

GNB

GRAY NOTEBOOK



Washington State
Department of Transportation

Quarterly performance analysis of WSDOT's
multimodal systems and programs

Roger Millar, Secretary of Transportation, PE, AICP

Edition 66 ■ June 2017

MAKING CONNECTIONS

A LOOK AT WSDOT'S BRIDGES

**Safety on
state highways**

Traffic fatalities
decrease

p. 11

Fish friendly

WSDOT's efforts to
improve fish passage
see success

p. 34

Import-Export

How WSDOT's freight
systems move goods in
the state

p. 39

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PERFORMANCE HIGHLIGHTS reported for the quarter ending June 30, 2017

537

highway **fatalities** occurred in Washington in 2016, showing a 2.5% decrease from the 551 fatalities in 2015

34
PERCENT

increase in **commercial truck traffic in Tacoma** from 2015 to 2016

Construction projects completed with **Nickel or Transportation Partnership Account** funds

377

91.8% OF WSDOT BRIDGES BY DECK AREA



were in **FAIR or BETTER** condition as of June 2017

5,860 HOURS

of WSDOT staff time saved by **general permitting** processes in 2016

15
new

LEAN improvement projects launched by WSDOT during the first half of 2017

\$23.8
MILLION

in economic benefit provided by WSDOT's **Incident Response** teams clearing 16,029 incidents during the quarter

WSDOT CORRECTED 20 FISH PASSAGE BARRIERS
IN 2016, IMPROVING ACCESS TO **92 MILES**
OF UPSTREAM HABITAT



66 RESULTS WSDOT & AGENCY EMPHASIS AREAS

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



Workforce Development

Addressing recruitment and retention issues, employee training and development, and succession planning for WSDOT's future



Inclusion

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



Practical Solutions

Improving the performance of the multimodal transportation system at the least cost; funding for future preservation and emergent needs makes this another critical focus area

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

Implementation plans define the actions and deliverables needed to achieve WSDOT's goals from 2014 through 2017. Results WSDOT is based on six goals: Strategic Investments, Modal Integration, Environmental Stewardship, Organizational Strength, Community Engagement, and Smart Technology.

Articles in this issue, indicated by a box with a goal logo, show how these goals are being realized.

Results WSDOT sets agency direction 2014 through 2017 Strategic Plan

Including recent Gray Notebook articles linked to goals and Agency Emphasis Areas (AEA)



Goal 1: STRATEGIC INVESTMENTS

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

- Aviation: GNB 63, [pp. 16-19](#)
- Bridges: GNB 66, [pp. 17-27](#)
- Capital facilities: GNB 63, [pp. 13-15](#)
- Ferries preservation: GNB 62, [pp. 23-28](#)
- Highway maintenance: GNB 64, [pp. 21-22](#) (AEA^{1,2})
- Multimodal assets: GNB 65, [pp. 7-8](#)
- Pavement conditions: GNB 64, [pp. 13-20](#) (AEA²)



Goal 2: MODAL INTEGRATION

Optimize existing system capacity through better interconnectivity of all transportation modes

- Ferries: GNB 66, [pp. 30-31](#)
- Freight: GNB 66, [pp. 39-42](#)
- Highway system safety: GNB 66, [pp. 11-16](#)
- Pedestrian and bicyclist safety: GNB 65, [pp. 12-15](#) (AEA^{2,3})
- Public transit: GNB 63, [pp. 11-12](#)
- Rail: Amtrak Cascades: GNB 66, [pp. 32-33](#)
- Trip reduction: GNB 60, [pp. 22-24](#)



Goal 3: ENVIRONMENTAL STEWARDSHIP

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

- Air quality: GNB 61, [pp. 22-23](#)
- Environmental compliance: GNB 64, [pp. 30-31](#)
- Fish passage barriers: GNB 66, [pp. 34-36](#)
- General permitting: GNB 66, [pp. 37-38](#)
- Water quality: GNB 63, [pp. 28-30](#)
- Wetlands protection: GNB 65, [pp. 25-27](#)



Goal 4: ORGANIZATIONAL STRENGTH

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

- Lean: GNB 66, [pp. 48-49](#) (AEA¹)
- Inclusion: GNB 66, [pp. 43-47](#) (AEA¹)
- Workforce development: GNB 65, [pp. 31-32](#) (AEA^{1,3})



Goal 5: COMMUNITY ENGAGEMENT

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

- Disadvantaged Business Enterprise: GNB 64, [pp. 38-39](#) (AEA³)
- Inclusion: GNB 66, [pp. 43-47](#) (AEA¹)
- Incident Response: GNB 66, [pp. 28-29](#) (AEA²)



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 65, [p. 29](#)
- Tolling: GNB 64, [pp. 35-37](#)
- Travel information: GNB 65, [p. 18](#) (AEA³)

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

Notes: 1 = Workforce Development. 2 = Practical Solutions. 3 = Inclusion. For more information on Results WSDOT, go to bit.ly/ResultsWSDOTStrategicPlan.

66 RESULTS WASHINGTON

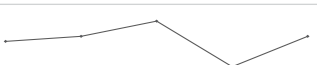
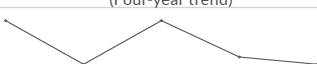
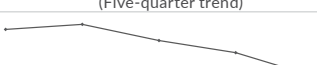
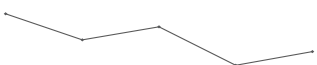
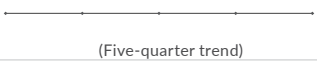
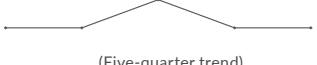
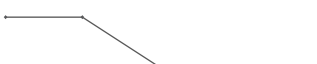
Results Washington, the state's performance management system, outlines Gov. Jay Inslee's priorities. This strategic framework sets the state's vision and mission, as well as the foundational expectation that state agencies will achieve goals collaboratively. Results Washington has five goals: World 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 ¹	Previous period	Current period	On target ²	Current trend	Desired trend
Annual Measure for which WSDOT is the lead agency					
Goal 2: Prosperous Economy					
Maintain the percent of Washington infrastructure assets in satisfactory condition at 2013 baseline levels through 2020 (2013 & 2014)	86% ³	85%	No	↓	↑
Control the percent of National Highway System bridges, state and locally owned, in poor condition from increasing over 10% by 2020 (FY2016 & FY2017)	9.3%	8.6%	Yes	↓	↓
Control the percent of National Highway System pavement, state and locally owned, in poor condition from increasing over 10% by 2020 (2014 & 2015)	6%	7%	Yes	↑	↓
Control the percent of ferry terminal systems that are past due for replacement from increasing over 6% by 2020 (FY2015 & FY2016)	3.7%	5.4%	Yes	↑	↓
Control the percent of ferry vessel systems that are past due for replacement from increasing over 10% by 2020 (FY2015 & FY2016)	8.3%	10.9%	No	↑	↓
Maintain percentage of transit fleet that exceeds the Federal Transit Administration's minimum useful life at 25% or below through 2020 (2014 & 2015)	37.3% ⁴	34.6% ⁴	No	↓	↓
Increase the percentage of Washingtonians using alternative transportation commute methods to 29% by 2020 (2014 & 2015)	27.6%	27.6%	No	↔	↑
Ensure travel and freight reliability on strategic corridors does not deteriorate more than 5% through 2020 ⁵ (2014 & 2015)	6.0% ⁶	5.0%	Yes	↓	↓
Operate strategic corridors at 90% efficiency or higher through 2020 (2014 & 2015)	94.6%	93.4%	Yes	↓	↑
Reduce the number of pedestrian and bicyclist fatalities on public roadways from 84 in 2012 to zero in 2030 (2015 & 2016)	100	106	No	↑	↓
Annual measures for which WSDOT is not the lead agency, but has an interest include:					
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% (FY2016)	Minority-owned: 1.65% Women-owned: 1.23% Veteran-owned: 0.26%		No	N/A	↑
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	40.4	Yes	↓	↓
Reduce the average emissions of greenhouse gases for each vehicle mile traveled in Washington by 25% from 1.15 pounds in 2010 to 0.85 pounds by 2020 (2012 & 2013)	1.11	1.11	No	↔	↓
Increase the average miles traveled per gallon of fuel for Washington's overall passenger and light duty truck fleet (private and public) from 19.2 mpg in 2010 to 23 mpg in 2020 (2014 & 2015)	20.6	21.0	No	↑	↑
Increase the number of plug-in electric vehicles registered in Washington from approximately 8,000 in 2013 to 50,000 by 2020 (2015 & 2016)	16,529	17,941	No	↑	↑
Increase miles of stream habitat opened from 55 miles per year in 2017 to 80 by 2020 ^{6,7} (2017)	N/A	55 ⁶	No	N/A	↑
Increase number of fish passage barriers corrected per year from 60 in 2017 to 90 by 2020 ^{6,7} (2017)	N/A	60 ⁶	No	N/A	↑
Goal 4: Healthy and Safe Communities					
Decrease number of traffic-related fatalities on all roads from 454 in 2011 to zero in 2030 (2015 & 2016)	551	537	No	↓	↓

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

Notes: **1** In addition to the measures listed in the table, WSDOT contributes performance information that is combined and reported with data from all state agencies in Goal 5: Efficient, Effective and Accountable Government. **2** A measure is "on target" if it is currently meeting its goal or if it is on a path to meet its goal by the target date. Some measures may be trending in the desired direction but not on target. **3** Data has been corrected from previous Gray Notebook editions. **4** Values differ from previous editions. To better align with the Federal Transit Administration, WSDOT has updated its method for calculating useful life; it is now based on age or mileage instead of just age. **5** This measure is the percentage difference between the value of the reliability index in one period and the average of the value of the reliability index in the three preceding periods. **6** Measure has been updated since GNB 65. **7** Includes work completed by multiple state agencies.

66 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 2015 & 2016)	0.92	0.88	<1.00 ¹	✓		↓
Rate of recordable incidents for every 100 full-time WSDOT workers (Annual measure: calendar years 2015 & 2016)	4.3	4.6	<5.0	✓		↓
Preservation						
Percentage of state highway pavement in fair or better condition by vehicle miles traveled (Annual measure: calendar years 2014 & 2015)	93.3%	93.0%	≥ 90%	✓		↑
Percentage of state bridges in fair or better condition by bridge deck area (Annual measure: fiscal years 2016 & 2017)	91.2%	91.8%	≥ 90%	✓		↑
Mobility (congestion relief)						
Highways: Annual (weekday) vehicle hours of delay statewide relative to maximum throughput speeds ² (Annual measure: calendar years 2014 & 2015)	32.3 million	N/A	*	N/A	 (Four-year trend)	↓
Highways: Average incident clearance times for all Incident Response program responses (Calendar quarterly measure: Q1 2017 & Q2 2017)	12.1 minutes	12.0 minutes	*	N/A	 (Five-quarter trend)	↓
Ferries: Percentage of trips departing on time ³ (Fiscal quarterly measure: year to year Q4 FY2016 & Q4 FY2017)	93%	90.7%	≥ 95%	—		↑
Rail: Amtrak Cascades on-time performance ⁴ (Annual measure: fiscal years 2015 & 2016)	72.1%	74.8%	≥ 80%	—		↑
Environment						
Number of WSDOT stormwater management facilities constructed (Annual measure: fiscal years 2015 & 2016)	130	151	*	N/A		Not applicable
Cumulative number of WSDOT fish passage improvement projects constructed (Annual measure: calendar years 2015 & 2016)	301	319	*	N/A		↑
Stewardship						
Cumulative number of Nickel and TPA projects completed ⁵ and percentage on time ⁶ (Calendar quarterly measure: Q4 2016 & Q1 2017, trendline for percentage on time)	377/ 87%	377/ 87%	≥ 90% on time	—	 (Five-quarter trend)	↑
Cumulative number of Nickel and TPA projects completed ⁵ and percentage on budget ⁶ (Calendar quarterly measure: Q4 2016 & Q1 2017, trendline for percentage on budget)	377/ 91%	377/ 91%	≥ 90% on budget	✓	 (Five-quarter trend)	↑
Variance of total project costs ⁵ compared to budget expectations ⁶ (Calendar quarterly measure: Q4 2016 & Q1 2017)	Under budget by 2.2%	Under budget by 2.2%	On or under budget	✓	 (Five-quarter trend)	Not applicable

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

Notes: (*) = goal has not been set. Dash (—) = goal was not met in the reporting period. For the Economic Vitality Policy Goal, see [p. 4](#) for Results Washington Goal 2: Prosperous Economy measures. **1** The Statewide Transportation Policy Goal for this performance measure is different than the federal MAP-21 goal for the same measure. See this edition's Highway System Safety ([p. 11](#)) and MAP-21 ([p. 9](#)) articles for more information. **2** Compares actual travel time to travel time associated with "maximum throughput" (defined as 70-85% of the posted speeds). **3** WSDOT Ferries' on-time departures include any trip recorded by automated tracking as leaving the terminal within 10 minutes of scheduled time. **4** Amtrak Cascades' on-time performance includes any trip arriving within 10 or 15 minutes, depending on the route, of scheduled arrival time. **5** Construction projects only. **6** Budget and schedule expectations are defined in the last approved State Transportation Budget. See [p. 50](#) for more information.

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MULTIMODAL ASSET PERFORMANCE DASHBOARD

WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Highway Assets						
Bridges						
Percentage of WSDOT-owned bridges in fair or better condition by bridge deck area (Fiscal years 2016 & 2017, GNB 62, p. 14)	91.2%	91.8%	≥90%	✓		↑
Number of WSDOT-owned bridges load restricted or load posted (Fiscal years 2016 & 2017, GNB 62, p. 18)	126	119	*	N/A		↓
Current WSDOT-owned steel bridge painting backlog in millions of dollars (Fiscal years 2016 & 2017, GNB 62, p. 20)	\$414.5	\$460.8	*	N/A		↓
Projected 10-year WSDOT owned steel bridge painting backlog in millions of dollars (Fiscal years 2016-2025 & 2017-2026, GNB 62, p. 20)	\$706.6	\$740.8	*	N/A		↓
Current WSDOT-owned bridge deck area due or past due for replacement in millions of dollars (Fiscal years 2016 & 2017, GNB 62, p. 19)	\$115.6	\$99.2	*	N/A		↓
Projected 10-year WSDOT owned bridge deck area due or past due for replacement in millions of dollars (Fiscal years 2015-2025 & 2016-2026, GNB 62, p. 19)	\$726.5	\$831.1	*	N/A		↓
Percentage of NHS bridge deck area located on structurally deficient bridges (locally- and WSDOT -owned) (Bridges Annual Report, see p. 21) (Fiscal years 2016 & 2017, GNB 62, p. 15)	9.3%	8.6%	≤10%	✓		↓
Pavement						
Percentage of WSDOT-owned pavement ¹ in fair or better condition; (Calendar years 2014 & 2015, GNB 64, p. 15)	93.3%	93.0%	≥90%	✓		↑
Highway Pavement Asset Sustainability Ratio; long term service replenishment rate ² (Calendar years 2014 & 2015, GNB 64, p. 14)	0.53	0.57	≥90%	—		↑
Highway Pavement Deferred Preservation Liability (backlog) in millions of dollars (Calendar years 2014 & 2015, GNB 64, p. 16)	\$351	\$403	\$0	—		↓
Highway Pavement Remaining Service Life as percentage of total useful life (Calendar years 2014 & 2015, GNB 64, p. 16)	46.9%	47.1%	45%-55%	✓		↑
Percentage of lane miles of interstate pavement in poor condition (MAP-21 criteria, see p. 10) (Calendar years 2014 & 2015)	3.9%	4.0%	≤5%	✓		↓
Safety Rest Areas						
Safety rest area score ³ through the Maintenance Accountability Process (Calendar years 2015 & 2016, GNB 65, p. 17)	B	B	B	✓		↑
Total visitors at safety rest areas in millions of visitors (Calendar years 2015 & 2016, GNB 65, p. 16)	23.1	24.0	*	N/A		N/A
Highway Maintenance						
Percentage of funded maintenance condition targets achieved ⁴ (Calendar years 2015 & 2016, GNB 64, p. 21)	85%	93%	100%	—		↑

WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Ferry Assets						
Vessels and Terminals						
Ferry vessel systems past due for replacement ⁵ (Fiscal years 2015 & 2016, GNB 62, p. 24)	8.3%	10.9%	≤10%	—	 (Three-year trend)	↓
Ferry terminal systems past due for replacement ⁶ (Fiscal years 2014 & 2015, GNB 62, p. 27)	3.7%	5.3%	≤6%	✓	 (Three-year trend)	↓
Ferry vessel preservation needs as percentage backlog of total vessel value (Fiscal years 2015 & 2016, GNB 62, p. 27)	26.1%	30.6%	*	N/A	 (Three-year trend)	↓
Ferry terminal preservation needs as percentage backlog of total terminal assets (Calendar years 2014 & 2015, GNB 62, p. 26)	11.3%	12.8%	*	N/A	 (Three-year trend)	↓
Multimodal Assets						
Aviation						
Airport combined (federal, state, local) grant funding ⁷ in millions of dollars (Fiscal years 2016 & 2017, GNB 63, p. 16)	\$40.7	\$59.7	*	N/A	 (Three-year trend)	↑
Percentage of airport inspections conducted by WSDOT ⁷ (Calendar years 2015 & 2016, GNB 63, p. 17)	76%	100%	100%	✓	 (Three-year trend)	↑
Other Assets						
Facilities						
Facilities ⁸ Preventive Maintenance Plan completion rate ⁹ (Biennial measure: 2013-2015 & 2015-2017, GNB 59, p. 8) ¹⁰	74% ¹¹	88% ¹¹	71%	N/A	 (Two-biennium trend)	↑
Percentage of primary buildings ⁸ in fair or better condition (Biennial measure: 2013-2015 & 2015-2017, GNB 59, p. 8) ¹⁰	60%	58%	*	N/A	 (Two-biennium trend)	↑
10-year forecast of unmet needs (backlog) ¹² in millions of dollars (Biennial measure: 2013-2015 & 2015-2017, GNB 59, p. 9) ¹⁰	\$473.0	\$475.5	*	N/A	 (Two-biennium trend)	↓

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

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

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MULTIMODAL SAFETY PERFORMANCE DASHBOARD

Statewide policy goal/ WSDOT performance measure	Previous period	Current period	Goal	Goal met	Five-year trend (unless noted)	Desired trend
Highway						
Total number of fatalities on Washington state public roads ¹ (Calendar years 2015 & 2016, GNB 66, p. 11)	551	537	415.5 ²			
Total number of serious injuries on Washington state public roads ¹ (Calendar years 2015 & 2016, GNB 66, p. 11)	2,100	2,209	1,788 ²			
Number of fatalities per 100 million vehicle miles travelled on Washington state public roads ¹ (Calendar years 2015 & 2016, GNB 66, p. 11)	.92	.88	.709 ²			
Serious injuries per 100 million vehicle miles travelled on Washington state public roads ¹ (Calendar years 2015 & 2016, GNB 66, p. 11)	3.52	3.63	3.058 ²			
Non-motorist						
Number of pedestrian and bicyclist combined fatalities and serious injuries ¹ (Calendar years 2015 & 2016, GNB 65, p. 12)	493	593	431.49 ²			
Ferries						
Passenger injuries per million passenger miles traveled (Fiscal years 2016 & 2017, GNB 66, p. 31)	0.32	0.77	<1.0			
OSHA recordable crew injuries per 10,000 revenue service hours ³ (Fiscal years 2016 & 2017, GNB 66, p. 31)	5.6	2.0	<7.6			
Rail						
Total number of train-related fatalities in Washington state ⁴ (Calendar years 2015 & 2016, GNB 65, p. 24)	27 ⁵	13	*	N/A		
Aviation						
General aviation fatalities in Washington state ⁶ (Calendar years 2015 & 2016, GNB 63, p. 16)	14	7	*	N/A		
Public Transit						
Fatalities involving Washington state public transportation (Calendar years 2014 & 2015, GNB 63, p. 11)	3	3	*	N/A		
Injuries involving Washington state public transportation (Calendar years 2014 & 2015, GNB 63, p. 11)	234	295	*	N/A		

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

Notes: N/A = not available or not applicable. Asterisk (*) = goal has not been set. Dash (–) = goal was not met or is not on track in the reporting period. **1** Fatality and serious injury data was finalized in January 2017. **2** These figures are the 2018 statewide targets for federal MAP-21 safety performance reporting, and are based on the goal of reaching zero fatalities in 2030. See this edition's Highways System Safety (pp. 11-16) and MAP-21 (p. 10) articles for more information. **3** OSHA = Occupational Safety and Health Administration. **4** Count includes all fatalities involving rail (passenger rail and freight rail) in Washington State. **5** There was a large increase in trespassing incidents on tracks in Washington state. As a result, more than 80% (22 of 27) of fatalities in 2015 were due to trespassing. **6** General aviation includes all civil aviation operations other than scheduled air services. Data for general aviation fatalities has been updated since GNB 63.

66 MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY (MAP-21)

FHWA finalizes two MAP-21 rules, states now working to set performance targets

Two performance management rules, which are part of the Moving Ahead for Progress in the 21st Century (MAP-21) Act, went into effect on May 20, 2017. The finalization of the Combined Rule and the National Highway Performance Program Rule had previously been delayed by the White House to provide the new administration additional time to review the plans in their entirety.

The National Highway Performance Program Rule, covering the condition of pavement and bridge assets, was released unchanged. The Combined Rule, which covers Highway System Performance, National Freight Movement Program, and the Congestion Mitigation and Air Quality Program (CMAQ), previously included a measure on tailpipe CO₂ emissions which was delayed indefinitely before release and will not take effect. Another measure tracking total emissions reductions will still apply, however.

With the Combined Rule and the National Highway Performance Program Rule now official, WSDOT and Metropolitan Planning Organizations (MPOs) from around the state are collaborating to establish Washington's performance targets by the October 2018 deadline, when they must be reported to Federal Highway Administration (FHWA).

Washington finalizes MAP-21 safety performance targets

Target setting for the Highway Safety Improvement Program rule has been underway since April 2016 and is scheduled to be completed by WSDOT, MPOs and other partners in August 2017. Final targets will be sent to FHWA for approval; see Highway System Safety, [pp. 11-16](#).

For more information about MAP-21, including links to WSDOT-specific MAP-21 folios, visit www.wsdot.wa.gov/Accountability/MAP-21.

MAP-21 measures by program area	Federal threshold/benchmark	MAP-21 target	WSDOT penalty (yes/no)	Rule release date	Existing WSDOT performance measures for this program area
Combined Rule - FINAL					
Highway System Performance (Congestion)					
Percent of person-miles traveled on the Interstate system providing for reliable travel	No	TBD	No	Final 1/18/2017	WSDOT's 2016 Corridor Capacity Report details highway travel times and congestion trends in Washington state.
Percent of person-miles traveled on the non-Interstate National Highway System (NHS) providing for reliable travel	No	TBD	No	Final 1/18/2017	The 2016 Corridor Capacity Report details highway travel times and congestion trends in Washington state.
National Freight Movement Program					
Truck travel time reliability index	No	TBD	No	Final 1/18/2017	A truck travel time reliability measure was established as part of the 2014 Washington State Freight Mobility Plan.
Congestion Mitigation and Air Quality Program					
Annual hours of peak-hour excessive delay per capita	No	TBD	No	Final 1/18/2017	The 2016 Corridor Capacity Report details corridor delay, highway travel times and congestion trends in Washington state.
Percent of non-SOV travel	No	TBD	No	Final 1/18/2017	The 2016 Corridor Capacity Report details multimodal measures such as drive-alone, carpool, transit, biking and walking rates.
Total emissions reduction	No	TBD	No	Final 1/18/2017	WSDOT reports CMAQ project emissions to the federal CMAQ public access system. The 2016 Corridor Capacity Report tracks GHG emissions at the corridor level.

Taking the next steps in federal performance reporting compliance

States' progress toward achieving their targets for the Highway System Performance, National Freight Movement, CMAQ and National Highway Performance programs will be first reported to Federal Highway Administration (FHWA) in the Baseline Performance

Report due October 1, 2018. This begins a four-year reporting cycle. FHWA will examine states' interim progress toward those targets based on the Mid-Performance Period Progress Report, to be submitted by October 1, 2020.

FHWA will provide guidance to states not showing significant progress toward their goals, or to those showing potential for failure to make that progress. WSDOT

and MPOs can work with FHWA to fine tune their targets and methods before the Final Performance Period Report is due on October 1, 2022. FHWA will make its first determination of "significant progress" toward targets based on this report. States not showing significant progress toward achieving MAP-21 targets may face penalties as indicated in the tables on p. 9 and below.

MAP-21 measures by program area	Federal threshold/benchmark	MAP-21 target	WSDOT penalty (yes/no)	Rule release date	Existing WSDOT performance measures for this program area
National Highway Performance Program – FINAL RULE					23 CFR Part 490; Rule ID No. 2125-AF53
National Highway System interstate pavement in good and poor condition	% of interstate pavement lane miles in poor condition not to exceed 5%	TBD	Yes	Final 1/18/2017	Pavement condition ratings from very good—very poor. See GNB 64 pp. 15, 20
National Highway System bridges classified in good and poor condition	% of structurally deficient bridges not to exceed 10%	TBD	Yes	Final 1/18/2017	Bridge condition ratings from good—poor and structurally deficient. For these and for an update on MAP-21 implications for state bridges see pp. 17, pp. 11-16 .
Highway Safety Improvement Program – FINAL RULE					23 CFR Part 490; Rule ID No. 2125-AF49
Number of traffic fatalities on all public roads ¹	No	415.5	Yes	Final 3/15/16	Traffic fatalities using the NHTSA methodology; see pp. 11-12
Rate of traffic fatalities per 100 million vehicle miles traveled (VMT) on all public roads ¹	No	0.709	Yes	Final 3/15/16	Traffic fatality rates using the NHTSA methodology; see pp. 11-12
Number of serious traffic injuries on all public roads ¹	No	1,788.0	Yes	Final 3/15/16	Serious injuries using the NHTSA methodology; see pp. 11-12
Rate of serious traffic injuries per 100 million VMT on all public roads ¹	No	3.058	Yes	Final 3/15/16	Serious traffic injury rates using the NHTSA methodology; see p. 12
Number of non-motorist traffic fatalities plus serious injuries	No	431.5	Yes	Final 3/15/16	Non-motorist (pedestrian/bicyclist) fatalities and serious injuries using the NHTSA methodology; see p. 12
Rate of per capita traffic fatalities for drivers and pedestrians 65 or older	Must show improvement versus baseline	Achieve yearly progress	No	Final 3/15/16	The rate of traffic fatalities for pedestrians and those 65 or older is part of Washington's Target Zero traffic safety campaign; see targetzero.com
Rate of fatalities on high-risk rural roads ¹	Must show improvement versus baseline	Achieve yearly progress	Yes	Final 3/15/16	Traffic fatality rates on high-risk rural roads as part of Target Zero
Highway-railway crossing fatalities	Must show improvement versus baseline	Achieve yearly progress	No	Final 3/15/16	Number of fatalities at highway-railway crossings

Notes: ¹ Performance metric includes all individuals (for example, pedestrians and bicyclists) who died or were seriously injured as a result of a motor vehicle crash in Washington.

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HIGHWAY SYSTEM SAFETY PROGRAMS ANNUAL REPORT

Statewide traffic fatalities decrease slightly, serious injuries increase in 2016

There were 537 traffic fatalities on all Washington state public roads in 2016. This is a 2.5% decrease from the 551 fatalities recorded in 2015. The number of traffic fatalities has dropped 6% in the 10 years since 2007, when there were 571. While annual traffic fatalities declined each year between 2007 and 2013, recent years have seen increases. The 2016 fatalities count is 23% higher than its 10-year low of 436 in 2013.

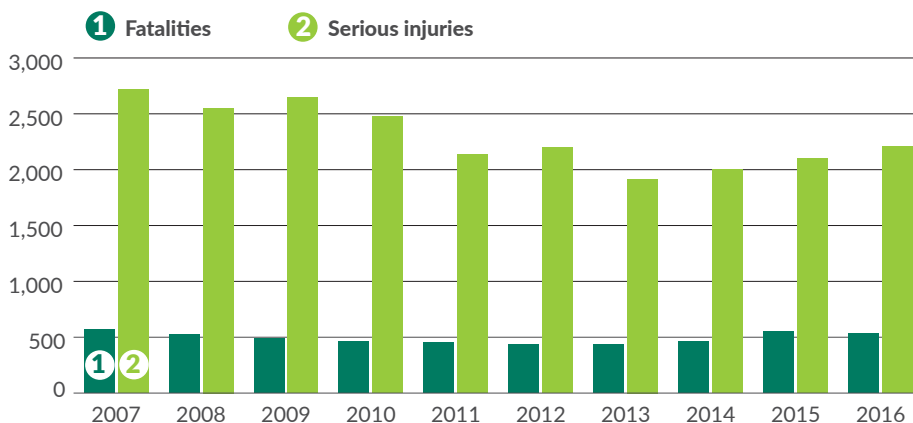
The rate of traffic fatalities per 100 million vehicle miles traveled (VMT) was 0.88 in 2016, a decrease of 4.3% from 0.92 in 2015. The lower rate is due to fewer fatalities and increased vehicle travel in the year. The fatality rate in 2007 was 1.00, and it reached its lowest level in 2013 at 0.76. Statewide VMT has grown 6.8% overall in the 10 years since 2007.

The number of annual serious traffic injuries recently climbed 5.2% to reach 2,209 serious injuries in 2016, up from 2,100 in 2015. The number of annual serious injuries on Washington's roadways has followed a similar pattern of decline and rise since 2007. In the last 10 years, the figure has seen a 18.7% decrease since the count of 2,718 serious injuries in 2007, but remains 15.2% higher than its low of 1,917 in 2013.

The rate of serious traffic injuries was 3.63 injuries per 100 million VMT in 2016, a 3.1% increase from the rate of 3.52 in 2015. The rate's 10-year high was 4.77 in 2007, and it reached its 10-year low at 3.35 in 2013. Throughout the article, performance metrics include all individuals (for example, pedestrians and bicyclists) that died or were seriously injured as a result of a motor vehicle crash in Washington.

Traffic fatalities and serious injuries in Washington continue recent trend

10 years, 2007 through 2016; statewide traffic fatalities and serious injuries on public roadways



Data source: Washington Traffic Safety Commission - Fatality Analysis Reporting System (FARS); WSDOT - Crash Database, Highway Performance Monitoring System.

Notes: Fatality data is from the preliminary 2016 Q4 release of the WA-FARS Analytical File, and the final 2015 WA-FARS file. The serious injury count is as of April 2017. Metrics include non-motorists.

Notable results

- Annual statewide traffic fatalities decreased 2.5% and serious injuries increased 5.2% from 2015 to 2016
- WSDOT and partners have finalized initial statewide targets for MAP-21 safety performance reporting
- Three compact roundabout intersections show 59:1 benefit to cost ratio in safety performance
- WSDOT was awarded \$2 million in federal grants to conduct two safety research projects



Agency Emphasis Area WORKFORCE DEVELOPMENT

Agency staff from across the state completed Practical Solutions Highway Safety Manual training. This training teaches the integration of safety into project planning, and aids in developing a data-driven culture when it comes to making safety decisions. It's one avenue WSDOT has taken to train and maintain a highly competent work force.

WSDOT's safety goals based on Target Zero

WSDOT works with its partners and the public to develop and update the state's Strategic Highway Safety Plan (SHSP), named Target Zero, every three years. During this time, data analysis and evaluation identify Washington's safety goals, priorities, and emphasis areas. Each is reviewed collaboratively so the SHSP remains a relevant document to all stakeholders.

Target Zero brings safety partners together, where combined efforts can achieve greater results than independent efforts, and its aspirational goal of zero fatalities and serious injuries by 2030 provides a clear and common vision for improving Washington; visit targetzero.com.

WSDOT tracks safety performance via Target Zero emphasis areas to reduce crashes statewide

WSDOT uses Target Zero to help identify investment strategies for the agency's safety program, and to measure achievement of its safety performance goals. In order to track the primary factors that contribute to traffic accidents, Target Zero gives a priority ranking to 21 total emphasis areas in five categories:

- Crash types (a crash caused by a vehicle veering out of its lane, for example)
- Road users (such as young drivers)
- High-risk behavior (including distracted and impaired driving)
- Decision and performance improvement (for example roadway signage to inform drivers)
- Other monitored emphases

A higher priority ranking for an emphasis area indicates that it is a factor in a larger number of traffic fatalities and serious injuries. Priority level one includes factors that were involved in at least 30% of such incidents. WSDOT's role focuses most strongly on particular crash types and road users.

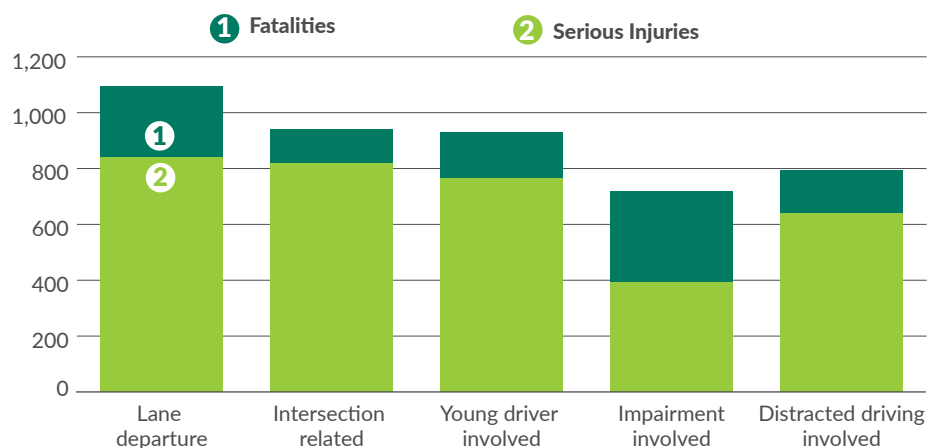
Crash types

Lane departures: The lane departures emphasis area is the leading factor in the crash type category over the last five years. In 2016, there were 254 traffic fatalities and 840 serious injuries involving a lane departure. Over the last five years, lane departures were associated with an average 52% of fatalities and 39% of serious injuries per year.

WSDOT uses widespread, low-cost strategies to reduce lane departures.

Target Zero identifies crash types and road users as emphasis areas for traffic fatalities and serious injuries

2016; Number of fatalities and serious injuries involving select characteristics (Target Zero emphasis areas)



Data source: Washington Traffic Safety Commission - Fatality Analysis Reporting System (FARS); WSDOT - Crash Database, Highway Performance Monitoring System.

Notes: A single fatality or serious injury may be counted in more than one category; for example, an impaired driver veering out of their lane. fatality data is from the preliminary 2016 Q4 release of the WA-FARS Analytical File, and the final 2015 WA-FARS file. The serious injury count is as of April 2017. Metrics include non-motorists.

Countermeasures include: Enhanced warning signs; centerline and shoulder rumble strips to alert drivers when their vehicles are leaving the lane; high-friction surface treatments on curves and ramps; median barriers; and pavement edge safety treatments to reduce drivers over-correcting when their vehicle hits the edge of the pavement.

Intersection related: In 2016, intersections were a factor in 122 fatalities and 818 serious injuries. They have played a role in 21% of traffic fatalities and 35% of serious traffic injuries on average over the last five years.

WSDOT uses several strategies to reduce crashes at intersections, including: Installing or converting intersections to roundabouts; optimizing traffic signal timing; and providing dynamic intersection warnings; and installing refuge islands and shortening crossing distances at intersections to reduce risk for pedestrians.

Road users

Young driver involved: This is the only priority level one emphasis area in the road users category. Young drivers were involved in—but didn't necessarily cause—165 fatalities and 763 serious injuries in 2016. They have been involved in 32% of fatalities and 34% of serious injuries in the last five years.

WSDOT strategies to reduce these fatalities and serious injuries include: implementing a corridor safety model at locations where data indicates a high rate of younger-driver-related crashes; and designs such as signage and striping to make young drivers' decisions easier.

High-risk behavior

Impairment: Impaired persons, not necessarily drivers, continue to be the most prominent factor in traffic fatalities. Impaired persons were involved in 326 fatalities in 2016, 61% of the total. The average has been at least 50% in each of the last five years. Serious injuries involving impaired persons tallied 391 (18%) in 2016, but this figure is likely underreported because toxicology screens are not completed for serious injury crashes with the same frequency as for fatal crashes.

Distracted driving: Washington saw 156 fatalities and 639 serious injuries related to distracted driving in 2016. On average over the last five years, it has been associated with 29% of fatalities. The share of all serious traffic injuries associated with distracted driving has risen markedly in recent years. Between 2013 and 2016 the average share was 30%—prior to 2013 it was 12%.

While WSDOT does not typically address driving behavior, engineering strategies to address impairment- and distraction-related crashes include installing centerline and shoulder rumble strips, and incorporating safety performance data when setting speed limits. Additionally, WSDOT continues to support enforcement efforts to reduce impaired and distracted driving, such as the new distracted driving law which took effect in Washington in July 2017—the Driving While Under the Influence of Electronics Act.

Ongoing research and partnerships with Washington Traffic Safety Commission and other agencies

Crash data is online

WSDOT's public online Crash Data Portal provides full reporting on crashes statewide, and for all 21 Target Zero emphasis areas. Data is updated weekly to provide the most up-to-date statistics, and users can refine their queries by area, year and road type; visit bit.ly/WSDOTCrashDataPortal.

addressing the behavioral components of safety are also part of WSDOT's work to reduce high-risk driving behavior (see the research study described on p. 16). The agency's Safety Data Business Plan project is an example of WSDOT's work in the decision and performance improvement category (see a description of the plan on p. 16).

MAP-21 details online

WSDOT's MAP-21 Safety folio contains full specifics on federal requirements for safety performance and Washington's target setting process; visit bit.ly/SafetyFolio.



Agency Emphasis Area INCLUSION

The MAP-21 target setting process has been a collaborative approach with community partners. WSDOT helped compile and submit comments on the federal draft rules from the state's MPOs in early 2014, and worked to align stakeholders' sentiment toward the target setting approach. The agency has hosted 35 informational and technical assistance webinars for Washington's MPOs and other safety partners.



Agency Emphasis Area PRACTICAL SOLUTIONS

Data-driven safety analysis is a key piece of the Practical Solutions approach that WSDOT is implementing. FHWA recently featured the agency's methods in a video for its Every Day Counts initiative; visit bit.ly/EDCDataDrivenSafety.

WSDOT establishes 2018 targets for MAP-21 safety

In April 2016, the Federal Highway Administration (FHWA) published the final rule requiring states and Metropolitan Planning Organizations (MPOs) to set and report safety performance targets across five performance measures. Using an approach that aspires to reach zero for all five measures by 2030, WSDOT and the Washington Traffic Safety Commission finalized the official statewide targets in June 2017. The five measures track traffic fatalities and serious injuries on all public roads in Washington, and each is reported as a five-year average.

The table below shows the value of each measure for calendar year 2016. This value will be used as the baseline for comparing progress toward targets. Washington state saw 537 traffic fatalities in 2016, bringing the five-year average to 484.8 fatalities per year. WSDOT has set a target for this average to reach 415.5 annual fatalities in 2018. Similarly, there were 2,209 serious traffic injuries statewide in 2016, bringing the five-year average

to 2,086. Washington's statewide target for this average is 1,788 serious traffic injuries in 2018.

In addition to these five measures, Washington must show improvement upon the 2016 baseline in three areas: Rate of fatalities on high-risk rural roads; per-capita rate of fatalities to drivers and pedestrians aged 65 and older; and fatalities at highway-railway crossings.

Final targets for each of the measures and areas were set using the approach of Target Zero, the state's Strategic Highway Safety Plan. The statewide targets were presented to MPOs in June 2017, and MPOs are now in the process of applying the Target Zero approach to their own safety targets. WSDOT is working with the MPOs to provide tools, guidance and technical assistance for that target setting process. MPOs must finalize their targets by February 2018.

WSDOT and partners will then repeat the process to set safety

MAP-21 safety targets for 2018 are now official

Five-year rolling averages; Number of persons; Number of persons per 100 million vehicle miles traveled (rates); Washington public roads

<u>Performance Measure</u>	<u>2016 value</u>	<u>2018 Official Targets</u>
Fatalities	484.8	415.5
Serious injuries	2,086.0	1,788.0
Non-motorists: fatalities + serious injuries	503.4	431.5
Serious injury rate	3.568	3.058
Fatality rate	0.828	0.709

Data sources: Washington State Traffic Safety Commission - Fatality Analysis Reporting System; WSDOT - Transportation Data, GIS & Modeling Office.

Notes: Fatality data is from the preliminary 2016 Q4 release of the WA-FARS Analytical File, and the final 2015 WA-FARS file. The serious injury count is revised as of April 2017. All metrics include non-motorists.

performance targets for calendar 2019 in early 2018. In December 2019, FHWA will review states' progress toward the 2018 calendar year targets below.

Roundabouts show 59:1 benefit to cost ratio

In WSDOT's recent review of safety performance at more than 350 roundabouts in the state, the proportions of fatal and serious injury crashes were much less than those associated with a typical "four leg" intersection with traffic signals.

FHWA recently highlighted WSDOT's use of roundabouts as part of its Every Day Counts initiative, a federal program aimed at disseminating innovative transportation management techniques. While the focus was on the improvement in mobility performance at Slater Road and Interstate 5 in Whatcom County, the three compact roundabouts

analyzed showed a safety performance benefit to cost ratio of 59:1.

WSDOT started building roundabouts on its transportation system in the early 2000s. Roundabouts offer operational, environmental and safety performance benefits compared to other types of traffic control. Roundabouts induce temporary reductions in driving speed, shorten crossing distances for pedestrians, and facilitate traffic flow in a way that helps reduce the severity of the crashes.

Safety research at WSDOT goes big data

WSDOT competed for and received nearly \$2 million in federal grants to conduct two naturalistic driving safety research projects. WSDOT was the only agency to receive a grant for more than one project, and has hired contractors to conduct the studies.



A truck navigates a compact roundabout. The truck apron (yellow, center) allows larger vehicles to drive over it because the turning radius in a compact roundabout is smaller than in traditional-sized roundabouts.

WSDOT sets example

A second FHWA video presents a case study of WSDOT's data-driven choice to install compact roundabouts at Slater Rd. and Interstate 5; visit bit.ly/EDCRoundaboutsFeature.

Adaptive lighting system to be installed on I-5

WSDOT is in the final stages of completing a \$4 million project to convert roadway lighting systems to light-emitting-diodes (LEDs) across northwestern Washington, and installing an adaptive lighting system on a 7-mile stretch of Interstate 5 in Olympia. The I-5 work is a continuation of a successful LED pilot project at US 101 interchanges in Olympia, which reduced power consumption by 74%.

This project is part of WSDOT's sustainability plan and environmental stewardship. WSDOT evaluated the safety performance of continuous roadway lighting on limited access highways (Interstate 5, for instance) and used the findings to target safety investment dollars, identifying and removing some lighting that was not adding a measurable safety benefit. The change allowed WSDOT to maintain safety performance, reduce unwanted light at nighttime, and help the environment.

Both projects are ongoing and they are entering the countermeasure development phase of the research, which will identify strategies for reducing crashes.

The studies examine "naturalistic" data to learn how drivers react instinctively to road conditions. The first considers reactions to lighting conditions at freeway on and off ramps. The second study evaluates drivers' speed choice based on the shape of the road and other situational context.

Both will make use of a new naturalistic driving dataset. FHWA has compiled data on more than 3,500 volunteer passenger-vehicles, data and videos from over 35 million vehicles miles traveled, and data on 4,200 crashes and near crashes. This was combined with over 200,000 center-line miles of roadway environment data to build a dataset that affords researchers new capabilities for investigating safety solutions. The dataset contains over 5 petabytes of data (5 million gigabytes).

WSDOT crafts plan for data in federal pilot project

WSDOT worked with safety data stakeholders to develop WSDOT's Safety Data Business Plan in summer 2017. The work was part of a pilot project with FHWA to develop a guide and business plan for state DOTs and their safety data.

Safety data is critical to the successful reduction of fatal and serious injuries. It is also part of WSDOT's commitment to decision and performance improvement, a Target Zero emphasis area.

Data drives WSDOT's picks for safety projects

WSDOT works to maximize the return on its safety investments, so it tracks the reduction in fatal and serious-injury crashes on the transportation system over time. Target Zero relies on historic crash data to develop a set of emphasis areas, and strategies to address them. WSDOT's Target Zero Implementation Plan outlines its approach to addressing the emphasis areas, including descriptions of which countermeasures might best reduce the potential for a given crash type, or factors that contribute to it.

WSDOT is required by law to select the safety projects it will fund based on a system that ranks proposed projects in order of priority according to the projects' safety benefit-cost ratio. This maximizes the potential for selected projects to reduce fatal and serious-injury crashes over time.

WSDOT screens potential locations against its selection criteria to outline a prioritized list for further analyses and evaluation. The agency diagnoses the factors contributing to crashes, analyzing whether a potential engineering countermeasure would provide a reduction in high-severity-injury crashes. Systematic approaches that focus on a particularly cost-effective crash countermeasures are often used (such as rumble strips to reduce "run off road" crashes). Investments at spot locations and over short road segments are also used in addition.

Locations which demonstrate the greatest potential for safety improvement will be prioritized, but not all locations on the list will be developed as a safety project. Locations ruled out based on predetermined criteria are not eligible for funding through the WSDOT State Highway Safety Program priority process.

Strategic Highway Safety Plans such as Target Zero are now required by federal law, and Washington's success working across agencies is believed to have helped spearhead the national approach to strategic safety planning. WSDOT's prioritized highway safety project lists are typically developed approximately every two years. Future editions of the *Gray Notebook* will highlight the safety categories and performance elements of these projects.

The development of the plan helped improve understanding of how decisions by different agency divisions impact safety data and WSDOT's ability to perform analysis. The plan itself outlines specific strategies, actions, and

goals for WSDOT to support the enhancement, management, maintenance, and governance of effective data systems.

Contributors include John Milton, Ida van Schalkwyk, and Matt Clark

66 ASSET MANAGEMENT: BRIDGES ANNUAL REPORT

Bridge conditions improve from 2016 to 2017

As of June 2017, 91.8% of WSDOT-owned bridges by deck area were in fair or better structural condition. This is an improvement over June 2016, when 91.2% of bridges by deck area were in fair or better condition (see chart below). WSDOT uses a Practical Solutions approach to maintenance, applying bridge preservation treatments at the most cost-effective time (see [p. 23](#)).

Measuring bridge conditions by deck area provides a more comprehensive view of system-wide conditions than only counting the number of bridges. For example, at the end of fiscal year (FY) 2017, 163 (4.9%) of WSDOT's 3,312 bridges were in poor condition, but reporting that figure alone would cause readers to underestimate the need for bridge repairs. Reporting bridge conditions by deck area allows WSDOT to clearly communicate that 8.2% of its bridge assets are structurally deficient.

This reporting method also aligns with the federal Moving Ahead for Progress in the 21st Century Act (MAP-21, see [p. 9](#)), and the state's Results Washington performance management system. The state and federal targets are identical, and apply only to the 2,272 WSDOT bridges and 204 locally owned bridges on the National Highway System (NHS). The targets require Washington to maintain its bridges so that less than 10% of bridges weighted by deck area are rated structurally deficient (in poor condition); Washington performed better than this standard.

Notable results

- At the end of FY2017, 91.8% of WSDOT-owned bridges by deck area were in fair or better condition, a slight increase from 91.2% in 2016
- Washington continues to meet the MAP-21 and Results Washington goals of having less than 10% of bridges in poor condition
- WSDOT conducted 1,435 bridge inspections during FY2017, 89% of which were routine
- WSDOT assembled a temporary Bailey bridge over the San Poil River on SR 21 in four days in April 2017

WSDOT has 91.8% of its bridges by deck area in fair or better condition, meeting performance goals

Fiscal years 2012, 2016, 2017; Number of bridges and percent of bridges by deck area and condition category;
Deck area in millions of square feet

STRUCTURAL CONDITION		2012	2016	2017	Trend (2016-17)	Desired trend
GOOD/VERY GOOD Bridges in good condition range from those with no problems to those having some minor deterioration of structural elements.	Bridge deck area	17.4	19.8	20.3	↑	↑
	Percent of deck area	33.1%	36.9%	37.3%	↑	↑
	Number of bridges	1,547	1,678	1,699		
FAIR Primary structural elements are sound; may have minor section loss, deterioration, cracking, spalling or scour. This is the most cost-effective time to rehabilitate before the underlying structure is damaged.	Bridge deck area	33.0	29.1	29.7	↑	*
	Percent of deck area	63.0%	54.3%	54.5%		
	Number of bridges	1,581	1,462	1,450		
GOOD/VERY GOOD & FAIR TOTALS: Goal = 90% or more deck area in fair or better condition	Bridge deck area	50.4	48.9	49.9	↑	↑
	Percent of deck area	96.1%	91.2%	91.8%		
	Number of bridges	3,128	3,140	3,149		
POOR (Structurally Deficient) A bridge in poor condition has advanced deficiencies such as section loss, deterioration, scour, or seriously affected structural components, and may have weight restrictions. A bridge in poor condition is still safe for travel.	Bridge deck area	2.1	4.7	4.5	↓	↓
	Percent of deck area	3.9%	8.8%	8.2%		
	Number of bridges	117	154	163		

Data source: WSDOT Bridge and Structures Office.

Notes: All years are state fiscal years (July 1–June 30). The above data shows WSDOT-owned bridges, culverts, and ferry terminals longer than 20 feet that carry vehicular traffic. All numbers shown in the table above are based on the revised “out-to-out” calculation method (which includes curbs and rails on the bridge) instead of the bridge width from curb to curb. The 2012 data was updated using this revised calculation method.

WSDOT owns 163 bridges in poor condition (structurally deficient) in 2017, of which 106 are located on the NHS. From July 2016 through June 2017, 21 WSDOT-owned bridges totaling 673,505 square feet of deck area in poor condition were repaired, transitioning them to good condition. Additionally, 30 WSDOT-owned bridges—with a net total of 491,206 square feet of deck area—deteriorated to poor condition.

Statewide structurally deficient bridges by deck area remain below 10% goal

As of June 2017, 7.6% (5.5 million square feet) of Washington's 72.1 million square feet of bridge deck area was located on structurally deficient bridges.

There are currently 370 structurally deficient bridges in Washington state, 163 of which are owned by WSDOT (see table below). This is an increase from FY2016, when 154 out of 342 statewide structurally deficient bridges were WSDOT-owned. WSDOT's 163 structurally deficient bridges account for 8.2% (4.5 million square feet) of WSDOT-owned bridge deck area. The remaining 207 structurally deficient bridges account for 5.9% (1 million square feet) of bridge deck area owned by local agencies.

Total (state and local) structurally deficient bridge deck area on the NHS in Washington state decreased from 4.6 million square feet in FY2016 to 4.3 million square feet in FY2017.

Condition of locally owned bridges improves in FY2017

Of the 7,373 bridges across Washington, 4,061 are locally owned and support an average of 10 million crossings per day. Approximately 96% of all Washington's locally owned bridges by deck area were in fair or better condition during the Federal Highway Administration 2017 reporting period (April 2016 through March 2017), improving from the 2016 reporting period.

WSDOT funds and administers the Local Bridge Program, which provides grants to local agencies to preserve and improve the conditions of city and county bridges that are physically deteriorated or structurally deficient. Grants

The National Highway System (NHS)

The National Highway System (NHS) is a network of strategic highways in the United States, and includes both state and local highways as well as roads serving major airports, ports, rail and/or truck terminals, and other transport facilities. Washington's NHS network includes 49.7 million square feet of bridge deck area, of which 90.9% is state-owned and 9.1% is owned by local agencies. The bridge performance targets in both Results Washington and MAP-21 (see [p. 21](#) and [p. 27](#)) apply specifically to bridges on the NHS.

Washington achieves goal of keeping structurally deficient bridge deck area below 10% statewide

As of June 2017; Percent of bridge deck area considered structurally deficient (SD); Deck area in millions of square feet

	National Highway System		Statewide	
	Deck area ¹	Number of bridges	Deck area ¹	Number of bridges
WSDOT-owned	45.1	2,272	54.4	3,312
Amount SD (%)	4.0 (8.9%)	106	4.5 (8.2%)	163
Locally owned ²	4.5	204	17.7	4,061
Amount SD (%)	0.3 (5.7%)	23	1.0 (5.9%)	207
Total	49.7	2,476	72.1	7,373
Amount SD (%)	4.3 (8.6%)	129	5.5 (7.6%)	370

Data source: WSDOT Bridge and Structures Office and WSDOT Local Programs Office.

Notes: Structurally deficient (SD) is equal to the state's poor condition rating; for locally owned bridges, SD also includes load-restricted bridges, even if those bridges are in fair or better condition.

¹ Due to rounding, some figures are not computable based on numbers in the table.

² Bridges owned by counties and cities.

from this program may fund bridge replacements or bridge rehabilitation and preservation projects such as scour repair, painting, seismic retrofit, deck overlay or joint replacement.

WSDOT is currently reviewing local agency project applications received in response to the Local Bridge Program's most recent call for

projects. Funds will be awarded to projects selected for the program in late fall 2017.

Cities and counties are responsible for managing local bridges, and are held to the same standards as WSDOT. Federal, state and local funding sources continue to help local agencies build new and maintain existing bridges.

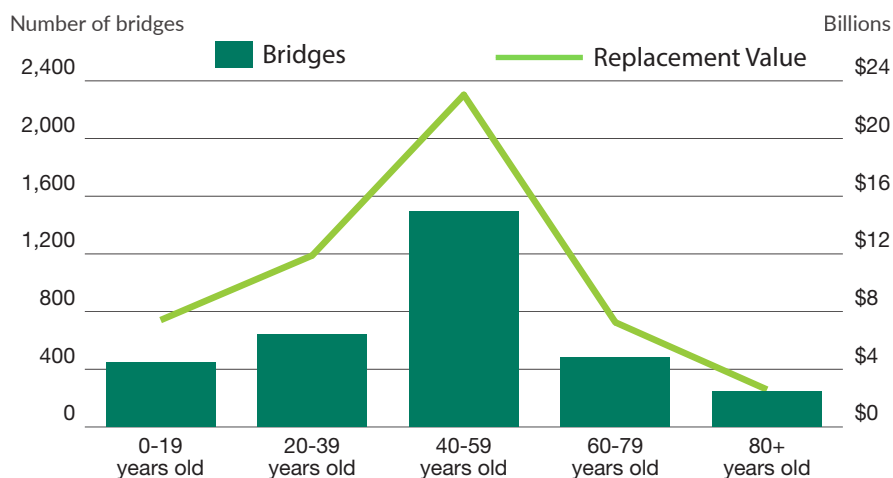
Replacing all Washington state bridges 80 years old or older would cost WSDOT \$2.6 billion in next 10 years

WSDOT owns 246 bridges that are 80 years old or older. Replacing these bridges as they near 100 years of age would cost nearly \$2.6 billion over the next 20 years, or approximately \$130 million per

year (in 2017 dollars). Many of these bridges will remain in use during the next 10 years—currently 24 of them (6% by deck area) are in poor condition—and WSDOT will continue to focus on their preservation.

Replacing WSDOT's 246 bridges that are 80 years or older would cost \$2.6 billion over the next 20 years

As of June 2017; Number of bridges by age; Replacement value in billions of dollars

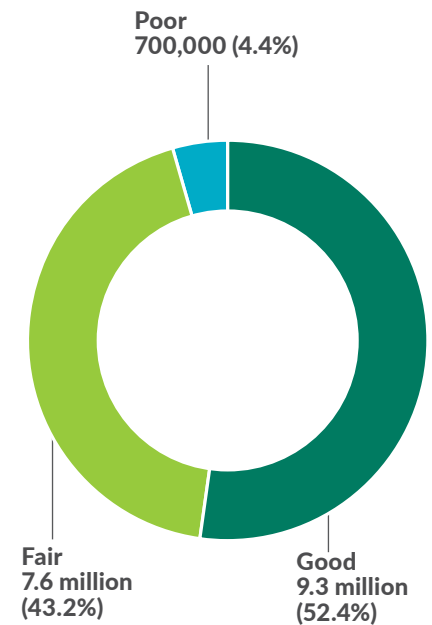


Data source: WSDOT Bridge and Structures Office.

Notes: The graph shows WSDOT-owned bridges only. Replacement value describes the cost to replace all bridges in each age range.

Majority of locally owned bridges in good condition in FY2017

Local agency bridge conditions by deck area for FY2017; Deck area in square feet



Data source: WSDOT Local Programs Office.

Note: This chart shows conditions for all locally owned bridges, both on and off the National Highway System.

WSDOT's bridge inventory grows by 32 structures

As of June 2017, the WSDOT-owned bridge inventory includes 3,897 structures. In addition to WSDOT's 3,312 vehicular bridges over 20 feet long, the inventory includes structures that are less than 20 feet long and structures not open to vehicular traffic (see table below). The replacement value of all WSDOT-owned bridges is estimated to be about \$58.2 billion.

Additionally, there are 5,734 locally owned bridge structures in Washington as of June 2017, a decrease of 195 structures from June 2016. This drop is due to the some duplicate entries that were removed when the state and local inventories were combined into one database. Vehicular bridges longer than 20 feet account for 71% of the local bridge

inventory, and total 17.7 million square feet of deck area.

The new State Route (SR) 520 floating bridge across Lake Washington was added to the WSDOT bridge inventory in FY2017, and is included in the table below. Although the bridge has been open to traffic since April 2016, it was not added to the inventory until the replacement contract was formally closed.

A contract to replace the SR 99 Alaskan Way Viaduct in Seattle with a tunnel is in progress. The existing double-decker bridge will be removed from the state's bridge inventory once the new tunnel opens to traffic and the viaduct can be removed.

Notes for graph at right:

- 1 The drop from FY2016 to FY2017 is due to the removal of duplicate entries which were discovered when combining state and local inventories into a single database during FY2017.
- 2 Locally owned culverts longer than 20 feet are included in the number of vehicular bridges longer than 20 feet.
- 3 WSDOT funds 50% of preservation for 11 border bridges.
- 4 Five of the border bridges are maintained by Oregon and one by Idaho.
- 5 The locally owned border bridge count is included in the number of vehicular bridges longer than 20 feet; therefore the one locally-owned border bridge is not included in the total bridge structures count.
- 6 Four of these bridges are shared with Oregon and one with Idaho.
- 7 Inventory totals do not equal the total number of state and local bridges on p. 17 or p. 18 because inventory includes miscellaneous structures that the Federal Highway Administration does not require to be inspected. FHWA requires states to report on conditions for all vehicular bridges, ferry terminals and culverts longer than 20 feet, which are the 3,312 WSDOT-owned and 4,061 locally owned structures in the chart on p. 18.

Washington's bridge inventory increases by 32 WSDOT-owned structures

Fiscal years 2016 and 2017; Inventory of WSDOT and local bridges

	WSDOT		Local	
	2016	2017	2016	2017
Vehicular bridges longer than 20 feet	3,109	3,124	4,041	4,061
Structures less than 20 feet long	418	431	1,465	1,251 ¹
Culverts longer than 20 feet	125	130	-. ²	-. ²
Pedestrian structures	81	80	264	264
Ferry terminal structures	69	69	9	9
Tunnels and lids	47	47	8	8
Border bridges³				
Maintained by border state	6 ⁴	6 ⁴	1 ⁵	1 ⁵
Maintained by Washington	5 ⁶	5 ⁶	-	-
Railroad bridges	5	5	142	141
Total Bridge Structures⁷	3,865	3,897	5,929⁵	5,734⁵

Data source: WSDOT Bridge and Structures Office and WSDOT Local Programs Office.

Majority of bridge inspections required by Federal Highway Administration in FY2017 are routine

WSDOT performed 1,435 bridge inspections in FY2017, 89% (1,278) of which were routine inspections. In addition, WSDOT conducted 89 inspections of fracture critical structures (bridges that contain support pieces or members that are under tension, where failure would likely cause a portion of or the entire bridge to collapse), 36 special (discretionary as-needed) inspections, and 32 underwater inspections.

Most of WSDOT's bridges are inspected on a two-year cycle as mandated by FHWA, but there are 118 bridges and ferry terminals which are inspected every year due to specific watch items (such as elements that are in need of repair or having a Bailey bridge installed). Additionally, a total of 523 concrete bridges that are in good condition and meet specific FHWA criteria are inspected on a four-year cycle.

WSDOT performs federally required inspections on all WSDOT-owned bridges as outlined in the National Bridge Inspection Standards to determine bridge conditions, maintain bridge safety, and identify preservation and maintenance needs.

Local agencies inspect 2,892 bridges

Local agencies performed 2,892 bridge inspections in FY2017, 96% (2,780) of which were routine. Local agencies follow the same federal guidance for inspections as the state.

Although most local governments inspect their own bridges, WSDOT conducts field reviews and provides training and technical assistance to Washington cities and counties for inspecting bridges on local roads.

WSDOT performs 1,278 routine bridge inspections and 20 routine ferry terminal inspections; Local agencies perform 2,780 routine inspections

Fiscal year 2017; Number of inspections by inspection type

Inspection type	WSDOT	Ferry terminals ¹	Local
Routine	1,278	20	2,780
Fracture critical	89	8	71
Special ²	36	8	17
Underwater	32	8	24
Total	1,435	44	2,892

Data source: WSDOT Bridge and Structures Office.

Notes: FHWA requires inspections on vehicular bridges and ferry terminals longer than 20 feet. WSDOT performs inspections on all structures included in the inventory on p. 20 but only reports on the inspections required by FHWA.

1 Ferry terminals owned by WSDOT. 2 These are discretionary and based on known or suspected deficiencies.



Leading indicator

Control the percent of National Highway System bridges, state and locally owned, in poor condition from increasing over 10% by 2020.

Status: On plan (green)

Strategies:

1. Replacing deteriorated bridge elements: WSDOT performs major preservation repairs by addressing specific bridge elements (such as floating bridge anchor cables, expansion joints and concrete columns) to improve bridges with low condition ratings.

Percent of bridges on the NHS that are structurally deficient (by deck area)

WSDOT owned	8.9%
Locally owned	5.7%
Combined	8.6%

2. Repainting steel bridges: A protective paint coating on a steel bridge is essential to prevent corrosion, extend the bridge's service life and keep the bridge in fair or better condition. Continuing to keep up with painting can prevent the number of bridges in poor condition from increasing.

3. Repairing concrete bridge decks: WSDOT is working to reduce the number of bridges classified as structurally deficient by addressing bridges with the highest benefits and the most cost savings. One strategy is to repair and rehabilitate concrete bridge decks to extend their service life.



Agency Emphasis Area PRACTICAL SOLUTIONS

By load restricting certain bridges, WSDOT uses Practical Solutions to reduce the risk of further damage to the structure while ensuring traveler safety. The practice also allows WSDOT to develop sound, cost-effective repair or replacement strategies.

WSDOT decreases number of load restricted and posted bridges to 119 in fiscal year 2017

A total of 119 WSDOT-owned bridges longer than 20 feet were load restricted or posted at the end of FY2017, down from 126 in FY2016. Nearly half (56) of WSDOT's load posted or restricted bridges are on the National Highway System, and 13.4% (16) were considered structurally deficient in FY2017. Two bridges (the SR 520 floating bridge and the SR 142 Klickitat River Bridge) were replaced in FY2017, removing the need for load restriction; the other five were repaired by either WSDOT maintenance crews or through contracts.

There were 216 locally owned bridges in Washington that were load restricted in FY2017 (of which 14 were on the NHS), an increase from 186 in FY2016.

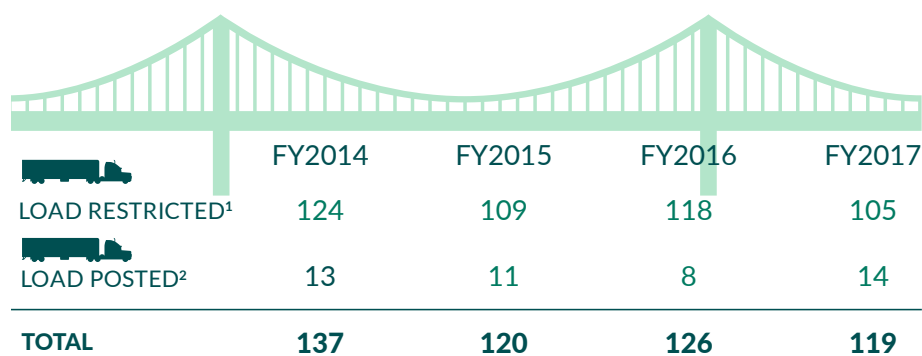
As part of the bridge inspection program, WSDOT performs load rating evaluations to verify whether

bridges can safely carry the weight of the trucks using them. Some bridges are weight restricted because they were designed and built at a time when the standard truck weight was lower. If a load rating evaluation result shows that the structure cannot safely carry certain loads because of bridge deterioration, damage or when it was built, WSDOT implements weight restrictions to reduce the risk of further damage and to ensure bridges are safe for the traveling public.

A bridge may first be load restricted, making it illegal for any overloaded truck to use the bridge. If the condition worsens and the bridge's capacity to carry heavy loads decreases, then the bridge will be "load posted." This limits the allowable weight of trucks to below typical legal weights. Preservation activities are required to correct load restricted or posted bridges.

WSDOT has 119 load restricted or load posted bridges

Fiscal years 2014 through 2017; Number of bridges with weight restrictions



Data source: WSDOT Bridge and Structures Office.

Notes:

¹ A "load restricted" bridge cannot be legally used by an overloaded truck

² A "load posted" bridge limits the allowable weight of trucks to below typical legal weights.

WSDOT takes a Practical Solutions approach to bridge preservation and asset management

WSDOT completed \$15.7 million in maintenance work on bridge decks and structures during FY2017. Maintenance repairs—a key element of WSDOT's Practical Solutions approach to bridge asset management—can substantially extend the amount of time bridges can be used before rehabilitation (more extensive repair) or replacement is needed.

As of June 2017, WSDOT had a statewide bridge maintenance backlog of 1,589 repairs, which it would need an estimated \$16 million to complete. Additionally, the agency has identified 133 larger repairs (estimated to cost \$36.5 million) which will need to be completed through contracts.

Repairing elements extends bridge service life

WSDOT hires contractors to address specific bridge element deterioration beyond what its maintenance crews can accomplish. Examples of this work include replacing steel anchor cables on floating bridges, repairing deteriorated concrete columns, replacing large steel expansion joints, and rehabilitating movable bridge mechanical and electrical systems.

During FY2017, WSDOT awarded contracts on bridge projects that included repairing concrete on a bridge on I-90 in Spokane, replacing anchor cables on the I-90 and SR 104 floating bridges, and repairing concrete columns on several bridges on SR 153. WSDOT currently has a project under

contract to replace gear boxes in the movable span of the SR 104 Hood Canal floating bridge.

WSDOT weighs multiple factors before making bridge repairs

When prioritizing bridge repair needs, WSDOT considers the severity of the issue, the importance of the route, and the risks involved in delaying repairs.

For the 2017-2019 biennium, there is \$41.5 million in planned funding for bridge repairs. Additionally, there are \$400,000 and \$4.6 million reserves for as-needed preservation work on the SR 520 floating bridge and the SR 16 Tacoma Narrows Bridge, respectively. Total funding for bridge repairs in the 2015-2017 biennium (July 2015 through June 2017) was \$37 million.

WSDOT kicks off Systematic Preventive Maintenance program

WSDOT has allocated \$6.0 million to perform systematic preventive maintenance (SPM) on bridges during the 2017-2019 biennium; this additional funding represents a 38.2% increase in the agency's maintenance budget. SPM is an asset management strategy that focuses on using planned maintenance treatments to extend the useful life of existing bridges in a cost-effective way. Work completed as part of SPM may include sealing bridge deck joints on steel truss bridges, filling in ruts on bridge decks, and spot-painting steel bridges.



Agency Emphasis Area **PRACTICAL SOLUTIONS**

Systematic preventive maintenance is a cost-effective asset management strategy that supports Practical Solutions. Applying bridge preservation treatments at the appropriate time can extend a bridge's useful life at a lower lifetime cost.



Strategic Plan Goal 1: **STRATEGIC INVESTMENTS**

Strategic Investments Strategy

Create a process to identify strategic preservation and maintenance investments and strategic operational and multimodal capacity improvement investments in corridors to achieve performance levels.

Asset Management Strategy

Define a strategic, agency-wide asset management policy.

In support of these strategies, WSDOT has implemented a Strategic Bridge Preservation program for the 2017-2019 biennium. The agency will also incorporate strategic preservation into its agency-wide asset management plan, a draft of which is currently in development.



Agency Emphasis Area **PRACTICAL SOLUTIONS**

By rehabilitating concrete bridge decks using modified concrete overlays rather than replacing them with new decks, WSDOT saves approximately \$220 per square foot of bridge deck area.

Spalling

When reinforcing steel in concrete bridge decks starts to corrode (for example, due to winter weather or the use of deicing salt), the concrete starts to “spall” (pothole) and deteriorate. WSDOT crews repair spalled areas annually, but these repairs are temporary and typically last one to three years. Once the total area of repairs and/or patching exceeds 2% of the total deck area, the bridge is added to the list of future needs projects and classified as structurally deficient. Bridge deck overlay projects are prioritized based on the total square footage of deterioration and the type of freight route on which the bridge is located, with bridges on vital freight routes and those leading to islands getting higher priority.

WSDOT expects concrete bridge deck repairs to cost \$867.9 million over 10 years

WSDOT has 13 bridges under contract to receive a deck repair and overlay, and plans to have an additional 14 bridges either completed or under contract in the 2017-2019 biennium. WSDOT spent \$11.3 million on concrete bridge deck rehabilitation during the 2015-2017 biennium and plans to spend \$35.8 million on similar rehabilitation projects during the 2017-2019 biennium. These planned expenditures will cover 4.1% of the \$867.9 million WSDOT expects to need for concrete bridge deck repairs over the next 10 years (see table at right).

Most WSDOT-owned bridges have reinforced concrete decks. The agency’s comprehensive bridge deck program aims to economically repair and overlay these decks to prolong their lifespan and avoid expensive deck replacements. Deck repairs and protective overlays extend bridges’ service lives by at least 25 to 30 years and are more cost-effective than replacing the entire deck; rehabilitating decks with a concrete overlay costs about \$80 per square foot, while replacing the deck entirely costs \$300 per square foot.

This Practical Solution to bridge deck deterioration substantially reduces overall project costs, and has allowed WSDOT to extend the service life of 343 bridge decks (8.2 million square feet) by 25-30 years. As a result, WSDOT has only had to fully replace 16 bridge decks since the agency was created in 1905 (when it was known as the State Highway Board).

303 bridges will need repairs to concrete decks in next 10 years

As of June 2017; Dollars in millions

Bridge deck status	Number of bridges	Cost to repair
Contract work in progress	13	\$36.8
Past due for Repair ¹	32	\$44.9
Due for Repair ²	42	\$54.3
To be due in next 10 years	216	\$731.9
Total 10-year needs	303	\$867.9

Data source: WSDOT Bridge and Structures Office.

Notes: **1** Bridges with more than 5% of deck area patched or spalled are classified as “past due.” **2** Bridges with 2% to 5% of deck area patched or spalled are classified as “due.”

WSDOT paints steel bridges to extend service life

WSDOT completed two painting projects on steel bridges during FY2017, and a total of five during the 2015-2017 biennium. WSDOT also provided 50% of the funds to paint a portion of the US 101 Columbia River Bridge to Astoria, Oregon.

WSDOT has three bridges currently under contract to be painted and another 17 funded to begin work during the 2017-2019 biennium. The agency has a total of \$82.6 million in funding for steel bridge painting in 2017-2019. WSDOT will need to repaint 184 steel bridges within the next 10 years (see table on p. 25).

WSDOT will need to paint 184 steel bridges in next 10 years

As of June 2017; Dollars in millions

Bridge painting status	Number of bridges	Cost to paint
Contract work in progress	3	\$9.3
Past due for Painting ¹	36	\$159.1
Due for Painting ²	73	\$301.7
Border Bridges ³	4	\$31.0
To be due within 10 years	68	\$280.0
Total 10-year needs	184	\$781.1

Data source: WSDOT Bridge and Structures Office.

Notes: **1** Steel bridges with more than 5% of steel exposed are classified as "past due for painting." **2** Steel bridges with 2% to 5% of steel exposed are classified as "due for painting." **3** Includes all border bridges expected to need painting with 10 years.

Sixteen WSDOT-owned bridges need replacement

As of June 2017; Dollars in millions

Bridge status	Number of bridges	Cost to repair
Contract work in progress	1	\$9.3
Current replacement need	16	\$159.0
Current rehabilitation need	17	\$101.6
Rehabilitation/ Replacement need within 10 years	60	\$319.8
Total 10-year needs	94	\$589.7

Data source: WSDOT Bridge and Structures Office.

WSDOT paints its steel bridges on state highways as needed to protect them against premature corrosion. The agency currently maintains 311 steel bridges that require painting on a regular basis. Washington also has eight steel bridges that cross state lines, and while WSDOT does not directly manage all eight, the agency shares painting costs equally with the bordering states.

Overall, WSDOT needs to replace or rehabilitate 32 bridges statewide

WSDOT replaced one bridge (the SR 142 bridge over the Klickitat River) during FY2017.

WSDOT currently manages 16 bridges that are structurally deficient and require replacement (excluding the State Route 99 Alaskan Way Viaduct Bridge, which has an active replacement contract). An additional 16 structurally deficient bridges need rehabilitation—major preservation repairs—with three of those requiring full bridge deck replacement.

WSDOT's total planned 2017-2019 biennial funding for bridge replacement/rehabilitation is \$84.6 million. WSDOT always estimates the cost of both rehabilitating a bridge and replacing it before deciding on a course of action. If the cost of rehabilitation is 60% or more of the cost of replacement, the agency will replace the bridge.



Agency Emphasis Area PRACTICAL SOLUTIONS

Painting steel bridges supports Practical Solutions by minimizing bridge life cycle cost. Painting a steel bridge extends its service life by 20 to 25 years, and costs approximately 20-25% as much as replacing it.



Agency Emphasis Area PRACTICAL SOLUTIONS

WSDOT always estimates the cost of both rehabilitating a bridge and replacing it before deciding on a course of action. If the cost of rehabilitation is 60% or more of the cost of replacement, the agency will replace the bridge.

Connecting Washington addresses bridge preservation needs

As part of the \$16 billion Connecting Washington transportation revenue package, \$1.2 billion is allocated to state highway preservation, which includes maintaining pavement, bridges and traffic operations. WSDOT is working to identify bridge preservation projects as part of this investment. Three bridge projects identified by the Legislature will be addressed in the next six years:

- SR 241 Yakima River bridge near Mabton—\$12 million
- US 12 Wildcat Creek bridge near White Pass—\$12 million
- SR 107 Chehalis River bridge near Montesano—\$12.5 million

In addition to the \$1.2 billion, another \$57.5 million from Connecting Washington is allocated to bridge preservation and repair projects over the next 16 years. No specific projects have been identified as part of this investment.

Connecting Washington funding will not allow WSDOT to restore all of its structurally deficient bridges to fair or better condition. Structurally deficient does not mean that a bridge is unsafe or in need of replacement; typically, one or more of the bridge's components requires either repair or preservation. Using a lowest life cycle cost approach to delivering preservation strategies means that there will continue to be bridge components that need work.

Connecting Washington will help address the most critical needs for bridges. In particular, it will help eliminate most of the weight restrictions on many of the deficient bridges and help prevent new weight restrictions from being imposed.

WSDOT will replace US 101 Elwha River Bridge near Port Angeles

Engineers are designing a bridge to replace the US 101 bridge over the Elwha River near Port Angeles. The new bridge will meet current standards and resist future river scour and earthquakes.

The existing Elwha River Bridge was built in 1926, after the original Glines Canyon and Elwha dams were constructed. When the dams were removed in 2012 as part of a National Park Service project to restore the Elwha River to its pre-dam state, the river began aggressively removing loose rock in the riverbed, leading to severe scour around the bridge's foundations (see photo at right).



The US 101 bridge over the Elwha River.

the highest-priority scour repairs needed. Scour repair projects for the three highest-priority bridges (the US 101 Chehalis River bridge, the SR 529 Union Slough bridge and the US 2 South Fork Skykomish River bridge) are currently in the design phase, with construction planned to begin in 2018. Total funding for scour repair in the 2017-2019 biennium is \$6.6 million.

WSDOT constructs temporary bridge over San Poil River after closure due to flooding

In April 2017, a flood on the San Poil River severely scoured the approaches and foundations of the SR 21 West Fork San Poil River Bridge (located south of Republic on the Colville Indian Reservation in rural eastern Washington), leading WSDOT to close the bridge.

WSDOT maintenance crews came from all over the state—including Spokane, Vancouver and the Tacoma Narrows Bridge—to install a temporary Bailey bridge (a steel bridge made of pre-fabricated, re-usable parts). Installing the Bailey bridge took four days, after which WSDOT engineers worked with a contractor to repair the approach roadways. The Bailey bridge, which allows one lane of alternating traffic to cross the river, opened 13 days after the original bridge was closed.

Bridge Scour

Bridges experience “scour” when high volumes of water cause soil erosion around their foundation. Foundation scour is the leading cause of bridge failures in Washington and nationwide.

WSDOT has 268 bridges at risk for scour

WSDOT manages 1,557 vehicular bridges and culverts longer than 20 feet that cross over water. Of these, 268 (17%) are “scour critical,” meaning they are at risk for future scour. All scour critical bridges are inspected every two years as part of routine bridge inspections.

In 2016, WSDOT reviewed the conditions and original plans of all scour critical bridges, and established

WSDOT is prioritizing I-405 bridges for seismic retrofits

WSDOT suspended bridge seismic retrofit projects during FY2017 in order to reassess its use of available funding. Following the “Cascadia Rising” earthquake drill (see [Gray Notebook 62 pp. 21-22](#)) and ongoing updates to the Resilient Washington initiative, WSDOT determined that it will further develop its network of seismically resilient routes in the Puget Sound region (see [bit.ly/SeismicLifeline](#)).

WSDOT has previously prioritized retrofitting bridges on I-5 between Joint Base Lewis McChord and the I-405 interchange near Renton. Most of these retrofits are now complete,

WSDOT completes 316 seismic retrofits to its bridges

As of June 2017

Bridge status	Number of bridges
Retrofit complete ¹	316
Partially retrofitted	119
Retrofit needed	474
Total	909

Data source: WSDOT Bridge and Structures Office.

Notes: ¹ Excluding foundations.

and the agency's next priority will be retrofitting bridges on I-405. During the 2017-2019 biennium, WSDOT will plan retrofits of one remaining bridge on I-5 (in Olympia) and of bridges on SR 518 and I-405.

WSDOT's Bridge Seismic Retrofit Program, launched in 1991, is a plan to make 909 bridges in the western

half of Washington state resilient to earthquakes. So far, 316 bridges have been retrofitted to withstand earthquakes, most commonly by putting steel jacketing around columns or by adding concrete-and-steel reinforcing to pier caps.

Contributors included Chris Keegan, Roman Peralta, Tim Rydholm, Ernie Sims, DeWayne Wilson, Helen Goldstein and Joe Irwin

A closer look at MAP-21, Results Washington and GASB bridge condition targets

The federal Moving Ahead for Progress in the 21st Century Act (MAP-21, see [p. 9](#)) requires states to maintain their bridges so that less than 10% of National Highway System (NHS) bridge deck area in each state is located on bridges classified as structurally deficient (in poor condition). The Results Washington goal mirrors this federal requirement (see [p. 21](#)).

WSDOT also follows infrastructure asset reporting policies of the Governmental Accounting Standards Board (GASB), which establishes reporting standards for state and local governments that follow Generally Accepted Accounting Principles. For GASB reporting, WSDOT has set a condition goal of 90% of WSDOT-owned bridge deck area in fair or better condition.

Bridge condition reporting requirements

Condition targets by performance reporting system

Reporting system	Target	Included bridges
Moving Ahead for Progress in the 21st Century	≤10% of deck area on structurally deficient (poor condition) bridges	All NHS bridges (WSDOT- and locally owned)
Results Washington	≤10% of deck area on structurally deficient (poor condition) bridges	All NHS bridges (WSDOT- and locally owned)
Governmental Accounting Standards Board	>90% of bridge deck area in fair or better condition	All WSDOT-owned bridges (NHS and non-NHS)

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

Note: NHS = National Highway System.

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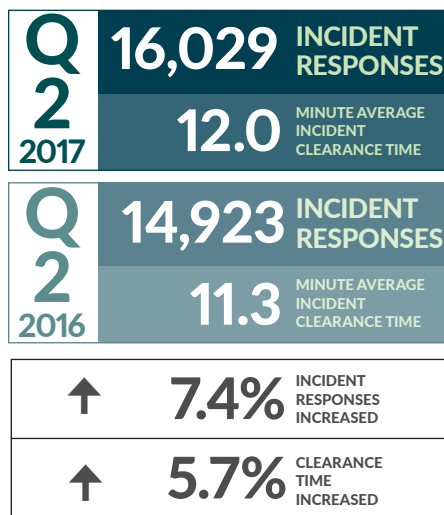
INCIDENT RESPONSE
QUARTERLY UPDATE

Notable results

- WSDOT responded to 16,029 incidents during the quarter, providing about \$23.8 million in economic benefits
- WSDOT cleared incident scenes in an average of 12 minutes, reducing traffic delay and the risk of secondary incidents

WSDOT reduces clearance times
while responding to more incidents

Second quarter (April through June) 2016 and 2017



Data source: Washington Incident Tracking System.

Notes: The data above only accounts for incidents to which an IR unit responded. IR data reported for the current quarter (Q2 2017) is considered preliminary. In the previous quarter (Q1 2017), WSDOT responded to 15,387 incidents, clearing them in an average of 12.1 minutes. These numbers have been confirmed and are now finalized.

Incident Response teams help improve
driver safety at 16,029 incidents

WSDOT's Incident Response (IR) teams assisted at 16,029 incidents during the second quarter (April through June) of 2017. This averages to a WSDOT team responding to an incident scene roughly every eight minutes during the quarter. There were 1,106 more incidents during the second quarter of 2017 than during the same period in 2016, about a 7.4% increase.

WSDOT teams cleared these incidents in an average of 12 minutes. This is 39 seconds longer than the average incident clearance time for the same quarter in 2016. During this time there was a 37.3% increase in incidents lasting more than 90 minutes while incidents lasting 15-90 minutes increased 11.3%, and incidents lasting less than 15 minutes increased 6.1%. The proportion of incidents which blocked at least one lane was 24.4% for this quarter compared to 23.7% during the same quarter last year.

WSDOT focuses on safety when clearing incidents, working to reduce incident-induced delay as well as the potential for secondary incidents. Secondary incidents occur in the congestion resulting from a prior 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 new incidents. A table summarizing the IR program's performance and benefits for the quarter is on the next page.

WSDOT's assistance at incident scenes provided an estimated \$23.8 million in economic benefits during the second quarter of 2017 by reducing the impacts of incidents on drivers. These benefits are provided in two ways:

- WSDOT reduces the time and fuel motorists waste in incident-induced traffic delay by clearing incidents quickly. About \$13.4 million of IR's economic benefits for the quarter result from reduced traffic delay.
- WSDOT helps prevent secondary incidents by proactively managing traffic at incident scenes. About \$10.4 million of IR's economic benefits result from preventing an estimated 3,019 secondary incidents and resulting delay. This figure is based on Federal Highway Administration data that indicates 20% of all incidents are secondary incidents.

Based on WSDOT's budget for IR, every \$1 spent on the program this quarter provided drivers roughly \$15.89 in economic benefit.

The mission of WSDOT's Incident Response program is to clear traffic incidents safely and quickly, minimizing congestion and the risk of secondary incidents. The statewide program has a biennial budget of \$12 million, about 59 full-time equivalent positions and 69 dedicated vehicles. Teams are on-call 24/7 and actively patrol approximately 1,300 centerline miles (3,400 lane miles) of highway on major corridors around the state during peak traffic hours. This covers approximately 18% of all state-owned centerline miles statewide.

WSDOT's Incident Response provided an estimated \$23.8 million in economic benefit

April through June 2017; 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 incident clearance time ⁴ (all incidents)	Cost of incident-induced delay	Economic benefits from IR program ⁵
Less than 15 min.	12,469	15.4%	2.6	4.7	\$14.6	\$6.8
Between 15 and 90 min.	3,387	54.7%	15.5	30.5	\$29.2	\$12.8
Over 90 min.	173	83.1%	138.6	178.0	\$10.0	\$4.3
Total	16,029	24.4%	14.0	12.0	\$53.8	\$23.8
Percent change from 2Q 2016	↑7.4%	↑0.7%	↓24.9%	↑5.7%	↑13.8%	↑13.4%

Data source: Washington Incident Tracking System.

Notes: Some numbers do not add up due to rounding.

- 1 Teams were unable to locate 934 of the 16,029 incidents. Because an IR team attempted to respond, these incidents are included in the total incident count, but are not factored into other performance measures.
- 2 An incident is considered blocking when it shuts down one or more lanes of travel.
- 3 Roadway clearance time is the time between the IR team's first awareness of an incident (when a call comes in or the incident is spotted by a patrolling IR unit) and when all lanes are available for traffic flow.
- 4 Incident clearance time is the time between an IR team's first awareness of an incident and when the last responder has left the scene.
- 5 Estimated economic benefits include benefits from delay reduction and prevented secondary incidents. See [WSDOT's Handbook for Corridor Capacity Evaluation, 2nd edition, pp. 45-47](#), for WSDOT's methods to calculate IR benefits.

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

WSDOT teams respond to 173 over-90-minute incidents

WSDOT Incident Response units provided assistance at the scene of 173 incidents that lasted more than 90 minutes during the second quarter of 2017. This is 47 more incidents—a 37.3% increase—than the same quarter in 2016. While these over-90-minute incidents accounted for 1.1% of all incidents, they resulted in 18.6% of all incident-related delay costs.

Nine of the 173 over-90-minute incidents took six hours or more to clear (referred to as extraordinary incidents). This is two more incidents

than the same quarter in 2016. The nine extraordinary incidents took an average of nine hours and 58 minutes to clear, accounting for 3.1% of all incident-induced delay costs for the quarter.

The average incident clearance time for all over-90-minute incidents was about two hours and 58 minutes. This is about five minutes faster than the same quarter in 2016. Excluding the nine 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, Michele Villnave, Takahide Aso, Dustin Motte



Agency Emphasis Area PRACTICAL SOLUTIONS

The Incident Response program aligns with WSDOT's Agency Emphasis Area, Practical Solutions, by improving the performance of the multimodal transportation system at the least cost.

Customer feedback:

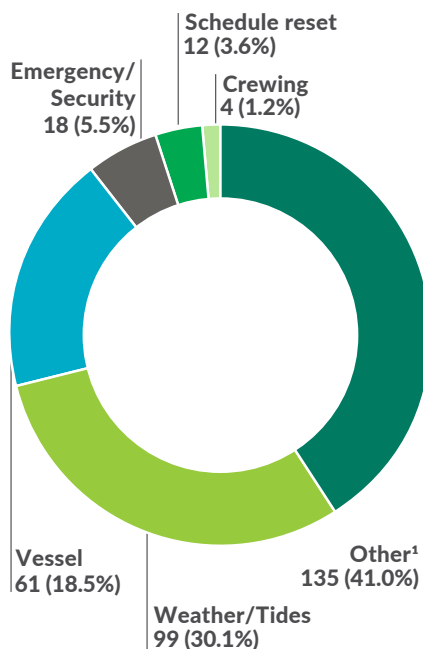
- Dave showed up just as I was about to call AAA. He used a large crow bar to help dislodge the tire/wheel from the vehicle and finished changing our tire. Very courteous and kind!
- Trent was excellent in every aspect of his handling of the incident.

Notable results

- *Ferries made 99.4% of its regularly scheduled trips in the fourth quarter of fiscal year 2017, exceeding its annual reliability goal of 99%*
- *Ferries ridership was more than 6.47 million in the fourth quarter of fiscal year 2017, about 128,300 (2%) more than the corresponding quarter in FY2016*

Vessel availability top reason for cancellations during quarter

Fourth quarter (April - June) FY2017



Data source: WSDOT Ferries.

Notes: Fiscal years (FY) run from July 1 through June 30. Percentages may not equal 100 due to rounding.

¹ The category for "Other" includes 117 cancellations that occurred when the M/V Kitsap went out of service on the Seattle - Bremerton route. The M/V Sealth was moved from the Fauntleroy - Vashon - Southworth route to fill in, leading to cancellations on that route. "Other" also includes issues at terminals, and events like disabled vehicles, environmental reasons and non-vessel related incidents that can impact operations.

² Ferries replaced 91 of the 329 canceled trips for a total of 238 net missed trips.

Ferries reliability exceeds annual goal of 99%

There were 40,745 regularly scheduled ferry trips during the fourth quarter of fiscal year (FY) 2017 (April through June 2017). WSDOT Ferries completed 99.4% (40,507) of these trips. This exceeded its annual reliability performance goal of 99% and was 0.2 percentage points lower than the same quarter in FY2016 (see table on the next page).

In the fourth quarter of FY2017, Ferries canceled 329 trips and was able to replace 91 of them, resulting in 238 net missed trips. This was 83 more net trips missed compared to the same quarter in FY2016.

Vessel availability contributed to 117 of the 136 cancellations in WSDOT's "other" category for cancellations during the quarter. The category, which totalled 135 (41.0%) of all cancellations, also includes non-vessel related problems and issues at terminals. Vessel availability was impacted by mechanical issues on the Motor/Vehicle (M/V) *Kitsap* on the Seattle - Bremerton route that prompted WSDOT to replace it with the M/V *Sealth* from the Fauntleroy - Vashon - Southworth (triangle) route. This, in turn, reduced the triangle route to a two-boat schedule. Weather and tides on the Port Townsend - Coupeville route accounted for an additional 99 (30.1%) cancelled trips during the quarter.

Ridership once again booms during the summer quarter

WSDOT Ferries' ridership was approximately 6.47 million during the fourth quarter of FY2017. This was about 241,900 (3.9%) higher than WSDOT projected for the quarter and about 128,300 (2.0%) more in total ridership than the corresponding quarter in FY2016.

The ridership increase compared to the same quarter last year is consistent with regional population gains and was not impacted by adverse weather.

On-time performance decreases

On-time performance dropped slightly compared to the same quarter in FY2016, decreasing from 93.0% to 90.7% for the fourth quarter of FY2017. The quarterly rate misses Ferries' annual on-time performance goal of 95%.

On average in the fourth quarter of FY2017, 41 out of 445 daily trips did not leave the terminal within 10 minutes of the scheduled departure time, an increase from an average of 31 out of 448 trips for the same quarter last year.

On-time performance declined on seven of nine routes compared to the fourth quarter of FY2016. The San Juan Domestic route had the largest decrease (9.7%) compared to the same quarter last year due to a mechanical problem that required a vessel to operate at slower speeds for part of the quarter.

Ferries' on-time performance and trip reliability decrease in the fourth quarter of fiscal year 2017

April through June FY2016 and FY2017; Annual on-time goal = 95%; Annual reliability goal = 99%

Route	On-time performance (fourth quarter)				Trip reliability (fourth quarter)			
	FY2016	FY2017	Status	Trend	FY2016	FY2017	Status	Trend
San Juan Domestic	88.1%	79.0%	-9.1%	↓	99.9%	99.8%	-0.1%	↓
Anacortes/Friday Harbor – Sidney, B.C.	91.8%	84.7%	-7.1%	↓	100.0%	100.0%	0.0%	↔
Edmonds – Kingston	98.7%	96.2%	-2.5%	↓	99.8%	99.9%	+0.1%	↑
Fauntleroy – Vashon – Southworth	87.9%	88.8%	+0.9%	↑	99.9%	99.1%	-0.8%	↓
Port Townsend – Coupeville	92.2%	93.7%	+1.5%	↑	94.5%	95.9%	+1.4%	↑
Mukilteo – Clinton	96.5%	95.9%	0.6%	↓	100.0%	100.0%	0.0%	↔
Point Defiance – Tahlequah	98.5%	98.4%	-0.1%	↓	99.8%	99.9%	+0.1%	↑
Seattle – Bainbridge Island	93.5%	90.4%	-3.1%	↓	100.0%	100.0%	0.0%	↔
Seattle – Bremerton	99.6%	93.9%	-5.7%	↓	99.9%	99.0%	-0.9%	↓
Total system	93.0%	90.7%	-2.3%	↓	99.6%	99.4%	-0.2%	↓

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.

Passenger injuries increase, employee injuries decrease

The rate of passenger injuries per million riders increased from 0.42 in the fourth quarter of FY2016 to 0.77 in the fourth quarter of FY2017, representing an increase from two to five total passenger injuries. The passenger injury rate last quarter was below Ferries' goal of 1.0 injury per million riders.

The rate of Occupational Safety and Health Administration recordable crew injuries per 10,000 revenue service hours decreased from 4.1 in the fourth quarter of FY2016 to 2.2 in during the same period in FY2017. This represents six less injuries compared to the same quarter in FY2016, and remains below Ferries'

annual goal of having a rate of less than 7.6 crew injuries per 10,000 revenue service hours.

Revenue follows ridership, trends up for the quarter

Ferries farebox revenue continued its upward trend, coming in at about \$51.7 million for the fourth quarter of FY2017. Farebox revenue was about \$2.1 million (4.3%) more than the same quarter in FY2016, and about \$2.8 million (5.9%) above projections.

Passenger complaints decrease for the quarter

In total, Ferries received 333 complaints and 32 compliments from 6.47 million riders during the fourth quarter of FY2017. This 113 fewer complaints than the same

quarter in FY2016. About one-third of complaints (116) centered around loading and unloading, which saw an increase from 80 complaints in the fourth quarter of FY2016. The biggest improvement was in reservations where complaints decreased from 51 to 23 during the period.

Contributors include:
Matt Hanbey, Kynan Patterson, Joe Irwin
and Dustin Motte



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

Notable results

- *Twelve of 18 Amtrak Cascades stations saw increases in passengers getting on or off trains in FY2017; the remaining six held steady*
- *Eighteen of 20 federally funded rail projects were complete and two were in construction as of June 30, 2017*

Measuring Station Use

Passenger use at each station is measured by “on-offs” that determine the number of riders who get on or off trains at a given station. For example, someone who rides Amtrak Cascades from Kelso to Seattle is counted as one passenger using the Kelso station (where they board the train), and as one passenger using the Seattle station (where they get off the train).

Amtrak Cascades stations saw a 5.8% increase in use during FY2017

Nearly 1.6 million passengers got on or off trains at one of the 18 Amtrak Cascades stations during fiscal year (FY) 2017 (July 2016 through June 2017)—an increase of 5.8% over FY2016. Approximately 53% of FY2017 Amtrak Cascades passengers used one of the 12 stations in Washington state. Washington stations saw passenger use increase by 5.7% between FY2016 and FY2017.

An enhanced 2016 marketing campaign likely contributed to the system-wide increases in ons and offs. The weak Canadian dollar also created an incentive for more travelers to head north, as evidenced by the 10.5% increase in passenger ons and offs at the Vancouver, British Columbia station—the largest increase of any station on the Amtrak Cascades line.

Seattle’s King Street Station also showed a sharp increase in usage, with 38,000 (7.9%) more passengers using it in FY2017 than in FY2016. With 478,000 passenger ons and offs in FY2017, the Seattle station was the busiest in the Amtrak Cascades system. The second busiest station was Union Station in Portland, Oregon, which 408,000 passengers used in FY2017, up 5.1% from the previous year.

None of the 18 stations saw passenger use decrease from FY2016 to FY2017, although six stations (Tacoma, Everett, Stanwood, Mount Vernon, Kelso, and Oregon City) held steady year-over-year, with no change in the number of passenger ons or offs.

Total number of passengers getting on or off trains¹ at Amtrak Cascades stations increases 5.8 %

Fiscal years (July 1 through June 30) 2016 and 2017

Station ²	FY2016	FY2017	Change	Station ²	FY2016	FY2017	Change
Vancouver, B.C.	153,000	171,000	10.5%	Olympia	48,000	50,000	4.0%
Bellingham	50,000	52,000	3.8%	Centralia	20,000	21,000	4.8%
Mount Vernon	18,000	18,000	0.0%	Kelso	25,000	25,000	0.0%
Stanwood	5,000	5,000	0.0%	Vancouver, WA	71,000	73,000	2.7%
Everett	24,000	24,000	0.0%	Portland ³	387,000	408,000	5.1%
Edmonds	22,000	24,000	8.3%	Oregon City ³	14,000	14,000	0.0%
Seattle	440,000	478,000	7.9%	Salem ³	39,000	40,000	2.5%
Tukwila	29,000	30,000	3.3%	Albany ³	19,000	20,000	5.0%
Tacoma	86,000	86,000	0.0%	Eugene ³	49,000	52,000	5.8%
				Total ⁴	1,499,000	1,591,000	5.8%

Data source: WSDOT Rail, Freight and Ports Division.

Notes: 1 Measures the number of passengers moving through stations by counting the number of riders that get on or off the train at each station (rounded to nearest thousand). 2 The stations are owned by different entities, primarily city governments and local transit agencies. WSDOT owns one station (Stanwood) and Amtrak owns two stations (Edmonds and Tacoma). 3 Station located in Oregon. 4 Excludes RailPlus passengers, riders whose origin and destination was unknown, and passengers who deferred their trip to another day. These accounted for 20,000 passengers in FY2016 and 28,000 passengers in FY2017.

WSDOT works with Seattle Seahawks' wide receiver to spread safety message

Seattle Seahawks wide receiver Doug Baldwin helped WSDOT spread the agency's train safety message at a series of events in May. Baldwin spoke to more than 1,100 students at two elementary schools (Tyee Park and Tillicum) in Lakewood on May 3, and to more than 300 people of all ages at a May 28 event, also in Lakewood.

WSDOT's Amtrak Cascades trains will be rerouted later this year to the Point Defiance Bypass, which will take passenger trains along I-5 from Tacoma to DuPont. WSDOT's Stay Back from the Tracks train safety campaign is designed to get area residents ready for the change.

The campaign includes a partnership with the non-profit Operation Lifesaver, which has provided safety presentations to nearly 7,000 students in 2017. WSDOT has also spoken with nearly 4,000 people at community events at Joint Base Lewis-McChord.

WSDOT completes 18 of 20 High-Speed Rail projects

Two more of WSDOT's 20 federally funded high-speed rail projects were completed during the second quarter (April-June) of 2017, for a total of 18 complete. The two remaining projects are scheduled to wrap up early in the third quarter (July-September) of 2017.

Kelso Martin's Bluff – New Siding

The \$56 million New Siding project, which was completed in May 2017, added 4 miles of new siding track

near the Port of Kalama. The siding tracks will relieve freight train congestion as trains enter and leave the port, allowing passenger trains to pass through the area more quickly.

Corridor Reliability Upgrades-South

This \$86.5 million project, also completed in May 2017, made a series of track upgrades to the BNSF main line tracks from the Nisqually area to the Columbia River. Work included upgrading track quality, replacing ballast (the rocks under the tracks), and replacing rail and bridge joints. The project allows Amtrak Cascades trains to maintain maximum speeds over longer distances, which should contribute to improving on-time performance.

New Tacoma Dome Station reaches construction milestone

The new Amtrak Tacoma Dome Station reached its final major construction milestone at the end of June. The station, which is part of the larger Tacoma-Point Defiance Bypass project (scheduled to be completed in August 2017), received its certificate of occupancy on June 29, 2017. The new station is part of a multimodal transportation hub around the historic Freighthouse Square in Tacoma's Dome District; Sound Transit's Sounder station is next door, and Pierce Transit's Tacoma Dome Station and Link light rail are across the street. The station and the Point Defiance Bypass are expected to open later in 2017, after Sound Transit completes a rail trestle project near the station.

Contributors include Teresa Graham, Barbara LaBoe, Janet Matkin, Helen Goldstein and Cara Motte

On-time performance reported annually

For most recent on-time performance data, see [Gray Notebook 63, p. 22](#).

Progress continues on WSDOT's 20 federally funded rail projects

As of June 30, 2017, WSDOT had two passenger rail projects in construction and 18 projects completed. More than 94% (\$745 million) of the funding for these 20 projects comes from the American Recovery and Reinvestment Act of 2009. Work includes purchasing new locomotives, adding tracks to handle increased passenger train traffic, and upgrading tracks, signals and stations.

When the program is completed in Fall 2017, Amtrak Cascades will add two new daily round trips between Seattle and Portland, with an anticipated travel time reduction of 10 minutes. In addition, WSDOT, Amtrak, Sound Transit and BNSF are committed to achieving an average of 88 percent on time performance for trains traveling in Washington.

To view an interactive map showing completion status and funding details for each of the federally funded rail projects, visit bit.ly/GNBrailmap.

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FISH PASSAGE BARRIERS
ANNUAL REPORT

Notable results

- WSDOT corrected 20 fish passage barriers in 2016, improving access to 92 miles of potential upstream habitat
- To date, WSDOT has corrected 44 fish passage barriers within the case area of the 2013 federal injunction, restoring access to 14% of previously blocked habitat

Agency Emphasis Area
**WORKFORCE
DEVELOPMENT**

WSDOT offered specialized multidisciplinary training sessions for staff working on fish passage barrier correction projects.

Agency Emphasis Area
INCLUSION

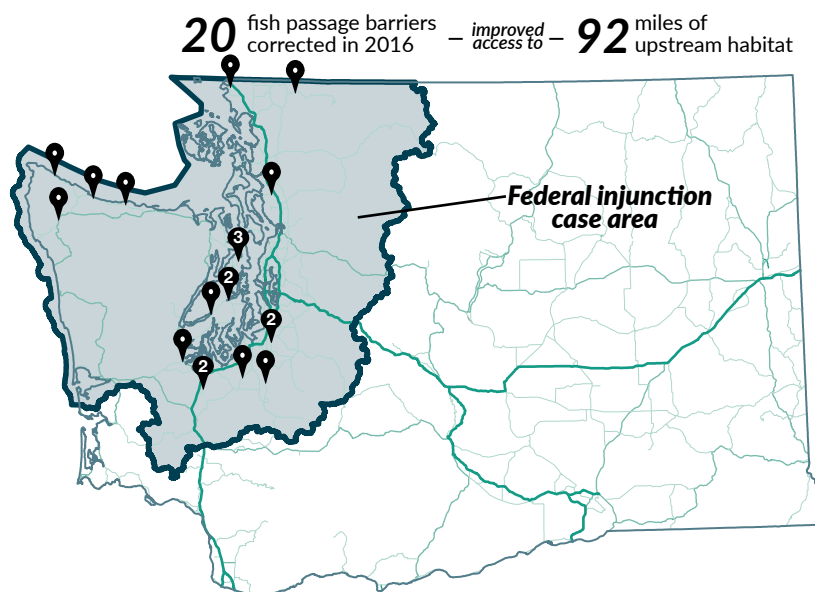
The Rattlesnake Creek project was a collaborative effort between WSDOT and the Asotin County Conservation District, the Nez Perce Tribe and the Confederated Tribes of the Umatilla Indian Reservation.

WSDOT improves access to 92 miles of potential upstream fish habitat

WSDOT corrected 20 fish passage barriers statewide in 2016, restoring fish access to 92 miles of upstream habitat. All 20 of the corrected fish passage barriers completed in 2016 are applicable to a March 2013 federal injunction that requires WSDOT to restore access to 90% of blocked habitat within the case area shown in the map below by 2030 (visit <http://www.wsdot.wa.gov/Projects/FishPassage/> for more information).

WSDOT has corrected 319 fish passage barriers to date statewide. These projects have restored access to approximately 1,032 miles of potential habitat for fish, including salmon, bull trout, steelhead and cutthroat trout. WSDOT started working with the Washington State Department of Fish and Wildlife in 1991 to systematically identify and correct fish passage barriers that occur where state-owned highways cross over rivers and streams. Correcting fish passage barriers is instrumental to recovering the population of Pacific salmon. These corrections contribute to healthy fish and wildlife, which is part of Goal 3: Sustainable energy and a clean environment of Results Washington, Governor Jay Inslee's performance management system for the state.

WSDOT corrects fish passage barriers using bridge design and stream simulation culverts designed to provide conditions closer to those of a natural stream. These corrections take place as either stand-alone projects for high-priority barriers, or as part of larger transportation projects.



Data source: WSDOT Environmental Services Office.

Notes: Markers with numbers represent sites with multiple fish passage barrier corrections, all other markers represent sites with one correction.

WSDOT makes progress to comply with injunction

WSDOT has corrected 44 fish passage barriers applicable to the March 2013 federal culvert injunction, including the Yarrow Creek project at State Route (SR) 520 that was completed in 2014 but had not been previously reported. These corrections have restored unblocked access to about 169 miles, or roughly 14%, of previously blocked habitat within the federal injunction case area. Twenty of the 44 barriers were corrected by projects completed in 2016.

WSDOT needs to correct approximately 475 barriers within the case area by 2030 to restore fish access to 90% of previously blocked habitat to be in compliance with the federal injunction. A barrier correction project is applicable to the injunction if it corrects a culvert that is a documented barrier to salmon or steelhead in the case area. Some barrier correction projects are not applicable to the injunction because they are outside the case area.

WSDOT offers cross-program training for fish passage projects

Members of WSDOT's Fish Passage team collaborated with other WSDOT environmental teams and hydraulic engineers to deliver multidisciplinary training sessions to the agency's construction project engineering offices throughout western Washington in the spring and summer of 2017. The training provided WSDOT engineers and contractors information on fish passage barrier correction projects



Above: Jansen Creek culvert at SR 112 before it was corrected by WSDOT in 2016. This project is applicable to the 2013 federal injunction. Below: The same location after WSDOT corrected the culvert using bridge design methodology. This design allows unhindered passage for fish to reach quality spawning and rearing habitat, and improves estuary function.



scheduled for completion in the remainder of 2017. WSDOT has found that well-timed training

imparts knowledge when it is needed, and reduces the risk of knowledge loss over time.

Corrected fish passage culvert survives 'extreme' flash flood and resulting debris

Heavy rains and a failed dam sent an estimated 13 million gallons of water and thousands of uprooted trees down the valley of Rattlesnake Creek in Asotin County on April 13, 2017, slamming debris into the fish passage culvert under SR 129.

The culvert remains in place and fully functional after the flash flood. WSDOT crews removed logs and debris from the culvert, and repositioned and repaired cracks in

its headwall, which was damaged during the “extreme high water pulse event.”

Rattlesnake Creek is designated as natural spawning habitat for Endangered Species Act-listed steelhead and bull trout, as well as other native fish. The creek bed and surrounding habitat sustained heavy damage in the flood but the culvert will allow passage for fish when they return to spawn.

The Rattlesnake Creek fish passage project was part of a coordinated watershed approach that corrected the last remaining barrier in the Rattlesnake Creek watershed. The project exemplified WSDOT’s Inclusion emphasis area by providing decision making opportunities for a diverse group of stakeholders. Over the course of the project, WSDOT consulted with the Asotin County Conservation District, the Nez Perce Tribe, and the Confederated Tribes of the Umatilla Indian Reservation. This coordinated approach to habitat improvements restored access to nine miles of habitat.



Above: Looking upstream at the corrected culvert of Rattlesnake Creek at SR 129 after the flood event of April 13, 2017. This fish passage barrier correction was completed in 2015 using a stream simulation culvert. Left: Rattlesnake Creek at SR 129 before WSDOT replaced the culvert that was creating a fish passage barrier.

Legislature authorizes fish passage funding

The Washington State Legislature has authorized \$736.4 million for fish barrier correction projects for the next 14 years. This includes \$300 million from the 2015 Connecting Washington transportation revenue package.

These funds will allow WSDOT to improve access to approximately 50-55% of total potential habitat, which is well short of the 90% required by the injunction. In order to increase the rate of fish passage barrier corrections, WSDOT anticipates correcting additional barriers that will be within the footprint of larger transportation projects.

Contributors include Susan Kanzler, Damon Romero, Takahide Aso, and Dustin Motte

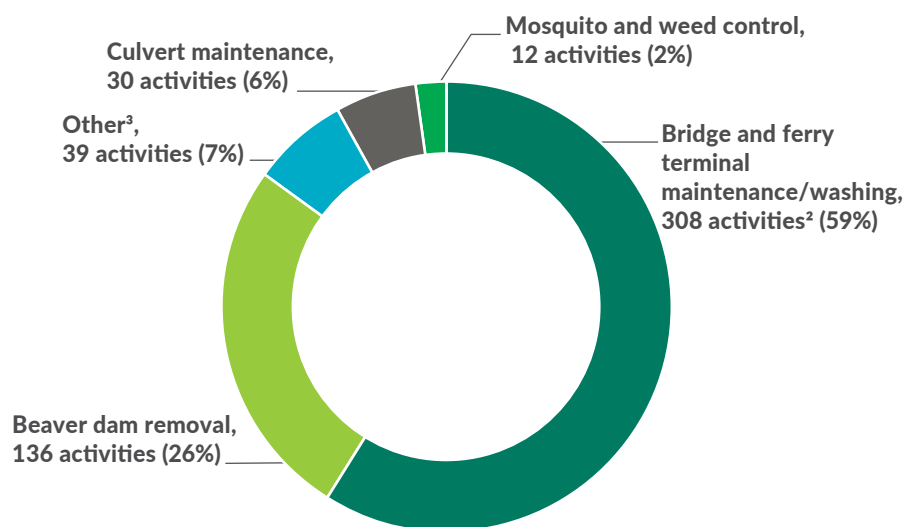
66 GENERAL ENVIRONMENTAL PERMITS ANNUAL REPORT

General permits help expedite WSDOT maintenance work, saving 5,860 hours

WSDOT saved an estimated 5,860 hours of WSDOT staff time in 2016 by using eight different general permits issued by the Washington Department of Fish and Wildlife (WDFW) and four from the Washington State Department of Ecology (Ecology). Each activity conducted under general permits has specific provisions WSDOT staff or contractors must implement to protect surrounding sensitive environments. Not having to apply for individual permits for each activity expedites the delivery of transportation projects and maintenance activities, while ensuring the agency continues to maintain its high environmental standards.

WSDOT saved four hours for every activity conducted under 10 of the 11 general permits used in 2016. The 12th permit, the National Pollutant Discharge Elimination System (NPDES) permit, is issued by Ecology and saves WSDOT 40 hours for every bridge and ferry terminal washing activity. WSDOT uses the NPDES permit in conjunction with a WDFW permit for maintenance activities that discharge wash water (and that meet permit conditions). In 2016, WSDOT used the NPDES permit for 94 activities compared to 77 in 2015, saving an estimated 3,760 hours of staff time.

General environmental permits streamline WSDOT maintenance work 2016; 12 general permits¹ used for 525 maintenance activities



Data source: WSDOT Environmental Services Office.

Notes: 1 In 2016, WSDOT used two permits for bridge and ferry terminal maintenance/washing, one for beaver dam removal, three for mosquito and weed control, one for culvert maintenance, and five for other maintenance activities.

2 Ninety-four of the 308 activities discharged wash water and used both the NPDES permit from Ecology and a WDFW permit.

3 "Other" maintenance activities in 2016 included channelized stream maintenance; fishway structures maintenance and repair; bridge structures debris removal; marine sediment test boring; and removing, repairing and replacing piles in marine waters.

Notable results

- WSDOT used 12 general permits to complete 525 maintenance activities in 2016, an increase of 37% activities from 2015
- General permit usage streamlined maintenance activities saving approximately 5,860 hours of staff time in 2016

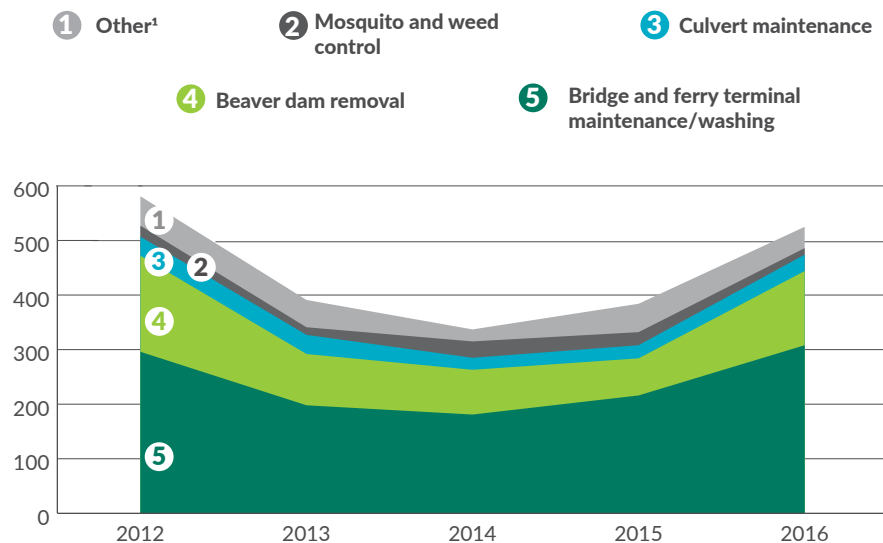


Agency Emphasis Area **PRACTICAL SOLUTIONS**

WSDOT's general permits take a Practical Solutions approach to maintaining the state's transportation system by managing existing assets to extend the life cycle of the state's transportation system at the least cost and streamlining processes to reduce staff time spent on permitting processes.

WSDOT general permit usage on the rise

Calendar years 2012 through 2016; Number of activities



Data source: WSDOT Environmental Services Office.

Notes: 1 "Other" 2012-2016 maintenance activities include channelized stream maintenance; fishway structures maintenance and repair; bridge structures debris removal; geotechnical test boring in freshwater; marine sediment test boring; and removing, repairing and replacing piles in marine waters.



WSDOT conducted maintenance/washing activities on the State Route 305 Agate Pass bridge between Suquamish and Bainbridge Island in February 2017.

WSDOT manages assets through general permits

Following a downturn from 2012 to 2013, WSDOT's use of general permits continues to increase (see chart at left). Bridge and ferry terminal maintenance and washing permits are the most used of all general permit types, comprising 308, or 59%, of the total 525 activities in 2016.

WSDOT maintains and repairs its facilities as quickly and inexpensively as possible as part of a Practical Solutions approach to maintaining the state's transportation system. High-quality management of existing assets helps extend the life of the state's transportation system and decrease replacement costs. These permits grant approval for multiple activities under one permit (providing the work meets the permit conditions).

General permits are a critical tool for maintenance because they allow WSDOT to spend more time preserving and maintaining assets, and less time acquiring individual permits for each activity.

For example, bridges are cleaned before inspection to help determine structural integrity. WSDOT uses the bridge and ferry terminal maintenance and washing general permit multiple times throughout the year to clean, paint and replace worn out components or deck overlays (For more information on bridge maintenance refer to p. 17).

Contributors include Gretchen Coker, Shravan Aeneni and Dustin Motte

66 FREIGHT SEMI-ANNUAL REPORT

Washington was the second most trade-dependent state in 2016

Washington was the second most trade-dependent state in the country in 2016, behind only Michigan.

Washington had total imports and exports valued at \$126.6 billion in 2016, down 8% from \$137.5 billion in 2015. WSDOT supports freight systems and freight-dependent industries by directly managing the state's highway system, ferry system, a short line railroad and several freight rail programs.

Gross business income for freight-dependent industry sectors was valued at \$565 billion in 2016, up 2.7% from the \$550 billion in 2015. WSDOT also provides policy analysis and planning coordination for the state's freight transportation system, which includes all infrastructure involved in the movement of goods in commerce.

WSDOT's work on freight movement improves travel and freight reliability on strategic corridors, which contributes to Goal 2: Prosperous Economy in Results Washington, Governor Jay Inslee's performance management effort.

South Puget Sound area continues to see the most freight truck traffic in Washington

Estimated average daily truck volumes increased on Interstate 5 (I-5) in the south Puget Sound area from 2015 to 2016. In Tacoma (milepost 131), which saw both the state's highest daily truck traffic and the largest increase between 2015 and 2016, volume increased 34.0% from an estimated 15,793 in 2015 to 21,086 in 2016. Other notable increases include:

- On I-5 in Olympia (milepost 107) where truck volume increased 9.9% from 13,158 in 2015 to 14,466 in 2016
- On I-90, the average daily truck volume increased 3.1% from 6,548 to 6,749 in North Bend (milepost 33) and by 5.6% from 3,495 to 3,691 in Vantage (milepost 136)
- On State Route 18 in Auburn (milepost 5), daily volume increased 7.4% from 5,317 to 5,711 and 5.6% from 3,853 to 4,067 in Snoqualmie (milepost 27).

Increases in truck traffic in Washington are largely due to the growing economy as well as the cancellation of scheduled container service in Portland, Oregon.

Notable results

- *Washington was the second most trade-dependent state in the country in 2016*
- *The number of trucks entering Washington from Canada decreased 1.3% in 2016 compared to 2015*
- *Truck traffic in Tacoma increased 34% in 2016 compared to 2015*



Agency Emphasis Area **PRACTICAL SOLUTIONS**

WSDOT designed and distributed truck parking maps at minimal cost that increase safety by reducing the amount of time fatigued truck drivers need to find safe overnight parking.

Average daily truck volumes increase along freight corridors

Location	2015	2016	%↑
I-5 (MP 131) Tacoma	15,793	21,086	34.0%
I-5 (MP 107) Olympia	13,158	14,466	9.9%
I-90 (MP 33) North Bend	6,548	6,749	3.1%
I-90 (MP 136) Vantage	3,495	3,691	5.6%
SR 18 (MP 5) Auburn	5,317	5,711	7.4%
SR 18 (MP 27) Snoqualmie	3,853	4,067	5.6%

Data source: WSDOT Freight Office.

Fewer trucks enter Washington from Canada in 2016

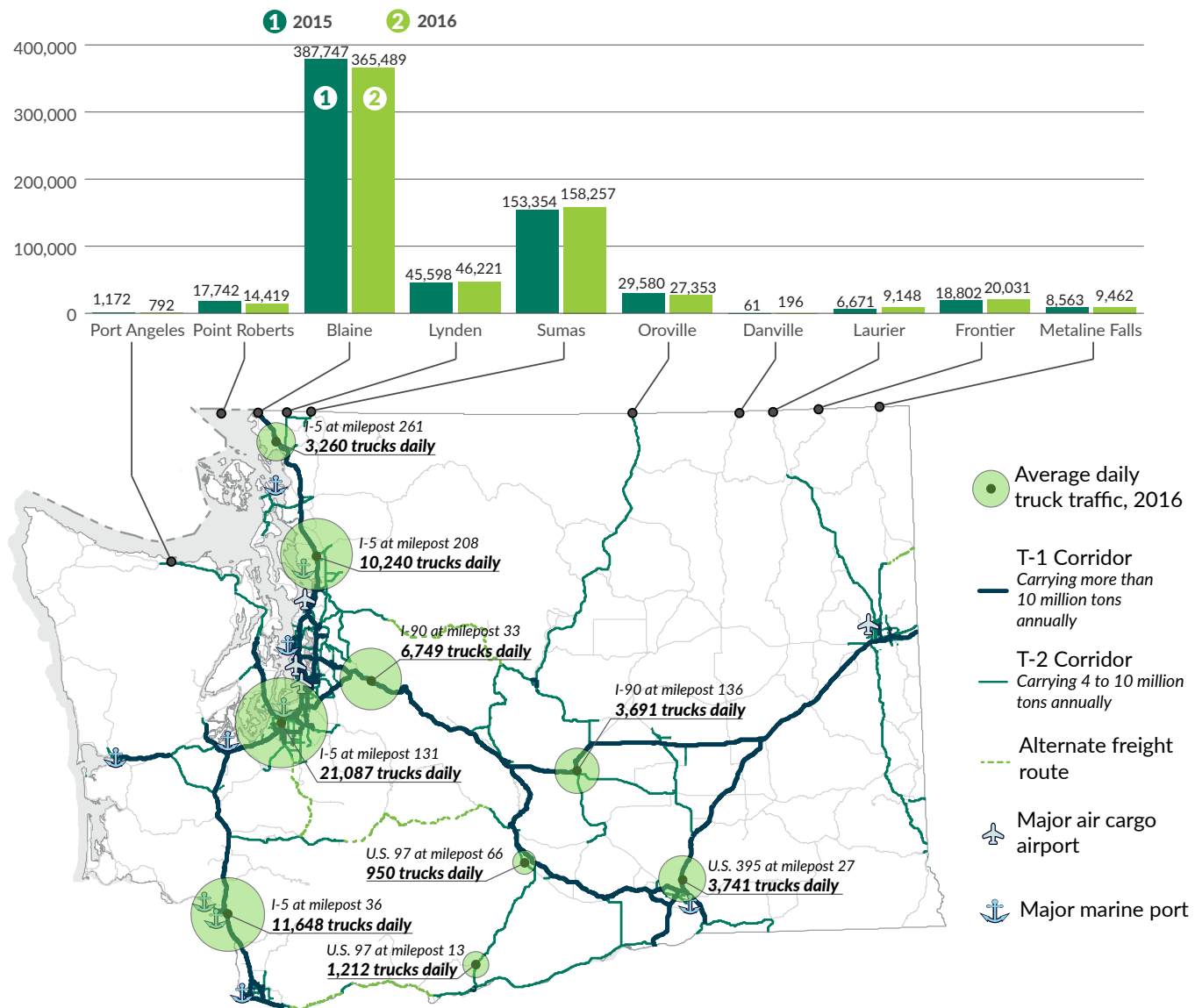
The number of trucks entering Washington from Canada decreased by 1.3% in 2016 to 652,427 from 661,106 in 2015. This slight decline was the first since 2009. The border

crossings at Blaine and Sumas continue to see the bulk of the traffic, comprising 80.3% of the state's total trucks entering from Canada in 2016. The Blaine border

crossing had 365,489 trucks enter from Canada in 2016, down 5.7% from 387,747 in 2015. Sumas had 158,257 trucks, a 3.2% increase from 153,354 in 2015.

For trucks, volumes and border crossing numbers change little

Number of truck crossings at the Canadian border¹, 2015 and 2016 (bar chart);
Average daily volume of truck traffic at select locations, 2016 (map)



Data source: U.S. Department of Transportation, Bureau of Transportation Statistics and WSDOT Freight Office.

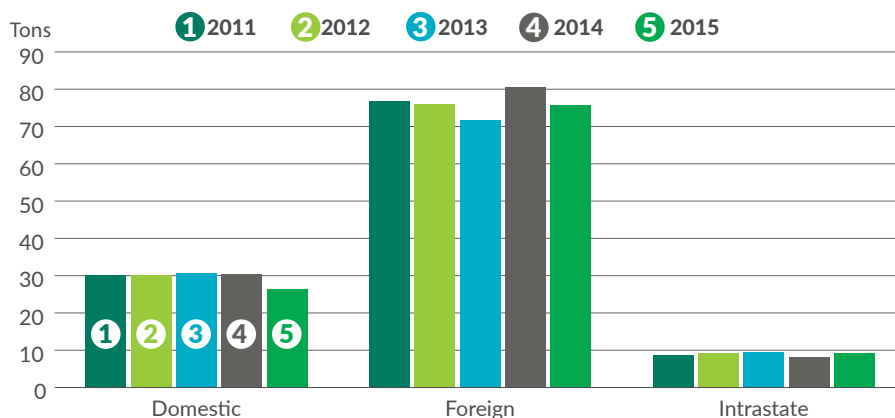
Notes: **1** Border crossing data does not include ferry (1,000 crossings in 2016) or boundary (59 crossings in 2016) ports of entry.

Total waterborne freight shipment tonnage in 2015 down 6.5% from 2014 levels

Total waterborne freight activity in Washington was 111.5 million tons in 2015, down 6.5% from the 2014 levels of 119.2 million tons. Waterborne freight is categorized as foreign, domestic or intrastate, depending on both the origin and destination. In 2015, 67.9% of

waterborne freight was foreign, followed by 23.8% domestic and 8.3% intrastate—or remaining in Washington. Key export commodities from Washington include food and food products, petroleum products, and lumber products.

Majority of waterborne freight in Washington crosses international borders 2011 through 2015; Tonnage in millions; Domestic, foreign and waterborne freight



Data source: U.S. Army Corps of Engineers, Navigation Data Center.

Seattle and Tacoma ports see increase in waterborne freight activity in 2016

The ports of Seattle and Tacoma saw combined 2.5% increase in waterborne freight in 2016. Containerized port freight is measured by 20-foot equivalent units (TEU), which represents the freight in one 20-foot marine cargo container. These containers carry many different kinds of freight and can come in different lengths; for example a 40-foot container would be equal to two TEUs.

In 2016, the Seattle and Tacoma ports—by far the largest ports in

the state—handled a combined 3.6 million TEUs of cargo, up from 3.53 million in 2015 and 3.4 million in 2014. The 2016 figures are also 3% higher than the five-year average.

Waterborne freight activity in Washington continues to mirror national trends. The strength of the U.S. dollar, grain prices, shipping line consolidation, and competition from Canadian and southwest U.S. ports all contribute to the growth of Washington's freight activity.

Truck parking study generates solutions

In a 2016 study that included surveying truck drivers, truck stop owners, and freight company officials in nine states and British Columbia, WSDOT found that truck drivers needed more comprehensive information about the truck parking and services available in Washington. To remedy this, WSDOT created truck parking maps showing:

- Exit numbers
- Available amenities
- Number of truck parking spaces available
- The direction of travel needed to access facilities

The purpose of the truck parking maps is to quickly and clearly show the locations of safe places for truck drivers to take their mandatory rest breaks and offer a summary of other facilities available.

Many truck drivers reported taking 60 minutes or longer to find overnight parking, often driving while fatigued due to the lack of available parking. The truck parking maps minimize the time needed for possibly fatigued drivers to find safe parking.

The maps were distributed to truck parking facilities, rest areas, trucking associations, and truck driving schools.

For more information visit <http://www.wsdot.wa.gov/Freight>.

State air cargo tonnage continues to increase

Washington airports saw another year of increased cargo in 2015, according to the most recent federal data available. All Washington airports combined handled 1.56 million tons of cargo (plane plus cargo weight) in 2015, up 2% from 1.53 million tons in 2014, according to the Federal Aviation Administration data. This is the third year in a row with increased air cargo tonnage for Washington state.

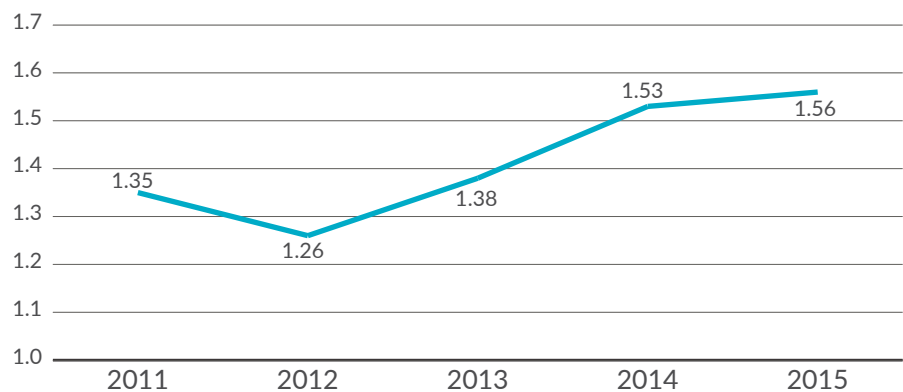
However, Seattle-Tacoma (Sea-Tac) International Airport continues to handle the bulk of all air cargo in the state, with 50.2% of the statewide total. Sea-Tac handled 366,000 metric tons of actual air cargo in 2015 (not including plane weight), up 10.2% from 2014. Sea-Tac Airport ranks 20th in terms of air cargo volume in the North America, and provides daily, non-stop service to 81 domestic and 24 international destinations.

The top five commodities moved through Sea-Tac are cherries, seafood, aluminum alloy and graphite, aerospace components, and footwear parts. High-value and time-sensitive goods often move through airports, which play a key role in supporting manufacturing, agriculture and service sectors in the state.

Contributors include Barbara LaBoe, Janet Matkin, Matthew Pahs, Wenjuan Zhao, Matt Clark and Dustin Motte

Total Washington air cargo tonnage increases

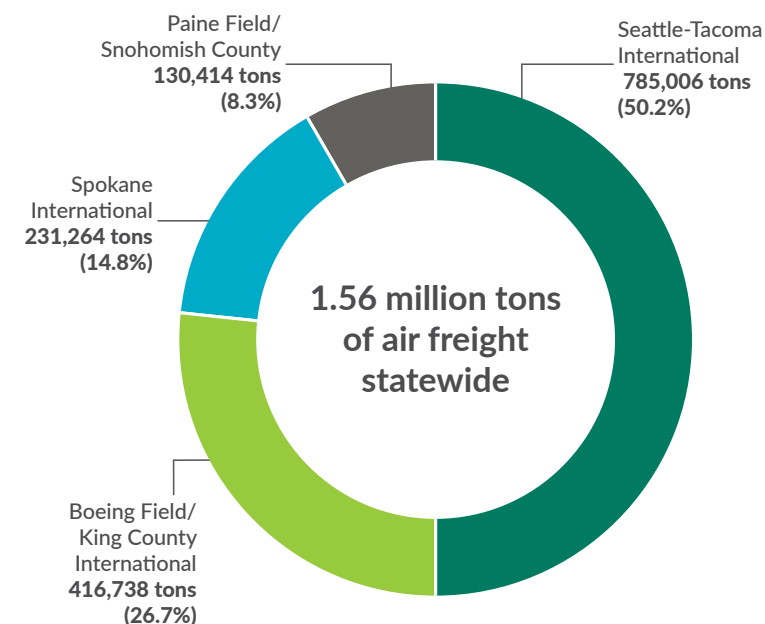
2011 through 2015; Tonnage measured in millions; Plane plus cargo weight



Data source: Federal Aviation Administration.

Seattle-Tacoma airport moves majority of air freight in 2015

Tonnage and percent share of air freight per airport in Washington state



Data source: Federal Aviation Administration.

66 INCLUSION ANNUAL REPORT

WSDOT's emphasis on inclusion enhances equal, fair access and respect for all citizens

To ensure all citizens are provided equal and fair access in their interactions with the agency, WSDOT has revised many of its manuals and plans to better reflect the agency's changing culture. WSDOT's goal is to become even more inclusive and respectful of all individuals in their diversity. In early 2017, WSDOT updated its Communications Manual and Disadvantaged Business Enterprise (DBE) Program Participation Manual. The agency also developed a Human Resources Diversity and Inclusion Plan, an American with Disabilities Act (ADA) Transition Plan and a Community Engagement Plan. The manuals and plans are tasks completed as part of the Inclusion strategy of Results WSDOT, the agency's strategic plan.

These efforts reflect the fact that people interact with WSDOT in numerous ways, like reading the Twitter feed, using the mobile apps, working with the agency as a contractor, being involved in the property acquisition process, and more. WSDOT's new Community Engagement Plan is one example. It provides guidelines and structure to ensure that the agency engages in a culturally appropriate fashion with diverse communities.

Engagement plan aims to better include minority, low income populations

WSDOT's extensive Community Engagement plan guides the agency on how to better engage minorities and low-income populations, provide more readily accessible information on translation and interpretation services, and increases emphasis on Title VI and Title VII of the Civil Rights Act of 1964, a federal law. Title VI prohibits discrimination on the basis of race, color or national origin under any program or activity receiving federal financial assistance. Title VII prohibits employers from discriminating against employees on the basis of sex, race, color, national origin, and religion.

Part of the agency's outreach seeks input from ethnic commissions and advisory groups to help ensure that no individuals are discriminated against in their interactions with WSDOT. The plan provides disability etiquette, cultural awareness, and additional oversight in interacting with businesses owned and controlled by socially and economically disadvantaged individuals.

Advisory group restructured for better focus

In July 2016, WSDOT restructured its Disadvantaged Business Enterprise (DBE) Advisory Group to allow for smaller focus groups that meet on a rotating basis to discuss issues relevant to their subgroup (DBEs, agencies, and prime contractors), thus completing another task of the agency's strategic plan. Smaller focus groups create an environment for more candid conversations that are expected to lead to increased productivity and better outcomes. The entire group meets quarterly to discuss shared concerns and to brainstorm potential issue resolution.

Notable results

- In 2017, WSDOT revised two manuals and three plans to help ensure citizens equal and fair access
- WSDOT receives \$1.5 million per biennium from the state Legislature to increase the number of minorities and women in the highway construction trade
- WSDOT met its goal of 11.6% for FHWA Disadvantaged Business Enterprises in the first half of FFY2017



Agency Emphasis Area INCLUSION

To foster a more inclusive environment within the agency and its interactions with the public, WSDOT is:

- Increasing access and participation of diverse communities in decision making
- Advancing workforce diversity
- Increasing cultural competency and awareness
- Enhancing diverse business contracting

Environmental Justice

The U.S. Environmental Protection Agency defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."

For more information on how WSDOT incorporates environmental justice principles into its programs, policies and activities, see <https://www.wsdot.wa.gov/Environment/EJ/default.htm>.

WSDOT works to improve Environmental Justice practices

WSDOT is applying best practices that engage minorities and low income populations in project-level decision making and environmental impact assessment through agency-wide collaborative work. WSDOT recently updated its guidance on how to conduct a thorough analysis of potential environmental impacts. These efforts are tasks in the Inclusion strategy of the agency's strategic plan.

WSDOT is updating community engagement approaches for transportation planning and projects; the agency is using tools that provide information on minority and/or low income communities. To achieve more inclusive engagement, the agency is using engagement approaches and demographic information gathering tools including a decision matrix, an EPA Environmental Justice screening website, and geospatial map data, to identify and involve minority and/or low income communities.

In 2016 and 2017, WSDOT provided Environmental Justice training to its planning and project delivery staff, and developed a short on-line training course on Environmental Justice basics for agency staff. This training helps WSDOT ensure its construction projects are adequately evaluated so that they do not disproportionately affect minority or low income individuals.

Recruitment and retention supports diversity

WSDOT is committed to building a workforce that looks like the people and communities the agency serves. WSDOT participated in 30 career fairs and outreach events in the first six months of 2017 to promote job opportunities and revive relationships with universities and colleges. These events increase outreach to historically under-served communities.

Talent pipeline programs seek diverse candidates

WSDOT is reaching out to communities and schools, increasing the pool of candidates interested in pathways programs in an effort to support workforce needs across the agency. Pathways programs have targeted training, skill development and access for growth and advancement opportunities within the agency.

WSDOT's goal is to recruit diverse candidates for the agency's talent pipeline programs (Maintenance Technician II In-training and Transportation Engineer Internship).

Funding supports diversity in highway construction workforce

WSDOT has also increased emphasis on inclusion and diversity in its highway construction workforce. WSDOT receives approximately \$200,000 annually from Federal Highway Administration for its On-the-Job Training Support Services Program which helps individuals gain family wage jobs in the heavy highway construction trades through pre-apprenticeships.

The WSDOT pre-apprenticeship is a program to assist minorities, women and other socially and economically



Strategic Plan Goal 4 ORGANIZATIONAL STRENGTH

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

WSDOT's Inclusion Strategy is part of its Organizational Strength goal.

disadvantaged individuals in gaining apprenticeship jobs. This program helps individuals gain the skills needed to enter the highway construction workforce. The various highway trades typically have minimum requirements to become an apprentice; pre-apprenticeship programs help the students meet these requirements.

WSDOT received \$750,000 in 2016 through Connecting Washington, funded by the state Legislature, and is slated to receive \$1.5 million per biennium to provide grants to pre-apprenticeship programs that increase the number of minorities and women gaining meaningful employment in the highway construction trades.

Training advances cultural competency and awareness

Since WSDOT's Inclusion initiative began, the agency has provided extensive training to staff and senior leadership to advance workforce diversity. This training includes:

1) Community engagement

WSDOT received funding from the state Legislature in July 2016 to provide community engagement training to project managers. To implement this, the agency developed inclusive training that staff can teach to their colleagues on-demand.

This train-the-trainer approach yielded 43 WSDOT trainers who have each been encouraged to

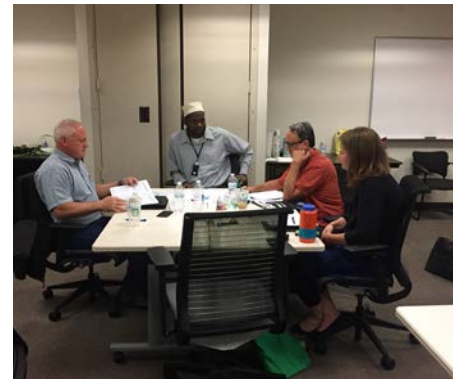
teach four classes in the 2017-2019 biennium; the first class is scheduled to be taught in August 2017. If each class has 30 students, more than 5,160 employees could be peer-trained on WSDOT's community engagement process in two years, although actual goals are up to each trainer's program or project area. For those who are unable to attend the in-person class, two e-learning modules that teach the same principles online are expected to be available in fall 2017.

2) Cultural competency and diversity

WSDOT continues to provide cultural competency training to senior management and executive leadership. Since April 2016, senior leaders have participated in two trainings.

Foundations of Cultural Competence provides a framework on how to address issues of equity and race. Unpacking White Privilege in the Workplace examines how white cultural norms and privileges can create barriers to equity.

WSDOT has implemented new training for supervisors throughout the agency focusing on retaining and hiring a diverse workforce. The agency has trained 260 supervisors or managers in six regions. WSDOT plans to offer this training to Ferries and Headquarters supervisors and managers, as well. The agency is also evaluating other tools and resources that complement the course.



Four WSDOT community engagement trainers learn to deliver training curriculum at this June 2017 train-the-trainer course in Seattle.

Employees rated on Inclusion efforts

All employees are now evaluated on their diversity and inclusion efforts as part of WSDOT's employee Performance Management Program. If agency staff have interaction with the DBE Program, they are also evaluated on their ability to effectively implement and monitor the program.

3) Civil rights

WSDOT performs annual civil rights training for its staff, and local agency staff and contractors, to assure they are familiar with program requirements. This training is mandatory for all WSDOT staff who are responsible for implementing or monitoring the DBE Program. Training is currently voluntary for contractors; WSDOT trains about 600 people annually.

WSDOT makes progress on business commitments

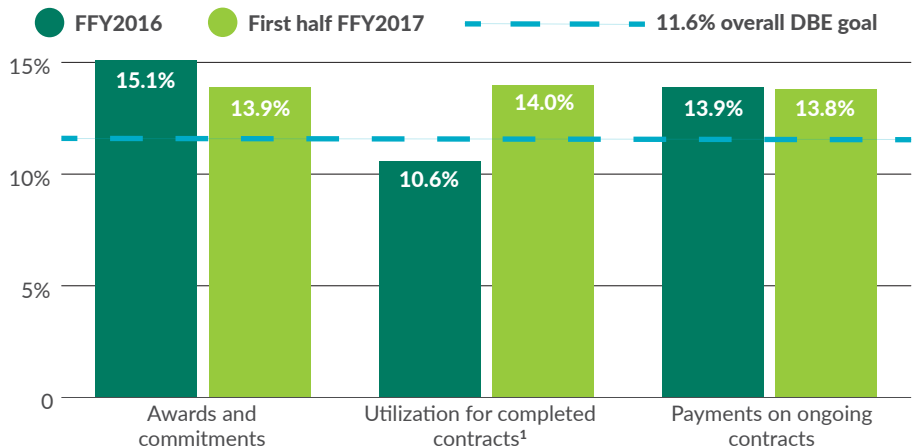
WSDOT met all three measurements of its mandatory Federal Highway Administration (FHWA) Disadvantaged Business Enterprise (DBE) goal during the first half of federal fiscal year 2017 (October 2016 through March 2017). WSDOT is also focusing efforts on increasing opportunities for minority, women's, veteran's, and small business enterprises on state-funded projects, making progress toward achieving voluntary Washington state goals. WSDOT construction projects require contractors to solicit business from disadvantaged businesses. The agency's Office of Equal Opportunity sets project goals that become part of the contract. Projects that include federal funds have a mandatory goal. All other projects have voluntary goals which WSDOT encourages contractors to meet.

WSDOT attains DBE goal

The overall goal for each FHWA DBE measure is 11.6%; the goal was attained in all three measures in the first half of FFY2017. As shown in the graph at the top right, WSDOT's awards and commitments were 13.9% in the first half of FFY2017, a decrease of 1.2 percentage points from the 15.1% achieved for all of FFY2016. The agency's utilization of completed contracts was 14.0% in the first half of FFY2017, a 3.4 percentage point improvement above the 10.6% achieved in FFY2016. WSDOT's payments on ongoing contracts were 13.8% in the first half of FFY2017, a 0.1 percentage point drop from the 13.9% achieved in FFY2016. For more information on how DBE goals are set, see [Gray Notebook 53, p. 27](#).

WSDOT FHWA Disadvantaged Business Enterprise program meets goal on all measures in first half of FFY2017

Comparing first half of federal fiscal year (FFY)2017 to FFY2016

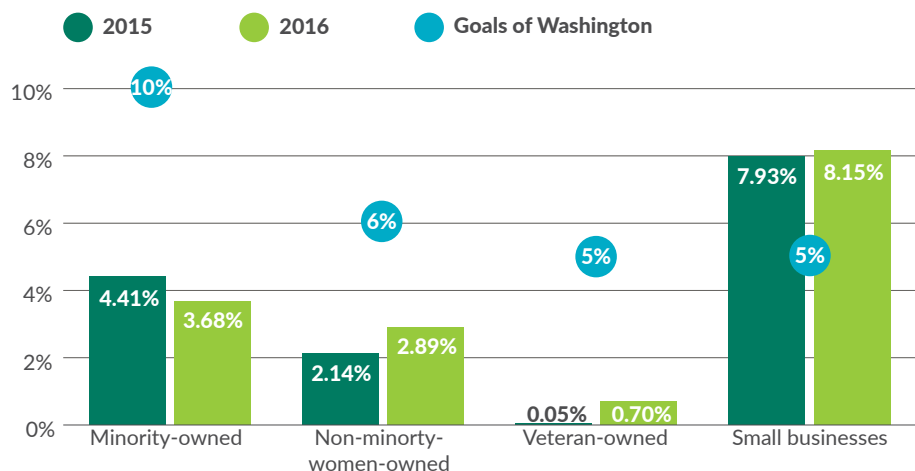


Data source: WSDOT Office of Equal Opportunity.

Notes: ¹ Utilization for completed contracts refers to those completed within the stated time.

WSDOT makes progress on three of four diverse business goals

Voluntary goals; Comparing state fiscal year (FY)2016¹ to FY2015²



Data source: WSDOT Office of Equal Opportunity.

Notes: ¹ July 1, 2015 through June 30, 2016. ² July 1, 2014 through June 30, 2015.

WSDOT exceeds small business goal, makes progress on two others

WSDOT is making progress on all except one of its voluntary goals for certified or state registered businesses, as shown in the table above. The goal for Washington state agencies contracting with small businesses is 5%; in state fiscal year 2016 (July 2015 through June 2016, the latest year for which data is available), WSDOT achieved 8.15% participation, an increase of 0.22 percentage points from the 7.93% achieved in FY2015. Minority- and non-minority-women's businesses also count toward the small business goal.

"Small business" includes firms certified by the Office of Minority and Women's Business Enterprises and all firms that indicate in Washington Electronic Business Solutions that they are small as defined by RCW 39.26.010.

The state contracting goal for minority-owned businesses is 10%. From FY2015 to FY2016, WSDOT's participation with minority-owned businesses decreased from 4.41% to 3.68%, missing the goal.

The state contracting goal for veteran-owned businesses is 5%. From FY2015 to FY2016, WSDOT increased its participation with veteran-owned businesses from 0.05% to 0.7%, missing the goal.

The state contracting goal for women-owned businesses is 6%. From FY2015 to FY2016, WSDOT increased its participation with women-owned businesses from 2.14% to 2.89%, missing the goal.

Mentoring program to increase business opportunities

WSDOT's new Mentor Protégé Program is intended to increase opportunities for minority, women's, veteran's and small businesses on state funded projects.

In April 2017, WSDOT began the process of designating a Mentor Protégé Coordinator who will finalize the framework for the program and serve as an intermediary between prime contractors and consultants participating in this new program. WSDOT anticipates the coordinator to begin work in late 2017.

Disparity study to recommend updated overall DBE goal

WSDOT's Disadvantaged Business Enterprise Program disparity study is nearing completion. Draft study results were sent to internal review in July 2017. Overall DBE goals are expected in fall 2017.

The new DBE Program disparity study will include recommendations for an updated overall DBE goal and improvements for WSDOT's current DBE Program implementation. Based upon the recommendations, WSDOT will consult with community and trade organizations and seek public comment on the new overall DBE goal.

Software system monitors, tracks diverse business participation

WSDOT has implemented a new software system, called B2GNow that was introduced in [Gray Notebook 64, p. 39](#). The system is used to monitor and track diverse business participation (disadvantaged, minority, small, veteran's, and women's business enterprises) and to ensure all subcontractors are paid promptly.

B2GNow is effective for all WSDOT construction contracts advertised after June 1, 2017. System implementation for WSDOT's Consultant Services and Local Programs will be phased in during fall 2017. This system, utilized by both WSDOT and the Office of Minority & Women's Business Enterprises can be viewed at: <https://wsdot.diversitycompliance.com/>.

Contributors include Jackie Bayne, Bill Bennion, Ann Bridges, Oscar Cerda, Teri Chang, Earl Key, Olga Peterman, Rafeeah Sok, Larry Watkinson, Dustin Motte and Yvette Wixson

Roadmap guides diversity for state contracts

WSDOT has developed a State Funded Contracts Diversity Roadmap to help guide the agency's progress toward meeting its voluntary goals. The map outlines the direction WSDOT is taking as it leads Gov. Jay Inslee's subcabinet on business diversity. See the roadmap at: <http://www.wsdot.wa.gov/sites/default/files/2017/07/14/OEO-Diversity-Roadmap.pdf>.

What is a Disadvantaged Business Enterprise?

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

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LEAN PROCESS IMPROVEMENTS
SEMI-ANNUAL REPORT

Notable results

- WSDOT trained 16 green belt candidates, meeting six-month Lean performance target
- WSDOT increased processing of third-party claim recoveries by 33% through a Lean process improvement project

WSDOT starts 15 Lean projects, exceeding goal; misses completion goal by two

WSDOT started 15 Lean projects, exceeding its goal by two in the first six months of 2017. In the same time period, the agency completed five projects, missing its mid-year completion goal by two. Several projects are taking longer than expected to complete, but the delay is not expected to affect the agency's annual goal. Lean projects help the agency work more efficiently, minimizing waste, maximizing value and concentrating on process improvements.

Five Lean projects complete in first half of 2017

WSDOT completed five Lean process improvement projects during the first six months of 2017. Three of those projects are highlighted here:

WSDOT now processing 33% more third-party claim recoveries per day

A team of 10 WSDOT employees from three different divisions made improvements to the third-party claim recovery process that allowed the agency's financial recovery team to go from processing 18 claims per person per day to processing 24 claims per person per day. WSDOT removed redundancies and obstacles for Financial Recovery Enforcement Officers, and introduced new software that allows the team to edit the forms in the system, decreasing rework and thereby increasing productivity.

Fuels balance sheet reconciliation, adjustment processing time down

A Lean process improvement project in WSDOT's office of Financial Reporting and Consulting Services decreased fuels balance sheet reconciliation processing time from 8-10 hours to 30 minutes. Problems with the reconciliation balance not matching the general ledger were also eliminated in the process. Improvements included switching from using multiple templates to only one report, and taking advantage of Excel tools such as pivot tables to reduce the chance of human error. The accuracy of the process adjustments improved to 100% in May and June 2017 reports, the latest available data. The result is more accurate financial reporting to the Office Financial Management and a reduced audit risk.

Agency Emphasis Area
**WORKFORCE
DEVELOPMENT**

WSDOT's Lean efforts support Workforce Development by:

- Providing training in problem solving and Lean Six Sigma
- Promoting a continuous improvement mindset

**Strategic Plan Goal 4
ORGANIZATIONAL
STRENGTH**

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

Key Performance Indicator	Goal Met ¹	Current Number	Mid-Year Goal	Year-End Goal
Lean projects started	✓	15	13	30
Lean projects finished	—	5	7	20
Lean consultations provided	✓	12	12	24
Green belt candidates trained	✓	16	15	39
Green belts successfully certified	✓	4	3	20

Data source: WSDOT Lean Office.

Note: 1 Mid-year goal met.

WSDOT streamlines employee phone stipend application process

WSDOT's Accounting and Financial Services Office improved the process for employees who sign up for a phone stipend, reducing the required forms from two to one. As part of the process improvement project, members of WSDOT's Payroll Department and Information Technology (IT) Division worked together to update the agency's policy on employee use of wireless communication devices.

During this collaboration, they realized that if an employee is applying only for a phone stipend (rather than for a WSDOT-issued phone) IT does not need to be involved, and therefore one of the forms was deemed unnecessary and eliminated.

Green belts lead teams to improve processes

WSDOT trained 16 green belt candidates in the six months ending June 2017; of these, four candidates were certified as Lean Six Sigma Green Belts. The agency met its training goal and exceeded its certification goal by one. Green belts enable the agency to address more complex Lean projects and to focus on measurable improvements.

Green belt training/certification is now reported in the *Gray Notebook* instead of nine-step problem solving classes because it is a more results-oriented performance indicator. To be certified, green belt candidates must successfully lead a team through a process improvement project. WSDOT continues to offer problem solving and other targeted classes.

Success measures evolve

WSDOT recently reevaluated its Lean mission, vision, goals and the way it measures success, revising Key Performance Indicators (KPIs). These KPIs may change as the agency's Lean services evolve. They currently focus on two areas:

- Direct results: measured by projects and consultations performed
- Workforce development: measured by trainings performed and certifications earned

WSDOT exploring how to measure continuous improvement

The agency is developing a third Lean KPI, continuous improvement mindset (CI), which looks at the way employees approach their work. Those who seek ways to reduce waste and improve the value of their work demonstrate CI. It is seen as the underlying key to success for a Lean organization; CI is difficult to measure, thus still being developed.

WSDOT offers Lean consultations

Consultations between agency Lean staff and programs set the stage for future Lean projects. WSDOT conducted 12 Lean consultations in the six months ending June 2017, meeting its target.

Consultations conducted by WSDOT employees are part of a new suite of Lean services the agency began in 2017. They include facilitated brainstorming, process mapping, value stream mapping, fundamentals mapping, sponsor training, targeted training, and KPI development.

Contributors include Russell Burgess, Amber Sander, Sam Wilson, Helen Goldstein and Yvette Wixson



WSDOT Lean Director Russell Burgess (far left) and WSDOT Secretary Roger Millar (far right) congratulate WSDOT's first in-house certified Lean Six Sigma Green Belts, Michael Severance, Jennifer Martin and Melody Donohue, who worked to improve processes in Human Resources and Tolling.



WSDOT's certified Lean Six Sigma Green Belt, Anna Fisher has been featured on a nationally recognized website for her work at WSDOT. For her Green Belt project, Anna and her project team reduced WSDOT's fuel reconciliation process from 10 hours per month down to 30 minutes. Watch her interview on GoLeanSixSigma.com.



Agency Emphasis Area PRACTICAL SOLUTIONS

WSDOT's Lean efforts support Practical Solutions, through facilitated process improvement projects that increase efficiency throughout the agency.

Notable results

- *WSDOT reported on the completion of two Connecting Washington program contracts in the eighth quarter of the 2015-2017 biennium*
- *WSDOT removed 24 projects from its Watch List during the eighth quarter of the 2015-2017 biennium; four remain*
- *WSDOT advertised 66 of 75 Pre-existing Funds projects, including 20 emergent projects*


**Strategic Plan Goal 1:
STRATEGIC
INVESTMENTS**
**Project Delivery: Deliver
transportation projects that
are on time and on budget.**

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

WSDOT completes contract work on two larger Connecting Washington projects

WSDOT completed a contract included in a larger Connecting Washington program (CW) project during the eighth quarter of the 2015-2017 biennium (April through June 2017). A second contract was completed in an earlier quarter (April through June 2016), but was reported this quarter. WSDOT has four CW projects under construction, 24 projects in the pre-construction phase and advertised three projects during the quarter.

WSDOT did not complete any Nickel and Transportation Partnership Account (TPA) construction projects during the quarter. To date, WSDOT has completed 377 of 421 Nickel and TPA construction projects since July 2003, with 87% on time and 91% on budget. The agency has nine Nickel and TPA projects underway; see [p. 57](#) for details.

The cost at completion for the 377 Nickel and TPA construction projects is \$6.83 billion, 2.2% less than the baseline cost of \$6.98 billion. As of June 30, 2017, WSDOT has 22 projects (including the nine projects currently underway) that are yet to be completed. These remaining projects have a total value of more than \$8.52 billion.

Nickel, TPA funding continues to be short of original 2003, 2005 projections

Fuel tax collections show 2003 and 2005 revenue forecasts, 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. As a result, reduced gasoline and diesel consumption leads to reduced tax revenue.

The 2003 Nickel transportation package was originally a 10-year plan, with revenues forecasted to total \$1.9 billion from 2003 through 2013. Fuel tax revenues collected during this period came in 10.2% less than the original March 2003 projections. Fuel tax funding from the 2005 TPA package is also less than the original March 2005 projections. The original projection for the TPA account was \$4.9 billion over a 16-year period from 2005 through 2021. Current TPA projections through 2021 are estimated to be \$4 billion, roughly \$900 million less (18.7%) than the original 2005 projection.

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

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

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CURRENT LEGISLATIVE EVALUATION &
ACCOUNTABILITY PROGRAM QUARTERLY UPDATE

Combined Nickel & Transportation Partnership Account (Status of projects to date; 2003 through June 30, 2017)	Number of Projects	Value of Program ¹
Subtotal of completed construction projects ²	377	\$6,976.8
<i>Non-construction projects that have been completed or otherwise removed from Nickel/TPA lists^{3,4}</i>	5	\$74.4
Projects included in the current transportation budget but not yet complete	22	\$8,523.8
<i>Projects that have been deferred indefinitely or deleted and removed from Nickel/TPA lists^{3,4}</i>	13	\$499.2
<i>Projects now funded by Connecting Washington and removed from Nickel/TPA lists (see GNB 63, p. 35)</i>	4	\$101.7
Total number of projects ⁵ in improvement and preservation budget	421	\$16,176.0
Schedule and budget summary Nickel & TPA combined: Results of completed construction projects in the current Legislative Transportation Budget and prior budgets.	Completed in 2015- 2017 Biennium Budget	Cumulative Program
Total number of projects completed	11	377
<i>Percent completed early or on time</i>	91%	87%
<i>Percent completed under or on budget</i>	91%	91%
Baseline cost at completion	\$809.9	\$6,976.8
Current cost at completion	\$777.7	\$6,826.5
Percent of total program over or under budget	4.0% under	2.2% under
Advertisement record: Results of projects entering into the construction phase or under construction	Combined Nickel & TPA	
Total current number of projects in construction phase as of June 30, 2017	9	
<i>Percent advertised early or on time</i>	78%	
Total number of projects advertised for construction in the 2015-2017 biennium (July 1, 2015, through June 30, 2017)	2	
<i>Percent advertised early or on time</i>	50%	
Projects to be advertised: Results of projects now being advertised for construction or planned to be advertised	Combined Nickel & TPA	
Total number of projects being advertised for construction (July 1 through December 31, 2017)	0	
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	\$1,769.7	
Actual total expenditures in 2015-2017 biennium to date (July 1, 2015, through June 30, 2017)	\$1,488.2	
<i>Total 2003 Transportation Funding Package (Nickel) expenditures</i>	\$92.3	
<i>Total 2005 Transportation Partnership Account expenditures</i>	\$789.7	
<i>Total Pre-existing Funds expenditures⁶</i>	\$566.1	

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers have been rounded. This chart was updated in GNB 63 to reflect reconciled Nickel and TPA project counts, and as a result it does not exactly match Current Legislative Evaluation and Accountability Program charts from previous editions. ¹ Dollars in millions ² Cumulative projects completed from July 1, 2003, to June 30, 2017. ³ Non-construction projects include commitments for engineering and right of way work. ⁴ Projects that have been deferred indefinitely or deleted include projects that have no funding available, projects that have been halted by the Legislature and those for which other entities (e.g., cities and counties) are now serving as the lead agency. ⁵ 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. ⁶ For full details of the Pre-existing Funds program, see pp. 59-60.

WSDOT completes 22 Rail and 23 ferries projects with Nickel and TPA funds

Current Legislative Evaluation and Accountability Program rail projects as of June 30, 2017; Dollars in millions	2003 Nickel Package	2005 TPA Package	Combined Nickel & TPA
Schedule, scope and budget summary of completed LEAP projects			
Cumulative to date (July 1, 2003 through June 30, 2017)	14	8	22
<i>Percent completed early or on time¹</i>	100%	100%	100%
<i>Percent completed within scope¹</i>	100%	100%	100%
<i>Percent completed on or under budget¹</i>	100%	100%	100%
Baseline cost at completion	\$200.0	\$57.6	\$257.6
Current cost at completion	\$199.9	\$57.6	\$257.5
Percent of total program on or under budget ¹	100%	100%	100%
Advertisement record of LEAP projects under construction or entering the construction phase			
Cumulative to date (July 1, 2003 through June 30, 2017)	1	2	3
Total projects advertised	0	1	1
<i>Percent advertised early or on time</i>	N/A	100%	100%
Total award amounts to date	\$0	\$9.0	\$9.0

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).

Current Legislative Evaluation and Accountability Program ferries projects as of June 30, 2017; Dollars in millions	2003 Nickel Package	2005 TPA Package	Combined Nickel & TPA
Schedule, scope and budget summary of completed LEAP projects			
Cumulative to date (July 1, 2003 through June 30, 2017)	13	10	23
<i>Percent completed early or on time¹</i>	100%	100%	100%
<i>Percent completed within scope¹</i>	100%	100%	100%
<i>Percent completed on or under budget¹</i>	100%	100%	100%
Baseline cost at completion	\$303.7	\$343.5	\$647.2
Current cost at completion	\$303.7	\$343.5	\$647.2
Percent of total program on or under budget ¹	100%	100%	100%
Advertisement record of LEAP projects under construction or entering the construction phase			
Cumulative to date (July 1, 2003 through June 30, 2017)	0	0	0
Total projects advertised	N/A	N/A	N/A
<i>Percent advertised early or on time</i>	0	0	0
Total award amounts to date	\$0	\$0	\$0

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers may not total 100% due to rounding. 1 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).

66 COMPLETED PROJECTS & CONTRACTS UPDATE

WSDOT reports one Connecting Washington contract completed in the quarter

WSDOT completed one Connecting Washington (CW) contract in the eighth and final quarter of the 2015–2017 biennium (April through June 2017). Additionally, one CW contract completed in a previous quarter is now being reported.

I-405/Northeast 30th St. & Northeast 44th St. - Ramp Improvements

KING COUNTY

On-ramp improvements at Northeast 30th St. and Northeast 44th St. were made, including new pavement, Intelligent Transportation System (ITS) equipment and lighting at both sites, a retaining wall at Northeast 30th St., and ramp metering on the Northeast 44th St. ramp. This work is part of the larger I-405 Renton to Lynwood - Corridor Widening project.

Project benefits: Ramp metering, pavement and ITS equipment aim to improve traffic flow.

Budget performance: The contract attained operational completion for \$1.1 million, on budget compared to the last approved budget. The original budget was \$1.0 million.

Schedule performance: This contract was delivered in April 2017, on time with respect to the last approved schedule, but five months later than the original schedule.

Highlights/challenges: WSDOT worked with the City of Renton to coordinate this solution to traffic back ups on local roads nearby the on-ramps. The city disallowed parking on Northeast 30th to

increase capacity for vehicles queueing to access I-405.

Weather was a significant obstacle to completion, preventing work on both the 30th St. and 44th St. ramps. There was also a delay with acquiring construction materials.

SR 224/SR 225 - Benton City - Construct Intersection Improvements

BENTON COUNTY

■ Completed in second quarter 2016 (April through June)

This contract converted two closely-spaced intersections at SR 224 and SR 225 into one single-lane roundabout. This work is part of the larger I-82 West Richland - Red Mountain Interchange project.

Project benefits: The roundabout design aims to better accommodate multimodal travel, form better connections to the local road system, and enhance safety.

Budget performance: The contract was delivered for \$3.5 million, on target with the original and last approved budgets.

Schedule performance: This contract was delivered in June 2016, on time with respect to the last approved schedule, and early with respect to the original schedule, which called for completion in November 2016.

Measuring operationally complete projects

Projects and contracts 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.

Delivery performance of completed projects and contracts are measured against the last approved schedules and budgets in accordance with criteria established by the Legislature. In addition to the last approved budgets and schedules for these projects and contracts, original budgets and schedules are included to show changes that may have occurred during design and construction phases.

For information on previously completed Nickel and TPA projects, visit www.wsdot.wa.gov/projects/completed.



Agency Emphasis Area PRACTICAL SOLUTIONS

WSDOT embraced a Practical Solutions approach on the SR 224/SR 225 - Benton City - Construct Intersection Improvements contract by incorporating improvements for several different modes of travel for the least cost.

Highlights/challenges: This contract underwent a review by WSDOT's Practical Solutions Committee, which led to the selection of the roundabout design.

66

WATCH LIST
QUARTERLY UPDATEWSDOT's Watch List
increases to five projects

WSDOT added 27 new projects to its Watch List and removed 24 this quarter (April through June 2017), leaving five projects on the Watch List as of June 30.

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

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

The Watch List helps track projects by providing status reports, and by explaining the factors affecting delivery and what the agency is doing about them. Projects are added and removed by WSDOT's Capital Project Delivery Program (CPDM). Projects are removed from the Watch List when issues are resolved or a resolution is assigned.

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

Project (County)	Funding	Date added	Date removed	Watch List issue
Projects remaining on the Watch List				
SR 99/S King St. Vicinity to Roy St. - Viaduct Replacement (King) ¹	Nickel, TPA	Dec-2013	-	According to a new schedule submitted by Seattle Tunnel Partners (STP), the estimated completion date for the tunnel is November 2018. After this time, work will be completed to connect the new tunnel to SR 99 at the south end and to Aurora Avenue at the north end; WSDOT estimates that the tunnel will be open to traffic in early 2019. The program anticipates a cash-flow need of up to \$60 million in the 2017-2019 biennium to ensure continued progress.
I-5/Northbound Spokane St. to Lake Washington Ship Canal Bridge - Special Bridge Repair (King)	PEF	Feb-2017	-	An additional six expansion joints in need of replacement were added to the project. The cost estimate has increased by \$2 million and the operationally complete date is delayed one year.
I-5/Northbound I-90 Vicinity to James St. Vicinity - Concrete Pavement Replacement (King)	Nickel	Apr-2017	-	An updated engineer's estimate reflects increases in material costs and project risks that have raised the overall project cost by \$2.9 million. Additionally, the needed repair of concrete expansion joints has delayed the project's completion date.
I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair (King)	Nickel	Apr-2017	-	The cost of this project has further increased due to the need for additional reinforced concrete paneling, the addition of an incentive for contractors to reduce the number of weekend closures, and potential project risks.
I-5/Northbound South Spokane St. Vicinity - Concrete Pavement Replacement (King)	Nickel	Apr-2017 ²	-	This project replaces concrete pavement. The estimated cost of this project has increased by \$2.4 million due to project risks involving weekend closure restrictions, lack of access to the work site, overtime pay, weekend construction safety risks, and competition within the area for the same labor pool. The operationally complete date has been delayed one year, to fall 2018.

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

Project (County)	Funding	Date added	Date removed	Watch List issue
Projects no longer on the Watch List				
I-5/SR 510 Interchange - Reconstruct Interchange (Thurston)	CW	Jan-2017	May-2017	Project funding is insufficient to implement the current interchange design concept. A value engineering workshop has identified the construction of a different interchange design — a diverging diamond interchange — as a better performing, less costly design alternative. This project has been reported and removed from the Watch List.
SR 14/West Camas Slough Bridge- Bridge Widening (Clark) ³	CW	Jan-2017	May-2017	WSDOT is deferring funding and construction of this project, shifting funding to a congestion-reduction project on SR 14 near the I-205 interchange. This project has been reported and removed from the Watch List.
SR 3/Belfair Area - Widening and Safety Improvements (Mason)	TPA	Apr-2017	Apr-2017	To address traffic congestion, safety, and the need for pedestrian facilities, roadway improvements will be made from SR 106 to Northeast Belfair Street. The total cost of this project has increased in order to repair previous roadway damage from a failed detention pond. This project has been reported and removed from the Watch List.
I-90/North Fork Issaquah Creek - Fish Passage (King)	PEF	Apr-2017	Apr-2017	The inclusion of an additional culvert to assist with fish passage paired with higher than anticipated bids at the time of project award, contributed to cost increases of \$655,000 for design changes and \$1.75 million for bids placed. This project has been reported and removed from the Watch List.
SR 524/Great Dane Creek - Fish Passage (Snohomish)	PEF	Apr-2017	Apr-2017	The cost estimate increased due to changing the culvert span length from 16 feet to 19 feet. The schedule has also been delayed while WSDOT acquires permits and increases coordination with the Muckleshoot Tribe. This project has been reported and removed from the Watch List.
SR 529/Northbound Union Slough Bridge - Scour Repair (Snohomish)	PEF	Apr-2017	Apr-2017	The completion date of this project has been delayed two years because it is being combined with other nearby projects, which is intended to reduce traveler impacts and gain construction efficiencies. This project has been reported and removed from the Watch List.
US 2/West of Leavenworth - Slope Stabilization (Chelan)	PEF	Apr-2017	Apr-2017	This project will stabilize the rock slopes by placing cable net, bolts, and rock doweling as well as remove loose rock from the slope. The project has been delayed one year for additional analysis and estimated total costs may potentially increase. This project has been reported and removed from the Watch List.
US 2/Stevens Pass - Avalanche Deflection Berm (King)	PEF	Apr-2017	Apr-2017	The project has been intentionally delayed 10 months in order to align with the availability of Western Federal Lands grant funding. The advertisement date has changed from fall 2018 and will be constructed during 2019. This project has been reported and removed from the Watch List.
SR 20/Loup Loup Pass - Emergency Repair 2017 (Okanagan)	PEF	Apr-2017	Jun-2017	Heavy rainfall caused flash flooding and extensive damage to State Route 20, requiring a emergency repair project. The scope of the damage has changed, increasing the cost of the project and delaying the completion date by three months. This project has been reported and removed from the Watch List. .
US 97/Swauk Creek Campground - Fish Passage Retrofit (Kittitas)	PEF	Apr-2017	Apr-2017	This project will build new structures and replace two existing concrete structures on Swauk Creek that cross under US 97. The construction schedule has increased from one to two seasons in order to provide additional time to perform hydraulic design and acquire the needed permits. These changes will delay project completion to fall 2019. This project has been reported and removed from the Watch List.
US 12/Unnamed Tributary to Wynoochee River – Remove Fish Barrier (Grays Harbor)	PEF	Apr-2017	Apr-2017	The cost estimate for the replacement of the fish passage barrier has increased due to the need for additional funds for the structural design, right of way acquisition, and construction. This project has been reported and removed from the Watch List.
US 101/Elwha River Bridge - Scour Repair (Clallam)	PEF	Apr-2017	Apr-2017	This project replaces a structurally deficient bridge with a new bridge designed to current standards. The cost of this project has increased to reflect changes in the design plan. This project has been reported and removed from the Watch List.
SR 548/Kickerville Road - Intersection Improvements (Whatcom)	PEF	Apr-2017 ²	Apr-2017	This project will help reduce traffic collisions by installing a single lane roundabout. The diameter of the roundabout has changed from 75 feet to 110 feet to accommodate larger vehicles, resulting in the need for additional right of way. Due to delays acquiring needed right of way, the advertisement date has been delayed from spring 2017 to fall 2017 and the completion date has been delayed to summer 2018. This project has been reported and removed from the Watch List.
I-5/Woodland Vicinity at Horseshoe Lake - Upgrade Pump System (Clark, Cowlitz)	PEF	Apr-2017	Apr-2017	This project installs a new pump from the Lewis River to Horseshoe Lake to meet current standards. The decision to install this new alternative pump increases the total cost of this project. This project has been reported and removed from the Watch List.

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

Project (County)	Funding	Date added	Date removed	Watch List issue
Projects no longer on the Watch List				
SR 112/Olsen Creek in Vicinity of Vista Dr. - Remove Fish Barrier (Clallam)	PEF	Apr-2017	Apr-2017	This project replaces an existing drainage structure with a structure allowing fish passage. The cost estimate for this fish passage barrier project has increased due to the need for additional funds for project redesign, right of way acquisition, and the change in construction materials. This project has been reported and removed from the Watch List.
I-5/Northbound Interstate Bridge - South Tower Trunnion Replacement (Clark)	PEF	Apr-2017	Apr-2017	The Oregon Department of Transportation and WSDOT share equal financial responsibility of this bridge tower replacement project. Due to increased labor rates and changes in traffic conditions, WSDOT's portion of this project has been increased. This project has been reported and removed from the Watch List.
US 12/Indian Creek Vicinity to Wildcat Creek Bridge Vicinity - Paving (Yakima)	PEF	Apr-2017	Apr-2017	Higher than expected bids paired with the deteriorating conditions of the Wildcat Bridge deck have increased cost estimates. This project has been reported and removed from the Watch List.
SR 167/SR 509 Puget Sound Gateway (King, Pierce)	Nickel/TPA	Apr-2017	Apr-2017	This larger project, comprised of two stages, has been accelerated four years due to a change in the staging of the project made possible by meetings between WSDOT and stakeholders. This project finishes the SR 167 extension by building the remaining four miles to connect to I-5, construct a new connection from SR 509 to I-5, and build five new interchanges. Changes in the Environmental Impact Statement, design, and preliminary engineering have contributed to increased costs. This project has been reported and removed from the Watch List.
I-5/SR 104 Vicinity to 212th St. Southwest Vicinity - Expansion Joint Replacement (King, Snohomish)	PEF	May-2017	May-2017	This project replaces expansion joints on eight bridges in the Mountlake Terrace area. In order to achieve a higher level of efficiency, the project has been added to an existing contract. Advertisement will begin in fall 2018 and be operationally complete in fall 2019. This project has been reported and removed from the Watch List.
I-90/1.5 Miles East of Cabin Creek Rd. to Kachess River Vicinity - Paving (Kittitas)	PEF	May-2017	May-2017	This project fixes deteriorating pavement on a 3.5-mile stretch of I-90. This project was advertised late in the 2017 construction season, which led to an increase in project costs at the time it was awarded. Construction is planned to start in July 2017 and should be operationally complete by October 2017. This project has been reported and removed from the Watch List.
SR 410/MP 51.5 Skookum Falls Viewpoint - Rock Fall (Pierce)	PEF	May-2017	May-2017	Heavy rainfall and snowmelt caused a rockslide on State Route 410 at the Skookum Falls Viewpoint, and an emergency contract was awarded. The rockslide was unexpected, which required spending unbudgeted money. Work is planned to start in June 2017, and should be operationally complete by July 2017. This project has been reported and removed from the Watch List.
SR 302/South of East Victor Rd. - Culvert Replacement (Mason)	PEF	May-2017	May-2017	Heavy rainfall caused a large portion of the eastbound side of State Route 302 to slide toward North Bay. In order to assist traffic, a temporary signal was required, increasing the total project cost. This project has been reported and removed from the Watch List.
US 2/Bickford Ave. Southeast to Fryelands Blvd. Southeast Vicinity - Corridor Improvements (Snohomish)	PEF	Jun-2017	Jun-2017	To gain delivery efficiencies, the project was advanced by two years and combined with six existing projects. The construction phase is planned to be advertised early 2019 and completed in fall 2019. The project's proposed solution will construct a new 6-foot median with rumble strips and 2 miles of new median barriers, increasing the total cost of the project. This project has been reported and removed from the Watch List.
SR 104/Hood Canal Bridge - Special Repair (Jefferson, Kitsap)	PEF	Jun-2017	Jun-2017	To preserve the structural integrity of the Hood Canal Bridge, aging anchor cables will be replaced. The cost of the project has increased due to the settlement of a claim filed by the contractor. This project has been reported and removed from the Watch List.
SR 503/Drainage Improvements (Clark)	PEF	Jun-2017	Jun-2017	This project replaces an existing drainage system to avoid runoff water draining onto the roadway. The new proposed solution involves replacing the entire existing system with a closed drainage system that outlets to an infiltration pond. Advertisement for this project is May of 2018, and is expected to be operationally complete in October of 2018. This project has been reported and removed from the Watch List.

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

Notes for all tables: **1** The schedule for this project changes frequently and WSDOT cannot verify the contractor's schedule. **2** This project was originally added and removed from the Watch List in August 2015, and added again in April 2017. **3** This project was originally reported as SR 14/West Camas Slough Bridge - Bridge Widening, but is now officially titled SR 14/I-205 to SE 164th Avenue-Auxiliary Lanes.

66 ADVERTISEMENT RECORD QUARTERLY UPDATE

Connecting Washington Account projects in construction Through June 30, 2017; County in parentheses; Dollars in millions			On schedule		Completion date		Construction Cost	
I-405 Renton to Lynnwood - Corridor Widening (King)								
I-405/SR 167 Direct Connector			✓		Dec-2018		\$168.5	
SR 150/No-See-Um Road - Intersection Improvements and Realignment (Chelan)			✓		Dec-2017		\$5.9	
I-5/Chamber Way Bridge - Emergency Repair and Replacement (King)					Oct-2018		\$14.3	
US 97/Dolarway Intersection - Intersection Improvements (Kittitas)					Oct-2017		\$3.5	
Connecting Washington Account projects advertised			On schedule		Ad date		Completion date	
SR 518/Des Moines Memorial Drive - Interchange Improvements			✓		Apr-2017		Oct-2018	
SR 3/SR 304 Interchange - Interchange Modification (Kitsap)			✓		Apr-2017		Jan-2018	
US 195/Colfax to Spangle - Add Passing Lanes (Whitman, Spokane)					Apr-2017		Nov-2017	
Nickel & TPA projects in construction Through June 30, 2017; County in parentheses; Dollars in millions			Fund type	Advertised on time	Ad date		Operationally complete date	Award Amount
I-5 Concrete Rehabilitation Program (King)			Nickel	✓	Jul-2009		May-2023	N/A
I-5/Northbound South 260th to Duwamish River Bridge - Concrete Rehab			Nickel	N/A	Nov-2016		Oct-2018	\$30.8
I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair			Nickel	N/A	Dec-2016		Sep-2019	\$38.6
I-5/Northbound South Spokane St. Vicinity - Concrete Pavement Replacement			(Work included in I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair)					
I-5/Northbound I-90 Vicinity to James St. Vicinity - Concrete Pavement Replacement			(Work included in I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair)					
I-5 Concrete Rehabilitation Program (King)								
SR 99/South King Street Vicinity to Roy Street – Viaduct Replacement			Nickel/TPA	✓	May-2010	To be determined	\$1,089.7	
The schedule for this project changes frequently and WSDOT cannot verify the contractor's schedule at this time.								
US 395/North Spokane Corridor (NSC) – Design and Right of Way – New Alignment (Spokane)			Nickel/TPA	✓	Apr-2012	Nov-2018	N/A	
US 395/NSC - Spokane River to Francis Ave. - Grading			TPA	N/A	Dec-2016		\$0.4	
US 395/NSC Freya St. - Structures			TPA	N/A	Dec-2016		\$7.6	
I-90/Concrete Rehabilitation			Nickel					
I-90/Peoh Rd. Bridge to Elk Heights Rd. Vicinity Westbound - Replace/ Rehab Concrete			Nickel	✓	Feb-2016	Nov-2017	\$17.7	
SR 520/Bridge Replacement and HOV (King)								
SR 520/I-5 to Medina – Evergreen Point Floating Bridge and Landings			TPA	✓	Dec-2010	Jul-2017	\$586.6	
SR 3/Belfair Area – Widening and Safety Improvements (Mason)			TPA	Late	Apr-2015	Aug-2017	\$10.3	
Advertisement was delayed due to revised project limits, which affected right of way acquisition.								
I-5/Tacoma HOV Improvements (Pierce)			Nickel/TPA					
I-5/M Street to Portland Avenue – Add HOV Lanes			Nickel	✓	Mar-2014	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	Oct-2017	\$177.1	
Advertisement was delayed to address fire and safety issues with the original snowshed design, resulting in long-term savings.								
SR 16/Anderson Creek Tributary to Sinclair Inlet – Fish Barriers (Kitsap)			TPA	Late	Feb-2016	Jun-2017	\$4.4	

Source: Capital Project Delivery Programs.

66

SCHEDULE & BUDGET SUMMARIES QUARTERLY UPDATE

Biennial summary of Nickel and Transportation Partnership Account projects

Costs estimated at completion; Dollars in millions

Cumulative to date	Fund type	Advertised on time ¹	Completed on time	Within scope	Baseline cost	Current cost	Completed on budget ²
2015-2017 biennium summary <i>This information is updated quarterly during the biennium</i>	0 Nickel 11 TPA	7 on time 4 late	10 on time 1 late	11	\$809.9	\$777.7	10 on budget 1 over budget
2013-2015 biennium summary See GNB 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 GNB 50, p. 31	5 Nickel 36 TPA	31 on time 10 late	32 on time 9 late	41	\$1,485.5	\$1,459.6	37 on budget 4 over budget
2009-2011 biennium summary See GNB 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 GNB 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 GNB 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 GNB 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 Projects are "on time" if they are operationally complete within the quarter planned in the last approved schedule. 2 Projects are "on budget" if the costs are within 5% of the last approved budget.

WSDOT reports five change orders costing \$500,000 or more during the quarter

During the quarter ending June 30, 2017, WSDOT approved five change orders of \$500,000 or more. Additionally, one change order, which occurred during the last quarter, is also being reported. These totaled approximately \$10.92 million. The largest of the five change orders, valued at about \$3.37 million, involves compensation of all costs, time, delay and impacts associated with the SR 520 West Approach Bridge North project. The second largest change order, valued at approximately \$1.99 million, involves a contract put in place to cover the amount of overtime and additional crews needed to complete the remaining work on the Tacoma Amtrak Cascades Station, as well as any additional work needed to meet their deadline of July 21, 2017. A change order for the Amtrak Cascades Station project covered \$1.02 million in costs for significant street improvements on East 25th Street located in front of the station. One change order, valued at \$1.65 million, settles a contractor claim regarding the removal of bushings and replacement of anchor cables on the Hood Canal Bridge. The fifth change order, valued at \$538,000, provided final settlement and resolution for all issues or claims relating to the SR 99 George Memorial Bridge painting and cleaning project. 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>.

66 PRE-EXISTING FUNDS QUARTERLY UPDATE

WSDOT advertises 66 Pre-existing Funds projects during the quarter

WSDOT advertised 66 of 75 Pre-existing Funds (PEF) projects in the eighth quarter of the 2015-2017 biennium (April through June 2017).

Of the 66 total projects, eight were advanced from future quarters, 17 were advertised on time, 20 were emergent, and 21 were advertised late. Of the remaining PEF projects scheduled for advertisement this quarter, nine were deferred out of the 2015-2017 biennium. See p. 60 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 495 PEF projects actually advertised through the eighth quarter of the 2015-2017 biennium is \$837.4 million, about \$6.9 million (1.0%) more than the original value of \$830.5 million. This increase is due to the 10 unplanned projects that WSDOT completed during

the biennium. The 495 actual advertisements cost about \$47.0 million (5.3%) less than those 485 originally planned for the 2015-2017 biennium. This reduction was due to the overall value of projects that were deferred out of the biennium or deleted altogether.

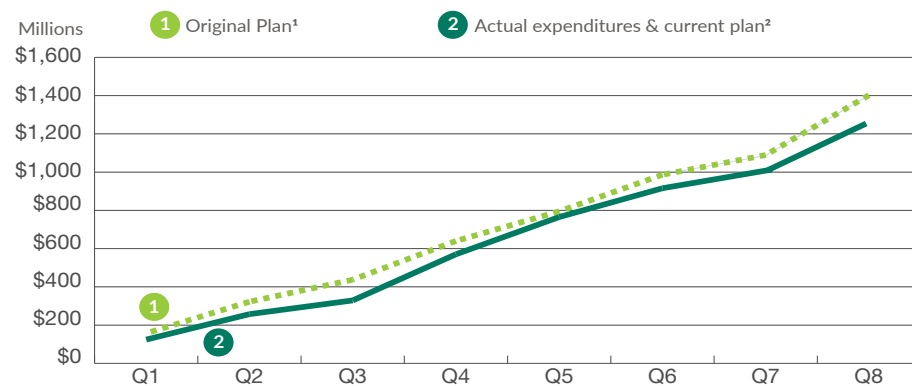
Improvement and preservation cash flows less than projections

Cumulatively, WSDOT planned to have \$1.4 billion in the combined improvement and preservation cash flow during the eighth quarter of the 2015-2017 biennium, but had \$1.25 billion instead (approximately 10.7% less).

This \$150.4 million variance was due to WSDOT's having based its initial improvement and preservation allotments on historical cash flow averages for the quarter.

Cumulative Pre-existing Funds preservation and improvement combined cash flows on track with current plan during the 2015-2017 biennium

Quarter ending June 30, 2017; Planned vs. actual expenditures; Dollars in millions



Data source: WSDOT Capital Program Development and Management.

Note: Q8 refers to the eighth quarter (April through June 2017) of the 2015-2017 biennium (July 2015 through June 2017).

1 The baseline was reset after GNB 62 when WSDOT's six-year plan was updated.

2 Actual expenditures followed the same course as the current plan throughout the biennium.

Actual cost to complete project advertisements about \$6.9 million more than the original value

2015-2017 biennium (July 2015 through June 2017); Quarter ending June 30, 2017; Dollars in millions

	Number of projects	Original value	Current cost to complete
Total PEF advertisements planned for the 2015-2017 biennium	485	\$876.7	\$884.4
Actual advertisements through June 30, 2017	495	\$830.5	\$837.4

Data source: WSDOT Capital Program Development and Management.

WSDOT completes 495 Pre-existing Funds project advertisements during the 2015-2017 biennium

Project status	Quarter ¹	Cumulative ²
Projects advanced ³	8	37
Projects advertised on time	17	329
Emergent projects advertised	20	58
Projects advertised late	21	71
Total projects advertised	66	495
Projects advertised early ⁴	0	23
Projects delayed within the biennium	0	104
Projects deferred out of the biennium	9	32
Projects deleted	0	3

Data source: WSDOT Capital Program Development and Management.

Notes:

1 Quarter refers to April through June 2017.

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.

WSDOT advertises 17 Pre-existing Funds projects on time

April-June 2017

Advertised Early (8)	
SR 105/North Cove Vicinity - Erosion Protection 2017	US 12/Coal Creek Bridge to Gulch Bridge - Paving
SR 153/Methow River Bridge MP 13.5 - Structural Rehabilitation	US 101/Coffee Creek - Remove Fish Barrier
SR 153/Methow River Bridges - Structural Rehabilitation	I-82/Selah Creek Bridge Eastbound - Paving
SR 14/US 97 to Cliffs Road Vicinity - Paving	I-82/Selah Creek Bridge Eastbound - Joint Repair
On time (17)	
US 12/SR 128 Vicinity to Snake River Bridge - Paving	SR 7/1.6 Miles North of Tilton River Bridge - Culvert Rehabilitation
US 12/SR 128 Vicinity to Snake River Bridge - ADA Compliance	SR 7/0.8 Mile North of Mineral Road - Culvert Rehabilitation
US 97/4 Miles South of Satus Creek Bridge to Yakima County Line with exception - Paving	SR 7/0.4 Miles North of Morton to Nisqually River Bridge - Paving
SR 6/Raymond to Chehalis River Bridge - Chip Seal	SR 501/26th Street Extension Vicinity to 1.3 Miles South of End of Road Vicinity Chip Seal
I-5/Southbound North Fork Lewis River Bridge - Resurfacing	SR 500/SR 503 to Northeast 4th Plain Boulevard - Paving
US 395/Arden to Colville - Paving	SR 432/Cowlitz River Bridge - Deck Repair and Overlay
US 2/Deer Road to Colbert Road - Paving	US 101/SR 6 - Remove Signal
SR 105/Raymond to Grays Harbor County Line - Chip Seal	I-90/Lacey V. Murrow Bridge - Electrical Rehabilitation
SR 7/North of Tilton River Bridge - Culvert Rehabilitation	
Emergent (20)	
I-5/Scatter Creek & Maytown SRA - Minor Rehabilitation - Olympic Region	SR 503/3 Miles West of SR 503 Spur - Slope Stabilization
Northwest Region Strategic Bridge Preservation 2017-2019	SR 971 MP 10.55 Emergency Slope Repair
SR 410/MP 51.5 Skookum Falls Viewpoint - Rock Fall	I-90/1.5 Miles East of Cabin Creek Road to Kachess River Vicinity - Paving
SR 539/Nooksack River Bridge - Special Repair	SR 129/Grand Ronde River to Rattlesnake Creek Vicinity - Emergency Repairs
US 2/Wenatchee West MP 117.79 - Irrigation Casings	SR 25/Northport Columbia River Crossing - Bridge Repair
SR 20/Loup Loup Pass - Emergency Repair 2017	SR 31/South of Metaline - Emergent Slide Repair
South Central Region 2017-2019 Strategic Bridge Preservation Eastern Washington	I-5/Toutle River Northbound/Southbound SRA - Sewer Rehabilitation - Southwest Region
SR 112/Milepost 0.50 and Milepost 1.83 Slides - Stabilize Slopes	Motor/Vessel <i>Martha S.</i> Disposal
Southwest Region - Strategic Preservation State Funded 2015-2017	SR 21/South of Republic - Gold Creek Bridge Emergent Repair
SR 14/Cape Horn Slide Bridge Vicinity - Debris Fence	US 395/South of Orient - Matsen Creek Washout Emergent Repair
Advertised Late (21)	
2015-2017 South Central Region - Intersection Safety Implementation Program	SR 28/17th to 19th St. East Wenatchee - Two Way Left Turn Lane
2015-2017 South Central Region - Region Wide Basic Safety - Signing	US 2/West of Coles Corner - Roadside Safety
2015-2017 Olympic Region - Region Wide Basic Safety - Guardrail	US 2/SR 207 Coles Corner - Two Way Left Turn Lane
US 101/Evergreen Parkway to Vicinity Crosby Blvd. - Install Cable Barrier	SR 531/Edgecomb Creek - Fish Passage
SR 20 Spur/Sharpe's Corner to Commercial Avenue - Paving	SR 26/Thacker Road - Intersection Improvements
SR 20 Spur/R Avenue Vicinity - ADA Compliance	SR 26/SR 243 Intersection Improvements
SR 20 Spur/Commercial Avenue to Anacortes Ferry Terminal - Paving	US 2/BNSF Railroad Bridge to South Fork Skykomish River - Chip Seal
SR 20 Spur/Commercial Avenue to Anacortes Ferry Terminal - ADA Compliance	US 2/Eagle Falls Vicinity to Railroad Bridge - Chip Seal
US 12/Nine Mile Creek Vicinity to Old Highway 12 - Paving	US 2/Money Creek to Tye Creek - Paving
US 12/McNary Pool to Dodd Road - Paving	US 2/Deer Road to Day Mount Spokane Road - Corridor Improvements
SR 28/5th Street Intersection Improvements	

Data source: WSDOT Capital Program Development and Management.

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Statewide transportation policy goals

Laws enacted in 2007 established policy goals for transportation agencies in Washington (RCW 47.04.280). Throughout its editions, WSDOT's Gray Notebook reports on progress toward the six statewide transportation policy goals that include:

- **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.

GNB subject index and edition archives online

Readers can access the GNB subject index online at bit.ly/GNBsubjectindex. Past GNB editions are available at bit.ly/GNBarchives.

GNB 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 (see charts below).

GNB credits

The GNB is developed and produced by the small team at WSDOT's Office of Strategic Assessment and Performance Analysis (OSAPA), and articles feature bylines indicating key contributors from dozens of WSDOT programs. The GNB and GNB Lite are printed in-house by Ronnie Jackson, Trudi Phillips, Talon Randazzo, Larry Shibley, Oma Venable and Deb Webb. OSAPA's Kate Wilfong coordinates distribution. WSDOT's graphics team (Marcy Mill, Erica Mulherin and Steve Riddle) provides creative assistance, and WSDOT program staff and communicators take the photographs in each edition.

Calendar, fiscal and federal fiscal quarters

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	GNB 65			GNB 66			GNB 67			GNB 68	
	Q1 2017			Q2 2017			Q3 2017			Q4 2017	
	Q3 FY2017			Q4 FY2017			Q1 FY2018			Q2 FY2018	
	Q2 FFY2017			Q3 FFY2017			Q4 FFY2017			Q1 FFY2018	

2015-2017 biennial quarters (used by Legislature)

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

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