costs estimated at completion; Dollars in millions

| Projects under construction (County)                                       | On schedule | Completion date | Construction cost |
|--|-------------|-----------------|-------------------|
| I-405/SR 167 Direct Connector - Widening (King)                            | √           | Dec-2018        | \$171.3           |
| I-405/Northeast 30th St. and Northeast 44th St. - Ramp Improvements (King) | √           | Feb-2017        | \$1.1             |

| Projects completed (County)   | On time | On budget | Completion date | Final cost |
|---|---------|-----------|-----------------|------------|
| I-82 West Richland - Red Mountain Interchange (Benton)              |         |           |                 |            |
| • SR 224/SR 225 - Benton City - Construct Intersection Improvements | √       | √         | Jun-2016        | \$3.3      |
| US 12/Schouweiler Rd. - Intersection Improvements (Grays Harbor)    | √       | √         | Dec-2016        | \$1.2      |

## Nine WSDOT Nickel and Transportation Partnership Account projects in construction phase

Through December 2016; Costs estimated at completion; Dollars in millions

| Project description<br>Cumulative to date (County)  | Fund type               | On-time advertised | Ad date  | Operationally complete date | Award amount |
|---|-------------------------|--------------------|----------|-----------------------------|--------------|
| I-5 Concrete Rehabilitation Program (King)<br>Multiple contractors continue to work on this project.  | Nickel                  | √                  | Jul-2009 | May-2023                    | N/A          |
| • I-5/Northbound South 260th to Duwamish River Bridge - Concrete Rehab  | Nickel                  | N/A                | Nov-2016 | Oct-2018                    | \$30.8       |
| • I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair  | Nickel                  | N/A                | Dec-2016 | Sep-2019                    | Pending      |
| • I-5/Northbound South Spokane St. Vicinity - Concrete Pavement Replacement   | Nickel                  | N/A                | Dec-2016 | Sep-2019                    | Pending      |
| • I-5/Northbound I-90 Vicinity to James St. Vicinity - Concrete Pavement Replacement  | Nickel                  | N/A                | Dec-2016 | Sep-2019                    | Pending      |
| SR 99/Alaskan Way Viaduct – Replacement (King)<br>This project replaces an aging viaduct with a new viaduct on the south end and adds a tunnel in downtown Seattle. WSDOT is funding or leading 30 contracts or projects as part of the viaduct replacement effort. Active Nickel/TPA projects are shown below: |                         |                    |          |                             |              |
| • SR 99/South King Street Vicinity to Roy Street – Viaduct Replacement  | Nickel/TPA              | √                  | May-2010 | TBD                         | \$1,089.7    |
| This subproject has several contract components; the bored tunnel, north and south access connections and associated work. The schedule for this project changes frequently and WSDOT cannot verify the contractor's schedule at this time.   |                         |                    |          |                             |              |
| US 395/North Spokane Corridor (NSC) – Design and Right of Way – New Alignment (Spokane)   | Nickel/TPA <sup>1</sup> | √                  | Apr-2012 | Nov-2018                    | N/A          |
| • US 395/NSC - Spokane River to Francis Ave. - Grading  | TPA                     | N/A                | Dec-2016 |                             | Pending      |
| • US 395/NSC Freya St. - Structures   | TPA                     | N/A                | Dec-2016 |                             | Pending      |
| I-90/Concrete Rehabilitation<br>Multiple contractors continue to work on this project.  | Nickel/TPA              |                    |          |                             |              |
| SR 520/Bridge Replacement and HOV (King)<br>• SR 520/I-5 to Medina – Evergreen Point Floating Bridge and Landings   | TPA                     | √                  | Dec-2010 | Jul-2017                    | \$586.6      |
| An additional contract award for this project is pending.   |                         |                    |          |                             |              |
| SR 3/Belfair Area – Widening and Safety Improvements (Mason)<br>Advertisement was delayed due to revised project limits, which affected right of way acquisition.   | TPA                     | Late               | Apr-2015 | Aug-2017                    | \$10.3       |
| I-5/Tacoma HOV Improvements (Pierce)<br>• I-5/M Street to Portland Avenue – Add HOV Lanes   | Nickel/TPA<br>Nickel    | √                  | Mar-2014 | Feb-2017                    | \$1.7        |
| I-90/Snoqualmie Pass East – Hyak to Keechelus Dam – Corridor Improvement (Kittitas)<br>• I-90/Snowshed to Keechelus Dam Phase 1C – Replace Snowshed and Add Lanes   | TPA<br>TPA              | Late               | Apr-2011 | Oct-2017                    | \$177.1      |
| Advertisement was delayed to address fire and safety issues with the original snowshed design, resulting in long-term savings.  |                         |                    |          |                             |              |
| SR 16/Anderson Creek Tributary to Sinclair Inlet – Fish Barriers (Kitsap)   | TPA                     | Late               | Feb-2016 | Jun-2017                    | \$4.4        |

Source: Capital Project Delivery Programs.

# Most TPA projects on budget for 2015-2017 biennium

## Biennial summary: Eleven projects completed in 2015-2017 biennium

Nickel and Transportation Partnership Account projects; Costs estimated at completion; Dollars in millions

| Cumulative to date  | Fund type                       | On-time advertised                 | On-time completed                 | Within scope    | Baseline estimated cost | Current estimated cost | On budget completed                        |
|---|---------------------------------|------------------------------------|-----------------------------------|-----------------|-------------------------|------------------------|--|
| <b>Current biennium reporting on capital project delivery</b>   |                                 |                                    |                                   |                 |                         |                        |  |
| <b>2015-2017 biennium summary<sup>1</sup></b><br>This information is updated quarterly throughout the biennium. | 0 Nickel<br>11 TPA              | 7 on time <sup>2</sup><br>4 late   | 10 on time<br>1 late              | 11              | \$809.9                 | \$777.7                | 10 on budget<br>1 over budget              |
| <b>Earlier biennia reporting on capital project delivery</b>  |                                 |                                    |                                   |                 |                         |                        |  |
| <b>2013-2015 biennium summary</b><br>See <a href="#">Gray Notebook 58, p. 55.</a>                               | 6 Nickel<br>15 TPA              | 16 on time<br>5 late               | 15 on time<br>6 late              | 21              | \$555.7                 | \$514.0                | 18 on budget<br>3 over budget              |
| <b>2011-2013 biennium summary</b><br>See <a href="#">Gray Notebook 50, p. 31.</a>                               | 5 Nickel<br>36 <sup>1</sup> TPA | 31 <sup>1</sup> on time<br>10 late | 32 <sup>1</sup> on time<br>9 late | 41 <sup>1</sup> | \$1,485.5 <sup>1</sup>  | \$1,459.6 <sup>1</sup> | 37 <sup>1</sup> on budget<br>4 over budget |
| <b>2009-2011 biennium summary<sup>1</sup></b><br>See <a href="#">Gray Notebook 42, p. 45.</a>                   | 16 Nickel<br>74 TPA             | 73 on time<br>17 late              | 80 on time<br>10 late             | 90              | \$1,641.6               | \$1,597.0              | 85 on budget<br>5 over budget              |
| <b>2007-2009 biennium summary</b><br>See <a href="#">Gray Notebook 34, p. 58.</a>                               | 42 Nickel<br>69 TPA             | 91 on time<br>20 late              | 96 on time<br>15 late             | 111             | \$1,685.7               | \$1,685.2              | 102 on budget<br>9 over budget             |
| <b>2005-2007 biennium summary</b><br>See <a href="#">Gray Notebook 26, p. 5.</a>                                | 52 Nickel<br>24 TPA             | 71 on time<br>5 late               | 68 on time<br>8 late              | 76              | \$673.9                 | \$668.8                | 67 on budget<br>9 over budget              |
| <b>2003-2005 biennium summary</b><br>See <a href="#">Gray Notebook 19, p. 5.</a>                                | 27 Nickel                       | 25 on time<br>2 late               | 27 on time<br>0 late              | 27              | \$124.6                 | \$124.4                | 25 on budget<br>2 over budget              |

Data source: WSDOT Capital Program Development and Management.

Notes: Dollar amounts are rounded up. **1** In *Gray Notebooks* published before the 2009-2011 biennium, WSDOT used a project count of 391 combined Nickel and TPA projects for project completion data. In conjunction with the 2009-2011 biennium wrap-up, the tables were reorganized to present the completed information for the current project count of 421. In the revised count, several projects that were developed as part of larger programs, like bridge, rail, and roadside safety, were included in the new count though they had been completed earlier. **2** Number of on-time projects was updated in the chart above for *Gray Notebook 63*.

## WSDOT reports eight change orders whose value exceeded \$500,000 during the quarter ending December 31, 2016

Additionally, two change orders which occurred at the end of last quarter are also being reported. The combined value of the 10 changes totals \$49.9 million. One change order to permanently resolve claims by contractors on the SR 99 tunnel project amounted to \$35.4 million. Other change orders included two projects that realized cost savings after going through a Practical Design Workshop process. After an extensive review, which can involve subject matter experts, contract specialists, and other outside stakeholders, WSDOT must sometimes change its engineers' original plans and specifications in order to complete projects. When this occurs, WSDOT issues a formal modification (or change order) to the contract, containing a description of the change and details about how or if the contractor may be compensated for it. Each month, WSDOT posts all change orders estimated to cost \$500,000 or more online at <http://bit.ly/WSDOTChangeorders>



# WSDOT advertises 59 of 95 Pre-existing Funds projects

WSDOT advertised 59 of 95 Pre-existing Funds (PEF) projects in the sixth quarter of the 2015-2017 biennium (October through December 2016).

Of the 95 total projects, three were advanced from future quarters, 43 were advertised on time, 10 were emergent and three were advertised late. Of the remaining PEF projects scheduled for advertisement this quarter, 34 were delayed within the biennium and two were deleted within the 2015-2017 biennium. See [p. 50](#) for this quarter's PEF advertisements.

WSDOT's current cost to complete the 303 PEF projects actually advertised through the sixth quarter of the 2015-2017 biennium is \$489.2 million, about \$17.9 million (3.5%) less than the original value of \$507.1 million.

**Actual cost to complete project advertisements about \$17.9 million less than the original value 2015-2017 biennium (July 2015 through June 2017); Quarter ending December 31, 2016; Dollars in millions**

|   | Number of projects | Original value | Current cost to complete |
|---|--------------------|----------------|--------------------------|
| Total PEF advertisements planned for the 2015-2017 biennium | 485                | \$876.7        | \$884.4                  |
| Planned advertisements through December 31, 2016            | 327                | \$587.2        | \$573.7                  |
| Actual advertisements through December 31, 2016             | 303                | \$507.1        | \$489.2                  |

Data source: WSDOT Capital Program Development and Management.

**WSDOT completes 244 Pre-existing Funds project advertisements so far during 2015-2017 biennium**

| Project status                         | Quarter <sup>1</sup> | Cumulative <sup>2</sup> |
|--|----------------------|-------------------------|
| Projects advanced <sup>3</sup>         | 3                    | 24                      |
| Projects advertised on time            | 43                   | 226                     |
| Emergent projects advertised           | 10                   | 22                      |
| Projects advertised late               | 3                    | 31                      |
| <b>Total projects advertised</b>       | <b>59</b>            | <b>303</b>              |
| Projects advertised early <sup>4</sup> | 0                    | 20                      |
| Projects delayed within the biennium   | 34                   | 79                      |
| Projects deferred out of the biennium  | 0                    | 7                       |
| Projects deleted                       | 2                    | 3                       |

Data source: WSDOT Capital Program Development and Management. Notes: **1** Quarter refers to October through December 2016. **2** Cumulative refers to July 2015 through June 2017. **3** Advanced includes projects that were moved up from future quarters. **4** Early includes projects from the quarter that were advertised in an earlier quarter.

The current estimated cost to complete all 485 advertisements planned for the 2015-2017 biennium is \$884.4 million, about \$7.7 million (0.9%) more than the original value of \$875.7 million for these projects.

**Improvement and preservation cash flows less than projections**

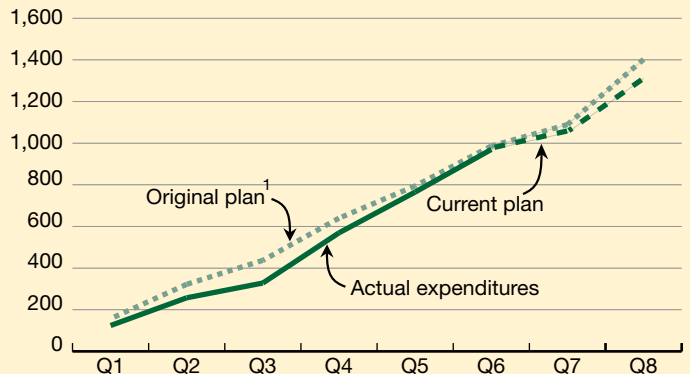
Cumulatively, WSDOT planned to have \$986.4 million in the combined improvement and preservation cash flow during the sixth quarter of the 2015-2017 biennium, but had \$969.8 billion instead (approximately 1.7% less). This \$16.6 million variance was due to WSDOT basing initial improvement and preservation program allotments on historical averages for the quarter.

WSDOT adjusted its baseline allotments and its planned expenditures during the 2015-2017 biennium to better reflect the six-year spending plan.

WSDOT uses improvement program funds for projects that optimize highway capacity, enhance safety and reduce the environmental impact of construction projects. The preservation program includes pavement, bridges and other projects that maintain the structural integrity of the existing highway system.

Contributors include Mike Ellis and Joe Irwin

**Cumulative Pre-existing Funds preservation and improvement combined cash flows lower than planned 2015-2017 biennium; Quarter ending December 31, 2016; Planned vs. actual expenditures; Dollars in millions**



Data source: WSDOT Capital Program Development and Management. Note: Q6 refers to the sixth quarter (October through December 2016) of the 2015-2017 biennium (July 2015 through June 2017). **1** Baseline was reset after Gray Notebook 62 when WSDOT's six-year plan was updated.

# WSDOT advertises 59 Pre-existing Funds projects

## Forty-three Pre-existing Funds projects advertised on time

October through December 2016

### On time (43)

|  |   |
|--|---|
| SR 8/Wildcat Creek - Fish Barrier Removal  | SR 410/White River Bridge to SR 164 - Paving  |
| I-5/Northbound SR 516 to Interurban Ave. South Interchanges - Americans with Disabilities Act (ADA) Compliance | SR 20/Jacobs Road to Holbrook Rd. Vicinity - Paving                                     |
| SR 525/Holmes Bay Vicinity to Lake Hancock - Paving  | SR 410/Warner Ave to Garrett St - ADA Compliance  |
| SR 20/Main St. Vicinity - ADA Compliance   | SR 20/Winthrop Vicinity - Paving  |
| SR 525/Lake Hancock to SR 20 - Paving  | SR 20/Winthrop Vicinity - ADA Compliance  |
| SR 525/Cultus Bay Rd. Vicinity - ADA Compliance  | SR 173/Bridgeport to Brewster - Chip Seal   |
| SR 525/Maxwelton Rd. Vicinity to Holmes Bay Vicinity - Paving  | SR 281/George North - Chip Seal   |
| SR 525/Maxwelton Rd. Vicinity to Main St. Vicinity - ADA Compliance  | SR 283/George Vicinity North - Chip Seal  |
| SR 8/Middle Fork Wildcat Creek - Remove Fish Barrier   | SR 17/North of Moses Lake - Chip Seal   |
| SR 525/Bob Galbreath Rd. to Maxwelton Rd. - Paving   | US 2/Leavenworth West - Chip Seal   |
| I-5/Koontz Road Overpass - Repair Bridge   | SR 17/US 2 to SR 174 - Chip Seal  |
| I-5/93rd Ave. Southwest Bridge - Special Repair  | SR 532/Church Creek - Fish Passage  |
| I-90/Adams County Line to Spokane County Line Bridge Repairs   | SR 28/Rock Island East - Chip Seal  |
| I-90/Adams County Line to Spokane County Line - Paving   | I-5/6th Ave South - ADA Compliance  |
| I-5/Southbound 84th St. - Replace Signal   | SR 150/West of Chelan - ADA Compliance  |
| I-82/Valley Mall Blvd. Vicinity to Yakima River Bridge - Paving  | I-5/Northbound Spokane St. to Lake Washington Ship Canal Bridge - Special Bridge Repair |
| US 97/Lateral A Vicinity to Ahtanum Creek - Paving   | I-5/Northeast Ravenna Blvd. Ramp - ADA Compliance                                       |
| I-82/1 Mile West of Benton City to I-182 Interchange Vicinity - Paving   | SR 16/Union Ave. to Jackson Ave. - ADA Ramps  |
| SR 20/Sedro-Woolley to Concrete Vicinity - Chip Seal   | SR 150/West of Chelan - Paving  |
| SR 164/Southeast 408th St. to 196th Ave. Southeast Vicinity - Pavement Repair                                  | I-5/Silver Lake Southbound Recreational Vehicle (RV) Dump Station Rehabilitation        |
| SR 164/SE 408th St. - ADA Compliance   | SR 129/SR 129 Spur Intersection - Replace Signal  |
| I-5/Northbound Martin Luther King Jr. Way - Barrier Extension  |   |

### Emergent (10)

|  |   |
|--|---|
| SR 28/Quincy Valley Safety Rest Area (SRA) - Sewer Recovery - North Central Region   | US 12/South of Mox Chehalis Creek to North of Cedar St. West - Chip Seal      |
| I-5/Toutle River Northbound/Southbound SRA - Minor Rehabilitation - Southwest Region | SR 8/West of Old Sand Creek Rd. to West of Summit Lake Rd. Northwest - Paving |
| SR 112/Green Creek Bridge to US 101 - Chip Seal                                      | SR 109/Conner Creek Bridge to North of Chabot Rd. - Chip Seal                 |
| SR 167/Southwest of Grandview Ave. to West of 87th Ave. East - Paving                | SR 109/South of Moclips Highway to Quinault River Bridge - Chip Seal          |
| SR 8/Mox Chehalis Rd. to Junction US 101 - Paving                                    | I-5/Northbound Milepost 248.5 Rock Fall Mitigation                            |

### Advertised early (3)

|   |  |
|---|--|
| North Central Region 2015-2017 Regionwide Guardrail Installations | I-90/North Bend to Easton - Intelligent Transportation System Preservation |
| North Central Region Guardrail Update 2015-2017                   |  |

### Advertised late (3)

|   |   |
|---|---|
| 2015-2017 Olympic Region Shoulder Rumble Strips - Install Rumble Strips | 2015-2017 Olympic Region Centerline Rumble Strips - Install Rumble Strips |
| SR 401/0.85 Miles North of Astoria Bridge - Culvert Replacement         |   |

Data source: WSDOT Capital Program Development and Management.

## Gray Notebook subject index, archives and acronym list online

Readers can access the *Gray Notebook* subject index online at [bit.ly/GNBsubjectindex](http://bit.ly/GNBsubjectindex). *Gray Notebook* editions are available at [bit.ly/GNBarchives](http://bit.ly/GNBarchives), and WSDOT's transportation acronym guide can be viewed at [bit.ly/WSDOTacronyms](http://bit.ly/WSDOTacronyms).

## Understanding reporting periods

WSDOT programs report their performance data during different periods to best fit the work they do. For example, a program that receives substantial federal funds may report performance based on the federal fiscal year.

The charts below show the reporting periods for *Gray Notebook* 64. October through December 2016 is the fourth quarter of the calendar year (Q4 2016); the second quarter of the state's fiscal year (Q2 FY2017); and the first quarter of the federal fiscal year (Q1 FFY2017). It is also the sixth quarter of the 2015-2017 biennium, which follows the current budget set by the Washington State Legislature.

### Calendar, fiscal and federal fiscal quarters

| Jan        | Feb | Mar | Apr        | May | Jun | Jul        | Aug | Sep | Oct               | Nov | Dec |
|------------|-----|-----|------------|-----|-----|------------|-----|-----|-------------------|-----|-----|
| GNB 61     |     |     | GNB 62     |     |     | GNB 63     |     |     | <b>GNB 64</b>     |     |     |
| Q1 2016    |     |     | Q2 2016    |     |     | Q3 2016    |     |     | <b>Q4 2016</b>    |     |     |
| Q3 FY2016  |     |     | Q4 FY2016  |     |     | Q1 FY2017  |     |     | <b>Q2 FY2017</b>  |     |     |
| Q2 FFY2016 |     |     | Q3 FFY2016 |     |     | Q4 FFY2016 |     |     | <b>Q1 FFY2017</b> |     |     |

### 2015-2017 biennial quarters

| Period         | Quarter | Period                | Quarter   |
|----------------|---------|-----------------------|-----------|
| Jul – Sep 2015 | Q1      | Jul – Sep 2016        | Q5        |
| Oct – Dec 2015 | Q2      | <b>Oct – Dec 2016</b> | <b>Q6</b> |
| Jan – Mar 2016 | Q3      | Jan – Mar 2017        | Q7        |
| Apr – Jun 2016 | Q4      | Apr – Jun 2017        | Q8        |

Notes: A calendar year begins January 1 and ends December 31. Washington state's fiscal year begins July 1 and ends June 30. The federal fiscal year begins October 1 and ends September 30. Biennia begin July 1 and end two years later on June 30.

## Gray Notebook credits

The *Gray Notebook* is developed and produced by the small team at WSDOT's Office of Strategic Assessment and Performance Analysis (OSAPA), and articles feature bylines indicating key contributors from dozens of WSDOT programs.

The *Gray Notebook* and *Gray Notebook Lite* are printed in-house by Ronnie Jackson, Trudi Phillips, Talon Randazzo, Larry Shibley, Oma Venable and Deb Webb. OSAPA's Kate Wilfong coordinates distribution. WSDOT's graphics team of Marcia Mill, Erica Mulherin and Steve Riddle provides creative help and assists with graphics, while WSDOT communicators typically take the photographs featured throughout each edition.

## Americans with Disabilities Act (ADA) information for the public

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