

The Gray Notebook

WSDOT's quarterly performance report on transportation systems, programs, and department management
Quarter ending December 31, 2015 • Published February 2016 Roger Millar, Acting Secretary of Transportation

The crews that tell Mother Nature, "Enough's enough"

From slope repairs to snow removal, WSDOT highway maintenance plays a vital role in keeping Washington moving

p. 20

WSDOT holding the line on pavement preservation

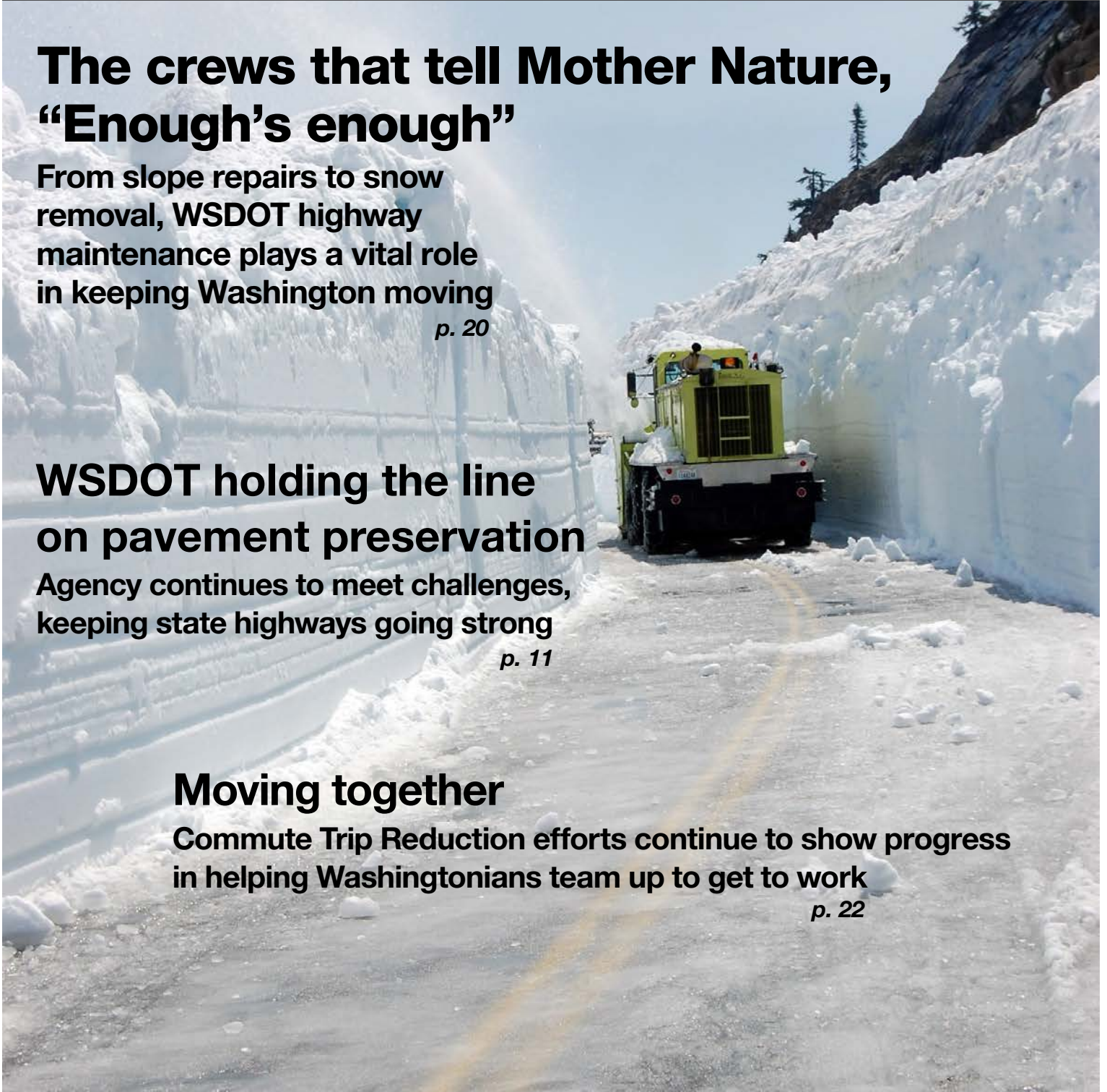
Agency continues to meet challenges, keeping state highways going strong

p. 11

Moving together

Commute Trip Reduction efforts continue to show progress in helping Washingtonians team up to get to work

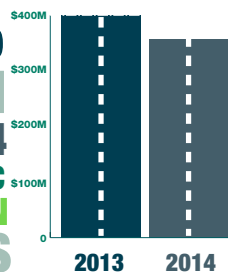
p. 22



Navigating the <i>Gray Notebook</i>	3	Economic Vitality	
Statewide Transportation Policy Goals	4	Freight Rail Annual Report	34
Moving Ahead for Progress in the 21st Century	5	WSDOT Tolling Annual Report	36
Results Washington	6	Construction Cost Trends Annual Report	39
Results WSDOT – Setting WSDOT’s Direction	7	Disadvantaged Business Enterprise	
WSDOT Reforms Update	8	Semi-Annual Report	40
Safety		Stewardship	
Worker Safety and Health Semi-Annual Update	10	Lean Process Improvements Quarterly Update	41
Preservation		Capital Project Delivery Programs Quarterly Update	43
Asset Management: Pavement Annual Report	11	Current Legislative Evaluation	
Asset Management: Highway Maintenance		and Accountability Program	44
Annual Report	20	Completed Projects and Change Orders	46
Mobility		Watch List	48
Trip Reduction Biennial Report	22	Advertisement Record	50
WSDOT Ferries: Annual Report Summary	25	Schedule and Budget Summaries	51
WSDOT Ferries Quarterly Update	26	Original LEAP	52
Rail: Amtrak Cascades Quarterly Update	28	Pre-existing Funds	54
Incident Response Quarterly Update	30	<i>Gray Notebook</i> Information Guide	56
Environment			
Environmental Compliance Annual Report	32		

Performance Highlights reported for the quarter ending December 31, 2015

WSDOT’S PAVEMENT PRESERVATION BACKLOG DECLINED BY 10% BETWEEN 2013 & 2014 DUE TO STRATEGIC PRESERVATION ACTIVITIES



43.6%

decrease in the cost of roadway excavation in 2015 lowered WSDOT’s **Construction Cost Index**

371

of 421 **Nickel and Transportation Partnership Account** funded projects have been completed

2.6 million

hours of maintenance were performed by WSDOT in 2015 without any **environmental violations**

40%

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

2,000+

WSDOT employees have received formal introductory **Lean training** to date

\$9.35 million

awarded by WSDOT in state grants and loans to support 19 **freight rail projects** in the 2015-2017 biennium

85%

of **highway maintenance** asset condition targets were achieved in 2015

EMPLOYEES at WORKSITES WITH COMMUTE TRIP REDUCTION PROGRAMS ARE LEAVING APPROXIMATELY

14,500 CARS = SINGLE lane of traffic 37 MILES long

AT HOME EVERY DAY

540,000

active **Good to Go!** accounts during fiscal year 2015

On the cover: A WSDOT snow blower clears State Route 542 near Artist Point in the North Cascades following a recent winter. See [pp. 20-21](#) for more details on WSDOT’s highway maintenance program.

Gray Notebook Lite now in easy to read mobile format

The *Gray Notebook Lite*—the condensed version of the *Gray Notebook*—is now available in a smartphone- and tablet-friendly format that makes it much easier to read on devices with smaller screens.

The *GNB Lite* features excerpts and charts and graphs from *Gray Notebook* articles, providing a brief overview of the highlights from the quarter. The format allows readers to know more on the go by accessing WSDOT's quarterly performance results on their mobile devices.

It's easy. It's fast. It's the *Gray Notebook* at *Lite* speed.

Gray Notebook features Results WSDOT goals

The 60th edition of the *Gray Notebook* continues to sync with Results WSDOT, the agency's strategic plan (see [p. 7](#)). The GNB incorporates Results WSDOT strategies throughout the publication, showing how programs are working to support the plan's six goals, which include strategic investments, modal integration, environmental stewardship, organizational strength, community engagement and smart technology. Results WSDOT also aligns with Gov. Jay Inslee's Results Washington plan to improve the state (see [p. 6](#)) while supporting 10 agency-wide reforms WSDOT proposed to the Legislature in 2013 (see [pp. 8-9](#)).

WSDOT participating in state and federal performance reporting plans

WSDOT is an active participant in Results Washington ([p. 6](#)), Gov. Inslee's plan to build a working Washington, and serves as a lead agency for Goal 2: Prosperous Economy. For more information, visit data.results.wa.gov/economy.

At the same time, WSDOT is working on future federal transportation reporting requirements for the Moving Ahead for Progress in the 21st Century Act. For more information on MAP-21, see [Gray Notebook 49, p. vii](#), and [p. 5](#) of this issue. MAP-21, Results Washington and Results WSDOT are helping guide WSDOT's future performance reporting.

Online GNB adds new navigation tool

The online version of the GNB allows readers to return to the table of contents after most articles. In the past, readers of the online GNB typically had to manually scroll back from article to article. The new option provides direct access to the table of contents, which includes links to every article in the publication.

Return to
Table of
Contents

Gray Notebook credits

The *Gray Notebook* is developed and produced by the small team at WSDOT's Office of Strategic Assessment and Performance Analysis, 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 Shibler, Oma Venable and Deb Webb. OSAPA's Linda Pasta coordinates distribution. WSDOT's graphics team of Jinger Hendricks, Diana Lessard, Fauziya Mohamedali, Erica Mulherin and Steve Riddle provides creative help and assists with graphics, while WSDOT communicators typically take the photographs featured throughout each edition.

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.

60

Statewide Transportation
Policy Goals

Statewide policy goal/ WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Safety						
Rate of traffic fatalities per 100 million Vehicle Miles Traveled statewide (Annual measure: calendar years 2013 & 2014)	0.76 ¹	0.80	Below 1.00	✓		↓
Rate of recordable incidents for every 100 full-time WSDOT workers (Annual measure: fiscal years 2014 & 2015)	5.4	4.3	Below 5.0	✓		↓
Preservation						
Percentage of state highway pavement in fair or better condition by Vehicle Miles Traveled (Annual measure: calendar years 2013 & 2014)	92.6%	93.3%	Above 90.0%	✓		↑
Percentage of state bridges in fair or better condition by bridge deck area (Annual measure: fiscal years 2014 & 2015)	91.8%	92.1%	Above 90.0%	✓		↑
Mobility (Congestion Relief)						
Highways: Annual (weekday) vehicle hours of delay statewide at maximum throughput speeds ² (Annual measure: calendar years 2013 & 2014)	32.5 ³ million	32.3 million	N/A	N/A		↓
Highways: Average incident clearance times for all Incident Response program responses (Calendar quarterly measure: Q3 2015 & Q4 2015)	12.8 minutes	13.6 minutes	N/A	N/A		↓
Ferries: Percentage of trips departing on time ⁴ (Fiscal quarterly measure: year to year Q2 FY2015 & Q2 FY2016)	96.4%	95.4%	Above 95%	✓		↑
Rail: Amtrak Cascades on-time performance (Annual measure: fiscal years 2014 & 2015)	74.2%	71.5%	Above 80%	—		↑
Environment						
Number of WSDOT stormwater management facilities constructed ⁵ (Annual measure: fiscal years 2014 & 2015)	189	130	N/A	N/A		Not applicable
Cumulative number of WSDOT fish passage improvement projects constructed (Annual measure: calendar years 2013 & 2014)	282 ⁶	291	N/A	N/A		↑
Stewardship						
Cumulative number of Nickel and TPA projects completed, and percentage on time ⁷ (Calendar quarterly measure: Q3 2015 & Q4 2015, trendline for percentage on time)	367/ 87%	371/ 87%	More than 90% on time	—		↑
Cumulative number of Nickel and TPA projects completed and percentage on budget ⁷ (Calendar quarterly measure: Q3 2015 & Q4 2015, trendline for percentage on budget)	367/ 91%	371/ 91%	More than 90% on budget	✓		↑
Variance of total project costs compared to budget expectations ⁷ (Calendar quarterly measure: Q3 2015 & Q4 2015)	under budget by 1.9%	under budget by 1.9%	On or under budget	✓		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. 6](#) for Results Washington "Goal 2: Prosperous Economy" measures. 1 Data has been updated from past GNBs. 2 Compares actual travel time to travel time associated with "maximum throughput" (defined as 70-85% of the posted speeds), where the greatest number of vehicles occupy the highway at the same time. 3 Data from 2013 differs from previous editions as numbers were updated. 4 WSDOT Ferries' on-time departures include any trip recorded by automated tracking as leaving the terminal within 10 minutes of scheduled time. 5 Trendline data point for 2012 does not match previous editions as numbers were updated. 6 Data from 2013 differs from previous editions as numbers were updated. 7 Budget and schedule expectations are defined in the last approved State Transportation Budget. See [p. 43](#) for more information.

Moving Ahead for Progress in the 21st Century

60

MAP-21 federal performance reporting requirements

MAP-21 goals by program area	Federal threshold/benchmark ¹	MAP-21 target ²	WSDOT penalty ³ (Yes/No)	Date draft rule was released	Existing WSDOT performance measures for this program area
Highway Safety Improvement Program					Federal Register Vol. 79, No. 60
Rate of traffic fatalities per 100 million Vehicle Miles Traveled on all public roads	No	TBD ⁴	Yes	3/11/14	Traffic fatality rates using the NHTSA ⁵ methodology, see GNB 58, p. 12
Rate of serious traffic injuries per 100 VMT on all public roads	No	TBD	Yes	3/11/14	Serious injury rates using the NHTSA ⁵ methodology, see GNB 58, p. 12
Number of traffic fatalities on all public roads	No	TBD	Yes	3/11/14	Traffic fatalities using the NHTSA ⁵ methodology, see GNB 58, p. 12
Number of serious traffic injuries on all public roads	No	TBD	Yes	3/11/14	Serious injuries using the NHTSA ⁵ methodology, see GNB 58, p. 12
Rate of per capita traffic fatalities for drivers and pedestrians 65 years of age or older	No	TBD	No	Guidance provided 10/1/2012	Traffic fatalities for pedestrians 65 years of age or older. See GNB 48, p. 8 for MAP-21 implications. The rate of traffic fatalities for older pedestrians is part of Washington's Target Zero ⁶ campaign.
Rate of fatalities on high-risk rural roads	No	TBD	Yes	Guidance provided 10/1/2012	Traffic fatality rates on high-risk rural roads as part of Washington state's Target Zero campaign
Highway-railway crossing fatalities	No	TBD	No	Guidance provided 2/22/2013	Fatalities at highway-railway crossings
National Highway Performance Program					Federal Register Vol. 80, No. 2
National Highway System (Interstate and Non-Interstate) pavement in good and poor conditions	% of interstate pavement in poor condition not to exceed 5%	TBD	Yes	1/5/15	See p. 19 for an update on MAP-21 implications for pavement. On February 20, 2015, the Asset Management Plan draft rule was released which is linked to pavement and bridge performance measures.
National Highway System bridges classified in good and poor conditions	% of SD ⁷ bridges measured by deck area not to exceed 10%	TBD	Yes	1/5/15	Several measures of bridge condition including good/fair/poor condition rating and structural deficiency rating, see GNB 58, p. 15
Combined Draft Rule - anticipated in near future (measures to be determined through federal rule making)					
- System Performance (Congestion)					
Measures TBD	No	TBD	No		The 2015 Corridor Capacity Report details highway travel times and reliability trends in Washington state
- National Freight Movement Program					
Measures TBD	No	TBD	No		WSDOT's freight mobility plan addresses trucking, rail and marine freight. See GNB 58, p. 44 for a review of MAP-21 freight implications.
- Congestion Mitigation and Air Quality Program					
Measures TBD	No	TBD	No		The 2015 Corridor Capacity Report details highway travel times and congestion trends in Washington state
Measures for on-road mobile source emissions TBD	No	TBD	No		No existing performance measure

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 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 TBD = To be determined. 5 NHTSA = National Highway Traffic Safety Administration. 6 State strategic highway safety plan. 7 SD = structurally deficient.

60

Results
Washington

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 ¹	Previous period	Current period	On target ²	Current trend	Desired trend
Annual measures for which WSDOT is the lead agency					
Goal 2: Prosperous Economy					
Based on current funding levels, maintain the percent of Washington infrastructure assets in satisfactory condition at 2013 baseline levels through 2020 (2013 baseline data)	N/A	87%	N/A	N/A	↑
Based on current funding levels, control the percent of state and local bridges ³ in poor condition from increasing over 10% by 2017 (Fiscal years 2014 & 2015)	9.3%	8.8%	Yes	↓	↓
Based on current funding levels, control the percent of state and local pavements ³ in poor condition from increasing over 10% by 2017 (2013 & 2014)	6.0%	6.0%	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 2014 & 2015)	6.0%	3.7%	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 2014 & 2015)	6.8%	8.3%	Yes	↑	↓
Maintain percentage of transit fleet that exceeds the Federal Transit Administration’s minimum useful life at 25% or below through 2020 (2013 & 2014)	25.4%	27.8%	No	↑	↓
Increase the percentage of Washingtonians using alternative transportation commute methods to 29% by 2020 (2013 & 2014)	27.3%	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 (2013 & 2014)	1.7%	6.6%	No	↑	↓
Operate strategic corridors at 90% efficiency or higher through 2017 (2013 & 2014)	95.2%	94.6%	Yes	↓	↑
Reduce the number of pedestrian and bicyclist fatalities on public roadways from 84 in 2012 to zero in 2030 (2013 & 2014)	61	84 ⁴	No	↑	↓
Annual measures for which WSDOT is not the lead agency, but has an interest					
Goal 2: Prosperous Economy					
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%	Measure is under development. Expected to report in March 2016				
Goal 3: Sustainable Energy and a Clean Environment					
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	40.6	No	↓	↓
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 ⁵	1.11	No ⁵	↔	↓
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 (2013 & 2014)	20.2	20.6	No	↑	↑
Increase the number of plug-in electric vehicles registered in Washington from approximately 8,000 in 2013 to 50,000 by 2020 (2013 & 2014)	7,896	12,351	No	↑	↑
Increase miles of stream habitat opened from 350 to 450 (per year) by 2016 (2014 & 2015)	599 ⁵	365	No	↓	↑
Increase number of fish passage barriers corrected per year from 375 to 500 by 2016 (2014 & 2015)	424 ⁵	479	No	↑	↑
Goal 4: Healthy and Safe Communities					
Decrease number of traffic-related fatalities on all roads from 454 in 2011 to zero in 2030 (2013 & 2014)	436	462	Yes	↑	↓

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 to meet the target. 3 This measure only includes assets on the National Highway System. 4 Data is preliminary and has been updated from what was reported in *Gray Notebook* 56. 5 Data has been corrected from previous *Gray Notebook* publications.

Results WSDOT – Setting WSDOT’s Direction

60

Results WSDOT, the agency’s strategic plan, directs WSDOT’s work with partners and communities; emphasizes multimodal integration, strategic investments and technology; and 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 or to see the Strategic Plan Progress Report Executive Summary, go to <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 the six goals listed in the table below, which are supported by strategies and tasks. Select *Gray Notebook* articles, indicated by a box with a goal logo, show how the plan’s goals are being implemented.

In addition to the strategic plan, WSDOT continues to improve performance and accountability by implementing 10 reforms. These reforms will put into action common-sense changes that foster efficient, effective and accountable government. See [pp. 8-9](#) for more information on WSDOT’s reforms.

Results WSDOT sets agency direction 2014 through 2017 Strategic Plan

Recent *Gray Notebook* articles linked to goals



Goal 1: STRATEGIC INVESTMENTS

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

- Aviation: [GNB 59, pp. 12-15](#)
- Bridges: [GNB 58, pp. 15-22](#)
- Capital facilities: [GNB 59, pp. 8-11](#)
- Ferries preservation: [GNB 58, pp. 23-28](#)
- Highway maintenance: [GNB 60, pp. 20-21](#)
- Pavement conditions: [GNB 60, pp. 11-19](#)



Goal 2: MODAL INTEGRATION

Optimize existing system capacity through better interconnectivity of all transportation modes

- Ferries: [GNB 60, pp. 26-27](#)
- Highway system safety: [GNB 58, pp. 12-14](#)
- Rail: Amtrak Cascades: [GNB 60, pp. 28-29](#)
- Trip reduction: [GNB 60, pp. 22-24](#)
- Trucks, goods and freight: [GNB 58, pp. 41-44](#)



Goal 3: ENVIRONMENTAL STEWARDSHIP

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

- Air quality: [GNB 53, pp. 15-16](#)
- Endangered Species Act documentation: [GNB 55, pp. 20-21](#)
- Environmental compliance: [GNB 60, pp. 32-33](#)
- Fish passage barriers: [GNB 58, pp. 37-38](#)
- General permitting: [GNB 58, p. 40](#)
- Water quality: [GNB 59, pp. 24-26](#)
- Wetlands preservation: [GNB 57, pp. 21-23](#)



Goal 4: ORGANIZATIONAL STRENGTH

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

- Lean: [GNB 60, pp. 41-42](#)
- Worker safety and health: [GNB 60, pp. 10](#)
- Workforce levels and training: [GNB 57, p. 30](#)



Goal 5: COMMUNITY ENGAGEMENT

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

- Bicyclist and pedestrian safety: [GNB 56, pp. 1-4](#)
- Local programs: [GNB 58, p. 39](#)



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 57, p. 25](#)
- Tolling: [GNB 60, pp. 36-38](#)
- Travel information: [GNB 57, p. 15](#)

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

In 2013, WSDOT began a transformation, initiating 10 reforms to implement common-sense changes that foster efficient, effective and accountable government. These reforms support both Results Washington, Gov. Jay Inslee's mission for the state (see [p. 6](#)), as well as Results WSDOT, the agency's strategic plan (see [p. 7](#)). Some of the reforms can only be implemented with action from the Legislature. Expectations and performance measures for the reforms are incorporated into Results WSDOT and reported in the *Gray Notebook*. The last reforms update appeared in [GNB 58, pp. 10-11](#).

WSDOT shows progress on 10 reforms for efficient, effective and accountable government

Proposed to the Washington State Legislature in November 2013

Reform

How WSDOT is achieving it

Progress

Develop a team committed to expedited project delivery

Reform I: Ensure efficiency and accuracy through strong management direction

Develop a strategic plan that will serve as a roadmap for WSDOT. It will identify specific outcome measures and leading indicators to support each of the agency's goals.

The initial Results WSDOT's "Moving Washington Forward" progress report was released in January 2015. The plan features six goals: strategic investments, modal integration, environmental stewardship, organizational strength, community engagement and smart technology. There are 23 strategies and 154 tasks. All strategies are on track to achieve their desired results, with 50% of tasks now complete.

See *Results WSDOT: Setting WSDOT's Direction* on [p. 7](#)

Reform II: Reward innovation in cost-effective design and construction management

Evaluating options for rewarding innovation in design and construction incentives; developing a contractual approach to allow alternate technical concepts during bidding; and evaluating concepts to allow contractor-led value engineering and constructability reviews.

WSDOT considered developing contractual language for an alternative technical concepts process that could be used on Design-Bid-Build projects. Current state law prohibits this practice, so legislative changes would be needed. WSDOT's industry partner, the Association of General Contractors, had concerns about making the needed legislative changes. The agency continues to work with industry partners on this topic but has made no further progress. In an effort to promote innovation and reward cost-saving ideas developed by the agency's contractors, WSDOT recently added contract language to the standard specifications to address Value Engineering Change Proposals on Design-Bid-Build projects.

Reform III: Develop workforce

Making a development plan and exploring cost-effective ways to address: Workforce Development—staff training in best industry practices; Leadership Development and Succession Planning—preparing high-potential employees for future executive-level positions; retraining talent within the agency; and, Internship Programs—actively recruit interns for entry-level engineering positions.

WSDOT's leadership and management training efforts were reported in [Gray Notebook 58, p. 10](#). WSDOT is implementing initiatives to support leadership and succession planning by preparing people for future roles through the following: training for civility and respect in the workplace; "Aspiring Leadership" and "Dare to Lead" training for individuals thinking about taking on a supervisory role; training more than 100 senior leaders and executives plus another 400 to 500 employees on Leading at the Speed of Trust; and using self-assessment tools for teams and individuals to foster further growth and development.

Reform IV: Increase opportunities for disadvantaged business enterprise

Taking actions to maximize disadvantaged business enterprise participation in WSDOT projects, identifying areas and processes where reform is necessary.

New DBE specifications went into effect and are included in WSDOT projects awarded after August 1, 2015. Key items include: The prime contractor is obligated to provide notice if subcontractor payments are deferred. If the prime contractor has not provided valid justification for withholding payments by the next estimate, the money is further deferred from the prime contractor. The project engineer is responsible for mitigating impacts to DBE participation that are due to state initiated change orders.

In order to assist small businesses, WSDOT has developed a new online payment reporting system to determine when and how much their prime contractors have been paid. This system allows businesses to monitor payments to prime contractors and know when they should anticipate payment.

WSDOT presented a class for DBE contractors regarding contract administration issues. The class emphasized actions and submittals necessary for payment.

See *FHWA Disadvantaged Business Enterprise Semi-Annual Report* on [p. 40](#)

Table continued on [p. 9](#)

WSDOT shows progress on reforms aimed at government accountability

Reform

How WSDOT is achieving it

Progress

Implement programs that save money and mitigate risk

Reform V: Implement Practical Design

Implementing a new approach to developing projects that targets transportation solutions for the lowest cost; assesses all components of project design at its earliest stages; and engages local stakeholders in defining scope to ensure their input is given at the right stage of project design.

WSDOT's recent efforts to implement Practical Design have focused on developing design guidance, training and oversight of Connecting Washington projects. A major update to WSDOT's Design Manual was published in fall 2015. The update provides clear guidance on refining project need, using context and community input to inform design decisions and documenting decisions in a way that reflects the agency's focus on project performance.

WSDOT's practical solutions training focuses on three areas: project development with a practical solutions approach, multimodal design and Highway Safety Manual implementation. WSDOT's practical solutions training team is developing curriculum; the first pilot courses are being taught in winter 2016, with full deployment anticipated in the first quarter of 2016.

WSDOT convened a committee that includes all regional administrators and key agency senior managers to review all Connecting Washington projects. The committee offers a forum for learning and sharing approaches for practical solutions. It also reviews opportunities for cost savings and discusses approaches for stakeholder and community engagement.

Reform VI: Strengthen quality assurance protocols for increased accountability

Creating an independent audit verification program; streamlining quality assurance guidance utilizing Lean principles; and creating a position for a quality assurance manager to assure WSDOT's quality assurance program is being effectively implemented.

WSDOT's Quality Assurance and Transportation System Safety Divisions met with the agency's state design engineer to discuss quality assurance and control practices for project development activities. WSDOT's Quality Assurance Division is reviewing SR 520 quality audit documentation and held a related meeting with their quality lead. Meetings have also been held with the agency's Rail Division quality lead, and Quality Assurance/Quality Control procedural documents have been provided to the division for review. Numerous quality and risk reviews of design manual chapters, research reports and data have occurred.

Reform VII: Expand and strengthen construction contracting methods and protocols

Evaluate options for rewarding innovation in design and construction incentives, develop a contractual approach to allow Alternative Technical Concepts during bidding and evaluate concepts to allow contractor-led value engineering and constructability reviews.

Work is underway on WSDOT's first General Contractor/Construction Manager project, the Multimodal Terminal at Colman Dock in Seattle. WSDOT decided not to push forward proposed WSDOT specific GCCM legislation until more experience is gained and industry concerns are better understood. Discussion with industry partners continues. Even without WSDOT specific legislative authority to develop a GCCM delivery program, WSDOT can, and expects to pursue GCCM delivery through the Capital Projects Advisory Review Board.

To further WSDOT's involvement in alternative contracting, the agency's state construction engineer has a representative who participates in CPARB and PRC committee meetings.

WSDOT's State Construction and Design Offices are implementing a system called the Project Delivery Method Selection Guidance. This system provides a process by which all WSDOT projects will be evaluated to ensure the most appropriate contracting delivery method (Design-Bid-Build, Design-Build or General Contractor/Construction Manager) is selected.

Reform VIII: Implement vessel construction and maintenance improvements suggested by State Auditor's Office and develop cost-effective protocols to staff every scheduled ferry sailing

Strengthening five leading practices identified in a SAO audit and actively preparing to recruit for positions to staff up to the appropriate level.

Ferries' efforts to address staffing challenges were reported in [Gray Notebook 58, p. 11](#). These efforts are expected to mitigate Ferries' critical deck officer shortage. These training initiatives will also increase the ranks of marine employees qualified to fill positions needed for reliable service. Regarding vessel construction, Ferries issued a Notice to Proceed in December 2015 for construction of a fourth Olympic Class vessel. The contract is a fixed price contract and design is complete.

Establish cost effective and efficiency measures to improve performance

Reform IX: Lean, more cost-effective operations

Removing duplicative tasks or unnecessary steps; training appropriate management staff in Lean management with a goal of identifying areas where cost savings can be gained and work can be done more efficiently.

WSDOT has initiated 70 Lean projects since 2012 to improve the effectiveness of processes and better meet customers' needs. Forty-two projects are being tracked and WSDOT has completed 28 projects that are now in "maintenance" phase. The agency has 70 Lean practitioners, with at least one Lean representative designated for every WSDOT region and division. More than 2,000 employees have received introductory Lean training since January 2015.

Reform X: Streamline tolling operations, costs and efficiencies

Reducing overhead and eliminating duplicative tasks to make tolling operations more efficient and cost effective; implementing Lean practices, reviewing contracting methods, improving toll collection efficiency and evaluating toll-facility planning.

WSDOT's Toll Division completed customer service improvements including redesigning toll bills and envelopes, and improving "returned mail" processing. WSDOT participated in a Lean review with the Department of Licensing to improve customer experience by aligning processes where feasible, particularly when renewal of a vehicle registration is impeded by unpaid toll bills. Both agency processes were adjusted and the time a customer spends resolving such issues was reduced. The number of unpaid toll trips assessed a civil penalty has reduced since the division introduced a Customer Program for Resolution in July 2015. Most customers with a civil penalty opt to use the CPR program which removes fees and civil penalties. Payments received related to outstanding tolls increased as well, a key goal of the program. If a customer exceeds the parameters of the CPR program, the process returns to adjudication.

Data source: WSDOT Reforms and their Status, December 2015. Office of Strategic Assessment and Performance Analysis; Construction Office; Human Resources and Safety Office; Office of Equal Opportunity; Engineering Policy and Innovations Office; Torts, Claims and Records Management; Ferries Division; Lean Process Improvement Office; Toll Division Lean Program.

60

Worker Safety and Health Semi-Annual Update

Notable results

- The agency-wide recordable incident rate improved 31% from 2011 through 2015
- 40% of WSDOT employees participate in Smart Health activities

WSDOT's agency wide worker safety rates improve

WSDOT's agency-wide measures of worker safety known as the recordable incident rate and "days away restricted or transferred" rate have improved significantly from 2011 through 2015. The RIR dropped from 5.4 in 2014 to 4.3 in 2015, indicating a decrease in the number of OSHA recordable injuries per 100 workers at agency worksites—a 31% improvement from 6.2 in 2011. The DART rate also decreased from 2.7 in 2014 to 1.8 in 2015—a 42% improvement from 3.1 in 2011. The DART rate is a subset of the RIR, where the injuries sustained result in days away, restricted or transferred duties.

Both the recordable incident and DART rates decreased significantly in the past five years due in large part to improved safety performance agency wide. Ferries' RIR increased slightly between 2014 and 2015, but still showed a 36% improvement since 2011.

WSDOT near-miss pilot program shows improved reporting

In the first eight months of the near-miss reporting pilot program in the Eastern Region, WSDOT has had a significant increase in near-miss reporting/safety suggestions, from 4.5 annually to more than 14 per month. The goal of the program is to help prevent workplace injuries and equipment damage by becoming more proactive so accidents can be eliminated or reduced when potential causes can be identified and corrected before an accident occurs. To do this requires a shift in culture, where once reporting a near miss may have been considered a bad thing, now it is recognized as a proactive way to resolve potential hazards.

A "near miss" is an incident that does not cause personal injury or equipment damage, but could have resulted in either. WSDOT's program is also designed to consider and incorporate safety suggestions that may prevent near misses and engage the entire workforce in safety awareness. Based on the success of the pilot program, WSDOT plans to expand the program agency wide by May 2016.

WSDOT's agency-wide recordable incident and DART rates show significant five year improvements¹

2011 through 2015; Average number of recordable incidents and DART rate for every 100 full-time employees per year

Incident rate	2011	2012	2013	2014	2015 ²	5-year % change ³
WSDOT ⁴	5.8	5.4	5.5	5.7	4.2	-28%
Ferries ⁴	7.5	5.5	6.1	4.5	4.8	-36%
Agency-wide	6.2	5.5	5.7	5.4	4.3	-31%
DART rate						
WSDOT ⁴	2.1	2.4	2.6	2.5	1.6	-24%
Ferries ⁴	6.4	3.5	4.2	3.1	2.4	-63%
Agency-wide	3.1	2.7	3.0	2.7	1.8	-42%

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 Reflects implemented safety strategies. 3 Rates: (-%) = improve; (+%) = worsen. 4 Ferries is separate due to its marine work environment.

Employees participate in wellness activities and assessments

WSDOT's Wellness Program developed statewide challenges and hosted Smart Health-related activities in which 40% of WSDOT employees participated in 2015. In addition, 40% of employees completed well-being assessments and 28% of WSDOT employees earned sufficient points for participating in Smart Health-related activities in 2015 to receive a \$125 credit toward their health insurance deductible in 2016. WSDOT expects to report employee's preferred activities and health assessment information in *Gray Notebook* 62.

Contributors include Marlo Binkley, Kathy Dawley, Kathy Radcliff, Ernst Stahn, Ed Stevens and Yvette Wixson



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 1,195 safety inspections in 2015 to accelerate progress toward a goal of zero recordable incidents.

Asset Management: Pavement Annual Report

60

Notable results

- *WSDOT pavement lane miles in fair or better condition held steady from 93.3% in 2013 to 93.4% in 2014*
- *WSDOT's Asset Sustainability Ratio fell between 2013 and 2014, but is expected to improve with Connecting Washington funding*
- *The preservation backlog for pavement declined by 10% between 2013 and 2014 due to strategic preservation activities*
- *WSDOT will nearly double the lane miles receiving pavement maintenance treatments, cost effectively extending pavement life*

Short-term pavement conditions hold steady

In 2014, 93.4% of WSDOT-managed pavement lane miles were in fair or better condition, which indicates similar condition to the 93.3% measured in 2013.

Looking at conditions weighted by the amount of travel, 93.3% of Vehicle Miles Traveled on state-owned roads were on pavement in fair or better condition in 2014, up from 92.6% in 2013. Where pavement condition is measured by VMT, roadways with more traffic are given more weight in the calculation than less traveled roads. WSDOT was able to sustain pavement conditions over the past year due to continuous monitoring and improvements to its pavement preservation activities including converting asphalt roads to chip seal and strategic pavement maintenance (see [p. 15](#)).

The condition of WSDOT-managed roadways is evaluated annually using three criteria:

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

These criteria are used to classify pavement into five categories: very good, good, fair, poor and very poor. The categories very good, good and fair indicate pavement that is performing adequately; pavement in poor condition is deficient and needs repair, and very poor indicates failure and need for substantial restoration or reconstruction.

Pavement conditions can be assessed in the short term by measuring the percent in very good, good, fair, poor and very poor condition in a given year. While this provides

Strategic asset management and new funding improves short- and long-term pavement conditions 2013 compared to 2014

Pavement annual performance measures ¹		2013	2014	Agency goal ²	Goal met	Progress	Desired Trend
Short term	Percent of pavement in fair or better condition measured for asphalt and concrete pavement (chip seal data was not collected in 2013 or 2014 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	93.3%	93.4%	90%		
		VMT	92.6%	93.3%			
Long term	Asset Sustainability Ratio measures the years of pavement service life replenished through rehabilitation, divided by the service life consumed annually.	65%	53% ³	90%			
	Remaining Service Life measures the remaining useful life before rehabilitation or replacement is needed for a given section of the roadway (shown as a percent of the total useful life and as average years remaining).	46.1% (7.29 yrs)	46.9% (7.37 yrs)	45% to 55%			
	Deferred Preservation Liability (backlog) estimates the accumulated cost in current dollars to fund the backlog of past due (deferred) pavement rehabilitation work.	\$391 million	\$351 million ⁴	\$0			

Data source: WSDOT Pavement Office.

Notes: 1 All measures, except for deferred preservation liability, are weighted by Vehicle Miles Traveled to better capture the typical road user's experience. 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. 18](#) for more information. 3 Measure did not meet goal in 2014—see [p. 12](#) for more information. 4 Measure did not meet goal in 2014—see [p. 14](#) for more information.

Connecting Washington increases pavement funding

a snapshot of pavement conditions, it does not account for long-term trends (see below right and [pp. 13-14](#)).

Long-term performance indicators provide a more in-depth assessment of pavement infrastructure, as they account for the impact funding has on asset sustainability, pavement service life and preservation backlog. The Connecting Washington transportation revenue package is projected to help restore pavement preservation funding closer to adequate levels (offsetting the preservation backlog) by 2020. As a result, the measured condition of pavement is expected to improve.

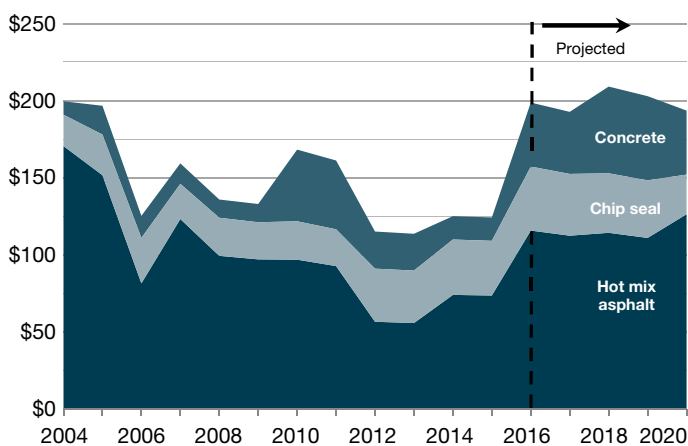
New transportation revenue increases preservation funding in Washington

The outlook for pavement preservation funding has improved substantially following the 2015 Washington State Legislature's implementation of Connecting Washington. Connecting Washington is a 16-year transportation revenue package that will provide about \$1.225 billion for highway preservation (which includes pavement and bridge preservation).

In the most recent pavement article published in *Gray Notebook* 56, the outlook for all pavement performance measures (fair or better condition, Asset Sustainability Ratio, Remaining Service Life, and Deferred Preservation Liability)

Connecting Washington funding package improves pavement outlook

Fiscal years 2004 through 2020; Pavement preservation funding (in millions of 2014 dollars) by pavement surface type



Data source: WSDOT Pavement Office.

Note: The different colors in the graph represent the shares of the annual pavement preservation funding allocated to each pavement type in real 2014 dollars. For example, in 2016, hot mix asphalt is receiving \$112 million while chip seal and concrete pavement each received about \$40 million in pavement preservation funding.

was bleak due to the reductions in pavement preservation funding over the last decade. The projected funding for pavement preservation is shown in the graph below left, and indicates increased funding for all pavement types (asphalt, chip seal and concrete). This change in the funding outlook substantially impacts the projected pavement performance measures. These performance measures are projected for a six-year pavement preservation plan. However, a significant and increasing need for concrete pavement replacement will affect these measures as funding needs increase over the next 10 years (see [pp. 16-17](#) for more information on concrete pavement needs).

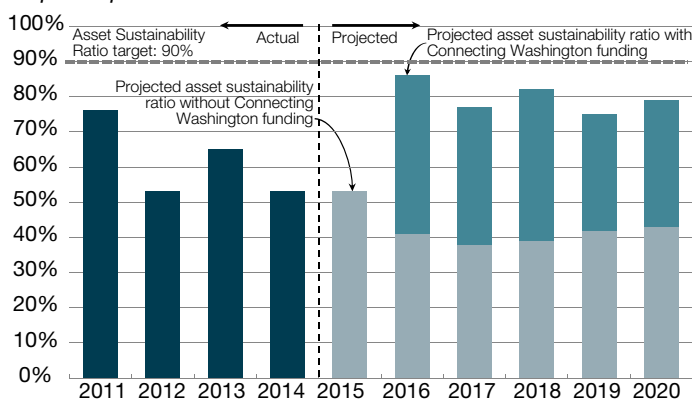
Asset Sustainability Ratio continues to miss WSDOT's goal in 2014

The Asset Sustainability Ratio measures the years of pavement service life replenished through rehabilitation, divided by the service life consumed annually. In 2014, WSDOT's Asset Sustainability Ratio was 53%, a decline from 65% in 2013 and well below WSDOT's goal of 90%. Because Connecting Washington was enacted midway through 2015, funding levels will be impacted starting in 2016. As a result, the Asset Sustainability Ratio is expected to see a large improvement due to the new funding beginning in 2016.

With the increased funding made available in Connecting Washington, the Asset Sustainability Ratio is expected to rise to approximately 75-86% between 2016 and 2020, as shown in the graph below. Despite this projected

WSDOT Asset Sustainability Ratio expected to improve with Connecting Washington funding

2011 through 2020; Asset Sustainability Ratio¹ for asphalt and chip seal pavements



Data source: WSDOT Pavement Office.

Note: 1 The Asset Sustainability Ratio measures the years of pavement service life replenished through rehabilitation, divided by the service life consumed annually. The dashed line separates actual (measured) pavement conditions (to the left of line) from projected pavement conditions based on expected funding levels (to the right of the line).


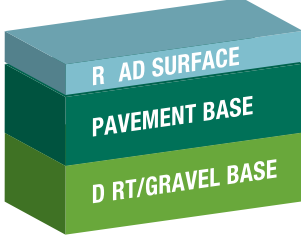

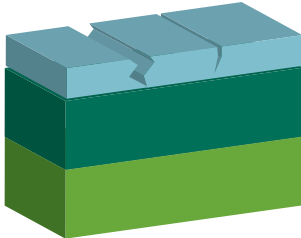

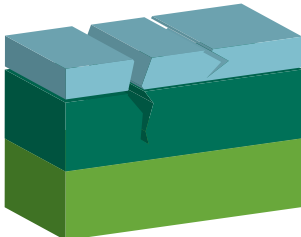

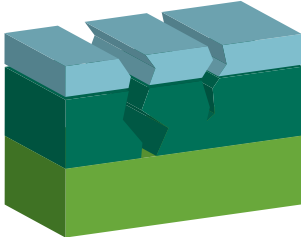
New funding helps sustain pavement conditions

increase, it is still not expected to reach the target level of 90%. WSDOT plans to use concrete triage (diamond grinding the pavement surface to smooth out any roughness) for 290 lane miles of the aging Interstate 5

corridor through Seattle. While this will help improve asset sustainability over the next six years, it will also require WSDOT to rebuild the same corridor between 2020 and 2030 (see [pp. 16-17](#) for more explanation).

WSDOT's good condition pavement declines while that in fair and poor condition increases

Actual numbers for 2008 and 2014; Projected 2020; Percent of lane miles and Vehicle Miles Traveled by condition category for all state-owned pavements excluding chip seals¹; Characteristics of pavement at each condition

WHAT DRIVERS SEE	WHAT IS HAPPENING	2008	2014	Projected 2020 ²	2008-2014 Trend ³	Desired trend
GOOD/VERY GOOD 	GOOD/VERY GOOD  <p>By lane miles</p> <p>By VMT⁴</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>	82.7%	75.1%	74.2%	↓	↑
FAIR 	FAIR  <p>By lane miles</p> <p>By VMT⁴</p> <p>The most cost effective time to resurface or repair a road is when the surface shows wear, yet before the underlying structure is damaged. This means the agency is managing by Lowest Life Cycle Cost⁵</p> <p><i>Preventive preservation repairs are a good strategy to maximize the road's service life</i></p>	11.8%	18.3%	23.3%	↑	↔
POOR 	POOR  <p>By lane miles</p> <p>By VMT⁴</p> <p>Waiting until a road 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>	3.9%	4.7%	1.7%	↑	↓
VERY POOR 	VERY POOR  <p>By lane miles</p> <p>By VMT⁴</p> <p>Delaying rehabilitation further 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>	1.6%	1.9%	0.8%	↑	↓

Data source: WSDOT Pavement Office.

Notes: 1 These condition figures do not include chip seal pavement. Chip seal pavement accounts for 32% of the lane miles on the state-owned highway network, yet because chip seal roads have less traffic than asphalt or concrete, they account for 6% of the Vehicle Miles Traveled.

2 Projections take into account the Connecting Washington transportation revenue package, and therefore do not match the projections published in [Gray Notebook 56, p. 9](#).

3 Trends are based on changes in observed conditions between 2008 and 2014. 4 Where pavement condition is shown 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. 5 LLCC methodology uses proven preservation actions to extend the useful life and minimize maintenance costs over the entire life of an asset. This cost-effective method ensures that assets are kept in good or fair condition, helping to maintain safety and useful life.

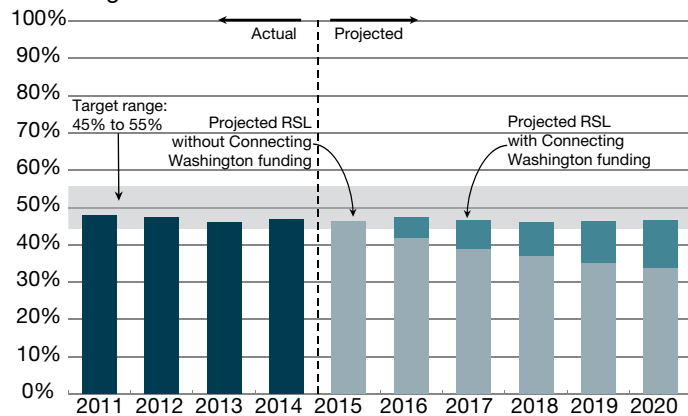
Long-term pavement conditions likely to improve

Remaining Service Life sees slight improvement between 2013 and 2014

The Remaining Service Life of state-owned pavement improved slightly between 2013 and 2014, up to 46.9% in 2014 from 46.1% in 2013. Remaining Service Life is a measure of how much pavement life remains for a given section of roadway before resurfacing is required. Calculating this measure for the entire state-owned road network provides an indicator of the remaining life in the state's pavement network. The increased funding made available for pavement preservation because of Connecting Washington is expected to keep the Remaining Service Life between 46% and 47% through 2020. Without Connecting Washington, Remaining Service Life was expected to decrease, so remaining steady is an improvement over previous projections (see graph below).

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 Pavement Office.

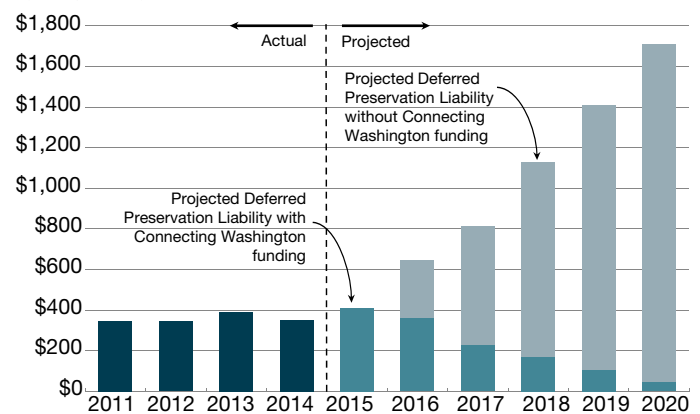
Note: For 2014, the Remaining Service Life of 46.9% is equivalent to 7.37 years remaining before rehabilitation is needed. The dashed line separates actual (measured) pavement conditions (to the left of line) from projected pavement conditions based on expected funding levels (to the right of the line).

Preservation backlog improves, likely to be mostly eliminated by 2020

When funding is inadequate to maintain pavement in an acceptable condition, WSDOT uses Deferred Preservation Liability to measure the investment that will eventually be needed to restore the pavement network to adequate condition. This is an estimate of the accumulated cost to fund the backlog of past due (deferred) pavement rehabilitation work. WSDOT's goal is to have a Deferred

WSDOT's Deferred Preservation Liability expected to decline with new transportation funding

2011 through 2020; Dollars in millions; Projections based on agency budget assumptions for pavement



Data source: WSDOT Pavement Office.

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. The dashed line separates actual (measured) pavement conditions (to the left of line) from projected pavement conditions based on expected funding levels (to the right of the line).

Preservation Liability of \$0, which means there is funding to cover the entire pavement rehabilitation backlog.

The 10% decrease in the preservation backlog from \$391 million in 2013 to \$351 million in 2014 was due to better-than-expected performance from strategic pavement preservation activities (see pp. 15-17). Also, the increased funding from Connecting Washington will further reduce the preservation liability through 2020. This funding will provide additional resources to apply pavement preservation to the majority of sections that otherwise would become past due.

WSDOT sustains roads with strategic asset management

While the funding outlook has improved with Connecting Washington, utilizing innovative pavement maintenance and preservation strategies ensures that WSDOT makes efficient use of taxpayer dollars. WSDOT has developed aggressive strategies during the last several years to increase efficiency and help counter the effects of the pavement preservation funding shortfall experienced prior to Connecting Washington.

Each strategy described on subsequent pages is designed to either accomplish transportation goals at a lower cost and/or extend the pavement life for a given set of conditions.

Integrating maintenance and preservation reduces costs

Strategy: WSDOT takes an integrated approach to pavement preservation

After reviewing its processes, WSDOT began emphasizing the coordination between maintenance and capital preservation in 2010. Better coordination with maintenance makes use of more cost effective treatments than using preservation alone and more seamlessly addresses the needs of state-maintained roadways.

Pavement treatments can be divided into three categories: maintenance, rehabilitation and reconstruction. As shown in the table to the right, maintenance treatments are inexpensive but also last a short period of time. Pavement rehabilitation (which includes resurfacing asphalt and chip seal pavements) is more expensive, but lasts for a longer amount of time. The most expensive treatment is reconstruction, which provides the longest extension of pavement life. To evaluate all of these treatments on an even basis, WSDOT considers both the expense of construction and the number of years of service it provides when determining the annual cost.

As the table to the right shows, reconstruction is the most expensive with the highest annual cost. For this reason, reconstruction is avoided as long as possible. Maintenance has the least annual cost, but there are limits to what maintenance can achieve and it is often limited to one or two treatments before pavement rehabilitation is necessary. Therefore, coordination is required between maintenance and the capital preservation program to achieve the maximum benefit and the lowest annual cost over the life of the pavement. This concept is the focus of a WSDOT

policy document titled “Integrated Approach to Pavement Preservation.” The policy was officially implemented by WSDOT’s Chief Engineer in August 2014. Because maintenance is a cost-effective way to extend pavement life, the policy mandates that before any capital preservation project can be programmed, the roadway section must first receive at least one maintenance treatment.

Since 2010, WSDOT has implemented a program that allows for the use of funds from the pavement preservation budget, on top of the funds that come from maintenance, to pay for maintenance treatments. This approach, referred to as Strategic Preservation,

WSDOT considers multiple factors when choosing best method for managing pavement

Typical construction cost, years gained and annual cost by pavement project type

Project type	Typical construction cost per lane mile	Years gained	Annual cost ¹
Maintenance			
Crack sealing	\$5,000	3	\$1,800
Patching	\$15,000	4	\$4,100
Rehabilitation			
Asphalt resurfacing	\$250,000	14	\$23,700
Chip seal resurfacing	\$45,000	7	\$7,500
Concrete grinding	\$150,000	15	\$13,500
Reconstruction			
Asphalt	\$900,000	20	\$66,200
Concrete	\$2,500,000	50	\$116,400

Data source: WSDOT Pavement Office.

Note: 1 The annual cost is equal to the typical construction cost divided by the years gained and applying a discount rate of 4%.

WSDOT strategies at work: Examples of pavement maintenance and preservation strategies



Crews perform crack sealing, a form of maintenance, along State Route 109. This is a relatively inexpensive treatment (about \$5,000 per lane mile) that can extend the life of a roadway section by about three years.



WSDOT crews repave a 1.5-mile stretch of SR 181 in Tukwila. This work costs about \$250,000 per lane mile and will extend the life of the highway by an additional 14 years. It is substantially less costly than reconstructing the roadway.



A concrete roadway on I-90 east of Cle Elum undergoes reconstruction in 2015. Concrete reconstruction is the most expensive method for managing pavement, costing \$2.5 million per lane mile, but adds 50 years of life to the roadway.

WSDOT strives to cost-effectively manage pavements

has grown significantly during the last four biennia due to its success. It has been an effective investment in extending pavement life and reducing the overall cost of the preservation program. These treatments may be done by WSDOT maintenance crews or may be contracted out.

As shown in the table below, WSDOT expects to nearly double the amount of lane miles receiving pavement maintenance treatments in the 2015-2017 biennium compared to the 2013-2015 biennium. In addition to the funding from the capital preservation program, maintenance spends \$36.3 million on pavement maintenance.

WSDOT increases use of pavement maintenance

Maintenance lane miles and cost by biennium

Biennium	Maintenance lane miles	Cost (thousands)	Average cost per lane mile
2009-2011	599	\$2,115	\$3,500
2011-2013	1,118	\$3,684	\$3,300
2013-2015	1,701	\$7,820	\$4,600
2015-2017 (estimated)	3,369	\$12,500	\$3,700

Data source: WSDOT Pavement Office.

Another development in the implementation of the integrated approach is the use of new technology in the Highway Activity Tracking System. In 2016, all WSDOT maintenance areas are using portable tablets that allow field personnel to record maintenance activities in the field, and get immediate location data from global positioning system technology. When pavement maintenance data is downloaded into HATS, it is immediately available to WSDOT's pavement management system, putting all types of pavement management and preservation data into a single integrated computer platform. This integration of all relevant data helps WSDOT make better informed pavement management decisions at the network and project level.

WSDOT research examines cost-effective pavement maintenance

In 2011, WSDOT began investigating the best use and timing of preventive treatments to extend pavement service life and reduce costs. Several types of treatments are being studied such as crack sealing, chip sealing, deep asphalt patching and blade patching. As of 2015, there are 66 active test sections statewide. Each is about one-quarter mile in length and located in every part of the state, with the majority in the Eastern and Olympic regions. The test sections were implemented on pavements with

conditions that vary from poor to good in locations that account for various climate and traffic conditions. The performance data from these and future test sections will be monitored for several years to determine and compare the effectiveness of each maintenance treatment.

The initial results from this study show pavement life can be extended a minimum of one year to in excess of three years using the treatments that were applied in 2012 through 2014. The estimated cost savings can be substantial—typically \$10,000 to \$15,000 dollars per year for each lane mile of pavement treated. The focus of the study to this point has been on preserving asphalt pavements late in their service life. Starting in 2016, WSDOT will begin a second phase and place emphasis on applying test maintenance treatments earlier in the pavement life to determine the performance and cost-effectiveness.

Report concludes that WSDOT pavement needs estimates are reliable

In January 2015, the Washington State Joint Legislative Audit and Review Committee published the second of two reports that were requested by the Legislature. As part of this study, JLARC contracted with expert consultants to review the methods and systems that WSDOT uses to develop long-term estimates of maintenance and preservation needs for highway pavement and bridges.

JLARC determined that WSDOT pavement estimates for current and long-term pavement needs are reliable, and as a result the "Legislature can consider fiscal and program alternatives based on accurate data and thorough analysis." JLARC's consultants also found that WSDOT meets and in many ways exceeds industry standards for estimating long-term pavement maintenance and preservation needs.

The full report can be accessed at <http://leg.wa.gov/jlarc/reports/WSDOTCostEst/f/default.htm>.

Strategy: Address the aging network of concrete roads

Washington has 2,434 lane-miles of concrete pavement (including bridge decks), making up approximately 13% of the state-maintained roadways. Because of its strength and longevity, concrete is typically installed in the areas of the state with the most traffic and carries 28% of the Vehicle Miles Traveled on the state system.

State's concrete roads are aging, need replacement

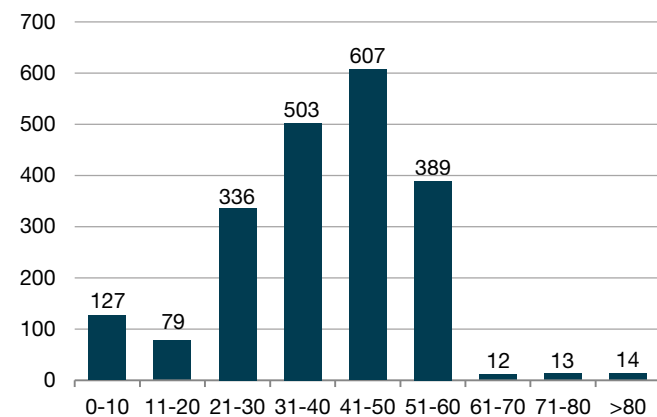
This asset must be managed carefully in the upcoming years because of the advanced age of the concrete pavement. As of 2015, half of WSDOT's concrete pavement is more than 40 years old, which is two times longer than the design life of 20 years. WSDOT is now planning for the upcoming need to replace the older pavements.

There is no method available to simply renew the surface of concrete pavement (like the mill and fill process that is used with an asphalt pavement). Instead, when concrete fails it is usually caused by the structural deterioration of the concrete slabs, and they must be replaced. There are typically three options for replacing concrete:

- Removal of the old concrete and rebuild with new concrete;
- Removal of the old concrete and rebuild with new asphalt; or,

Fifty percent of concrete pavement over 40 years old

2015; Concrete lane miles of state-owned pavement in Washington grouped by age (in years)



Data source: WSDOT Pavement Office.

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



Contractor crews working for WSDOT replace 21 worn concrete panels on Interstate 5 between College Street in Lacey and 38th Street in Tacoma. Some of the concrete panels were installed when I-5 first opened during the early 1960s.

- "Crack and seat" the old concrete slabs and leave them in place, then overlay with asphalt.

For more information on these procedures, and concrete triage strategies, refer to [Gray Notebook 52, p. 10](#).

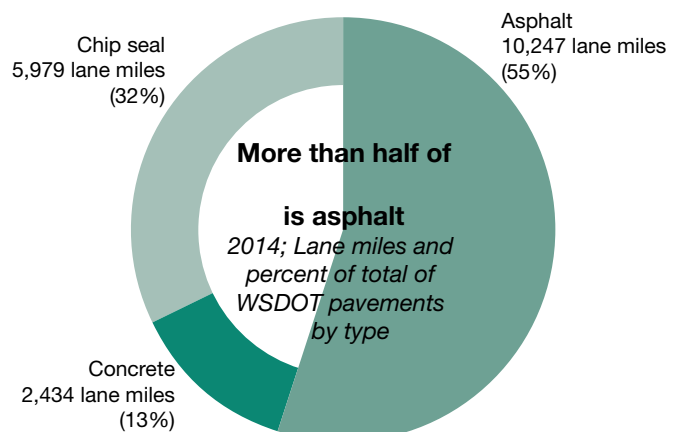
There are advantages and disadvantages with all three methods of concrete reconstruction, and WSDOT is currently developing a long-term strategy to plan for this work. It is expected that for the next 30 years, an average of 35 lane-miles of concrete will need to be re-constructed each year, in order to make sure that no concrete pavement exceeds the high-risk age of 70 years old.

For descriptions of additional WSDOT pavement preservation strategies including converting asphalt surfaces to chip seal, implementing practical design and cost effective project prioritization, refer to [Gray Notebook 56, pp. 11-12](#).

WSDOT manages 18,680 lane miles of pavement

In 2014, WSDOT managed 18,680 lane miles of pavement, which is more than three roundtrips driving between Seattle and New York City. More than half (55%) of WSDOT-managed pavement is asphalt, 32% is chip seal and 13% is concrete.

In terms of annual Vehicle Miles Traveled, 66% of travel occurs on asphalt roads and 28% of annual VMT is on concrete roads. Even though chip seal roads comprise nearly one-third of Washington's state-owned roads, they account for 6% of annual VMT.



Data source: WSDOT 2014 State Highway Log.

Note: Data in graph includes pavement on bridge decks.

WSDOT meets pavement performance requirements

Progress to date on pavement reporting requirements

Results Washington

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. The target for this measure is to have no more than 10% of Vehicle Miles Traveled for state and local NHS roads on pavements in poor condition by 2017. In 2014, 6% of NHS pavements were in poor or very poor condition, the same as in 2013.

This measure of pavement condition is based on the International Roughness Index, which has varying condition thresholds depending on roadway speed. For example, a road with a higher speed limit has a lower poor condition IRI threshold, because pavement roughness is more noticeable when driving at higher speeds.

The NHS is a network of strategic highways within the United States, and includes both state and local highways and roads serving major airports, ports, rail and/or truck terminals, and other transport facilities. About 61% of WSDOT-managed pavement is on the NHS. Washington's NHS network includes 14,752 lane miles of pavement. More than three-quarters of this roadway is managed by WSDOT, and the remaining 23% is managed by local governments.

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. 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 2014 with 93.4% of lane miles in fair or better condition. Pavement conditions for GASB are assessed based on IRI, cracking and rutting.

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.

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

State-owned roads	4%
Locally-owned roads	15%
Total	6%

2. Implement practical design - 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. In August 2014, WSDOT implemented a policy that no pavement rehabilitation should take place without first using strategic maintenance to extend pavement life.

4. Prioritize cost effective projects - The WSDOT prioritization process avoids reconstruction, emphasizes lower annual cost, and takes into consideration traffic volume.



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 instructional letter for this policy was renewed in 2015, extending it for an additional year. For more detailed information related to these efforts, see the section on WSDOT's strategy of integrating pavement maintenance and preservation methods to extend pavement life on [p. 7](#).

Local pavement conditions expected to hold steady

Local pavements account for 86% of lane miles in Washington

In addition to the state-owned pavement, Washington state has 116,338 lane miles of locally-owned pavement, which accounts for approximately 86% of the total lane miles of pavement in the state. Of the total locally-owned lane miles, about 3,340 (almost 3%) are located on the National Highway System.

In 2014, about 15% of locally-owned pavement (as a percentage of Vehicles Miles Traveled) on the NHS were in poor condition. This is steady from 2013 and an increase from 10% in poor condition in 2012. This measure is based on pavement roughness as measured for Results Washington (see [p. 18](#)).

Connecting Washington funding is unlikely to change the conditions of local pavement at their current levels. Some of the most critical near-term local pavement issues include the following:

- Funding for urban corridors with heavy bus traffic and freight corridors is below the estimated need to make the necessary improvements.
- Normal wear and tear due to increasing average daily travel. Funding to rehabilitate and reconstruct these roads is significantly below the level of need, and capacity has not expanded to meet demand. This places a heavier burden on existing roads, which makes them deteriorate at a faster rate.
- Local agencies are unsure how NHS pavement conditions in their cities will be evaluated in the future and how this may impact their ability to control roadways and allocate resources in a way that they feel appropriate.
- Locally-owned roadways are disproportionately impacted by severe weather events. In some cases, these events have become extreme, posing a substantial concern for local agencies. An aging drainage infrastructure coupled with an already stressed roadway system is a major concern, particularly in the Puget Sound area.

Contributors include Dave Luhr, Ruth McIntyre, Tim Rydholm, Jeff Uhlmeier, Kim Willoughby, Erica Bramlet and Alison Wallingford

WSDOT provides comments on proposed MAP-21 pavement rules

WSDOT provided comments in May 2015 to the Federal Highway Administration on the proposed rules for pavement performance and is well positioned to be in compliance with these reporting standards. The final rules are tentatively set to be released in August 2016.

The draft rules for the Moving Ahead for Progress in the 21st Century legislation are requiring all states to report on the following pavement performance measures:

- Percentage of pavements on the interstate system in good condition;
- Percentage of pavements on the interstate system in poor condition;
- Percentage of pavements on the National Highway System (excluding the interstate system) in good condition; and
- Percentage of pavements on the National Highway System (excluding the interstate system) in poor condition.

For additional information on MAP-21, see [p. 5](#).

WSDOT's Pavement Notebook: Detailed performance information

WSDOT's Pavement Notebook presents detailed performance reports of pavement, such as average pavement life, International Roughness Index statistics and lane miles paved by year.

A new document called Pavement Asset Management is now available. It is a comprehensive overview of how WSDOT systematically manages its pavement. The Pavement Notebook can be accessed at: <http://www.wsdot.wa.gov/Business/MaterialsLab/Pavements/PavementNotebook.htm>.

60

Asset Management: Highway Maintenance Annual Report

Notable results

- WSDOT achieved 85% of its highway maintenance asset condition targets in 2015

- WSDOT had a highway maintenance backlog of approximately \$90 million in 2015

Highway maintenance activity increases in 2015

WSDOT met 85% of highway maintenance asset condition targets in 2015, an increase from the 79% achieved in 2014. Targets are based on the funded level established for each maintenance activity. The Maintenance Accountability Process measures the annual performance of 27 maintenance activities using two metrics: asset condition level of service and task completion.

Asset condition LOS is determined by condition assessments and operational assessments. A condition assessment is measured using data collected from site surveys. An operational assessment evaluates the performance of the asset, such as how many traffic signal repairs were needed in a given period of time.

WSDOT quantifies task completion using the number of planned tasks for a specific maintenance activity each year compared to how many of those tasks were completed. See [Gray Notebook 36, p. 17](#) for a more comprehensive overview of the task completion metric. To see a table that shows both LOS and task completion percentages for select assets, go to http://wsdot.wa.gov/publications/fulltext/graynotebook/GNB60_Extra/Maintenance_TaskCompletion.pdf.

WSDOT reduced the number of maintenance activities reported on from 28 to 27 in 2015. The Keller Ferry, a vessel operated by the maintenance program at a lake crossing between Lincoln and Ferry counties, was previously listed as an individual MAP activity. As an indispensable asset to the highway system in northeastern Washington, the ferry has been integrated into the movable and floating bridge operations category, which is at the top of the MAP activities priority list.

The table to the right lists maintenance activities in priority order with LOS scores compared to condition targets. These targets, based on funded levels, use a letter grading scale, with A being the best and F being the worst. [Gray Notebook 32, p. 19](#) has a detailed overview of the MAP LOS standards.

WSDOT meets 85% of asset condition targets Funded level asset condition target and score achieved

	Funded level ¹	2014 results	2015 results
Movable and floating bridge operations ²	A	A ³	A
Traffic signal system operations	C	B-	B
Snow and ice control operations	A	A	A
Bridge cleaning operations	B	B	B
Urban tunnel systems operations	B	B+	B
Regulatory/warning sign maintenance	C	C ³	D
Intelligent transportation systems	A	A- ⁴	A
Slope repairs	A	A	B
Maintain catch basins and inlets	B	A+	A
Guardrail maintenance	A	B+	B
Pavement striping maintenance	B	C+	A
Raised/recessed pavement markers	C	C+	C
Control of vegetation obstructions	C	C	C
Rest area operations	B	B	B
Sweeping and cleaning	A	A	A
Highway lighting systems	A	A+	B
Maintain ditches	B	B+	B
Guidepost maintenance	D	D	D
Stormwater facility maintenance	B	I ⁵	A
Maintain culverts	D	C	D
Pavement marking maintenance	D	C- ⁶	D
Shoulder maintenance	C	C	C
Noxious weed control	B	B+	B
Guide sign maintenance	C	B	C
Nuisance vegetation control	D	D	C
Landscape maintenance	D	D	D
Litter pickup	D	D	D
Percent of targets achieved or exceeded		79%⁷	85%
Percent of targets missed		18%⁷	15%

Data source: WSDOT Maintenance Office.

Notes: The 27 maintenance activities are in prioritized order. Highlighted boxes indicate failing scores. 1 Funded levels have been changed based on the new rating scale for 2015. 2 This activity now includes the Keller Ferry. 3 These scores fell below the funded level using the 2014 rating scale. 4 This score met the funded level using the 2014 rating scale. 5 "I" indicates an incomplete rating. Evaluation methods for stormwater facilities were restandardized, creating a long-term effort to fully implement. 6 Reported rating has changed due to updated information since initial publication. 7 Percentages include the Keller Ferry as its own maintenance activity. Percentages do not add up to 100 because stormwater facility maintenance, which accounts for 3% of maintenance activities, is not included due to the incomplete rating in 2014.

In past maintenance reports, asset condition targets and the LOS ratings for each activity have been reported on a scale of A through F, including increments of pluses and minuses. Beginning in 2015, the rating scale no longer includes the pluses and minuses, leading to easier data interpretation.

WSDOT met 23 of 27 asset condition targets in 2015

Maintenance critical to aging assets

WSDOT Maintenance plays a critical role in the agency's asset management by meeting the daily needs of approximately 19,000 highway and state route lane miles and 2,000 miles of ramps and special use lanes on the state highway system. WSDOT focuses on preventive maintenance, repairs and the safe operation of highway infrastructure. When the number of WSDOT preservation projects decline, maintenance activities must increase to care for aging assets. WSDOT estimated a maintenance backlog of \$90 million for both 2014 and 2015.

Asset condition LOS is affected by maintenance activity, rehabilitation/rebuilding 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 23 maintenance asset condition targets in 2015, with one activity experiencing a significant increase from 2014. WSDOT did not achieve its goals for four activities.

Pavement striping received a LOS rating of A. Historically, ratings have ranged from a high C to a low B, showing a significant improvement for 2015. Maintaining stripes on pavement is highly weather-dependent. With its unusually mild winter and record-setting dry and warm summer, 2015 had optimal weather conditions for highway striping. Maintenance crews were able to complete more miles of striping than in past years, leading to the above average LOS rating.

Regulatory signs received a D rating, missing its target of C. WSDOT's maintenance and preservation programs replace regulatory signs that are damaged, deteriorated or no longer function as designed. During the 2013-2015 biennium (July 2013 through June 2015), there were changes in the preservation program that resulted in reduced sign replacement efforts, extending the time that damaged signs remained in use. It is anticipated that preservation program activity for replacing signs will increase in the 2015-2017 biennium.

Slope repair missed its target of A, receiving a B rating. The majority of deficiencies contributing to this rating were unstable slopes located in southwest Washington that have been identified for future construction projects. Until these projects can be completed, periodic maintenance will be needed to address small slides and erosion, keeping the roads and ditches in the area functional. Due to the extra maintenance needs, WSDOT has

increased planned slope repair expenditures in southwest Washington for the 2015-2017 biennium by nearly 30% more than what was spent in the 2013-2015 biennium.

Guardrail maintenance missed its target of A and received a B rating. Damaged guardrails in mountain pass areas where low-speed hits from vehicles traveling during winter account for much of the low LOS rating. These hits impart relatively minor damage, leaving guardrails generally functional. As such, these are lower priority for maintenance repairs. Another contributing factor to the low LOS rating was a small backlog of guardrail repairs that have been completed since the 2015 rating assessment was conducted in July 2015.

Highway lighting systems missed its target of A, receiving a B score. WSDOT's inventory of electrical infrastructure continues to increase and age while funding to maintain the items has decreased, leading to an overall reduced ability to provide needed repairs. Malfunctions in traffic signals have immediate impacts to motorists and get immediate maintenance attention from WSDOT. However, malfunctions in lower-priority lighting can go for longer periods of time without causing significant impacts, and are often deferred as workload increases in other areas.

WSDOT overhauls maintenance activity tracking software

WSDOT overhauled its Highway Activity Tracking System, which is designed to support staff in documenting maintenance activities. The new HATS has expanded capabilities, including improved accuracy and details for performance management data. The improved version was launched on July 1, 2015, and more than 1,000 handheld electronic tablets with HATS capabilities were issued to maintenance employees across the state. Using HATS on tablets allows maintenance personnel to record information about field work as it is completed. It also provides a multitude of resources needed for task completion, helping bridge the gap between office and field work.

Introducing the tablets has allowed field staff to more efficiently submit records on highway asset conditions and needed or completed maintenance activities. Workers are now able to submit an average of 275 records per working day, up from 142 records prior to tablet usage. Additional information on HATS can be found in the Pavement Annual Report on [p. 16](#).

Contributors include Rico Baroga, Kelly Shields, Tricia Hasan and Todd Lamphere

Notable results

- *Employees at worksites with Commute Trip Reduction programs are leaving approximately 14,500 cars at home every day*
- *The Legislature amended the CTR tax credit program to give more businesses greater incentive to provide CTR programs*
- *Employees in CTR programs have decreased Vehicle Miles Traveled by an annual average of about 33 million miles as compared to 2007*
- *On an annual basis, commuters are using 1.6 million fewer gallons of fuel, saving them \$5.8 million each year*

CTR reduced drive-alone commuting rate by 2.6%

Employees at nearly 1,000 Commute Trip Reduction worksites across Washington reduced their drive-alone to work rate by 2.6 percentage points, from 65.7% in 2007 to 63.1% in 2014. WSDOT surveys program participants biennially to determine the impact on trip reduction. The CTR Board's biennial 2015 Report to the Legislature, based on the 2014 survey responses, finds that about 14,500 vehicles are left at home each day as employees commute to work by bus, train, vanpool, carpool, walking or biking, or skip the commute altogether and telework from home.

Results from the 2014 survey also show the average Vehicle Miles Traveled by employees at CTR worksites has dropped by 3.1% since reporting started in 2007, representing a total statewide reduction of 33 million VMT annually. This translates to 1.6 million fewer

gallons of fuel being used annually, saving commuters more than \$5.8 million per year in fuel costs.

Employees in CTR programs have reduced their annual greenhouse gas emissions by 14,700 metric tons from 2007 to 2014, which is equivalent to the amount of carbon found in 79 railcars full of coal or the amount of carbon captured and stored annually by 12,000 acres of forests.

CTR Board successfully advocates for tax credit extension

The CTR Board, in partnership with the Association of Washington Business, successfully advocated to the Legislature to give small and mid-sized businesses greater incentive to provide CTR programs for their employees. The tax credit program amendment was passed during the 2015 Legislative session and adjusts the maximum amount of credits a single employer may request, phases out deferrals of credits and provides clarifications of the tax credit. The credit program, administered by the Department of Revenue, was also granted a 10-year extension. The number of businesses applying for credits has more than doubled since 2008. More than 670 employers applied for \$6.78 million in credits in 2014, far exceeding the \$2.75 million in CTR tax credits that are available each fiscal year.

The CTR tax credit program encourages employers to offer commute-alternative programs for their employees and supports the state's goal to reduce congestion. Employers who provide financial incentives to their employees for ridesharing, using public transportation, car sharing or non-motorized commute options may apply for CTR tax credits against business and occupation or public utility taxes.

Employees continue reducing drive-alone rates across Washington

July 2007 through June 2014

Outcome	2007-2008 ¹	2009-2010	2011-2012 ²	2013-2014	2007 to 2014 Results
Drive-alone rate	65.7%	62.6%	63.7%	63.1%	-2.6 (-4.0%) ³
Vehicle Miles Traveled per employee	10.95	10.36	10.45	10.61	-0.34 (-3.1%) ³
Annual gallons of fuel saved ⁴					1.6 million
Annual fuel costs avoided ⁴					\$5.8 million
Annual greenhouse gas emission reduction ⁴					14,700 metric tons

Data source: WSDOT Commute Trip Reduction survey database.

Note: 1 Data from this first reporting period represent a baseline for future data comparison. 2 Data differs from the GNB 51 edition as preliminary numbers were updated after publication. 3 Results show change from initial 2007 rates to current 2014 rates in both actual difference and percentage change. 4 Based on 2007-2014 Vehicle Miles Traveled reduction.

Board recommends addressing more drive-alone trips

CTR Board recommends growing trip reduction program

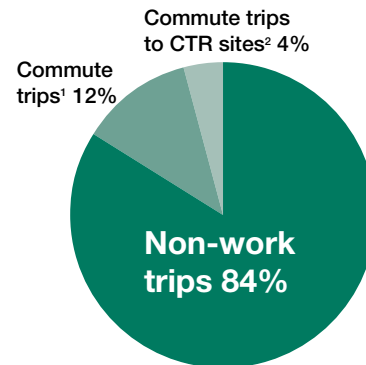
In both their 2013 and 2015 Reports to the Legislature, the CTR Board, supported by WSDOT, has proposed the Legislature broaden the policy focus of the CTR program beyond commute-to-work trips in an effort to reduce other types of drive-alone trips. The CTR Board is planning to request a bill in the 2017 legislative session that would amend the current CTR program. The planned legislation would authorize local jurisdictions to come up with innovative plans that broaden their markets for trip reduction and address the sources of congestion. Additionally, it would include a competitive grant program to provide support for local jurisdictions and organizations to develop and implement community-focused trip reduction projects and plans.

Non-commute drive-alone trips, with destinations such as shopping, medical appointments and social events, account for 84% of all annual trips, according to the most recent National Household Travel Survey conducted in 2009 (see figure at right). By changing the scope of trip reduction to include other types of trips,

Law reduces drive-alone commutes

The state's original CTR law was enacted in 1991 to improve air quality, reduce traffic congestion and decrease the consumption of fuel. The state Legislature then passed the Commute Trip Reduction Efficiency Act in 2006, which supports an urban center and land use focus within the program. The law requires major employers—workplaces with 100 or more full-time employees in the most congested areas of the state—to develop and implement employee commute programs to reduce the number and length of drive-alone commutes to work. The state provides grants to local governments to support employers and commuters. WSDOT staffs the CTR Board and provides technical assistance to local jurisdictions and employers to get their programs up and running. WSDOT also administers funding, guides the program with policies and procedures, and coordinates measurement and evaluation of the program. The CTR Board, appointed by the Secretary of Transportation, directs the program's policies and funding use and reports to the Legislature every two years.

Majority of drive-alone trips are for non-work reasons; CTR Board recommends program reform 2009; Nationwide drive-alone trips



Data source: National Household Travel Survey.

Note: 1 Indicates all vehicle trips taken to worksites without Commute Trip Reduction programs. 2 Indicates all vehicle trips taken to worksites with Commute Trip Reduction programs.

the CTR Board would be building upon the contribution already being made by the state's major employers in reducing traffic congestion, supporting a strong economy and encouraging healthy communities.

Locally designed and customized approaches for drive-alone trip reduction would provide new opportunities to meet both community and state goals. The proposal with new grant availability would better promote CTR program alignment with state and local priorities and goals by:

- Easing congestion by reducing drive-alone trips from the transportation system;
- Decreasing greenhouse gas emissions by reducing Vehicle Miles Traveled;
- Fostering healthy communities by lowering emissions and helping people make healthier transportation choices; and,
- Supporting the goals of the Washington State Public Transportation Plan.

At the state level, the proposed new CTR program would also strengthen the connection to Gov. Jay Inslee's Results Washington program by supporting the following two goals:

- Prosperous Economy—Sustainable Transportation: increase Washingtonians' use of alternative transportation for work commutes to 29% by 2020 (the 2013 use rate was 27.3%).
- Sustainable Energy and a Clean Environment—Clean Transportation: reduce transportation-related greenhouse gas emissions from 42.4 to 37.5 million metric tons by 2020.

Washington CTR worksites create innovative programs

Trip reduction pilot projects underway across Washington

Projects aimed at piloting new approaches to trip reduction began in 2013 in Tacoma, Seattle, Tukwila, Yakima, Redmond and Snohomish County. The CTR Board chose projects that, in a four-year time frame, would test the feasibility of “outside the box” approaches to reducing traffic congestion, air pollution and fuel consumption. These pilot projects, now two years underway, are scheduled for performance assessments in 2017.

WSDOT celebrates CTR program success at four worksites

Employers across Washington are implementing CTR programs to encourage their employees to find alternative commuting methods. Many CTR employers, four of which are highlighted below, have gone above and beyond to create successful programs.

Triumph Composite Systems, based in Spokane, has consistently maintained a well-rounded CTR program since it began in 1993. With more than 600 employees, the company is able to support an employee transportation coordinator, a guaranteed-ride-home program, 31 preferred parking spaces and a 50% vanpool subsidy. Triumph Composite Systems currently has 17 vans on the road with 175 vanpool riders. In addition, 46 employees carpool on a regular basis. Compared with the 2007 survey results, the company’s program prevented nearly 260,000 extra miles from being driven in 2014.

Big Fish Games in Seattle has achieved the lowest drive-alone rate (32.6%) of any worksite located in its geographic area, north of downtown Seattle.

\$ WSDOT administers the Commute Trip Reduction budget, which is \$5.67 million for the 2015-2017 biennium. Within the budget, \$3.9 million is distributed to jurisdictions to aid local employer programs. WSDOT supports implementation by providing technical assistance, collaborating with the CTR Board and measuring performance.

Employees at Big Fish Games receive transportation benefits including a fully subsidized transit pass, a guaranteed ride home, free parking for carpools and vanpools, and free access to shower and locker facilities at an on-site gym for walkers and bicyclists.

KPFF Consulting Engineers is a multi-office, multi-discipline engineering firm with a staff of 240 in their downtown Seattle office. KPFF has a current worksite drive-alone rate of 10.5%. Employees benefit from an improved quality of life and lower commuting costs as they utilize alternative commuting options, reduce congestion and promote a healthier workplace community.

The University of Washington’s Seattle campus is a strong partner of the city’s CTR program, helping about 70% of their 27,000 employees get to campus by using an alternative to drive-alone commuting. In doing so, UW achieved a 32.9% drive-alone rate, one of the lowest in its geographic area.



Alternative methods of commuting are becoming more popular in Washington communities, helping to reduce congestion statewide.

In the past year, UW has developed a Climate Action Strategy for Transportation with the overarching goal of becoming carbon neutral by 2050. The campus CTR program helps leverage UW’s efforts to reduce emissions by encouraging a shift to lower-carbon transportation modes, such as biking and walking, and changing how people perceive their transportation options.





















Contributors include Alexandra DeMoss, Kathy Johnston, Paul Mason, Debbie Ruggles, Tricia Hasan and Yvette Wixson

WSDOT Ferries: Annual Report Summary

(Presented to the Washington State Legislature in January 2016)

60

Ferries meets majority of Legislative performance goals

	Policy goal/Performance measure	Prior (FY2014)	Current (FY2015)	Goal	Goal met	Comments
Maintenance and Capital Program Effectiveness						
1	Percent of terminal projects ¹ completed on time	100%	50%	90%		Missed on-time goal for terminal projects in FY2015; decreased from FY2014
2	Percent of terminal projects ¹ completed on budget	100%	100%	90%		Exceeded on budget goal for terminal projects in FY2015; no change from FY2014
3	Percent of vessel projects completed on time A) Existing vessels ¹ B) New vessels	100% ² 0%	50% 0%	75% 100%	 	A) Emergent needs required rescheduling vessel projects at shipyard; decreased from FY2014 B) New vessel delivered 52 days late
4	Percent of vessel projects completed on budget A) Existing vessels ¹ B) New vessels	64% ² 100%	75% 100%	75% 100%	 	A) Nine of 12 projects on existing vessels were within budget, an improvement from FY2014 B) New vessel delivered on budget
14	Preliminary engineering costs ³ A) As a percent of terminal capital project costs B) As a percent of existing vessel capital project costs	13% 8% ¹	12% 7% ¹	<11.5% <17%	 	A) Engineering costs for terminal capital projects missed the goal B) Engineering costs for vessel capital projects met the goal in FY2015
15	Average vessel out of service time	8.1 weeks	9.4 weeks	<8 weeks		Missed vessel out of service time due to vessel mechanical issues; increased from FY2014
Safety Performance						
5	Passenger injuries per million passenger miles ⁴	0.53	0.93	<1.0		Passenger injury rate was within the goal of less than one in one million
6	OSHA ⁵ recordable crew injuries per 10,000 revenue service hours	7.5	6.1	<8 ⁶		Met the goal for reduced OSHA recordable crew injuries; increased from FY2014
Service Effectiveness						
7	Passenger satisfaction with Ferries' staff customer service	95% ⁷	94% ⁷	90%		Exceeded passenger satisfaction for customer service goal; slightly less than FY2014
8	Passenger satisfaction with cleanliness and comfort of Ferries terminals, facilities and vessels	89% ⁷	89% ⁷	90%		Dissatisfaction with cleanliness of terminal bathrooms resulted in missed goal; no change from FY2014
9	Passenger satisfaction with service requests made via telephone or Ferries website	91% ⁷	92% ⁷	90%		Exceeded goal for passenger satisfaction with service requests; slight increase from FY2014
16	On-time performance level (percent of trips departing within 10 minutes of the scheduled departure time)	95.5%	94.5% ⁸	95%		Missed the on-time performance level goal; decrease from FY2014
17	Service reliability level (percent of scheduled trips completed)	99.5%	99.5%	99%		Exceeded service reliability level goal; no change from FY2014
Cost Containment Measures						
10	Annual operating cost estimate per passenger mile compared to budgeted cost	-3.53%	-4.45%	Within 5% of budget		Exceeded goal for annual operating cost per passenger mile; slightly worse than FY2014
11	Annual operating cost estimate per revenue service mile compared to budgeted cost	-1.00%	-0.60%	Within 5% of budget		Exceeded goal for annual operating cost per revenue service mile; slightly better than FY2014
12	Overtime hours as a percentage of straight time hours compared to budgeted overtime hours	+1.00%	+0.45%	Within 1% of budget		Met goal for annual overtime as a percentage of straight time; slightly better than FY2014
13	Gallons of fuel consumed per revenue service mile compared to budgeted fuel consumption	-3.29%	-4.08%	Within 5% of budget		Exceeded goal for fuel consumption per revenue service mile; slightly worse than FY2014

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 FY2014 (July 2013 through June 2014) and current reporting year is FY2015 (July 2014 through June 2015). < = goal is less than percent or number indicated. 1 Includes preservation and improvement projects.

2 Percentages on measures 3a and 4a for FY2014 vary from those reported in GNB 57, as they were adjusted after publication to match actual project delivery results. The adjustments did not effect whether the goals were met. 3 Measure 14 goal varies annually depending on project type as defined in the Cost Estimating Manual for WSDOT Projects. 4 Measure revised since GNB 57. 5 OSHA = Occupational Safety and Health Administration. 6 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. 7 Percentages include neutral responses from customers and are based on the number of respondents to the customer surveys.



The online version of this article has an interactive map with more route information; visit bit.ly/GNBferriesmap.

Notable results

- *WSDOT Ferries ridership was 5.4 million in the second quarter of fiscal year 2016, a 2.2% increase over the same quarter in FY2015*
- *Ferries revenue was \$37.7 million for the second quarter of fiscal year 2016, 1.3% more than the second quarter of FY2015*

Ferries has its highest ridership quarter in years

WSDOT Ferries ridership was approximately 5.4 million during the second quarter of fiscal year 2016 (October through December 2015). This was about 12,500 (0.2%) fewer people than Ferries had projected for the quarter but about 105,000 (2.1%) more than the second quarter in FY2015.

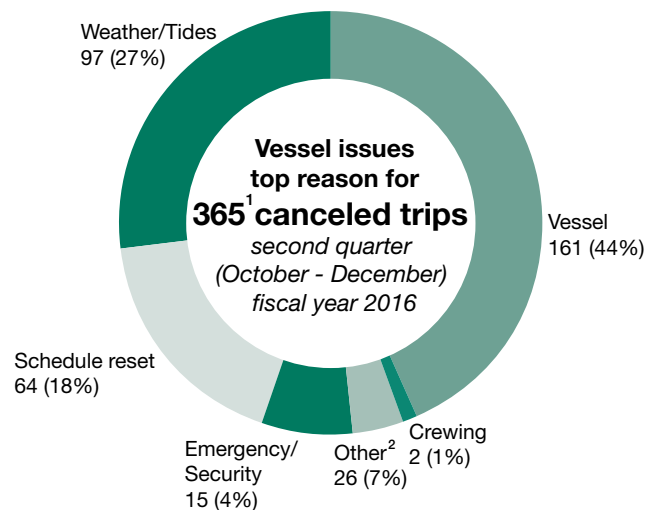
Ridership on the Point Defiance – Tahlequah route increased by more than 21,000 (12.5%) during the second quarter compared to the same quarter in FY2015. Ongoing construction at the Vashon Island terminal resulted in additional workers and materials using the Point Defiance – Tahlequah route on a daily basis, contributing to the increase.

Ferries carried approximately 57,000 (1.7%) more vehicles in the second quarter of FY2016 compared to the same quarter one year prior.

On-time performance drops slightly during the quarter

On-time performance was one percentage point lower than the same quarter in FY2015, decreasing from 96.4% to 95.4% for the second quarter of FY2016. The quarterly rate exceeds Ferries' annual on-time performance goal of 95%, which is typically met during the second quarter when seasonal ridership is lower. Based on this average, 20 out of 439 daily trips did not leave the terminal within 10 minutes of the scheduled departure time during the second quarter of FY2016, an increase from last year.

Ferries improved on-time performance on two of nine routes. The Anacortes – Sidney, B.C., route had the biggest improvement compared to the second quarter of FY2015 with a one percentage point increase in on-time performance. At 91.7%, the Seattle – Bainbridge Island



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 106 of the 365 canceled trips, for a total of 259 net missed trips. 2 "Other" includes events like disabled vehicles, issues at terminals, environmental reasons or non-ferries related incidents that can impact operations.

route saw the largest decrease in on-time performance, 4.4 percentage points lower than the same quarter last year. Construction projects in the area near Colman Dock in Seattle impacted Ferries' on-time performance as this work delayed unloading onto city streets.

Ferries makes 99.4% of trips, exceeds annual reliability goal

There were 40,690 regularly scheduled trips during the second quarter of FY2016. Ferries made 99.4% (40,431) of them, exceeding its annual reliability performance goal of 99% and remaining steady compared to the same quarter in FY2015 (see table on [p. 27](#)). In the second quarter of FY2016, Ferries canceled 365 trips and was able to replace 106 of them, resulting in 259 net missed trips. This was 31 more net trips missed compared to the second quarter of FY2015.

Vessel related problems were the leading reason for cancellations during the quarter, totaling 161 (44%). Eleven vessels had mechanical related cancellations,

Passenger injuries decrease, farebox revenue increases

with the Motor/Vessel *Issaquah* having 39 that were all related to propulsion. Weather/tides was the next highest reason, accounting for 97 (27%) of total cancellations.

Passenger injuries decline

Passenger injuries per million riders decreased 72% from 1.33 during the second quarter of FY2015 to 0.37 during the same quarter in FY2016. The rate for this quarter represents two passenger injuries.

The number of Occupational Safety and Health Administration recordable crew injuries per 10,000 revenue service hours increased 58% for the second quarter, from a rate of 6.0 in FY2015 to 9.5 in FY2016. This represents an increase of 30 injuries (based on January 2016 data) that were identified over the quarter, with roughly one-third of those related to hearing loss. Other employee injuries included sprains, strains, cuts, eye injuries, and puncture wounds.

Ferries farebox revenue hits all time high for fall quarter

Ferries farebox revenue followed ridership numbers and continued its upward trend, coming in at about \$37.7 million

for the second quarter of FY2016, the highest yet for the second quarter. Farebox revenue was \$476,000 (1.3%) more than the second quarter of FY2015, but about \$1.1 million (2.8%) less than projections. Farebox revenue is the largest source of funding for ferry operations.

Overall rider complaints increase

Ferries received 504 complaints and 52 compliments from the 5.34 million riders it served during the second quarter of FY2016. This was an increase of 121 from the same quarter in FY2015.

Reservations had the largest increase in complaints with 72 this quarter compared to 34 in the same quarter of FY2015. This increase is related to the new reservations system implemented on the San Juan domestic route on January 1, 2015. This quarter's 72 is the lowest number of reservations related complaints received in the four quarters since the new system was implemented. The largest decrease in complaints was in the Customer Behavior category, which decreased from 27 to 15 compared to the same quarter in FY2015. The large drop is mostly associated with the fact that the second quarter of FY2015 was higher than normal.

Contributors include Matt Hanbey, Kynan Patterson and Joe Irwin

Ferries' on-time performance down, trip reliability steady for the second quarter of fiscal year 2016

October through December FY2015 and FY2016; Annual on-time goal = 95%; Annual reliability goal = 99%

Route	On-time performance (second quarter)				Trip reliability (second quarter)			
	FY2015	FY2016	Status	Trend	FY2015	FY2016	Status	Trend
San Juan Domestic	94.8%	93.8%	-1.0%	↓	99.9%	99.4%	-0.5%	↓
Anacortes/Friday Harbor – Sidney, B.C.	96.6%	97.6%	+1.0%	↑	100.0%	98.9%	-1.1%	↓
Edmonds – Kingston	98.7%	98.6%	-0.1%	↓	99.7%	99.5%	-0.2%	↓
Fauntleroy – Vashon – Southworth	93.7%	92.0%	-1.7%	↓	99.6%	99.1%	-0.5%	↓
Port Townsend – Coupeville	94.7%	93.6%	-1.1%	↓	93.0%	96.2%	+3.2%	↑
Mukilteo – Clinton	98.7%	99.2%	+0.5%	↑	99.9%	99.9%	0.0%	↔
Point Defiance – Tahlequah	99.6%	99.4%	-0.2%	↓	99.4%	100.0%	+0.6%	↑
Seattle – Bainbridge Island	96.1%	91.7%	-4.4%	↓	100.0%	99.8%	-0.2%	↓
Seattle – Bremerton	98.7%	98.7%	0.0%	↔	99.9%	99.5%	-0.4%	↓
Total system	96.4%	95.4%	-1.0%	↓	99.4%	99.4%	0.0%	↔

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.

Notable results

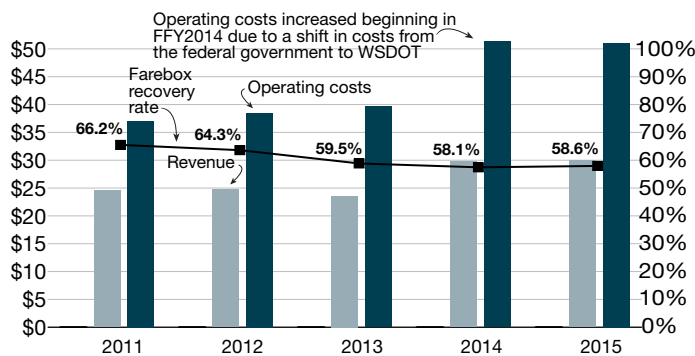
- Ticket revenues covered 58.6% of state-funded Amtrak Cascades operating costs in federal fiscal year 2015
- The design phases are complete on all 20 federally funded rail projects, with 10 projects complete

Farebox recovery rate improves to 58.6%

Ticket revenues covered 58.6% of operating costs in federal fiscal year 2015 (October 1, 2014 through September 30, 2015) compared to 58.1% in FFY2014. This percentage, called the farebox recovery rate, improved for the first time in five years due to a decrease in operating costs and an increase in ticket revenue.

Farebox recovery rate rises to 58.6% due to declining operating costs and increasing ticket revenue

Federal fiscal years 2011 through 2015; Dollars in millions



Data source: WSDOT Rail Division - Based on financial billing data from Amtrak.
Note: 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.

Within Washington state, Amtrak Cascades transported 644,000 riders during FFY2015, a decrease of 2.9% from the 663,000 riders in FFY2014 (compared to a total corridor ridership decline of 4.1%). Despite lower ridership, ticket revenue in Washington increased from \$29.8 million last year to \$29.9 million in FFY2015, indicating passengers are spending more per seat on average.

This is partially attributable to the annual 2% increase in ticket prices, combined with more last-minute bookings that did not use advance purchase discounts. The non-linear relationship between revenue and ridership was particularly true for the trips between Vancouver, B.C., and Seattle, where a

4.2% ridership increase accounted for an 11.9% increase (accounting for \$535,000 more) in ticket revenue.

At the same time, WSDOT slightly decreased its operating costs year-over-year from \$51.3 million in FFY2014 to \$51.1 million in FFY2015, contributing to the higher farebox recovery rate of 58.6%.

Other key performance measures that remained consistent over the five-year period include:

- July and August were the busiest months based on ticket sales and ridership;
- The Seattle, Portland, Vancouver, B.C., and Tacoma stations had the highest number of passengers (in consecutive order); and,
- The Seattle/Portland and Seattle/Vancouver, B.C. city pairings netted nearly 40% of all corridor revenue.

The Amtrak Cascades intercity passenger rail service is owned and administered by WSDOT and the Oregon Department of Transportation. Expenses not covered by ticket revenue are funded with contributions from the two states. Maintaining or increasing the current ticket revenue level is crucial to minimizing the financial impact to the states. WSDOT continues to work with partners and stakeholders to raise awareness and market the advantages of intercity passenger rail travel.

When all the rail capital construction improvements are completed in 2017 (see [p. 29](#)), Amtrak Cascades will add two more daily roundtrips between Seattle and Portland, decrease travel times by at least 10 minutes and increase on-time performance to above 88%. These steps will enable WSDOT to:

- Maximize ticket revenue;
- Provide viable alternative transportation options for Washington's citizens and visitors; and,
- Minimize public costs by operating the system in the most efficient manner possible.

Landslide mitigation work improves corridor reliability

The last of the landslide mitigation construction funded under the American Recovery and Reinvestment Act of 2009 was substantially complete by December 31, 2015, with the remaining final work scheduled for early 2016.

The work, officially titled the Corridor Reliability – Supplemental Work project, is designed to help prevent or reduce the landslides along the coastal bluffs between Seattle and Everett that have disrupted passenger rail service in the past. WSDOT selected six historically slide-prone sites to enhance with \$16 million from the ARRA federal fund. The first two sites were completed in 2013 and 2014, after which there have been no new blocking events. The four remaining sites also held up well during heavy storms in fall 2015 despite still being under construction.

The construction work includes:

- Retaining walls to catch landslide debris before it hits the tracks;
- Slide detection fences to provide early warnings of active landslides;
- Improved drainage systems; and,
- Erosion control.



Retaining walls like the ones near Mukilteo being constructed in the photos above will catch landslide debris before it hits the tracks and will improve train reliability.

Work group studies landslide activity

In addition to site work, WSDOT partnered with BNSF Railway, Sound Transit, Amtrak, several municipalities, the Department of Ecology and the Department of Natural Resources to form the Landslide Mitigation Work Group to study landslide activity in the area and recommend potential solutions. The group holds annual public meetings in Snohomish County communities along coastal bluffs to educate landowners about steps they can take to help reduce landslide risk.

The landslide mitigation project is crucial for corridor reliability because BNSF postpones all passenger trains for 48 hours every time there is a blocking landslide. BNSF evaluates nearby slopes and clears the tracks to ensure they are safe before allowing service to resume. Reducing landslides means fewer train disruptions, better on-time reliability and improved customer satisfaction.

While the federal grant work is nearly complete, the Washington State Legislature recently provided \$1 million in the 2015-2017 biennium to continue to address landslides along rail lines. This and additional funding, which will be identified in subsequent years, will be used to further address landslide risks.

Contributors include Jason Biggs, Chris Dunster, Jeremy Jewkes, Barbara LaBoe, Janet Matkin, Brent Thompson, David Smelser and Erica Bramlet

Interactive online map shows progress of the 20 federally funded passenger rail projects

As of December 31, 2015, WSDOT had 10 passenger rail projects in construction and 10 projects completed. Work includes purchasing new locomotives, adding tracks to handle increased 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 will benefit from the addition of two daily roundtrips between Seattle and Portland, Oregon, with an expected travel time reduction of 10 minutes. In addition, WSDOT, Amtrak and BNSF are committed to an average of 88% on-time performance for trains traveling from Portland to Seattle and Seattle to Vancouver, B.C. To view the interactive map of the federally funded rail projects, visit bit.ly/GNBraillmap.

Notable results

- *WSDOT teams helped clear 12,756 incidents during the quarter, providing an estimated \$21.9 million in economic benefits*
- *Teams cleared incident scenes in an average of 13 minutes and 39 seconds, reducing traffic delay and risk of secondary incidents*

Incident Response teams help at 12,756 incidents

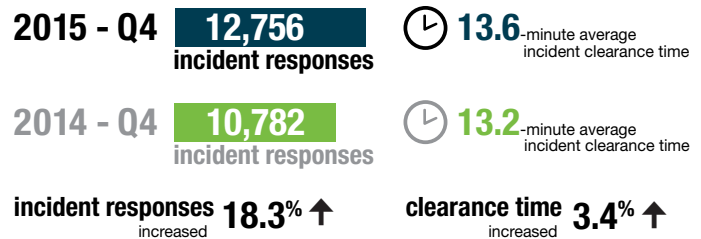
WSDOT's Incident Response teams assisted at 12,756 incidents during the fourth quarter (October through December) of 2015. This averages to a WSDOT IR team responding to an incident scene roughly every 10 minutes during the quarter. The agency responded to 1,974 more incidents—about an 18% increase—during the fourth quarter of 2015 than during the same period in 2014. Increases in traffic combined with record wet weather during the quarter likely led to the jump in the number of incidents. Data for the quarter is considered preliminary.

WSDOT IR teams cleared incidents in an average of 13 minutes and 39 seconds. This was 27 seconds slower than the average incident clearance time for the same quarter last year. The proportion of incidents which blocked at least one lane was 26.7% during the quarter compared to 27.7% last year, and there was a 12.7% increase (19 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 \$9 million, funding about 47 full-time equivalent positions (approximately 80 trained drivers) and 62 dedicated vehicles. Teams are on-call 24/7 and actively patrol 493 centerline miles (about 32% of all urban centerline miles) of highway on major corridors around the state such as I-5 or I-205 during peak traffic hours.

WSDOT responds to 18% more incidents compared to last year, while average clearance times increase only 3.4%
Fourth quarter (October through December) 2014 and 2015



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 2015) are considered preliminary. In the previous quarter (Q3 2015), WSDOT responded to 13,706 incidents, clearing them in an average of 12.8 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. 31](#).

WSDOT's assistance at incident scenes provided an estimated \$21.9 million in economic benefits during the fourth quarter of 2015 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 \$12.5 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 \$9.4 million of IR's economic benefit results from preventing an estimated 2,428 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 \$19.50 in economic benefit.

WSDOT responds to more extraordinary incidents

WSDOT’s Incident Response prevents \$21.9 million in traffic delays and secondary incidents
October through December 2015; Incidents by duration; Times in minutes; Costs and benefits in millions of dollars

Incident duration	Number of incidents ¹	Percent blocking ²	Average roadway clearance time ³ (blocking only)	Average roadway clearance time ³ (all incidents)	Average incident clearance time ⁴ (all incidents)	Cost of incident-induced delay	Economic benefits from IR program ⁵
Less than 15 min.	9,566	17.0%	5.0	4.9	5.1	\$12.4	\$5.8
Between 15 and 90 min.	3,021	57.0%	25.9	25.3	30.9	\$27.2	\$11.8
Over 90 min.	169	87.0%	178.4	178.4	181.7	\$10.2	\$4.3
Total	12,756	26.7%	23.6	23.0	13.6	\$49.8	\$21.9
Percent change from fourth quarter 2014	↑ 18%	↓ 1%	↑ 3%	↑ 0.3%	↑ 3%	↑ 26%	↑ 24%

Data source: Washington Incident Tracking System.
Notes: Some numbers do not add up due to rounding. 1 Teams were unable to locate 615 of the 12,756 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, pp. 40-42](#), 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 \$49.8 million in wasted time and fuel during the fourth quarter of 2015. This is about \$10.2 million more than in the same quarter of 2014. Without WSDOT’s assistance, this economic impact would have been roughly \$71.7 million (\$21.9 million in prevented delay and secondary incidents plus \$49.8 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, pp. 40-42](#).

WSDOT teams respond to 169 over-90-minute incidents

WSDOT Incident Response units provided assistance at the scene of 169 incidents that lasted more than 90 minutes during the fourth quarter of 2015. This is 19 more incidents—roughly 12.7%—than the same quarter in 2014. While these over-90-minute incidents accounted for 1.3% of all incidents, they resulted in 20.6% of all incident-related delay costs.

Thirteen of the 169 over-90-minute incidents took six hours or more to clear (referred to as extraordinary incidents). This is five more extraordinary incidents than the same quarter in 2014. The 13 extraordinary incidents took an average of eight hours and 32 minutes to clear, accounting for about 4% of all incident-induced delay costs for the quarter.

The average clearance time for all over-90-minute incidents was about three hours and two minutes. This is about four minutes slower than the same quarter in 2014. Excluding the 13 extraordinary incidents, WSDOT’s average clearance time for over-90-minute incidents was two hours and 34 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 is money well spent during 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 2015:

- Jim was my hero that day! Thank you for this amazing service. Definitely worth our tax dollars.
- I had no idea that the DOT had this program. These guys really helped me out in a time of need and I appreciate this program.
- Happy to know that my tax dollars are going for a good use. Brian was courteous and kind.

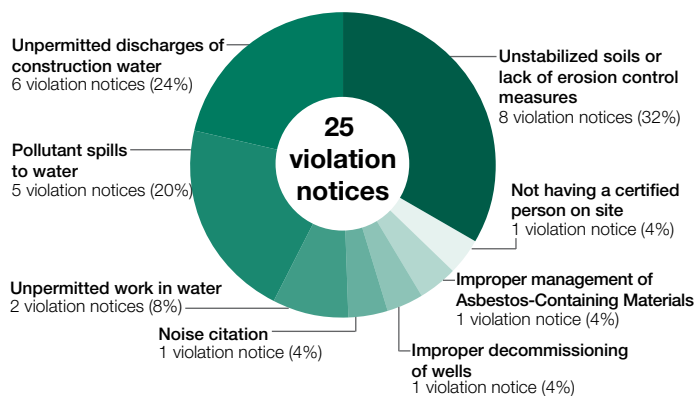
Notable results

- *WSDOT performed 2.6 million hours of maintenance in 2015 without receiving a single violation notice*
- *Of 663 active construction projects in 2015, 98% of them did not receive violation notices*

Compliance is a priority for all WSDOT activities

WSDOT made 160,000 ferry sailings, had 663 active construction projects and completed 2.6 million maintenance work hours in 2015. The total number of environmental violation notices received for these three activities was 25. This is seven more than the agency received in 2014. The increase is attributed to the heavy precipitation in the last quarter of 2015 (October through December) along with extensive in-water work occurring on Lake Washington for State Route 520 projects. In- or over-water projects have a higher risk for non-compliance because many environmental regulations are aimed at protecting water and aquatic resources.

WSDOT activities receive 25 violation notices in 2015 Number of notices by environmental violation category



Data source: WSDOT Environmental Services Office.

Note: Of the 25 violation notices, three occurred at ferry terminals or vessels, and the remaining 22 occurred during construction projects. Some projects had multiple violation notices.

Thirteen of the 25 notices were issued to WSDOT statewide. The remaining 12 were issued to WSDOT's contractors because regulatory agencies determined they were solely responsible for the violation or the contractor was the permit-holder. The most common activities that resulted in a violation notice in 2015 were unstabilized soils or lack of erosion control measures and

discharges of construction water, which accounted for 14 of the 25 notices (56%). WSDOT and its contractors regularly perform site inspections and monitor water quality to ensure compliance for activities like these.

The Washington State Department of Ecology requires notification when turbid discharges are above the benchmark limit. After they are notified, Ecology may follow up by conducting a site visit and issuing an inspection report. If violations are noted, WSDOT or its contractors have 10 days to implement corrective measures.

In February 2015, WSDOT began transferring the Construction Stormwater General Permit to its contractors as a standard practice, giving contractors more responsibility for environmental compliance. As a result, over half of the 12 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 59, pp. 24-26](#).

WSDOT receives two monetary penalties totaling \$750 in 2015

WSDOT's violation notices included two monetary penalties totaling \$750 in 2015, the same amount as in 2014. One \$250 penalty was issued by the U.S. Coast Guard to WSDOT Ferries after a hydraulic hose leaked at a ferry terminal, resulting in a small release (less than one gallon) of hydraulic fluid to the water.

The other penalty, set at \$500, was issued to WSDOT by the Spokane Regional Clean Air Agency for the improper management of Asbestos-Containing Materials. To prevent a reoccurrence, WSDOT is working on a requirement for future demolition contracts that requires a licensed abatement representative to be on site to monitor demolition activities for signs of ACM not identified in original asbestos surveys. WSDOT will also discuss applicable requirements with its contractors at preconstruction conferences.

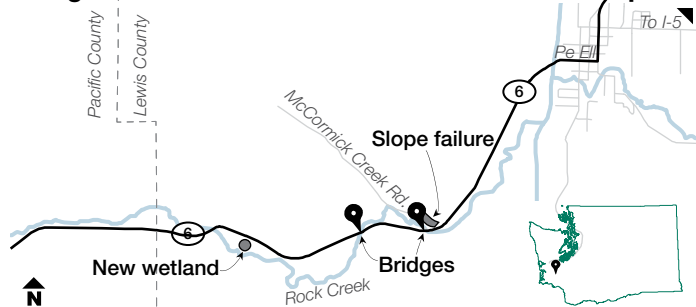
WSDOT strives to improve environmental conditions

WSDOT's contractors received seven monetary penalties in 2015 totaling \$149,150. The most notable was when a contractor for the SR 520 Pontoon Construction Project discovered they had not properly decommissioned monitoring wells at the Aberdeen project site. The contractor self-notified Ecology and was assessed a \$90,000 fine, which it has appealed to the Pollution Control Hearings Board.

Rock Creek bridges project nominated for environmental award

WSDOT received 20 nominations from staff for teams or individuals dedicated to environmental stewardship in 2015. While all of the nominations highlighted WSDOT's commitment to improving environmental conditions (see the Results WSDOT Environmental Stewardship goal on [p. 7](#)), many of the projects also supported other strategic goals like Community Engagement, Organizational Strength and Strategic Investments.

Bridge work on SR 6 minimizes environmental impacts



WSDOT replaced two bridges on SR 6 at Rock Creek to ensure compliance through wetland mitigation, fish exclusion and cultural preservation.

The State Route 6 Rock Creek Bridges Replacement project is one example of the efforts taken by staff to ensure compliance with environmental regulations.

The safety project replaced two bridges crossing Rock Creek in Lewis County and featured compliance efforts by the project team that included:

- Timely design, with advice from WSDOT's Geotechnical Services, of a reinforced structure to stabilize an unexpected slope failure (see map above) during construction along McCormick Creek Road
- Field coordination with the Washington Department of Fish and Wildlife to mitigate the potential stranding of fish within excavation areas
- Collaboration with Ecology and environmental staff at WSDOT to collect data and photos to establish statewide



SR 6 Rock Creek Bridges Replacement project team members use nets to remove fish from the project site.

Water Quality Monitoring Protection Plan guidance and training materials

- Diligent efforts to keep fish from harm by temporarily excluding them from the project site (see photo above)
- Innovative stream diversion techniques using two upstream dams and a sump pump (running 24 hours a day), ensuring work occurred in a dry environment to comply with state water quality standards
- Construction of a wetland (see map at left) at a nearby upstream site along Rock Creek, benefiting the immediate area by providing backwater storage during high water events
- Resourceful excavation design allowing for preservation of archeological artifacts and minimization of construction costs associated with discovery of artifacts
- Preservation of the McCormick town site's historical significance through curation of discovered artifacts like the bowl pictured at right.

The project team demonstrated WSDOT's commitment to maintaining safe roadways while preserving environmental and cultural resources using

strategic planning and coordination within the agency, as well as with other agencies and community groups.

Contributors include Gretchen Coker, Dave Wasson, Eric Wolin and Erica Bramlet



WSDOT facilitated curation of artifacts from a Japanese Residential Encampment, like this bowl discovered during project construction.

Notable results

- *Washington Grain Train carloads decreased from 1,974 in 2014 to 1,815 in 2015, a decline of 8.1%*
- *WSDOT awarded \$9.35 million in state grants and loans to support 19 freight rail projects in the 2015-2017 biennium*

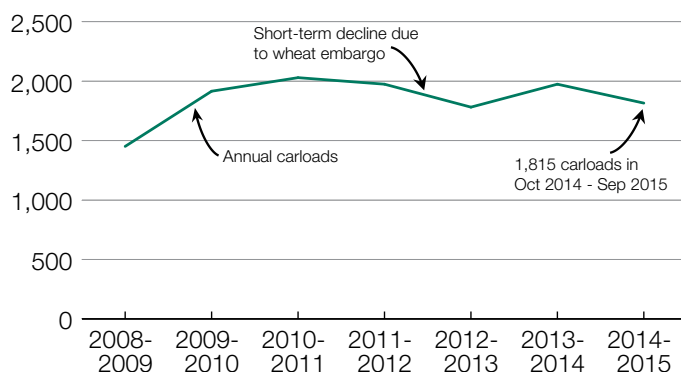
Grain Train carloads drop 8.1% from 2014 to 2015

Washington Grain Train shipments decreased 8.1% from 1,974 carloads in the 2014 crop year (October 2013 through September 2014) to 1,815 carloads in the 2015 crop year (October 2014 through September 2015). The decrease in shipments is linked to summer drought conditions throughout the Pacific Northwest that resulted in a much smaller wheat crop.

Washington state's 2014 wheat crop, which began shipping to market by way of the Grain Train in October 2014, was 108.5 million bushels. This is a decrease of 24.8% from 144.2 million bushels in 2013. Despite the smaller wheat crop, the number of Grain Train carloads decreased by a much smaller percentage during the 12-month period as Grain Train equipment saw an increased use in moving the state's wheat crop in 2014. This was because BNSF grain cars continued to be used predominantly for corn and soybean crops grown in the Midwest United States.

The Washington Grain Train, which WSDOT jointly manages with the ports of Whitman County, Walla Walla and Moses Lake, serves more than 2,500 cooperative

Annual Grain Train carloads decrease 8.1%
October through September, 2008-2009 through 2014-2015



Data source: WSDOT Freight Systems Division.

Note: October through September represents a crop year, defined by harvest occurring in August and shipment of the products in early fall.

members and farmers. The Grain Train carries thousands of tons of grain from eastern Washington to deepwater ports for transport to domestic and international markets.

WSDOT to address crossings on short-line rail system

WSDOT continues to improve rail access and protect infrastructure on the Palouse River and Coulee City rail system in eastern Washington. The state Legislature allocated \$2.3 million for maintenance and restorative work during the 2015-2017 biennium (July 2015 through June 2017).

Work for the biennium includes one construction contract, scheduled to occur in 2016, that will rehabilitate 8.4 miles of track between Spangle in Spokane County and Oakesdale in Whitman County. In partnership with Palouse River and Coulee City operators, WSDOT is also addressing 70 defective grade crossings identified during the summer of 2015 by the Utilities and Transportation Commission and will rehabilitate 11 additional crossings.

WSDOT purchased the deteriorating PCC rail system in 2007 and has been rehabilitating and improving crossings, track and bridges on the 297-mile system since. The agency's work ensures the vital short-line rail system continues to serve eastern Washington grain cooperatives that purchase and ship grain from hundreds of farmers. See [Gray Notebook 47, p. 42](#), for a map of the PCC rail system.

State funds nine projects through 2015 transportation package

The state's new transportation revenue package, Connecting Washington, is furthering improvements through rail projects across the state. The package is currently supporting nine projects with \$10.6 million in allocations.

Connecting Washington was approved in June 2015 and will provide \$109.7 million for projects that include a safety study and freight rail track improvement and

State grants and loans support freight rail projects

preservation with an additional \$31 million for freight rail grant programs. The first freight rail improvement and preservation projects funded by Connecting Washington are getting underway. The most recent phase of the \$475,000 West Vancouver Freight Access project (see below) is in the agreement phase, and eight projects are in the scope confirmation stage.

Connecting Washington is also providing an additional \$970,000 toward continued funding for the Freight Rail Assistance Program, helping capital improvement projects across the state during the 2015-2017 biennium. FRAP is directed toward larger projects where it is difficult to gain a contribution and where the rail location or the project is of strategic importance to the local community and the state. During the 2016 session, the Legislature will review a proposed list of FRAP projects prioritized by WSDOT and other state agencies and determine funding levels for each.

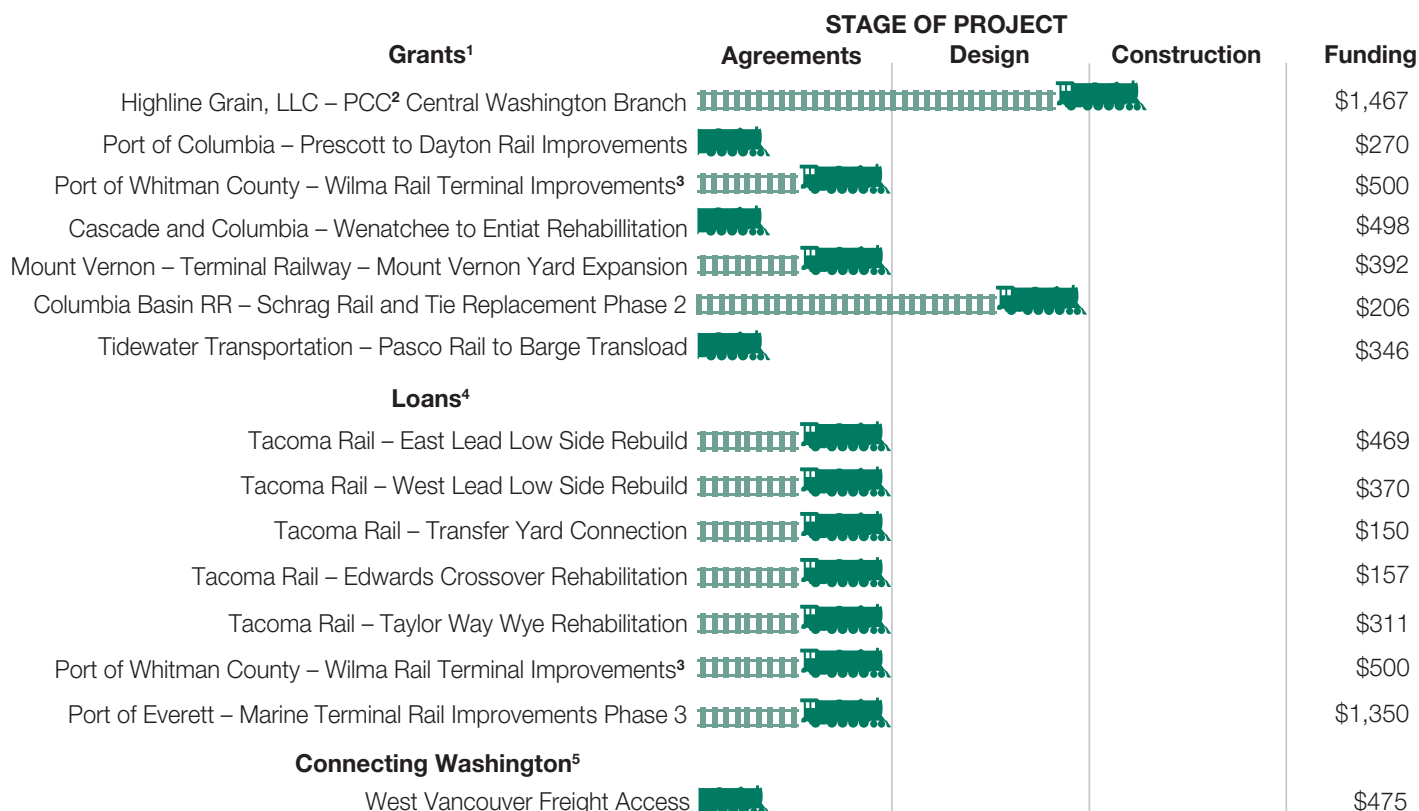
Nineteen rail projects receive state grants and loans for the biennium

In the 2015-2017 biennium, WSDOT awarded a total of \$9.35 million in state grant and/or loan funding to 19 projects around Washington state as part of the Freight Rail Investment Bank and FRAP. Funding became available in July 2015, and to date, one project has entered construction (see chart below). These projects are designed to improve the state's long-term economic vitality while creating jobs by using capital investments in rail infrastructure. For example, the Mount Vernon – Terminal Railway – Mount Vernon Yard Expansion project is designed to increase accessibility to rail for businesses seeking transportation options in Skagit and Whatcom counties. The project will provide more capacity for truck-to-rail transloading in the region.

Contributors include Chris Herman, Matthew Pahs and Joe Irwin

New freight rail capital project enters construction phase

Project status as of December 31, 2015; Projects by funding type; Funding in thousands of dollars



Data source: WSDOT Freight Systems Division.

Notes: 1 Projects funded by a Freight Rail Assistance Program grant. Confirmations are underway on the scopes for five of the 12 FRAP projects and will be included in the table above when they reach the agreement stage. 2 PCC = Palouse River and Coulee City. 3 This project received a state grant and a state loan and is listed in both groups, but counts as one project. 4 Projects funded by a Freight Rail Investment Bank loan. One of the eight FRIB projects is also waiting for confirmation of the project scope. 5 Eight of the nine Connecting Washington projects are currently in the scope confirmation phase and will be included in the table above when they reach the agreement stage.

Notable results

- *Toll transactions increased to 37.6 million in fiscal year 2015, up 4% from 36.1 million transactions in FY2014*
- *Drivers paid 78% of tolls using Good to Go! —WSDOT's all-electronic tolling system— through more than 540,000 active accounts*

Transactions increase on all state's tolled facilities

Tolling transactions increased 4% in fiscal year 2015 (July 2014 through June 2015) compared to FY2014 from 36.1 million transactions to 37.6 million on the state's three toll facilities in operation. During FY2015, WSDOT's toll facilities included the State Route 520 Bridge between Seattle and Bellevue, the eastbound SR 16 Tacoma Narrows Bridge between Gig Harbor and Tacoma, and the SR 167 High Occupancy Toll lanes between Auburn and Renton. WSDOT opened the Interstate 405 Express Toll Lanes between Lynnwood and Bellevue in September 2015 which will be reported in the next tolling annual report in *Gray Notebook* 64. This article provides performance data for WSDOT's FY2015 tolling operations. See the feature on [p. 37](#) for initial I-405 ETL performance data.

WSDOT collected \$133.8 million in toll revenues, a 7% increase from the \$124.8 million collected in FY2014. In FY2015, 81% of tolling revenues collected on the SR 520 Bridge and 86% from the Tacoma Narrows Bridge went to dedicated funds that support ongoing preservation,

Tolling transactions and revenues increase

Fiscal years 2014 and 2015 (July through June); Transactions and revenues in millions

Facility transactions	FY2014	FY2015	Percent change
SR 520 Bridge	21.0	22.0	+5%
Tacoma Narrows Bridge	14.0	14.4	+3%
SR 167 HOT Lanes	1.1	1.2	+4%
Total	36.1	37.6	+4%
Facility revenues ¹			
SR 520 Bridge	\$60.5	\$64.0	+6%
Tacoma Narrows Bridge	\$63.1	\$68.2	+8%
SR 167 HOT Lanes	\$1.2	\$1.7	+42%
Total	\$124.8	\$133.8	+7%

Data source: WSDOT Toll Division.

Note: Numbers and percentages have been rounded. 1 Facility revenues only includes funds from tolls on vehicles. This is different from *Gray Notebook* 56, which also included toll reprocessing fees.



WSDOT crews construct the new SR 520 floating bridge's west end. The new bridge is set to open later this year. Tolling is on track to provide \$1.2 billion for projects to improve safety and congestion on SR 520.

financial obligations, and corridor improvements. There are multiple costs WSDOT incurs to collect and administer tolls such as customer service, bank card fees, and toll equipment operations and maintenance. See the WSDOT Toll Division Annual Report at <http://www.wsdot.wa.gov/Tolling/publications.htm> for more information.

SR 520 toll transactions increase, traffic still less than before tolling

Tolling transactions increased on the SR 520 Bridge to 22 million in FY2015, up 5% from FY2014. The average weekday traffic volume on the SR 520 Bridge during FY2015 was 74,000 tolled vehicles, up from 72,000 in FY2014. Despite the increase in traffic volume, WSDOT is meeting its goal of reducing congestion on the SR 520 Bridge with the weekday volume down about 28% from the pre-tolling average weekday volume of 103,000 vehicles in FY2011.

WSDOT collected about \$64 million in toll revenue on the SR 520 Bridge in FY2015, an increase of 6% from FY2014. Costs to collect and administer tolls on the SR 520 Bridge were \$12.6 million in FY2015.

WSDOT opens Express Toll Lanes on Interstate 405

The state began tolling on the existing SR 520 Bridge in December 2011 to manage congestion and provide \$1.2 billion to fund a replacement bridge. The existing bridge is being replaced to address earthquake and severe windstorm resiliency concerns. The work is part of the \$4.5 billion SR 520 Bridge Replacement and High Occupancy Vehicle Program, which is building 12.8 miles of improvements to address safety and congestion from I-5 in Seattle to SR 202 in Redmond.

Daily transit use on SR 520 rose to 23,000 riders in FY2015, an increase of 4% from FY2014 and 52% from before tolling began. Some of the increase is due to transit service added by King County Metro and Sound Transit. In addition, the number of vanpools crossing the SR 520 Bridge rose to 238, compared to 200 in FY2014 and the pre-tolling level of 130.

WSDOT reduces cost to collect tolls on Tacoma Narrows Bridge

Traffic on the Tacoma Narrows Bridge increased 3.1% resulting in approximately 14.4 million total transactions in FY2015 up from 13.9 million in FY2014. On average, 42,000 vehicles crossed the eastbound Tacoma Narrows Bridge each weekday in FY2015.

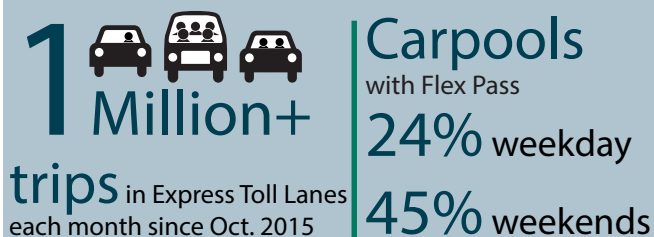
WSDOT collected \$68.2 million in toll revenue on the eastbound Tacoma Narrows Bridge, \$5.1 million (8%) more than revenues collected in FY2014. WSDOT also reduced expenses for administering tolls on the Tacoma Narrows Bridge by implementing cost savings measures such as working with customer service center vendors to standardize inventory management processes. Costs were \$880,000 (8%) lower than the \$10.3 million projected. This savings allows WSDOT to reallocate more funds to paying debt service on the new bridge.

SR 167 High Occupancy Toll lane use continues steady increase

Compared to the general purpose lanes, the northbound SR 167 HOT lane saved weekday drivers 10 minutes during the morning peak hour for an average toll of \$2.75. Compared to the general purpose lanes during the afternoon peak hour, the southbound HOT lane saved weekday drivers about five minutes in the car for an average toll of \$2.25. HOT lane tolls cost between 50 cents and \$9 and can change based on time of day and traffic congestion. Solo drivers can opt to pay a toll

More than one million trips made each month in the new I-405 Express Toll Lanes

WSDOT opened the I-405 Express Toll Lanes on September 27, 2015. Drivers can now choose to travel faster by paying a toll, while carpools, vanpools and motorcycles can use the lanes for free with a *Good To Go!* pass. WSDOT will reinvest toll revenue in the I-405 corridor. After the agency opened the new toll facility, drivers made more than one million trips in the ETL each month through December 2015.



14 minutes average travel time savings for drivers in Express Toll Lanes



7 minutes southbound travel time savings in the general purpose lanes

Most of I-405 going faster, some new congestion

Most of I-405 is moving more vehicles at faster speeds during peak commute periods in both the ETL and general purpose lanes. Compared to fall 2014, southbound trips from Lynnwood to Bellevue in the general purpose lanes are seven minutes faster on average. Northbound general purpose lane trips (Bellevue to Lynnwood) are one minute faster on average.

An exception is northbound I-405 between SR 522 near Bothell and I-5 near Lynnwood. General purpose lane trips now take an average of four minutes longer than before the ETL opened. The combined effects of the new I-405 lane south of SR 522 and SR 522/I-405 interchange improvements, shifted a bottleneck north to where five lanes transition down to three. WSDOT is implementing solutions to help alleviate this new congestion. For more information on the I-405 ETL, go to <http://www.wsdot.wa.gov/Tolling/405/>.

State Route 167 toll lanes continue to provide benefits

to use the HOT lanes, reducing their commute times. Carpools, vanpools and transit use the lanes for free.

On an average weekday, 4,800 drivers chose to pay a toll to use the HOT lanes in FY2015, a 33% increase from FY2009. Overall traffic on the SR 167 corridor between Auburn and Renton grew by 6% during the same period.

Toll revenue on the SR 167 HOT lanes increased 42% from \$1.2 million in FY2014 to approximately \$1.7 million in revenue for FY2015. This was more than double expenses to collect tolls and maintain the system, which amounted to \$811,000 in FY2015. Revenues from the HOT lanes are used to maintain and operate the SR 167 corridor for the 115,000 drivers who use the corridor every weekday.

Good to Go! electronic payment system exceeds half a million users

WSDOT surpassed half a million active *Good To Go!* accounts with a total of approximately 540,000 in FY2015. Drivers pay 78% of tolls using *Good To Go!*. The proportion of drivers use that *Good to Go!* varies by facility. For example, drivers crossing the SR 520 Bridge paid 84% of tolls on that facility with *Good to Go!* while the Tacoma Narrows Bridge saw 69% of tolls paid with this method.

Tolls paid with a *Good to Go!* pass are also the least expensive for drivers to pay and WSDOT to collect. This method frees

Tolls paid with *Good to Go!* accounts most efficient
Fiscal year 2015; Average WSDOT cost to collect per toll transaction

Payment method	Average collection cost ¹
Good To Go! Pass	\$0.40
Pay By Plate	\$0.44
Pay By Mail	\$0.98
Tollbooths ²	\$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.

Tacoma Narrows Bridge only, pay at the tollbooths. The cost to collect tolls varies by method.

Good To Go! customer service representatives answered more than 448,000 calls and sent more than 3.1 million emails and 2.8 million pieces of mail

WSDOT provides travel times update for major commutes including tolled facilities

WSDOT monitors and provides semi-annual reports on travel time trends for 18 major commutes in the Puget Sound region, including those on tolled facilities such as State Route 167 and SR 520. The latest update to this report provides travel times for January through June of 2015. This is before tolling began on Interstate 405. The table with this data can be found at http://bit.ly/GNB60_TravelTimeTrends.

in FY2015. Customer service centers in Bellevue, Gig Harbor and Seattle had nearly 116,000 walk-in customer visits; about half were at the Gig Harbor center.

WSDOT has been working with the Department of Licensing to reduce the time and number of calls needed to resolve unpaid tolls and related penalties by developing an online form to streamline the resolution process. See the Lean Process Improvements Quarterly Update on [p. 41](#) for more details.

WSDOT makes changes to help customers resolve unpaid tolls

In July 2015, WSDOT changed how it resolves disputes for customers who have received a penalty for unpaid tolls. Toll violators now have the opportunity to resolve their civil penalty by paying the outstanding tolls without fees and penalties. The purpose of this program is to collect the toll and educate the customer so they won't get behind in the future.

More than 30,000 vehicle owners have had their civil penalties and fees waived. WSDOT has dismissed more than \$11.5 million in civil penalties and fees and collected nearly \$1.1 million in toll revenue through the program as of January 3, 2016.

WSDOT reported FY2014 tolling revenues as \$126.6 million in *Gray Notebook* 56, which included toll reprocessing fees. Due to these changes in policy the *Gray Notebook* will now only report revenues directly collected for tolls.

Contributors include Ethan Bergerson, Emily Pace, Bradley Bobbitt and Tricia Hasan

Construction Cost Trends Annual Report

60

Notable results

- **WSDOT's Construction Cost Index decreased by 14.9% in 2015, from 328 in 2014 to 279, due to smaller construction awards**
- **The price of roadway excavation decreased by 43.6%, strongly influencing the Construction Cost Index**

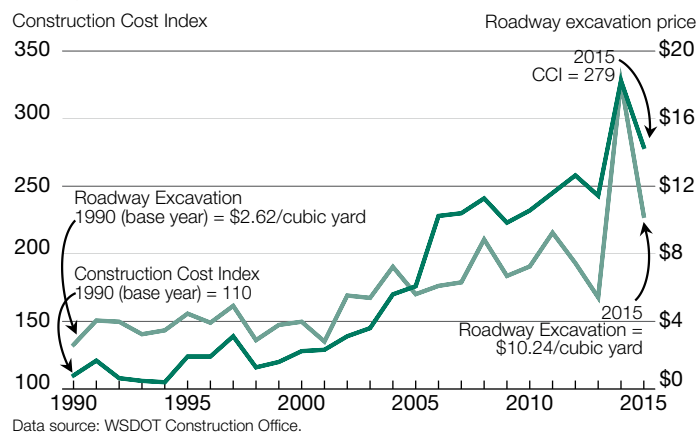
WSDOT's Construction Cost Index decreases in 2015

WSDOT's Construction Cost Index decreased 14.9% in 2015, from 328 to 279. WSDOT uses the CCI to track materials' price changes in some of its common construction activities. A drop in the CCI indicates a reduced per unit cost of materials from the previous year. Because the 2014 CCI increased 35% (reported as 35.4% in *Gray Notebook 56*) due to several large-scale, expensive projects, the decrease in 2015 indicates a return to smaller, more typical construction awards and projects with reduced materials needs.

WSDOT's CCI is based on low bid prices since 1990 for seven work activities common to highway construction (see table at right). The resulting index provides an inflation rate for WSDOT's construction program as a whole.

The decrease in CCI was due in large part to roadway excavation needs, including grading. Roadway excavation prices dropped by 43.6%, from \$18.16 per cubic yard in 2014 to \$10.24 in 2015. Roadway excavation pricing increased 235% in 2014 with the needs of

Drastic changes in roadway excavation between 2014 and 2015 influence WSDOT's Construction Cost Index 1990 through 2015; Costs of construction activity materials relative to 1990 levels; Roadway excavation price in dollars per cubic yard



Half of awarded common work activity bid items¹ that make up Construction Cost Index decrease
Percent change in cost from 2014 to 2015

Common work activity ² (example)	Percent cost change
Roadway Excavation (grading)	-43.6%
Crushed surfacing (placing crushed rock)	0.8%
Hot mix asphalt (asphalt paving)	-1.6%
Concrete pavement ³ (concrete paving)	-0.6%
Steel rebar (placing rebar to construct bridges)	19.8%
Structural steel (placing steel forms to construct bridges)	N/A ⁴
Structural concrete (placing concrete to construct bridges)	17.6%

Data source: WSDOT Construction Office.

Notes: 1 WSDOT's Construction Cost Index is based on the low bid prices for the seven most common construction work activities for highway projects. 2 For the official definitions of each of these work activities, see the [2016 Standard Specifications](#). 3 Concrete pavement is also known as Portland Cement Concrete Pavement. 4 No projects involving structural steel were awarded in 2015.

larger projects, such as the State Route 520 Bridge west approach. Smaller projects awarded in 2015 led to a change in roadway excavation needs that better reflects the expected fluctuations in pricing.

Three of the seven common work activities listed above saw an increase in price in 2015. However, these increases were not enough to offset the decrease in roadway excavation pricing and the other work activities included in the CCI.

Contributors include Dacia Dunbar, Tricia Hasan and Zoe Zadworny

WSDOT's Construction Cost Index weighted by common construction activity

Hot mix asphalt prices, which account for 48.5% of the Construction Cost Index calculation, tend to vary with crude oil prices. Because of the high weighting factor, HMA pricing usually has the most influence on the CCI. However, a small drop in HMA pricing was overshadowed by the 43.6% pricing decrease in roadway excavation, even though roadway excavation is weighted at 10.6% of the CCI. This change in influential construction activities stems from drastic increases in 2014 due to the needs of several large-scale projects. See [Gray Notebook 56, p. 29](#) for more information.

60

FHWA Disadvantaged Business Enterprise Semi-Annual Report

Notable results

- *In federal fiscal year 2015, WSDOT exceeded the overall DBE goal of 11.6% in awards and commitments and ongoing payments*
- *WSDOT implemented a new tool for small businesses, allowing them to monitor payments in real-time*

Strong progress on WSDOT's DBE goals

WSDOT exceeded two of three Disadvantaged Business Enterprise performance goals during federal fiscal year 2015. The overall goal for each measure is 11.6%. Across the agency, 11.7% of work on WSDOT projects is committed to DBE firms. Utilization of completed contracts came in at 6.2%. Analysis determined that participation in the SR 104 Hood Canal Bridge Replacement Project, begun many years before WSDOT's increased efforts to utilize DBE firms, is the primary factor in the lower utilization for completed contracts. Payments on ongoing contracts, a newly-developed FHWA reporting requirement, were at 15.5% for FFY2015. Because this is new, there are no figures for FFY2014.

Agency-wide processes and procedures have been implemented to ensure the established DBE participation goals for current and future projects are in alignment with expectations as established in a conciliation agreement, regulations and internal processes and procedures. See [Gray Notebook 57, p. 29](#) for information on how this work supports the agency's strategic plan.

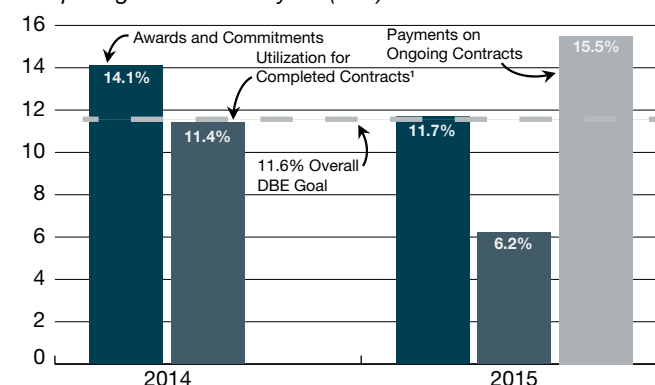
Federal funding and DBE participation are linked

WSDOT received \$423 million in federal funding during FFY2015, a 40% decrease from FFY2014. This reduced funding meant fewer dollars available for DBE participation. WSDOT awarded \$49.7 million to DBEs through 466 contracts and subcontracts in FFY2015, compared to \$99.6 million and 636 contracts in FFY2014.

WSDOT launching new Disparity Study

WSDOT is negotiating a new contract for a DBE Program Disparity Study, to be completed in 2017. This Disparity Study will determine the availability of minority and women owned firms (DBEs) to participate on WSDOT highway construction and consulting agreements. The study will also evaluate the utilization versus availability of minority

WSDOT FHWA Disadvantaged Business Enterprise program meets goal on most measures in FFY2015 Comparing federal fiscal year (FFY) 2015 to FFY2014



Data source: WSDOT Office of Equal Opportunity.

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

and women owned firms to determine if discrimination exists and to what extent, allowing the agency to implement the program in accordance with federal rules and case law.

The Disparity Study will also evaluate WSDOT's administration of the DBE Program and serve as a tool to assist the agency in refining implementation.

New tool to help small businesses

WSDOT is helping small businesses by developing a new [online payment reporting system](#) to determine when and how much their prime contractors have been paid. This system allows businesses to monitor payments to prime contractors on WSDOT construction projects and know when they should anticipate payment.

Connecting Washington and diversity

WSDOT is working with the Governor's Subcabinet on Business Diversity to increase the effectiveness of the Minority and Women's Business Enterprise Program, which is applicable to the state funded program. WSDOT presented information about our new Small, Minority, Women and Veteran's Business Program at a Connecting Washington Open House in January 2016.

Contributors include Jackie Bayne, Mike North, Olga Peterman, Tricia Hasan and Yvette Wixson

Lean Process Improvements Quarterly Update

60

Notable results

- *WSDOT launched new Lean training on problem solving in 2015, with 82 employees trained as of December 2015*
- *WSDOT and the Department of Licensing decreased time needed to resolve vehicle registration holds by 59 days (33%)*

WSDOT's Lean training expanding with new course

WSDOT continues to train its employees in-house on Lean tools and practices. During the fourth quarter of 2015 (October through December), WSDOT's Lean practitioners provided Intro to Lean training to 888 WSDOT employees. Since WSDOT first launched the Intro to Lean class in January 2015, more than 2,000 employees have received the trainings. WSDOT launched an additional Lean course for employees focused on problem solving. As of December 31, 2015, 82 WSDOT employees have received the problem solving training, which better enables them to evaluate the current state of an issue, conduct a root cause analysis, and test and implement countermeasures.

Although there were no new Lean projects initiated during the fourth quarter of 2015, WSDOT's Lean practitioners continue to facilitate and support agency improvement projects such as those listed on [p. 42](#).

WSDOT, Department of Licensing expedite vehicle registration holds

WSDOT's Toll Division worked with the Washington State Department of Licensing to reduce the time needed to resolve holds placed on vehicle registrations due to unpaid toll bills. In 2015, WSDOT and DOL averaged 118 days to resolve a hold, an improvement of 33% from 177 days between July 2013 and December 2014. The number of holds resolved increased 192% during the same time period, from 720 holds resolved per month to 2,100, while the number of holds placed increased 178%. With Lean process improvements, WSDOT and DOL were able to handle almost three times the number of holds while resolving holds more quickly.

In July 2013, WSDOT and DOL began placing vehicle registration holds on vehicles with unpaid toll bills. WSDOT informs DOL to place a hold on a vehicle's registration tabs if the customer fails to address two or more toll-related



Strategic Plan Goal 4: ORGANIZATIONAL STRENGTH

Strategy 4.1 (Workforce): Implement various strategies that foster a safe, capable, engaged and valued workforce.

WSDOT has set 2016 goals for the total number of Lean process improvement projects, as well as training targets for two of the in-house Lean classes that WSDOT offers. See table below for progress toward these goals.

WSDOT sets 2016 goals for Lean endeavors

Measure	As of Dec 2015	Goal for Nov 2016
Total Lean process improvement projects	70	100
Employees trained through Intro to Lean ¹	2,000	2,600
Employees trained through Problem Solving ¹	82	500

Data source: Lean Process Improvements Office.

Note: 1 In-house courses offered by WSDOT.

civil penalties. Before the Lean project, customers sometimes had to call or visit DOL or WSDOT's *Good To Go!* office multiple times trying to resolve the unpaid toll bills so they could renew their vehicle registration tabs.

WSDOT and DOL streamlined the communication and processing of vehicle registration holds, developing an online form to allow same-day hold clearing and tab renewal, standardizing terminology, processing hold data daily instead of weekly and improving customer service communications with updated websites and easier access to information.

Streamlining the resolution process has resulted in a decrease of 94% in DOL staff hours spent answering tolling-related calls. WSDOT and DOL staff processed and resolved an additional 16,600 holds in 2015 compared to 2014, with resolutions to customers 59 days faster on average. Because of the process changes, more than 1,900 hours of staff time is available to meet customer needs, and fewer customers have to contact DOL to resolve registration holds.

Contributors include Mark Allen, Gail Beaver, Jean Denslow, Anita Gausepohl, Jeff Hall, Rebecca Hixson, Joanna Lowrey, Patricia Michaud, Tracy Paul, Laura Peterson, Anna St. Martin, Alec Williamson, Leon Winger, Terie Wright, Cyndee Baugh (DOL), Mike Martin (DOL), Tricia Hasan and Zoe Zadworny

Lean work emphasizes improved customer service

WSDOT's Lean projects save employees, customers time

October through December 2015; Progress reported on select projects

Project, program	Changes to process	Measuring success	Results
COMPLETE: Improving supply management <i>Eastern Region</i>	<ul style="list-style-type: none"> ■ Determined quantity and type of item to inventory based on customer input and purchasing history ■ Increased inventory of guardrail and fencing items, reducing freight shipping charges ■ Eliminated stocks of non-inventoried supplies, moving to an order-as-needed approach ■ Decentralized ordering responsibilities for office supplies ■ Delivered supplies directly to offices instead of using a centralized location 	<p>In the past 12 months:</p> <ul style="list-style-type: none"> ■ Decreased non-inventoried items in stock by 98%, from 60 items to one ■ Reduced freight charges from an estimated \$10,500 for 156 orders to \$800 for 44 orders while maintaining supply levels ■ Decreased spending on office supplies by 13%, from \$29,500 to approximately \$25,700 ■ Decreased labor hours for managing non-inventoried supplies by 81%, from 3,100 annual labor hours to 600 hours 	<p>WSDOT staff redeployed 2,500 labor hours annually to better manage inventoried items critical for maintenance and operations of the region's transportation system.</p> <p>WSDOT saved \$9,700 in freight charges and \$3,800 in office supplies for the region annually.</p> <p>Guardrail is continuously available to maintenance crews for guardrail repairs, contributing to highway safety.</p>
COMPLETE: Independent Assurance testing compliance <i>Southwest Region</i>	<ul style="list-style-type: none"> ■ Tracked records of tester qualifications, audits and compliance using standardized tracking tool ■ Launched training and education tool to give users standard terminology to set expectations 	<p>In the past six months:</p> <ul style="list-style-type: none"> ■ Qualified materials testers achieved compliance 100% of the time for all materials, up from 79-92% compliance (based on material type) 	<p>WSDOT's Southwest Region is in compliance with the Independent Assurance program mandated by the Federal Highway Administration. Non-compliance puts federal funding at risk for WSDOT projects.</p>
COMPLETE: Vehicle registration holds for unpaid toll bills <i>Toll Division and Department of Licensing</i>	<ul style="list-style-type: none"> ■ Developed online vehicle hold clearance form so WSDOT and DOL can clear a hold more quickly, allowing the customer to renew their vehicle tabs that same day ■ Changed policy to allow DOL staff to provide information on toll balances ■ Implemented daily processing of new vehicle registration holds data instead of weekly ■ Updated WSDOT and DOL websites with additional links providing registration hold information 	<p>In the past 12 months:</p> <ul style="list-style-type: none"> ■ Decreased the amount of time to notify, resolve and release a hold by 59 days (33%), from 177 days to 118 ■ Hold resolutions increased 192% from 720 holds resolved per month to 2,100 while the number of holds placed increased 178% ■ Decreased DOL staff time spent answering tolling-related phone calls by 94%, from 2,090 hours annually to 130 hours annually ■ Decreased number of customer calls to DOL from approximately 140 calls per day to 10 or less 	<p>Customers receive a hold resolution 59 days faster on average.</p> <p>WSDOT and DOL staff resolved approximately 16,600 additional holds annually.</p> <p>DOL re-assigned approximately 1,960 labor hours annually and use them to meet the needs of other customers.</p> <p>Approximately 33,900 fewer customers annually need to contact DOL with toll-related questions.</p>
ONGOING: Aircraft registrations and exemptions <i>Aviation Division</i>	<ul style="list-style-type: none"> ■ Stopped requiring backup documentation for exemption requests regarding non-airworthy aircraft ■ Launched online request form for customers to seek an aircraft registration exemption ■ Routed aircraft registration payments directly to WSDOT's Accounting Division, centralizing processing ■ Trained accounting staff to hold transactions as needed to continue processing other payments 	<p>In the past two months:</p> <ul style="list-style-type: none"> ■ Decreased time spent processing non-airworthy aircraft registration exemptions by 50%, from 90 seconds to 45 seconds for each exemption ■ Decreased time needed per exemption for customer to compile documentation by approximately 98%, from approximately two hours to two minutes 	<p>WSDOT staff re-assigned more than eight labor hours in the first two months of the registration renewal cycle, allowing them to process an additional 517 non-airworthy aircraft exemptions (672 exemptions total for November-December 2015, up from 155 in November-December 2014).</p> <p>By eliminating justification documents for approximately 1,270 non-airworthy aircraft, customers are anticipated to save approximately 2,500 hours during the 2016 exemption renewal year.</p>
ONGOING: Public Disclosure Requests for viaduct change orders <i>Alaskan Way Viaduct Replacement Program</i>	<ul style="list-style-type: none"> ■ Started weekly Public Disclosure Request meetings to identify needed records, using checklists to define scope, roles and due dates ■ Developed standardized instructions for searching records, and clearly defined record storage locations ■ Initiated weekly PDR tracking emails 	<p>In the past six months:</p> <ul style="list-style-type: none"> ■ Decreased the number of days needed to process a PDR by 22%, from 32 days to 25 days ■ Decreased labor hours needed to acquire records for change orders by 81%, from 20 hours to 3.8 hours 	<p>Customers receive the PDR response on average seven days faster.</p> <p>WSDOT staff redeployed 550 labor hours in six months to other program management tasks.</p>

Data sources: WSDOT Alaskan Way Viaduct Replacement Program, Aviation and Toll divisions, Southwest and Eastern regions, Washington State Department of Licensing and WSDOT Lean Process Improvement Office.

Capital Project Delivery Programs Quarterly Update

60

Notable results

- *WSDOT has completed 371 of 421 Nickel and TPA projects to date, with 87% on time and 91% on budget*
- *The number of projects on WSDOT's Watch List held steady at seven as 10 were added and 10 were removed during the quarter*

WSDOT completes two Nickel and TPA projects

WSDOT completed one Nickel/Transportation Partnership Account project and one TPA project during the second quarter of the 2015-2017 biennium (October through December 2015). Two other TPA projects, which were completed in September 2015 but were not entered as complete into WSDOT's project tracking system last quarter, have been added to the operationally complete list this quarter.

WSDOT has completed 371 of 421 Nickel and TPA projects since July 2003, with 87% on time and 91% on budget. The cost at completion for the 371 projects is \$6.46 billion, 1.9% less than the baseline cost of \$6.58 billion. WSDOT currently has 14 projects underway; see [p. 50](#) for details.

Nickel, TPA funding falling short of original 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 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.

WSDOT completes 371 Nickel and TPA projects July 2003 through December 2015; Dollars in millions

Project status	Number of projects	Baseline cost at completion
Projects completed in earlier biennia that are <i>not</i> included in the current transportation budget	171	\$1,477.2
Projects completed that are included in the current transportation budget	200	\$5,107.0
Completed projects subtotal:	371	\$6,584.1
Projects included in the current transportation budget that are not yet complete	50	\$9,633.7
Total:	421	\$16,217.8

Data source: WSDOT Capital Program Development and Management.
Note: Numbers have been rounded.

— Goal for Nickel and TPA is 90% —

371 of 421 projects complete **87%** on time **91%** on budget

Data source: WSDOT Capital Program Development and Management.

Notes: 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.

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 short of the original March 2003 projections by 10.2%. Four Nickel projects have been deferred indefinitely while other projects have continued past the original 10-year period.

Fuel tax funding from the 2005 TPA package is also coming up short of 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 \$1 billion less (19.2%) than the original 2005 projection. This revenue shortfall has caused nine TPA projects to be deferred indefinitely. 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, Claudia Lindahl, Theresa Scott, Dean Walker, Aaron Ward, Joe Irwin and Zoe Zadworny



Strategic Plan Goal 1: STRATEGIC INVESTMENTS

Strategy 1.5 (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 371 projects completed to date, 87% have been on time and 91% have been on budget.

Number of uncompleted Nickel, TPA projects down to 50

Highway construction performance summary shows about \$9.6 billion in projects remain to be completed

Current Legislative Evaluation and Accountability Program as of December 31, 2015; Dollars in millions

Combined Nickel and TPA programs	Number of projects	Value of program
Subtotal of completed projects	371	\$6,584.1
Projects completed in earlier biennia that are not included in the current transportation budget	171	\$1,477.2
Projects completed that are included in the current transportation budget	200	\$5,107.0
Projects included in the current transportation budget but not yet complete	50	\$9,633.7
Total number of projects² in improvement and preservation budget	421	\$16,217.8

Schedule and budget summary Nickel & TPA combined: Results of completed projects in the current Legislative Transportation Budget and prior budgets.

	Completed in 2015-2017 biennium budget	Total in current legislative budget	Cumulative program
Number of projects completed	3	200	371
Percent completed early or on time	100%	87%	87%
Percent completed under or on budget	100%	92%	91%
Baseline cost at completion	\$417.2	\$5,107.0	\$6,584.1
Current cost at completion	\$412.1	\$4,994.4	\$6,460.9
Percent of total program over or under budget	1.2% under	2.2% under	1.9% under

Advertisement record: Results of projects entering into the construction phase or under construction, detailed on [p. 50](#).

	Combined Nickel & TPA
Total current number of projects in construction phase as of December 31, 2015	14
Percent advertised early or on time	86%
Total number of projects advertised for construction in the 2015-2017 biennium to date (July 1, 2015 through June 30, 2017)	1
Percent advertised early or on time	100%

Projects to be advertised: Results of projects now being advertised for construction or planned to be advertised, detailed below.

	Combined Nickel & TPA
Total projects being advertised for construction bids (January 1 through June 30, 2016)	1
Percent on target for advertisement on schedule or early	0%

Budget status for the 2015-2017 biennium:

	WSDOT biennial budget
Budget amount for 2015-2017 biennium	\$1,836.1
Actual expenditures in 2015-2017 biennium to date (July 1, 2015 through December 31, 2015)	\$365.0
Total 2003 Transportation Funding Package (Nickel) expenditures	\$8.6
Total 2005 Transportation Partnership Account expenditures	\$266.6
Total Pre-existing Funds expenditures ³	\$89.8

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers have been rounded. 1 Cumulative projects completed from July 1, 2003 to December 31, 2015. 2 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. 3 For full details of the Pre-existing Funds program, see [pp. 54-55](#).

WSDOT preparing to advertise one new Transportation Partnership Account project

January through June 2016; Dollars in millions

Project description	Fund type	Original planned ad date	Current planned ad date	On schedule	Baseline estimated cost	Current estimated cost at completion
SR 16/Anderson Creek Tributary to Sinclair Inlet — Fish Barriers	TPA	12/14/2015	2/22/2016		\$7.1	\$9.5

Data source: WSDOT Capital Program Development and Management.

No additional Nickel,TPA rail or ferry projects complete

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

multimodal accounts. The multimodal account 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 19 rail construction projects since 2003

Current Legislative Evaluation and Accountability Program as of December 31, 2015; Dollars in millions

	2003 Nickel Package	2005 TPA Package	Combined Nickel & TPA
Schedule, scope, and budget summary: Completed LEAP projects			
Cumulative to date (July 1, 2003 through December 31, 2015)	12	7	19
Percent completed early or on time ¹	100%	100%	100%
Percent completed within scope ¹	100%	100%	100%
Percent completed under or on budget ¹	100%	100%	100%
Baseline cost at completion	\$72.6	\$41.0	\$103.3
Current cost at completion	\$72.6	\$41.0	\$103.3
Percent of total program on or under budget ¹	100%	100%	100%
Advertisement record: LEAP projects under construction or entering construction phase			
Cumulative to date (July 1, 2003 through December 31, 2015)	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 22 ferries construction projects since 2003

Current Legislative Evaluation and Accountability Program as of December 31, 2015; Dollars in millions

	2003 Nickel Package	2005 TPA Package	Combined Nickel & TPA
Schedule, scope, and budget summary: Completed LEAP projects ¹			
Cumulative to date (July 1, 2003 through December 31, 2015)	12	10	22
Percent completed early or on time ²	100%	100%	100%
Percent completed within scope ²	100%	100%	100%
Percent completed under or on budget ²	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 ²	100%	100%	100%
Advertisement record: LEAP projects under construction or entering construction phase			
Cumulative to date (July 1, 2003 through December 31, 2015)	1	0	1
Percent advertised early or on time ²	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 adds four Nickel, TPA projects to completed list

WSDOT completed one Nickel/Transportation Partnership Account project (consisting of five subprojects) and one TPA project in the second quarter of the 2015-2017 biennium (October through December 2015). Two other TPA projects, completed in September 2015, were not entered as complete in the project tracking system and did not get reported earlier. These projects have been added to the operationally complete list this quarter.

I-405/Kirkland Vicinity Stage 2 — Widening (Nickel/TPA) King County

This Nickel/TPA project, consisting of five subprojects, constructed additional lanes, replaced on- and off-ramps, and added Express Toll Lanes on Interstate 405 near Kirkland.

Project benefits: Widening and other highway improvements help reduce congestion and enhance mobility on I-405 segments in the Kirkland vicinity.

Budget performance: The project was completed for \$382.7 million, \$100,000 more than the last legislatively approved budget and \$39.2 million less than the original 2009 budget of \$421.9 million.

Schedule performance: All subprojects were completed by October 2015. See section on highlights and challenges for information on select subproject timelines.

Highlights/challenges: Of the five subprojects, three widened segments along I-405, one project was deferred and will replace a bridge near Northeast 132nd Street and one converted the HOV lane from Northeast 6th Street to I-5 with Express Toll Lanes. Select subproject highlights include:

Northeast 6th Street to I-5 — Express Toll Lanes: Costs increased due to the need for median barrier reconstruction, a short construction work window and a higher than expected awarded bid.

SR 520 to SR 522 — Widening Stage 2: High construction bid prices, the need for trenches along the highway to manage water runoff and inflation contributed to increasing costs. The construction phase of the project was delayed by two years to balance TPA cash flow for the statewide highway construction program.

Northeast 124th Street to SR 522 — Northbound Widening: Additional drainage structures, pedestrian improvements and other design refinements impacted

Measuring operationally complete projects

Delivery performance of completed projects is measured against the last legislatively approved schedules and budgets in accordance with criteria established by the Legislature. For this quarter, it is the 2015 transportation budget. In addition to the projects' last approved budgets and schedules, original legislative budgets and schedules are included to show changes that may have occurred during design and construction phases.

Projects are "on time" if they are 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.

Nickel and TPA budgets and schedules reset whenever changes are made in the last approved legislative budget. For information on previously completed Nickel and TPA projects, visit <http://www.wsdot.wa.gov/projects/completed>.

projects costs. The project was awarded for 37.8% less than the original engineer's estimate.

Northeast 132nd Street — Bridge Replacement: The project was advanced eight years to coincide with other widening work in the area. However, the project was never fully funded and no work was completed. The bridge replacement has since been funded under the Connecting Washington transportation revenue package, decreasing the overall cost of the I-405/Kirkland Vicinity Stage 2 — Widening project by \$48.5 million.

Northeast 195th Street to SR 527 — Northbound Widening: The project was completed on time in June 2010. Costs increased \$9.3 million due to drainage design refinement, inflation, material costs, and an added noise wall and transit shoulder.

SR 162/Puyallup River Bridge — Replace Bridge (TPA) Pierce County

This TPA project replaced the Puyallup River Bridge in Tacoma.

Project benefits: Replacing the existing structurally deficient bridge (for definition of structurally deficient, see [Gray Notebook 58, p. 16](#)) with a new, wider bridge will ensure this section of the road meets current engineering and safety standards, reducing the potential for collisions.

Budget performance: The project was completed for \$10.6 million, on target with the last legislatively

TPA projects construct wider bridges on SR 6

approved budget and \$4.4 million less than the original 2006 budget of \$15 million.

Schedule performance: The project was completed on time in December 2015, one month later than the last legislatively approved schedule (see definition of “on time” on [p. 46](#)) and more than four years later than the original schedule of June 2011.

Highlights/challenges: The project was delayed to address cultural sensitivities regarding the demolition of the existing historic bridge. The project was further delayed to complete the National Historic Preservation Act compliance process. The project cost was less than anticipated following the decision to keep the existing bridge, building the replacement alongside.



Construction crews begin building a replacement for the SR 162 Puyallup River Bridge in Tacoma.

SR 6/Rock Creek Bridge — Replace Bridge (TPA) Lewis County

Two TPA projects replaced the SR 6 Rock Creek bridges near Pe Ell with two new, wider structures. Each project addressed a different bridge, with one project for the east bridge and one for the west bridge.

Project benefits: The bridges were beyond their service life and too narrow to accommodate the types and volume

of vehicles that cross it. Replacing the existing bridges ensures that this section of SR 6 meets current standards, helping the bridges better withstand earthquakes and flooding while allowing traffic to flow more smoothly.

Budget performance (East): The project was completed for \$10.3 million, on target with the last legislatively approved budget and \$4.3 million more than the original 2006 budget of \$6 million.

Schedule performance (East): The project was completed in September 2015, on target with the last legislatively approved schedule and two years later than the original schedule of June 2013.

Budget performance (West): The project was completed for \$7.2 million, \$100,000 more than the last legislatively approved budget and \$1.2 million more than the original 2006 budget of \$6 million.

Schedule performance (West): The project was completed in September 2015, on target with the last legislatively approved schedule and two years later than the original schedule of June 2013.

Highlights/challenges: Both projects were delayed one year to better balance project spending during the 2007-2009 biennial budget development. The discovery of archeological and historic sites, as well as issues with slope stability and stormwater and wetland designs further delayed the projects. The original 2006 estimate was calculated without site-specific information; costs increased due to environmental mitigation work, archaeological salvaging and a temporary stream diversion.

For more information on the Rock Creek bridges project, see [p. 33](#).

Contributors include Mike Ellis, Penny Haeger, Theresa Scott, Dean Walker, Aaron Ward, Joe Irwin and Zoe Zadworny

WSDOT reporting change orders costing \$500,000 or more online

During the quarter ending December 31, 2015, WSDOT approved five change orders of \$500,000 or more. These change orders totaled approximately \$12.3 million with the majority — \$9.5 million — addressing three change orders for the State Route 99 bored tunnel alternative design project, part of the Alaskan Way Viaduct replacement. WSDOT provided compensation for project aspects including different site conditions than anticipated at the tunnel access shaft and labor costs during the time picketers were present.

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>.

Number of projects on WSDOT's Watch List steady

WSDOT added 10 projects to its Watch List and removed 10 this quarter (October through December 2015).

As of December 31, there were seven projects remaining on the Watch List. See table below and on [p. 49](#) for this quarter's Watch List projects.

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

WSDOT's Watch List projects that have been reprioritized, deferred or delayed due to funding constraints are listed separately. This quarter there were no Watch List projects with funding constraint issues. 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 http://www.wsdot.wa.gov/Projects/Reports/ProjectDeliveryReports_Archive.htm.

Future editions of the *Gray Notebook* will also report Watch List issues for projects funded by the Connecting Washington transportation package. For an overview of the 2015 revenue package, see [Gray Notebook 58, p. 9](#).

WSDOT's Watch List projects with schedule or budget concerns

Quarter ending December 31, 2015

Project (County)	Date added	Date removed	Watch List issue
I-5/Koontz Road Overpass – Repair Bridge (Lewis) ¹	Dec-2015	Dec-2015	The bridge was damaged by an oversize load. WSDOT is using emergency procedures to move forward with repairs. The project has been removed from the Watch List.
I-5/South 320th St. to Duwamish River Bridge Southbound – Concrete Pavement Rehabilitation (King) ^{1,2}	Dec-2015	Dec-2015	Project estimate has increased by \$900,000 due to extended project limits and additional concrete panels requiring replacement. The schedule has not been impacted, and the project has been removed from the Watch List.
I-90/Yakima River Bridge East of Cle Elum Eastbound – Deck Rehabilitation (Kittitas) ¹	Dec-2015	Dec-2015	Project cost has increased and the schedule has been delayed due to more extensive bridge deck deterioration than anticipated and the addition of a detour bridge. Advertisement has been delayed one year until winter 2018, and WSDOT plans to combine this project with similar projects along I-90 for construction efficiencies. This project has been removed from the Watch List.
I-90/Yakima River Bridge East of Cle Elum Westbound – Deck Rehabilitation (Kittitas) ^{1,2}	Dec-2015	Dec-2015	Project cost has increased and the schedule has been delayed due to more extensive bridge deck deterioration than anticipated and the addition of a detour bridge. Advertisement has been delayed two years until winter 2018, and WSDOT plans to combine this project with similar projects along I-90 for construction efficiencies. This project has been removed from the Watch List.
I-90/Yakima River Bridge West of Ellensburg Eastbound – Deck Rehabilitation (Kittitas) ¹	Dec-2015	Dec-2015	Project cost has increased and the schedule has been delayed due to more extensive bridge deck deterioration than anticipated and the addition of a detour bridge. The operationally complete date has been moved from fall 2018 to fall 2020, and the project has been removed from the Watch List.
I-90/Yakima River Bridge West of Ellensburg Westbound – Deck Rehabilitation (Kittitas) ¹	Dec-2015	Dec-2015	Project cost has increased and the schedule has been delayed due to more extensive bridge deck deterioration than anticipated and the addition of a detour bridge. The operationally complete date has been moved from fall 2018 to fall 2020, and the project has been removed from the Watch List.
US 12 Corridor – Emergency Washout Repair (Lewis, Yakima) ¹	Dec-2015	Dec-2015	Severe storms caused washouts and landslides that closed the highway. WSDOT has completed temporary repairs, opening the roadway to alternating single lane traffic. Permanent repairs are scheduled for spring 2016, and the project has been removed from the Watch List.
I-5/Mellen Street to Blakeslee Junction – Add Lanes, Interchange Improvements (Lewis) ¹	Nov-2015		The operationally complete date has been delayed by nine months from December 2015 to September 2016. Paving work on connecting bridges was not completed before the end of the 2015 construction season. Work will restart in summer 2016.
SR 542/Marshall Hill Rd. – Culvert Repair (Whatcom) ¹	Nov-2015	Nov-2015	Severe storms in November 2015 damaged both SR 542 and the culvert beneath it. An emergency contract will reduce the highway to one lane to make repairs, and the project has been removed from the Watch List.

Table continued on [p. 49](#)

Seven projects remain on WSDOT's Watch List

Table continued from [p. 48](#)

Project (County)	Date added	Date removed	Watch List issue
I-5/93rd Avenue Southwest Bridge – Special Repair (Thurston) ¹	Oct-2015	Dec-2015	The bridge was damaged by an oversize load, necessitating structural repair and replacement of bridge elements. Permanent repair work is scheduled for October 2016, and the project has been removed from the Watch List.
I-82/Valley Mall Blvd. to Yakima River Bridge – Paving (Yakima)	Sep-2015	Nov-2015	Pavement conditions show less deterioration than expected. WSDOT approved a one-year delay to the project and construction will begin in 2017. This project has been removed from the Watch List.
SR 410/White River Bridge – Bridge Elements Repair (King, Pierce)	Aug-2015		Permanent work to repair the damaged overhead bridge support structure was delayed by seven months from September 2015 to April 2016. The delay minimizes impacts to the community as the bridge will be closed to traffic during repairs.
SR 92/Pilchuck River – Chronic Environmental Deficiency (Snohomish)	Jun-2015		Project advertisement was delayed to spring 2016 to allow additional time to obtain environmental permits and address right of way issues. The advertisement may be further delayed if there are environmental design changes.
SR 524/Yew Way – Railroad Crossing Improvements (Snohomish)	Jun-2015		Right of way issues have delayed the project schedule. Project advertisement was further delayed from fall 2015 to winter 2016 and remains at risk.
SR 302/North of East Victor Rd. – Culvert Replacement (Mason)	Apr-2015		The schedule has been delayed by one year from 2015 to 2016 to allow WSDOT time to acquire environmental permits and a permanent construction easement, as well as address a redesign.
SR 161/24th St. East to Jovita – Add Lanes (Pierce)	Sep-2014		This project was completed in August 2014 and is facing a potential cost increase pending a claim from the contractor.
SR 99/South King St. Vicinity to Roy St. – Viaduct Replacement (King)	Dec-2013		As of January 2016, the tunnel boring machine's operations have been suspended due to sinkholes in the tunneling vicinity.

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

Notes: 1 Projects have been added to the Watch List during the current quarter. 2 This project was previously removed from the Watch List but has been added again due to emerging issues.



The I-5/Koontz Road overpass was hit by an oversize load in December 2015. WSDOT used emergency procedures to move forward with the repair of two of the four girders that support the bridge.

WSDOT continues work on Nickel and TPA projects

Fourteen WSDOT projects in construction phase as of December 31, 2015

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

Project description Cumulative to date (County)	Fund Type	On-time advertised	Ad date	Contractor	Operationally complete date	Award amount
I-5 Concrete Rehabilitation Program (King) Multiple contractors continue to work on this project.	Nickel	√	Jul-2009	Multiple contractors	May-2023	\$9.8
SR 99/Alaskan Way Viaduct – Replacement (King) 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	Seattle Tunnel Partners	TBD	\$1,089.7
			Oct-2013	Guy F. Atkinson Construction	TBD	\$41.6
This subproject has several contract components; the bored tunnel, north and south access connections and associated work. As of January 2016, tunnel boring machine operations have been suspended until the emergence of sinkholes near the tunnel site can be fully investigated. 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) The US 395/North Spokane Corridor project is ongoing and several phases still require funding.	Nickel/ TPA					
I-5/Mellen Street Interchange to Grand Mound Interchange – Add Lanes (Thurston, Lewis)	TPA					
• I-5/Mellen Street to Blakeslee Junction – Add Lanes, Interchange Improvements	TPA	√	Mar-2012	Cascade Bridge	Sep-2016	\$21.6
The operationally complete date was delayed due to schedule adjustments needed for complex traffic revisions, demolitions, repairs and painting of nearby bridges.						
• I-5/Mellen Street Interchange – Interchange Improvements	TPA	√	Combined with project above for construction efficiencies.			
SR 502/I-5 to Battle Ground – Add Lanes – Stage 2 (Clark)	TPA	√	Jan-2014	Rotschy	Oct-2016	\$27.5
I-90/Concrete Rehabilitation						
• I-90/Oakes Avenue Interchange to Peoh Road Bridge Vicinity Westbound – Replace/Rehabilitate Concrete (Kittitas)	Nickel	√	Mar-2015	Midmountain Contractors	Nov-2016	\$10.6
SR 520/Bridge Replacement and HOV (King)						
• SR 520/I-5 to Medina – Evergreen Point Floating Bridge and Landings	TPA	√	Dec-2010	Kiewit-General, A Joint Venture	Apr-2016	\$586.6
I-205/Mill Plain Interchange to Northeast 18th Street – Build Interchange – Stage 2 (Clark) Advertisement was delayed to address practical design changes to the project.	TPA	Late	Aug-2014	Cascade Bridge	Dec-2016	\$24.3
SR 3/Belfair Area – Widening and Safety Improvements (Mason) Advertisement was delayed due to revised project limits, which affected right of way acquisition.	TPA	Late	Apr-2015	Ceccanti	Nov-2016	\$10.3
SR 167/8th St. East Vicinity to South 277th St. Vicinity – Southbound Managed Lane (King, Pierce)	TPA	√	Aug-2014	Guy F. Atkinson Construction	Jun-2017	\$53.9
SR 167/SR 18 Interchange West-North Ramp North-East Ramp Overcrossing – Seismic Retrofit (Pierce)	TPA	√	Combined with project above for construction efficiencies.			
I-5/Tacoma HOV Improvements (Pierce)	Nickel/ TPA					
• I-5/M Street to Portland Avenue – Add HOV Lanes	Nickel	√	Mar-2014	Mid-Mountain Contractors	Feb-2017	\$1.7
I-90/Snoqualmie Pass East – Hyak to Keechelus Dam – Corridor Improvement (Kittitas)	TPA					
• I-90/Snowshed to Keechelus Dam Phase 1C – Replace Snowshed and Add Lanes	TPA	Late	Apr-2011	Guy F. Atkinson Construction	Oct-2017	\$177.1
Advertisement was delayed to address fire and safety issues with the original snowshed design, resulting in long-term savings.						
SR 532/Pilchuck Creek Tributary – Fish Barrier (Snohomish)	TPA	√	Dec-2015	Faber Construction Corp.	Oct-2016	\$1.9

WSDOT finishes latest TPA projects on time, on budget

Biennial summary: Five 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
Current biennium reporting on capital project delivery							
2015-2017 biennium summary¹ This information is updated quarterly throughout the biennium.	0 Nickel 5 TPA	5 on time 0 late	5 on time 0 late	5	\$417.2	\$412.1	5 on budget 0 over budget
Earlier biennia reporting on capital project delivery							
2013-2015 biennium summary¹ See Gray Notebook 58, p. 55 .	6 Nickel 15 TPA	16 on time 5 late	15 on time 6 late	21	\$555.7	\$514.0	18 on budget 3 over budget
2011-2013 biennium summary See Gray Notebook 50, p. 31 .	5 Nickel 36 ¹ TPA	31 ¹ on time 10 late	32 ¹ on time 9 late	41 ¹	\$1,485.5 ¹	\$1,459.6 ¹	37 ¹ on budget 4 over budget
2009-2011 biennium summary² See Gray Notebook 42, p. 45 .	16 Nickel 74 TPA	73 on time 17 late	80 on time 10 late	90	\$1,641.6	\$1,597.0	85 on budget 5 over budget
2007-2009 biennium summary See Gray Notebook 34, p. 58 .	42 Nickel 69 TPA	91 on time 20 late	96 on time 15 late	111	\$1,685.7	\$1,685.2	102 on budget 9 over budget
2005-2007 biennium summary See Gray Notebook 26, p. 5 .	52 Nickel 24 TPA	71 on time 5 late	68 on time 8 late	76	\$673.9	\$668.8	67 on budget 9 over budget
2003-2005 biennium summary See Gray Notebook 19, p. 5 .	27 Nickel	25 on time 2 late	27 on time 0 late	27	\$124.6	\$124.4	25 on budget 2 over budget

Data source: WSDOT Capital Program Development and Management.

Notes: Dollar amounts are rounded up. 1 The number of projects has been updated since *Gray Notebook 51* to reflect the addition of a completed project that was reported after the biennium. 2 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.

WSDOT completes four Transportation Partnership Account projects

October through December 2015; Dollars in millions

Project description	Fund type	On-time advertised	On-time completed ¹	Baseline estimated cost	Current estimated cost at completion	On budget ¹
I-405/Kirkland Vicinity Stage 2 – Widening	TPA ²	√	√	\$382.6	\$382.7	√
SR 162/Puyallup River Bridge – Replace Bridge	TPA		√	\$15.6	\$10.6	√
July through September 2015; Dollars in millions						
SR 6/Rock Creek Bridge East – Replace Bridge ³	TPA		√	\$10.3	10.3	√
SR 6/Rock Creek Bridge West – Replace Bridge ³	TPA		√	\$7.1	\$7.2	√

Data source: WSDOT Capital Program Development and Management.

Notes: 1 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. Numbers may not match those on [p. 46](#) due to different reporting periods and baselines being used. 2 This project is listed as a Nickel/TPA project on [p. 46](#), but as a TPA only project in the two charts above due to the charts’ formatting. 3 These projects were completed in September 2015 but not entered as complete in the project tracking system and were not reported earlier. They have been added to the operationally complete list this quarter.

WSDOT delivers 114 Nickel highway projects since 2003

The performance summaries below and those on [p. 53](#) provide status reports on WSDOT's delivery of the Nickel and Transportation Partnership Account programs compared to the original legislative funding packages presented in the 2003 and 2005 Legislative Evaluation and Accountability Program lists.

The Legislature has approved changes to these funding packages and assigned funds to different projects since these two funding packages were created. As a result, the data listed below and on the next page show the original LEAP, which differs from the current legislative budgets on [pp. 44-45](#).

The 2003 and 2005 tables feature budget items including pre-construction and environmental studies that were in the original funding packages. The original LEAP tables do not include projects that cities, counties and tribes collaborate on with WSDOT to complete.

These tables show the total number of projects and the percentage of projects that are complete, underway, scheduled to start or affected by a legislatively approved change of project scope. They also give budget updates showing original planned budgets and the current planned or actual expenditure, breaking out programs by category: highways, ferries and rail.

WSDOT project delivery and budget update: Original 2003 Nickel Transportation Funding Package As of December 31, 2015; Dollars in millions

Project delivery update	Total program		Highways		Ferries		Rail	
	Number of projects	Percent of total	Number of projects	Percent of program	Number of projects	Percent of program	Number of projects	Percent of program
Project number and phase	156		127		5		24	
Completed projects	130	83%	114	90%	2	40%	14	58%
Total projects underway	13	8%	10	8%	2	40%	1	4%
<i>In pre-construction phase</i>	4		3		1		0	
<i>In construction phase</i>	9		7		1		1	
Projects starting in the future	1	1%	0	0%	0	0%	1	4%
Projects deferred or deleted from program	12	8%	3	2%	1	20%	8	33%
<i>Number of legislatively-approved scope changes</i>	20		18		0		2	
<i>Pre-construction starts within six months</i>	0		0		0		0	
<i>Construction starts within six months</i>	0		0		0		0	

Data source: WSDOT Capital Program Development and Management.

Notes: Totals do not include projects that cities, counties and tribes collaborate on with WSDOT to complete. Percents may not add to 100 due to rounding.

Project budget update	Total program		Highways		Ferries		Rail	
	Budget	Percent of total	Budget	Percent of program	Budget	Percent of program	Budget	Percent of program
Total original legislative planned budget	\$3,887.5		\$3,380.1		\$297.9		\$209.5	
Original plan, 2003 through 2013-2015 biennium	\$3,887.5	100%	\$3,380.1	100%	\$297.9	100%	\$209.5	100%
Actual expenditures, 2003 through 2013-2015 biennium	\$4,093.7	105%	\$3,537.7	105%	\$423.2	142% ¹	\$132.8	63%
Original plan through 2015-2017 biennium	\$3,887.5	100%	\$3,380.1	100%	\$297.9	100%	\$209.5	100%
Current plan through 2015-2017 biennium	\$4,320.1	111% ¹	\$3,682.6	109% ¹	\$504.7	169% ¹	\$132.8	63%
Actual expenditures, 2003 through December 31, 2015	\$4,136.8	106% ¹	\$3,546.4	105% ¹	\$457.4	154% ¹	\$133.1	64%

Data source: WSDOT Capital Program Development and Management.

Notes: Expenditures are Nickel funds only. Totals do not include projects that cities, counties and tribes collaborate on with WSDOT to complete. ¹ The Legislature added funds for construction of a second 144-vehicle ferry for WSDOT Ferries and for highway construction during the first quarter (July through September) of the 2013-2015 biennium. These funds put Ferries above its original funding level and will result in continued over-performance by this program.

WSDOT completes 190 TPA highway projects since 2005

WSDOT project delivery and budget update: Original 2005 Transportation Partnership Account

As of December 31, 2015; Dollars in millions

Project delivery update	Total program		Highways		Ferries		Rail	
	Number of projects	Percent of total	Number of projects	Percent of program	Number of projects	Percent of program	Number of projects	Percent of program
Project number and phase	248		229		4		15	
Completed projects	199	80%	190	83%	1	25%	8	53%
Total projects underway	29	12%	26	11%	0		3	20%
<i>In pre-construction phase</i>	9		8		0		1	
<i>In construction phase</i>	20		18		0		2	
Projects starting in the future	6	2%	2	1%	1	25%	3	20%
Projects deferred or deleted from program	15	6%	12	5%	2	50%	1	7%
<i>Number of legislatively-approved scope changes</i>	23		23		0		0	
<i>Pre-construction starts within six months</i>	1		1		0		0	
<i>Construction starts within six months</i>	0		0		0		0	

Data source: WSDOT Capital Program Development and Management.

Notes: Totals do not include projects that cities, counties and tribes collaborate on with WSDOT to complete. Percents may not add to 100 due to rounding. Since the Transportation Partnership Account program was passed in 2005, the Legislature has approved changes to WSDOT Ferries' construction program so that the current budget does not match the original budget. Among the changes, TPA funding was provided for three 64-car ferries. For definitions about terminology used in Original LEAP, see [Gray Notebook 53, p. 40](#).

Project budget update	Total program		Highways		Ferries		Rail	
	Budget	Percent of total	Budget	Percent of program	Budget	Percent of program	Budget	Percent of program
Total original legislative planned budget	\$6,982.1		\$6,678.5		\$185.4		\$118.3	
Original plan, 2005 through 2013-2015 biennium	\$6,472.5	93%	\$6,218.0	93%	\$136.3	74%	\$118.3	100%
Actual expenditures, 2005 through 2013-2015 biennium	\$4,627.1	66%	\$4,476.3	67%	\$77.1	42%	\$73.7	62%
Original plan through 2015-2017 biennium	\$6,472.5	93%	\$6,218.0	93%	\$136.3	74%	\$118.3	100%
Current plan through 2015-2017 biennium	\$5,716.9	82%	\$5,563.7	83%	\$77.1	42%	\$76.2	64%
Actual expenditures, 2005 through December 31, 2015	\$4,895.6	70%	\$4,743.0	71%	\$77.1	42%	\$75.6	64%

Data source: WSDOT Capital Program Development and Management.

Notes: Expenditures are TPA funds only. Totals do not include projects that cities, counties and tribes collaborate on with WSDOT to complete.

WSDOT advertises 26 Pre-existing Funds projects

WSDOT advertised 26 of 35 Pre-existing Funds projects in the second quarter (October through December 2015) of the 2015-2017 biennium.

Of the 26 advertised projects, seven were advanced from future quarters, nine were on time, seven were late and three (like the SR 542/Marshall Hill Road — Culvert Repair project) were due to unexpected, emergent events. Seven were delayed to a future quarter within the biennium and two were deferred to a future biennium. See below and [p. 55](#) for this quarter's PEF advertisements, and [Gray Notebook 51, p. 38](#) for full definitions of PEF terms.

WSDOT's current cost to complete the 57 PEF projects actually advertised through the second quarter of the 2015-2017 biennium is \$114.7 million, about \$9.1 million (8.6%) more than the original value of \$105.6 million.

WSDOT completes 49% of Pre-existing Funds project advertisements on time for biennium 2015-2017 biennium (July 2015 through June 2017)

Project status	Quarter ¹	Cumulative ²
Projects advanced ³	7	16
Projects advertised on time	9	29
Emergent projects advertised	3	5
Late projects advertised	7	7
Total projects advertised	26	57
Projects advertised early ⁴	0	1
Projects delayed within the biennium	7	15
Projects deferred out of the biennium	2	2
Projects deleted	0	0

Data source: WSDOT Capital Program Development and Management.

Notes: 1 Quarter refers to October through December 2015.

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 number of planned advertisements for this biennium has increased from 389 to 469 to reflect updated delivery assumptions and the passage of the Connecting Washington revenue package.

The current estimated cost to complete the 469 advertisements planned for the 2015-2017 biennium is \$824.3 million, about \$30.8 million (3.6%) less than the original value of \$855.1 million for these projects. The majority of this reduction is due to two projects being taken out of the PEF program during the first quarter of the biennium and receiving funds through the Nickel transportation funding package.

Cost to complete WSDOT's project advertisements indicates expenses lower than engineer's estimates

2015-2017 biennium (July 2015 through June 2017); Quarter ending December 31, 2015; Dollars in millions

	Number of projects	Original value	Current cost to complete
Total PEF advertisements planned 2015-2017 biennium	469	\$855.1	\$824.3
Planned advertisements through December 31, 2015	42	\$106.8	\$108.1
Actual advertisements through December 31, 2015	57	\$105.6	\$114.7

Data source: WSDOT Capital Program Development and Management.

Improvement and preservation cash flows less than projections

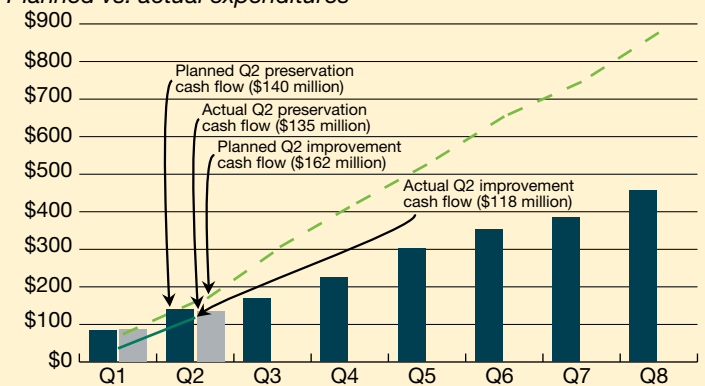
Cumulatively, WSDOT planned to have \$162 million in improvement program cash flow during the second quarter of the 2015-2017 biennium, but had \$118 million instead (approximately 27% less). The improvement program funds projects that optimize highway capacity, enhance safety and reduce the environmental impact of construction projects.

Cumulatively, WSDOT planned to have \$140 million in the preservation program cash flow during the second quarter of the 2015-2017 biennium, but had \$135 million (approximately 4% less). The preservation program includes pavement, bridges and other projects that maintain the structural integrity of the existing highway system.

Contributors include Dean Walker and Joe Irwin

Cumulative Pre-existing Funds preservation and improvement cash flows lower than planned levels

2015-2017 biennium; Quarter ending December 31, 2015; Planned vs. actual expenditures



Data source: WSDOT Capital Program Development and Management.

Note: Q2 refers to the second quarter (October through December 2015) of the 2015-2017 biennium (July 2015 through June 2017).

WSDOT advertises 26 Pre-existing Funds projects, *continued*

Nine Pre-existing Funds projects advertised on time during quarter

October through December 2015

Advanced (7)

US 101/Astoria-Megler Bridge Main Span – Substructure Painter

SR 17/Lind Coulee Bridge – Drainage Modifications

I-5/Southbound Nulle Rd. to Iowa St. Vicinity – Paving

I-5/Northbound Nooksack River to Blaine – Paving

I-5/Northbound Nulle Rd. to Samish Highway Vicinity – Paving

SR 167/Southbound 84th Ave. South to I-405 – Paving

Northwest Region Curve Warning Signs (2015-2017)

On Time (9)

I-90/Front Street Bridge 90/66S – Girder Replacement

I-5 Northbound/Portage Creek Bridge Vicinity to Stillaguamish River Vicinity – ADA Compliance

I-5/Southbound South 320th St. to Duwamish River Bridge – Concrete Pavement Rehabilitation

I-90/Stampede Pass Interchange – Bridge Repair

I-90/SR 202 Interchange to South Fork Snoqualmie River – Paving

SR 283/Adams Rd. – Intersection Improvements

I-5/Northbound SR 531 Vicinity to Portage Creek Bridge Vicinity – Paving

Olympic Region – Regionwide Curve Warning Signing – Chevron Alignment 2

I-5/North Portage Creek Bridge Vicinity to Stillaguamish River Vicinity – Paving

Emergent (3)

SR 14/Vicinity of Tunnel No. 3 – Rock Scaling

SR 542/Marshall Hill Road – Culvert Repair

US 97/Maryhill Climbing Lane – Rock Scaling

Late (7)

SR 20/Race Road to Jacobs Road – Safety Improvements (Phase 1)

SR 397/0.2 Miles South of East A St. – Railroad Crossing Improvements

Northwest Region Preservation Signing (15-17)

SR 305/ Suquamish Way Intersection Improvements

SR 9/Van Zandt – Railroad Crossing Improvements

US 97/Old Highway 10 – Railroad Crossing Improvements

SR 548/Unnamed Creek to Drayton Harbor SR 17/Lind Coulee Bridge – Drainage Modifications

Delayed (7)

US 12/Palisades Viewpoint to Gulch Bridge – Emergency Washout Repair
Combined with another project for efficiencies.

SR 507/Lacamas Creek Tributary to Muck Creek – Fish Barrier Removal
Delayed to ensure environmental permit approval.

I-90/Westbound Mercer Slough to West Lake Sammamish Parkway – Paving
Combined with another project for efficiencies.

SR 124/Monument Dr./Railroad Crossing – Construct Bridge
Delayed for right of way acquisitions and a cost-sharing agreement with the railroad.

SR 112/Jansen Creek – Remove Fish Barrier
Delayed to allow additional time for design scheduling.

US 12/Rimrock Tunnel Vicinity to Wildcat Creek Vicinity – Emergency Repairs
Combined with another project for efficiencies.

US 12/0.9 Miles East of Clear Creek Falls – Emergency Washout Repair
Combined with another project for efficiencies.

Deferred (2)

I-5/Gee Creek Northbound Safety Rest Area – RV Dump Station Rehabilitation
Deferred to allow funding for higher priority projects.

I-5/Gee Creek Southbound Safety Rest Area – RV Dump Station Rehabilitation
Deferred to allow funding for higher priority projects.

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 <http://bit.ly/GNBsubjectindex>. *Gray Notebook* editions are available at <http://bit.ly/GNBarchives>, and WSDOT's transportation acronym guide can be viewed at <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* 60. October through December 2015 is the fourth quarter of the calendar year (Q4 2015); the second quarter of the state's fiscal year (Q2 FY2016); and the first quarter of the federal fiscal year (Q1 FFY2016). It is also the second 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 57			GNB 58			GNB 59			GNB 60		
Q1 2015			Q2 2015			Q3 2015			Q4 2015		
Q3 FY2015			Q4 FY2015			Q1 FY2016			Q2 FY2016		
Q2 FFY2015			Q3 FFY2015			Q4 FFY2015			Q1 FFY2016		

2015-2017 biennial quarters

Period	Quarter	Period	Quarter
Jul – Sep 2015	Q1	Jul – Sep 2016	Q5
Oct – Dec 2015	Q2	Oct – Dec 2016	Q6
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.

Americans with Disabilities Act information for the public

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