

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 67 ■ September 2017



WATER WORLD

FERRIES SET SAIL AROUND THE SOUND

Blue and green

WSDOT working to improve water quality

p. 35

Up to standard

How WSDOT maintains and better its facilities

p. 23

Flying higher

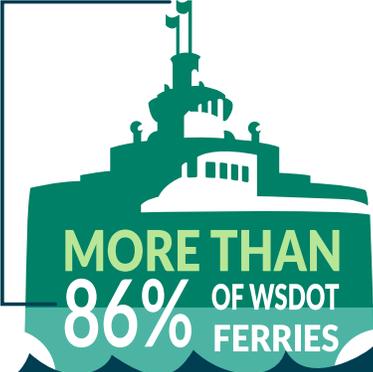
WSDOT's aviation program continues upward trends

p. 11

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PERFORMANCE HIGHLIGHTS reported for the quarter ending September 30, 2017



MORE THAN 86% OF WSDOT FERRIES

VESSEL SYSTEM VALUE (\$1.06 billion) is not overdue for REPLACEMENT

129

stormwater **treatment facilities** were constructed by WSDOT in fiscal year 2017

35 PERCENT

of WSDOT-owned **primary buildings** are more than 50 years old

4.8 PERCENT

increase in **vehicle miles traveled** in Washington from 2014 to 2016

19

of 20 federally-funded **rail projects** complete as of September 30, 2017

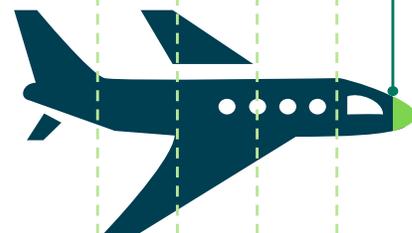
\$25.8 MILLION

in economic benefit provided by WSDOT's **Incident Response** teams clearing 16,356 incidents during the quarter

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

380

WSDOT SURPASSED ITS 95% GOAL



FOR REGISTRATION COMPLIANCE WITH 6,586 WASHINGTON AIRCRAFT RENEWED

67 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 67, [pp. 11-14](#) (AEA^{2,3})
- Bridges: GNB 66, [pp. 17-27](#) (AEA²)
- Capital facilities: GNB 67, [pp. 23-26](#)
- Ferries preservation: GNB 67, [pp. 15-30](#) (AEA²)
- Highway maintenance: GNB 64, [pp. 21-22](#) (AEA^{1,2})
- Multimodal assets: GNB 65, [pp. 6-7](#)
- Pavement: GNB 64, [pp. 13-20](#) (AEA²)



Goal 2: MODAL INTEGRATION

Optimize existing system capacity through better interconnectivity of all transportation modes

- Ferries: GNB 67, [pp. 29-30](#)
- Freight: GNB 66, [pp. 39-42](#) (AEA²)
- 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 67, [pp. 31-32](#)
- 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 67, [pp. 35-36](#) (AEA²)
- 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)
- Fish Passage Barriers: GNB 66, [pp. 34-36](#) (AEA^{1,3})



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.

67 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					
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 (by value) that are past due for replacement from increasing over 6% by 2020 (FY2016 & FY2017)	5.4%	5.2%	Yes	↓	↓
Control the percent of ferry vessel systems (by value) that are past due for replacement from increasing over 10% by 2020 (FY2016 & FY2017)	10.9%	13.3%	No	↑	↓
Maintain percentage of transit fleet that exceeds the Federal Transit Administration's minimum useful life at 25% or below through 2020 (2015 & 2016)	34.6% ³	40.2%	No	↑	↓
Increase the percentage of Washingtonians using alternative transportation commute methods to 29% by 2020 (2015 & 2016)	27.6%	27.9%	No	↑	↑
Ensure travel and freight reliability on strategic corridors does not deteriorate more than 5% through 2020 ⁴ (2015 & 2016)	5.0% ⁵	5.7%	Yes	↓	↓
Operate strategic corridors at 90% efficiency or higher through 2020 (2015 & 2016)	93.4%	94.0%	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)	17,941	24,624	No	↑	↑
Increase miles of stream habitat opened from 55 miles per year in 2017 to 80 by 2020 ^{5,6} (2017)	N/A	55 ⁵	No	N/A	↑
Increase number of fish passage barriers corrected per year from 60 in 2017 to 90 by 2020 ^{5,6} (2017)	N/A	60 ⁵	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** Value differs 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. **4** 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. **5** Measure has been updated since GNB 65. **6** Includes work completed by multiple state agencies.

67 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: Q2 2017 & Q3 2017)	12.0 minutes	12.6 minutes	*	N/A	 (Five-quarter trend)	↓
Ferries: Percentage of trips departing on time ³ (Fiscal quarterly measure: year to year Q4 FY2016 & Q1 FY2018)	90.7%	87.5%	≥ 95%	—		↑
Rail: Amtrak Cascades on-time performance ⁴ (Annual measure: fiscal years 2016 & 2017)	74.8%	56.3%	≥ 80%	—		↑
Environment						
Number of WSDOT stormwater management facilities constructed (Annual measure: fiscal years 2016 & 2017)	151	129	*	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: Q1 2017 & Q2 2017, trendline for percentage on time)	380/ 87%	380/ 87%	≥ 90% on time	—	 (Five-quarter trend)	↑
Cumulative number of Nickel and TPA projects completed ⁵ and percentage on budget ⁶ (Calendar quarterly measure: Q1 2017 & Q2 2017, trendline for percentage on budget)	380/ 91%	380/ 91%	≥ 90% on budget	✓	 (Five-quarter trend)	↑
Variance of total project costs ⁵ compared to budget expectations ⁶ (Calendar quarterly measure: Q3 2016 & Q3 2017)	Under budget by 2.2%	Under budget by 1.5%	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. **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. 37](#) 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 66, p. 17)	91.2%	91.8%	≥90%	✓		↑
Number of WSDOT-owned bridges load restricted or load posted (Fiscal years 2016 & 2017, GNB 66, p. 22)	126	119	*	N/A		↓
Current WSDOT-owned steel bridge painting backlog in millions of dollars (Fiscal years 2016 & 2017, GNB 66, p. 25)	\$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 66, p. 25)	\$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 66, p. 24)	\$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 66, p. 24)	\$726.5	\$831.1	*	N/A		↓
Percentage of NHS bridge deck area located on structurally deficient bridges (locally- and WSDOT -owned) (Fiscal years 2016 & 2017, GNB 66, p. 18)	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 by value ⁵ <small>(Fiscal years 2016 & 2017, GNB 67, p. 16)</small>	10.9%	13.3%	≤10%	—	 <small>(Three-year trend)</small>	↓
Ferry terminal systems past due for replacement ⁶ <small>(Fiscal years 2016 & 2017, GNB 67, p. 17)</small>	5.3%	5.2%	≤6%	✓	 <small>(Three-year trend)</small>	↓
Ferry vessel preservation needs as percentage backlog of total vessel value <small>(Fiscal years 2016 & 2017, GNB 67, p. 18)</small>	30.6%	23.6%	*	N/A	 <small>(Three-year trend)</small>	↓
Ferry terminal preservation needs as percentage backlog of total terminal assets <small>(Calendar years 2015 & 2016, GNB 67, p. 19)</small>	12.8%	11.9%	*	N/A	 <small>(Three-year trend)</small>	↓
Multimodal Assets						
Aviation						
Airport combined (federal, state, local) grant funding ⁷ in millions of dollars <small>(Fiscal years 2016 & 2017, GNB 67, p. 11)</small>	\$59.7	\$88.4	*	N/A	 <small>(Three-year trend)</small>	↑
Percentage of airport Master Record inspections conducted by WSDOT ⁷ <small>(Calendar years 2015 & 2016, GNB 67, p. 11)</small>	100%	100%	100%	✓	 <small>(Three-year trend)</small>	↑
Other Assets						
Facilities						
Facilities ⁸ Preventive Maintenance Plan completion rate ⁹ <small>(Biennial measure: 2015-2017 & 2017-2019, GNB 67, p. 24)</small>	88% ¹¹	82% ¹⁰	71%	N/A	 <small>(Two-biennium trend)</small>	↑
Percentage of primary buildings ⁸ in fair or better condition <small>(Biennial measure: 2015-2017 & 2017-2019, GNB 67, p. 23)</small>	58%	55.8%	*	N/A	 <small>(Two-biennium trend)</small>	↑
10-year forecast of unmet needs (backlog) ¹¹ in millions of dollars <small>(Biennial measure: 2015-2017 & 2017-2019, GNB 67, p. 24)</small>	\$475.5	\$474.7	*	N/A	 <small>(Two-biennium trend)</small>	↓

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

Notes: N/A = not available or not applicable. Asterisk (*) = goal has not been set. Dash (—) = goal was not met in the reporting period. **1** 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 Division uses a risk assessment matrix, which combines the probability of system component failure with information on the failure's impact on ferry operations to gauge when ferry systems are past due for replacement; systems in condition rating 3 are past due for replacement. **6** WSDOT Ferries Division uses 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** Reporting of the Facilities Preventive Maintenance Plan Completion Rate was changed from annually in Gray Notebook 63 to biennially in Gray Notebook 64. **11** Measured as backlog of unmet needs over the next 10 years as identified by the capital facilities strategic plan.

67 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 <small>(Calendar years 2015 & 2016, GNB 66, p. 11)</small>	551	537	416 ²			
Total number of serious injuries on Washington state public roads ¹ <small>(Calendar years 2015 & 2016, GNB 66, p. 11)</small>	2,100	2,209	1,788 ²			
Number of fatalities per 100 million vehicle miles travelled on Washington state public roads ¹ <small>(Calendar years 2015 & 2016, GNB 66, p. 11)</small>	.92	.88	.709 ²			
Serious injuries per 100 million vehicle miles travelled on Washington state public roads ¹ <small>(Calendar years 2015 & 2016, GNB 66, p. 11)</small>	3.52	3.63	3.058 ²			
Non-motorist						
Number of pedestrian and bicyclist combined fatalities and serious injuries ¹ <small>(Calendar years 2015 & 2016, GNB 65, p. 12)</small>	493	593	431 ²			
Ferries						
Passenger injuries per million passenger miles traveled <small>(Fiscal years 2017 & 2018, GNB 67, p.30)</small>	0.77	0.80	<1.0			
OSHA recordable crew injuries per 10,000 revenue service hours ³ <small>(Fiscal years 2016 & 2017, GNB 67, p.30)</small>	2.2	1.6	<7.6			
Rail						
Total number of train-related fatalities in Washington state ⁴ <small>(Calendar years 2015 & 2016, GNB 65, p. 24)</small>	27 ⁵	13	*	N/A		
Aviation						
General aviation fatalities in Washington state ⁶ <small>(Calendar years 2015 & 2016, GNB 67, p.14)</small>	7	3 ⁷	*	N/A		
Public Transit						
Fatalities involving Washington state public transportation <small>(Calendar years 2014 & 2015, GNB 63, p. 11)</small>	3	3	*	N/A		
Injuries involving Washington state public transportation <small>(Calendar years 2014 & 2015, GNB 63, p. 11)</small>	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 have been rounded and are the 2018 statewide targets for federal MAP-21 safety performance reporting. The "goal" is to show a trend of continual reduction of fatalities and serious injuries over time, not to have a specific number of one or the other. Goals are based on the target of reaching zero fatalities in 2030. **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. **7** Data current to October 2017 and will be updated after fatality data is confirmed for calendar year 2017.

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

WSDOT, Metropolitan Planning Organizations work to set MAP-21 performance targets

In May 2017, the U.S. Department of Transportation approved the final rule calling for states and Municipal Planning Organizations (MPOs) to set targets for highway system performance, freight, and Congestion Mitigation and Air Quality (CMAQ). As part of the performance management requirements, recipients of federal aid transportation funds will make transportation investments that show progress toward the following national goals:

- **Congestion reduction** – To achieve a significant reduction in congestion on the National Highway System;
- **System reliability** – To improve the efficiency of the surface transportation system;
- **Freight movement and economic vitality** – To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development; and
- **Environmental sustainability** – To enhance the performance of the transportation system while protecting and enhancing the natural environment.

MAP-21 folios provide more information

To help MPOs and other stakeholders navigate the complicated terrain created by MAP-21, WSDOT provides a number of informational folios covering various rules and topics.

For 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					23 CFR Part 490; Rule ID No. 2125-AF54
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 2017 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 2017 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 2017 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 2017 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 2017 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.

The report is 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 table 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 GNB 66 p. 17 .
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	416 ²	Yes	Final 3/15/16	Traffic fatalities using the NHTSA methodology; see GNB 66 p. 11
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 GNB 66 p. 11
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 GNB 66 p. 11
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 GNB 66 p. 11
Number of non-motorist traffic fatalities plus serious injuries	No	432 ²	Yes	Final 3/15/16	Non-motorist (pedestrian/bicyclist) fatalities and serious injuries using NHTSA methodology; see GNB 66 p. 11
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. **2** Number has been rounded up.

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ASSET MANAGEMENT: AVIATION ANNUAL REPORT

State contributes \$1.2 million to receive \$76.9 million in federal funds for Airport Aid

WSDOT awarded \$1.2 million for airport investments through its Airport Aid Grant Program for fiscal year (FY) 2018 (July 2017 through June 2018). Public-use airports in the state leveraged \$923,300 of these funds to secure \$76.9 million in federal grant funding. These grant awards will benefit 29 projects at 25 airports in FY2018. WSDOT's leveraged dollars make up 74.4% of the \$1.2 million in total state funds for the Airport Aid Grant Program (see table below). The remaining \$317,500 (25.6%) will go to airports not eligible for federal funding.

A total of \$88.5 million will be available for airport investment projects during FY2018. This figure includes \$10.3 million in local and other funding, in addition to state and federal funding. The majority of these funds (\$82.8 million or 94%) are slated for pavement projects, including \$41 million for runway realignment at the Pullman-Moscow Regional Airport. This project includes property acquisition, power line relocation and construction of airfield improvements. The work will further separate the runway and the taxiway to meet federal standards and reduce the potential for accidents.

Projects that improve safety at airports account for 3% of the total dollars (\$2.7 million), with the remaining 3% (\$3.0 million) allocated for security and other projects. For more information about WSDOT's Airport Aid Grant Program, visit: www.wsdot.wa.gov/aviation/Grants.

Majority of airport investment funding slated for pavement projects

Funding by source for fiscal year 2018; Dollars in millions

Project type	Total	Local	State	Federal
Pavement	\$82.8	\$10.0	\$0.9	\$71.7
Safety	\$2.7	\$0.1	\$0.1	\$2.5
Security	\$1.0	\$0.1	\$0.1	\$0.9
Other ¹	\$2.0	\$0.1	\$0.1	\$1.8
Total	\$88.5	\$10.3	\$1.2	\$76.9

Data Source: WSDOT Aviation Division

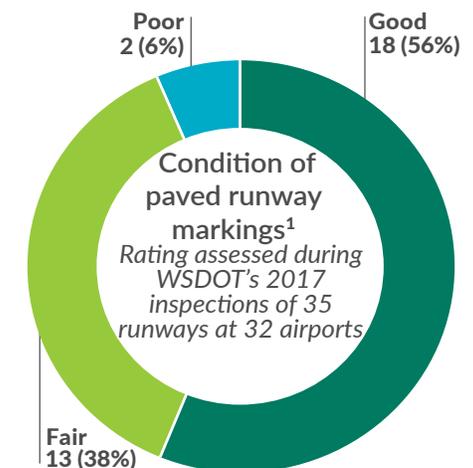
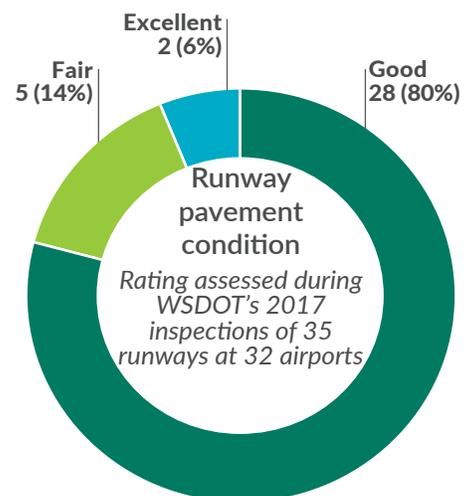
Notes: Some numbers do not add up due to rounding. 1 "Other" projects include planning, maintenance and equipment acquisition.

WSDOT finishes 100% of Airport Master Record inspections

WSDOT completed 100% of its airport inspections of the 42 airports scheduled in 2017. During these visual inspections, WSDOT determined that 86% of runway pavement at 32 airports (10 airports have turf, gravel or water runways) was in excellent or good condition (see chart at right). WSDOT inspectors, following Federal Aviation Administration (FAA) guidance on Master Records, also assessed runway markings. Inspectors found that of the 35 runways at the 32 airports—some airports have more than one runway—approximately 94% had markings that were in good or fair condition.

Notable results

- WSDOT's Airport Aid Grant Program leveraged \$923,300 in state funding to make \$76.9 million in federal funds available for airport investments in fiscal year 2018
- The Pullman-Moscow Regional Airport is slated for a \$41 million runway realignment project
- Airport inspections found that 86% of runway pavement at 32 airports was in excellent or good condition



Data Source: WSDOT Aviation.

Notes: Some airports have more than one runway. The condition of runway markings was assessed at 32 of the 42 inspected airports because runways at the other 10 locations were turf, gravel, or water surfaces. 1 Two runways had no markings.

WSDOT is developing a best management practices toolkit

In accordance with a proposed solution from the Airport Investment Study, WSDOT is developing a best management practices guidebook/toolkit for public-use airports. The guidebook will be a resource to use in employing successful airport management methods as well as meeting statutory requirements. These practices are based on airport management knowledge obtained from experts across the nation. The guidebook is expected to be available by December 2019.



Agency Emphasis Area PRACTICAL SOLUTIONS

WSDOT's development of a best management practices toolkit for public use airports in Washington state supports Practical Solutions by consolidating knowledge and best practices obtained from airport management experts across the nation.

Pavement work scheduled for Methow Valley Airport

WSDOT will undertake a \$5.9 million project at Methow Valley State Airport beginning in May 2018. The project at the state-managed airport will rehabilitate 21-year-old pavement on the primary runway, and will install new sub-drains, grade the runway safety area and rehabilitate surrounding taxiways and other pavement. Work at the airport will also expand and reconfigure the aircraft parking apron to meet FAA design standards.

The pavement at Methow Valley State Airport has reached the end of its useful life. The design and environmental work for the project began in January 2017 and went to bid in August 2017. The work is scheduled to begin in May 2018 and take approximately 100 calendar

days. The project will be completed in phases to minimize impacts on airport operations.

The Methow Valley State Airport is one of 16 airports that WSDOT operates. It is the only state-run airport eligible for federal funds because it is included in the Federal Aviation Administration's National Plan of Integrated Airport Systems (NPIAS). The NPIAS is the FAA's federal system of airports.

The airport is also home to a U.S. Department of Agriculture Forest Service Smokejumper Base. The base employs approximately 30 staff who use the airport to conduct forest fire fighting operations. The airport is also used for business and recreational travel.

WSDOT's Airport Investment Study identifies solutions for needed airport funding

The Airport Investment Solutions Handbook was released in 2015 as the second and final phase of WSDOT's Airport Investment Study. The study identified \$3.6 billion in needed investment, and a \$1.6 billion gap between needs and available funding over the next 20 years.

The handbook proposed solutions to cover the state's share—\$8.4 million annually—of the current airport investment funding gap. Among possible solutions resulting from the study were the need for a state-sponsored revolving aviation infrastructure loan fund and a best management practices guidebook/toolkit for state airports.

In 2017, the legislature considered an aviation revitalization revolving loan program reflected in House Bill 1656 and Senate Bill 5328. While neither bill passed, they are scheduled for further discussion in the 2018 session, as is \$5 million in possible start-up funding in the state capital budget.

The revolving loan would provide seed money for airports to complete projects that will generate long-term revenue streams. These revenue streams could allow airports to provide the 5% matching funds that are required of a WSDOT or FAA airport infrastructure grant.

Aircraft registration with WSDOT climbs to a record high

WSDOT registered a record 6,586 aircraft and provided 3,056 total exemptions to qualifying aircraft during the 2017 aircraft registration and renewal cycle (see sidebar on p. 14 for more information about exemptions). As a result, WSDOT surpassed its annual registration goal of 95%.

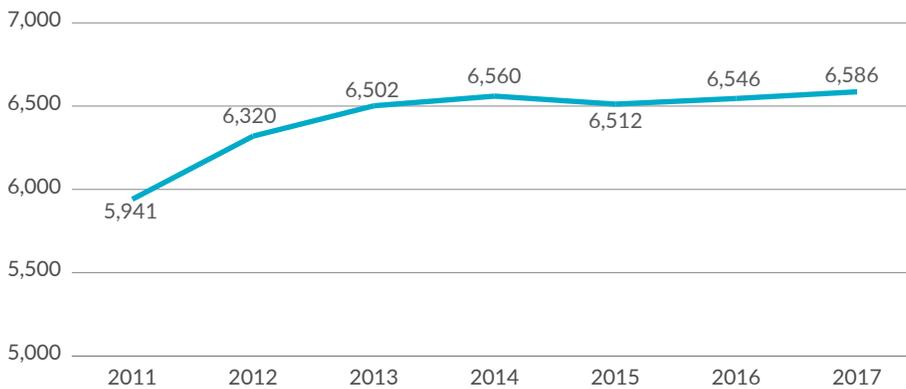
Washington state law requires that airworthy general aircraft be registered with WSDOT Aviation.

Annual aircraft registration fees are due January 1 each year and directly support airport preservation, maintenance and improvement programs.

In 2017, late registration fees were paid for 146 aircraft in Washington state. Gov. Jay Inslee signed a bill in 2016 which assesses a one-tier late registration penalty of \$100 per aircraft instead of the previous escalating penalty schedule.

Number of aircraft registered in Washington soars to record high in 2017

2011 through 2017; Number of aircraft registered with WSDOT per year



Data source: WSDOT Aviation Division.

FAA and WSDOT Partner for a statewide Disadvantaged Business Enterprise Program disparity study

The Federal Aviation Administration (FAA), WSDOT's Office of Equal Opportunity (OEO) and WSDOT's Aviation Division are collaborating on a statewide Disadvantaged Business Enterprise (DBE) Program Disparity Study. The study is projected to begin in January 2018 and be completed in June 2019. The structure of the study will eliminate redundant spending while benefitting airports and the state.

WSDOT OEO has successfully completed DBE studies in 2005, 2012 and 2017. Given this experience, the FAA requested that OEO manage this project on its behalf in conjunction with a consultant.

This DBE Program Disparity Study will evaluate contracting data for 64 of the 136 public-use airports in Washington state that are under WSDOT authority and determine

Most aircraft registered with WSDOT are single engine

Calendar year 2017; Number of aircraft registered by type

Aircraft type	Quantity
Single engine	4,681
Home built	1,085
Helicopter	228
Piston, multi-engine, small	213
Turbojet, multi-engine	135
Sail/glider	122
Turboprop, multi-engine	41
Lighter than air	36
Piston, multi-engine, large	23
Aircraft 8,001-9,000 lbs.	10
Aircraft 4,001-6,000 lbs.	7
Aircraft less than 4,001 lbs.	4
Aircraft 9,001-12,500 lbs.	1
Total	6,586

Data source: WSDOT Aviation Division.



Agency Emphasis Area INCLUSION

WSDOT is supporting Inclusion by partnering with the FAA to conduct a Disadvantaged Business Enterprise program disparity study. This study will examine utilization of minority- and women-owned businesses by the Airport Improvement Program in Washington state in relation to the availability of those businesses.

Aircraft registration exemption

In 2017, WSDOT provided 3,056 exemptions to aircraft that qualified. This means owners of those aircraft were not required to pay registration fees to WSDOT according to state law. Aircraft that qualify for exemption from WSDOT registration are still required to register with the FAA.

There are several criteria to qualify for aircraft registration exemption, all of which require approval by WSDOT. For more information about exemption qualification and how to apply, see <http://bit.ly/AircraftExemptions>.

Statewide general aviation passenger safety improves

WSDOT does not track passenger safety, but it assists the National Transportation Safety Board (NTSB) after aviation accidents, providing information to help NTSB investigations.

General aviation¹ fatalities in Washington state declining

2015 through 2017; General aviation passenger boardings and fatalities only

	2015	2016	2017
Total fatalities	14	7	3

Data sources: Federal Aviation Administration; National Traffic Safety Board, Aviation Accident Database.

Note: Data current through October 2017. ¹ General aviation includes all non-commercial passenger aviation.

the availability versus utilization of minority- and women-owned firms on airport projects. The study will provide these airports with sufficient information to implement their DBE program consistently with current regulatory standards.

The collaboration between the FAA, OEO and WSDOT Aviation provides several benefits to our airport stakeholders, including:

- Eliminating redundant spending and efforts by conducting the required DBE Disparity Study for 64 airports concurrently, instead of 64 separate studies and consultants;
- Ensuring that each airport's DBE Program Disparity Study will meet federal requirements;
- Ensuring that airports receive the benefit of WSDOT's experience from recently conducting a Federal Highway Administration-funded DBE Program Disparity Study;
- Providing each airport with the legal foundation to evaluate data and properly implement the DBE Program as required by federal law under the Code of Federal Regulations; and
- Developing specific areas for improvement and best practices for airports located in Washington state.

Aviation System Plan charts a new course for Airports

In July 2017, Transportation Secretary Roger Millar approved the Washington Aviation System Plan (WASP) final report, opening the way for WSDOT to begin implementing new programs designed to improve the state's system of public-use airports.

The WASP is a statewide study conducted approximately every five years. It examines and analyzes Washington's system of airports to identify changes that are needed to meet airport and aviation transportation needs.

Among the key findings of the study were modest growth in statewide commercial air service, air cargo, and general aviation. The study also explored several emerging issues such as alternative fuels, aircraft innovation and unmanned aircraft systems.

The study's results included a new airport classification system, new performance goals, objectives and measures, new performance metrics for airports, and strategic alternatives for enhancing aviation activities at the statewide, regional and individual airport levels.

WSDOT will work with airports, local governments and stakeholders to implement the new tools developed through the study. For more information about the WASP, visit:

<http://bit.ly/WSDOTWASP>.

Contributors include Rob Hodgman, Eric Johnson, John MacArthur, Tracy Paul, Paul Wolf, Patrick Wright, Joe Irwin and Dustin Motte

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ASSET MANAGEMENT: FERRIES VESSELS & TERMINALS ANNUAL REPORT

Vessel systems needing replacement remain steady at 11%

WSDOT retired the Motor/Vessel (M/V) *Klahowya* from service in fiscal year (FY) 2017. The retirement of the 59-year-old vessel was made possible by the delivery of the M/V *Chimacum*. The M/V *Chimacum* is the third of four new 144-vehicle Olympic Class vessels, and made its first sailing in May 2017.

The percentage of vessel systems needed replacement remained steady at 11% from the end of FY2016 to the end of FY2017. This the net effect of the M/V *Chimacum* replacing the M/V *Klahowya*, investments to renew vessel systems, additional systems coming due, and changes of system conditions based on inspections.

WSDOT uses a risk assessment guide to help rate the condition of its vessel systems at the end of each fiscal year, which runs from July 1 through June 30. The agency assigns each system a Condition Rating of 1, 2 or 3 depending on the likelihood of failure and the impact a failure would have on ferry service (see risk assessment matrix below).

The number of vessel systems included in Condition Rating 1 (systems not currently needing replacement) increased from 52% in FY2016 to 57% in FY2017. This increase was due to the retirement of the aging M/V *Klahowya* and the arrival of the new M/V *Chimacum*, as well as WSDOT replacing systems that were due for replacement.

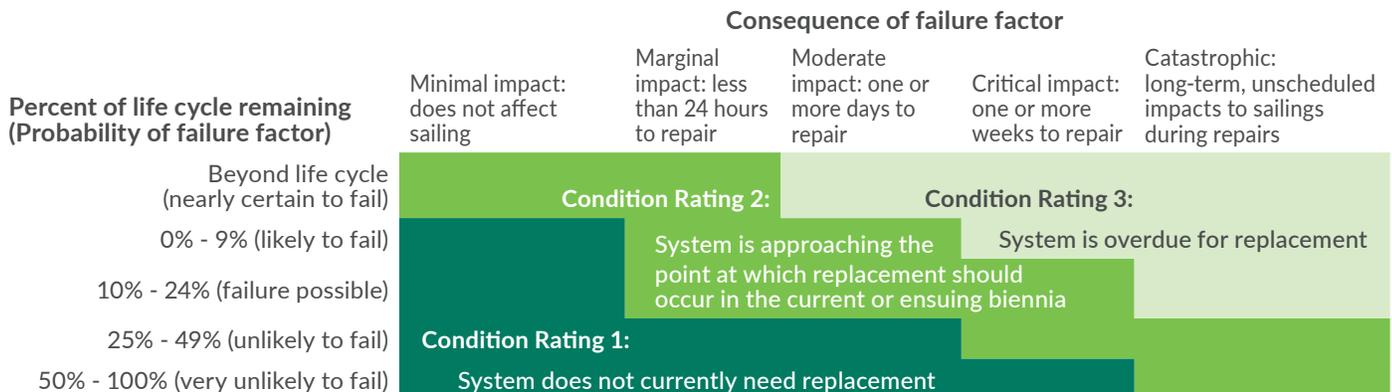
The number of vessel systems in Condition Rating 2 (approaching the need for replacement) decreased from 37% to 32%, and the number of systems in Condition Rating 3 (overdue for replacement) stayed the same at 11%, between FY2016 and FY2017. Condition category ratings include the 22 vessels operating at the end of FY2017, with 1,997 total vessel systems tracked at the end of FY2017. This is 31 more systems than there were at the end of FY2016.

Notable results

- The number of WSDOT Ferries vessel systems needing to be replaced held steady at 11% between FY2016 and FY2017
- The value of WSDOT Ferries vessel systems needing to be replaced is \$162.2 million or 13.3% of the total value of the fleet systems
- Approximately 88% of WSDOT Ferries terminal systems were in fair of better condition at the end of calendar year 2016
- WSDOT removed the M/V *Klahowya* from service in FY2017 and replaced it with the M/V *Chimacum*

WSDOT risk assessment criteria helps prioritize ferry vessel preservation

Based on the likelihood of the system failing combined with the likely consequences of the system's failure



Data source: WSDOT Ferries.

Emergent regulatory work on vessels impacts preservation efforts

When multiple vessels' sprinkler systems failed inspection in the beginning of FY2017, WSDOT conducted additional targeted sprinkler inspections and testing on other vessels with aging systems. The results led to increased regulator scrutiny and the replacement of sprinkler systems on six vessels during the second half of FY2017. These dockside visits to the shipyard to perform unplanned sprinkler work deferred other planned preservation work.

WSDOT spent \$19.4 million preserving 41 inventory items on 12 vessels during FY2017. These efforts included:

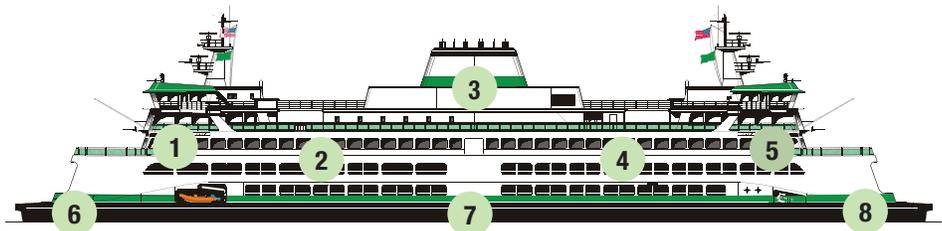
- Replacing piping on five vessels
- Replacing auto deck steel on the M/V *Tacoma*
- Replacing propeller blades and completing structural preservation of steel on the M/V *Sealth*, and
- Replacing marine evacuation slides on the M/V *Hyak*, M/V *Yakima*, and M/V *Chelan*.

At the end of FY2017, there were 22 vessels in operation with an average age of 29 years old, compared to 31 years of age at the end of FY2016. This change was affected mainly by the new vessel M/V *Chimacum* replacing the decommissioned M/V *Klahowya* (built in 1958).

WSDOT is expecting the delivery of a new 144-vehicle Olympic Class vessel, the M/V *Suquamish*, in summer 2018. This vessel will join

Percentage of WSDOT ferry vessel systems that do not currently need replacement remains steady from FY2016 to FY2017

Fiscal years 2016 and 2017; Results by type of vessel system



Types of ferry vessel systems	Number of systems	Percent of systems in Condition Ratings ¹		
		OK 1	Monitor 2	Past due 3
1 Communications, navigation, lifesaving systems	631	70%	20%	10%
2 Piping systems	150	49%	35%	17%
3 Structural preservation (paint)	220	74%	20%	6%
4 Passenger and crew spaces	76	59%	38%	3%
5 Security systems	101	59%	22%	19%
6 Steel structures	175	66%	26%	7%
7 Mechanical/electrical systems	350	55%	34%	11%
8 Propulsion systems	294	16%	69%	15%
Total/average FY2017	1,997	57%	32%	11%
Total/average FY2016	1,966	52%	37%	11%

Data source: WSDOT Ferries.

Notes: Percentages may not add to 100 due to rounding. 1 Systems included in Condition Rating 1 do not currently need to be replaced; those in Condition Rating 2 should be monitored for replacement within the current or ensuing biennium; those in Condition Rating 3 are past due for replacement.

the fleet's most recent additions in the Olympic Class, the M/V *Tokitae* (2014), M/V *Samish* (2015), and M/V *Chimacum* (2017) to further reduce the average age of the fleet as they replace older vessels.

Security, piping systems have higher percentage of past due items

Security and piping systems had the highest percentage of items that were past due for replacement in FY2017 (Condition Rating 3), with 19% and 17%, respectively (see chart

above). The largest increase from FY2016 was security systems which went from 0% to 19% overdue for replacement by the end of FY2017. This was because 10 systems became due, and none were replaced due to their lower consequence of failure.

Due to repair work, the percentage of piping systems in Condition Category 3 had the largest drop, going from 23% in FY2016 to 17% in FY2017.

WSDOT weights ferry systems that are critical to service more heavily than those that do not immediately

impact travel. Major mechanical and electrical systems are considered high priority because repairs can require removing the vessel from service, which can result in trip cancellations or delays in service if a suitable, spare vessel is not available.

Due to this high consequence of failure and to ensure continued service, these systems are elevated to Condition Rating 3 earlier in their life cycle than other, less critical systems. This can result in ferries having more critical systems (like propulsion and piping systems) in Condition Rating 3. Systems with the very highest consequence of failure can become Condition Rating 3 while still having just under 25% of their life cycle remaining. Meanwhile, systems like passenger and crew spaces are less critical because the probability of disrupting service is low, even as they pass the end of their useful life.

Applying dollar values to systems helps determine preservation funding needs

When weighted by the total dollar value of the vessel systems, Condition Rating 1 items not currently needing replacement comprised \$553.3 million (45.4%) of the total in FY2017, an increase of \$34.6 (6.25%) million from FY2016.

This change was due to items moving from Condition Rating 1 to the other two condition ratings during FY2017, and the replacement of the M/V *Klahowya* that had 33% of systems in Condition Rating 1, with the M/V *Chimacum* that has all of its systems in Condition Rating 1.

Super, Evergreen State class vessels have higher percentage of systems needing replacement in FY2017

Fiscal years 2016 and 2017; Inspection results by vessel

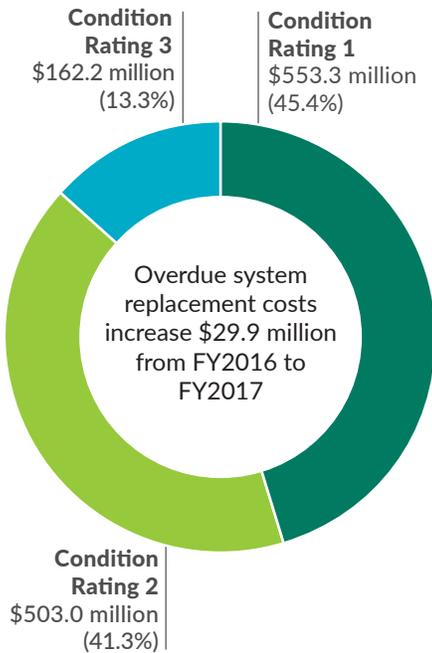
Vessel classes and vessels	Number of vessel systems	Year built	Percent of systems in Condition Ratings ¹		
			1	2	3
Jumbo Mark II Class					
M/V Tacoma	100	1997	56%	30%	14%
M/V Wenatchee	100	1998	47%	45%	8%
M/V Puyallup	100	1999	50%	40%	10%
Jumbo Class					
M/V Spokane	94	1972	53%	36%	11%
M/V Walla Walla	94	1973	44%	45%	12%
Super Class					
M/V Hyak	92	1967	29%	48%	23%
M/V Kaleetan	93	1967	49%	39%	12%
M/V Yakima	91	1967	46%	44%	10%
M/V Elwha	95	1967	33%	34%	34%
Olympic Class					
M/V Tokitae	89	2014	85%	15%	0%
M/V Samish	89	2015	87%	13%	0%
M/V Chimacum	89	2017	100%	0%	0%
Issaquah Class					
M/V Issaquah	87	1979	47%	37%	16%
M/V Kitsap	87	1980	53%	31%	16%
M/V Kittitas	89	1980	43%	43%	15%
M/V Cathlamet	88	1981	53%	31%	16%
M/V Chelan	93	1981	58%	32%	10%
M/V Sealath	88	1982	43%	38%	19%
Evergreen State Class					
M/V Tillikum	83	1959	36%	49%	14%
Kwa-di Tabil Class					
M/V Chetzemoka	84	2010	81%	15%	4%
M/V Salish	86	2011	81%	19%	0%
M/V Kennewick	86	2011	85%	15%	0%
Fleet wide FY2017	1,997	Avg. 1988	57%	32%	11%
<i>Fleet wide FY2016</i>	<i>1,966</i>	<i>Avg. 1985</i>	<i>52%</i>	<i>37%</i>	<i>11%</i>

Data source: WSDOT Ferries.

Notes: M/V = Motor/Vessel. The M/V *Klahowya* was removed from service in fiscal year 2017 and the M/V *Chimacum* was added. Percentages may not add to 100 due to rounding. 1 Systems included in Condition Rating 1 do not currently need to be replaced; those in Condition Rating 2 should be monitored for replacement within the current or ensuing biennium; those in Condition Rating 3 are past due for replacement.

More than 86% of vessel systems value are not overdue for replacement

FY2017; Percent of total dollar value



Data source: WSDOT Ferries.

Notes: Percentages may not add to 100 due to rounding. 1 Results Washington measure. 2 Systems included in Condition Rating 1 do not currently need to be replaced; those in Condition Rating 2 should be monitored for replacement within the current or ensuing biennium; those in Condition Rating 3 are past due for replacement.

Condition Rating 2 items were \$503.0 million (41.3%), a decrease of \$62.9 million from FY2016 (see chart at left). The decrease was also due the decommissioning of the M/V *Klahowya* that had 49% of its systems in Condition Rating 2. At the end of FY2017, the dollar value of items in Condition Rating 3 was \$162.2 million (13.3%), marking a \$29.9 million increase from FY2016 in the dollar amount of items that are overdue for replacement. The increase was associated with WSDOT updating the replacement costs being applied to some of the more critical systems and having more systems move from Condition Rating 2 to 3 than the Condition Rating 3 systems being replaced.

With the total vessel systems valued at approximately \$1.219 billion in FY2017, the valuations indicate that \$1.056 billion (86.7%) of items have Condition Ratings of 1 or 2 and are not currently overdue for replacement.

WSDOT monitors the dollar value of its systems in Condition Rating 3 to determine the success of its ongoing efforts to reduce the number of past due systems. WSDOT reduces the number of Condition Rating 3 items by obtaining extended or extra shipyard periods and reprioritizing work prior to established shipyard visits.

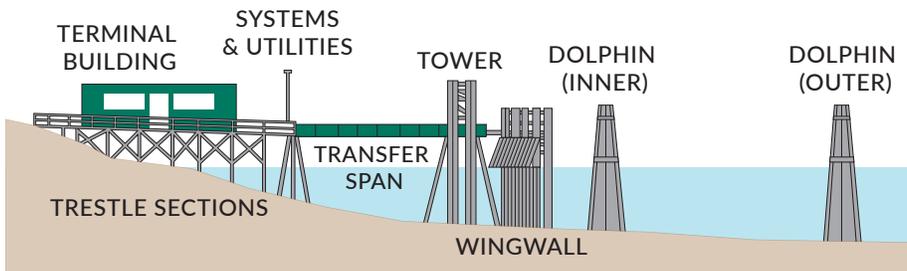


The Olympic Class M/V Chimacum during its christening event.



Agency Emphasis Area
PRACTICAL SOLUTIONS

WSDOT Ferries Vessels program focuses its capital preservation and operating programs maintenance resources on vessel systems affecting vessel reliability. WSDOT applies cost benefit analyses based on the Life Cycle Cost Model to determine how long systems should be operated beyond their life cycles.



Structural system conditions of WSDOT Ferries terminals decrease from 2015 to 2016

Facility or system type	Number of systems	Good or fair (70-100)	Poor or substandard (0-69)	Not rated
Buildings	138	97.8%	1.4%	0.7%
Landing aids ¹	176	82.4%	17.6%	0.0%
Overhead loading systems	66	80.3%	19.7%	0.0%
Passenger-only ferry facilities	14	78.6%	21.4%	0.0%
Pavement	84	85.7%	14.3%	0.0%
Trestles and bulkheads	69	94.2%	5.8%	0.0%
Vehicle transfer spans	210	88.1%	11.9%	0.0%
Total/average 2016	757	88.0%	11.9%	0.1%
<i>Total/average 2015</i>	<i>760</i>	<i>87.0%</i>	<i>12.8%</i>	<i>0.3%</i>

Data source: WSDOT Ferries.

Notes: Percentages may not add to 100 due to rounding. ¹ Landing aids ensure the ferry vessels are aligned correctly at the terminals, and include wingwalls and dolphins. The condition categories do not indicate whether systems are safe or unsafe, but rather how closely their condition should be monitored prior to spending funds on preservation.

WSDOT improves terminal conditions in 2016

Approximately 88.0% of WSDOT Ferries terminal systems—which assist in the safe, efficient movement of people and vehicles to and from ferry vessels—were in fair or better condition at the end of calendar year 2016. This is an increase of one percentage point from the 87.0% in 2015. WSDOT saw a decrease in the number of systems in the poor or substandard condition category by 0.9 percentage points, from 12.8% in 2015 to 11.9% in 2016.

Terminal system ratings are based on inspections that are mandated

by state law to occur at least once every three years. Increases to system condition ratings occur after preservation work has been completed under the capital program, or after maintenance work is finished under the Ferries operating program. Decreases to the ratings occur after normal use or weather conditions degrade an asset to a lower level of functionality or safety.

Systematic inspections do not always occur during the same year work takes place on an asset. As a



Agency Emphasis Area PRACTICAL SOLUTIONS

WSDOT Ferries Terminals program increases maintenance actions to extend the useful life of systems that have been targeted for deferral by the Economic-based Needs Model.



Based on current funding levels, control the percent of ferry vessel systems that are past due for replacement from increasing to over 10% by 2020.

Status: Off target (red) – 13.3% as of June 30, 2017

Strategies:

- 1) Maintaining vessel systems - Focus capital program preservation and operating program maintenance resources on vessel systems designated to maintain vessel reliability and apply cost benefit analysis based on the Life Cycle Cost Model to determine how long other systems should be operated beyond their life cycles.
- 2) Efficiently using resources - Integrate capital program preservation and operating program maintenance planning and contracting to achieve the best use of resources.
- 3) Using flexible planning to achieve goals - Minimize loss of preservation and maintenance opportunities by maintaining highly flexible project planning and execution that facilitates adjusting the biennial preservation and maintenance work plans to react to changes in vessel and shipyard availability.
- 4) Keeping policy makers in the loop - Inform policy makers about the strategic resource situation by applying the Life Cycle Cost Model to establish preservation performance objectives and program delivery.

result, repairs and improvements to terminal systems or individual assets may not be reflected in the reporting period the work was accomplished.

Most buildings at WSDOT terminals in good/fair condition in 2016

Buildings at WSDOT terminals continued to have the highest percent (97.8%) of inventory items in good or fair condition in 2016, a slight increase from the 97.1% in 2015.

The condition of trestles and bulkheads had the largest increase of systems in the good or fair category, improving from 85.9% in 2015 to 94.2% in 2016. Preservation and maintenance work on the trestle and bulkhead at the Vashon Island terminal was the major reason for that increase. Work on landing aids (wingwalls and dolphins) improved

their system condition rating from 80.2% in 2015 to 82.4% in 2016.

Vehicle transfer spans had the largest decrease of inventory items in good or fair condition, dropping from 89.5% in 2015 to 88.1% in 2016. Electrical systems on transfer spans that earned a poor rating at the Lopez Island and Bainbridge Island terminals were responsible for the drop.

At 21.4%, passenger-only facilities had the highest percentage of inventory items with a poor or substandard condition rating at the end of 2016. This is the same percentage as in 2015. Passenger-only facilities are located at Colman Dock in Seattle, the Vashon Terminal and the Eagle Harbor maintenance facility on Bainbridge Island and include transfer spans, floating docks, trestles and aprons.

Ferries uses life cycle costs, condition ratings to prioritize its preservation work annually

WSDOT invested \$21.7 million in vessel and terminal preservation projects during FY2107 in an effort to reduce the number of systems in the preservation backlog.

In order to estimate future terminal and vessel preservation needs per Legislative mandate, WSDOT uses a Life Cycle Cost Model (LCCM). The LCCM is an inventory database of systems, which includes information like the year systems were built and their standard life cycles.

WSDOT uses the LCCM to develop budget requests for preservation funding to address the backlog

of ferries maintenance and repair projects. In FY2017, there were 1,997 vessel systems and 757 terminal systems. This number can change when systems are added or removed, or when new vessels are added or old ones retired.

WSDOT vessel backlog decreases due to new Olympic Class ferry

The 2015-2017 biennial vessel preservation plan forecasted an increase in the backlog of needed preservation work from 26.3% at the beginning of the 2015-2017 biennium (July 2015) to 28.1% at the end of the

Gauging preservation needs at Ferries

WSDOT has implemented an asset management model with economic inputs to screen which preservation items fiscally make sense to replace. While the standard condition-based preservation backlog from the Life Cycle Cost Model (LCCM) is dependent on when items are past their life cycles, the economic model's backlog are items whose maintenance cost, risks, and financial impacts of failure are higher than the cost of replacement.

WSDOT updates the economic model annually, reviewing and reassessing the costs of risks, impacts of failure, system replacement, and maintenance. Conditions of systems are updated based on inspections, and systems are also added or removed from the model to match the inventory database in the LCCM.

biennium (June 2017). If no vessel systems due for replacement were renewed in the biennium, the vessel preservation backlog would have risen to 32.3%.

At the end of the biennium (June 2017), completed work and vessel replacement accounted for an 8.7% reduction of the vessel preservation backlog. The backlog at the end of the biennium was 23.6%, which was 4.5% below the original plan entering the biennium (July 2015). This drop is primarily accounted for by the decommissioning of the M/V *Klahowya* and introduction of the M/V *Chimacum*.

Fewer vessel emergencies reduce impacts to service

Fiscal year 2017 had only one emergency that kept a vessel out of service, and two emergencies that required visits to the shipyard. This is down from 11 emergency events in FY2016, reducing the overall impact to planned preservation work.

Annual fleet wide inspections of fire suppression sprinkler systems—which were at the end of the usable life—found many needed to be replaced. These priority replacements resulted in six unscheduled, non-emergency dockside shipyard visits of WSDOT vessels in the final six months of FY2017. These visits ultimately replaced other planned preservation work that had been scheduled in FY2017.

WSDOT completed \$49.3 million of vessel preservation work in FY2017 from a supplemental biennial budget of \$68.6 million. The M/V *Kaleetan* had the most preservation work completed (\$6.9 million) in FY2017, with the replacement of propellers, saltwater piping and sprinkler systems, draft indicator systems, and hull steel.

The M/V *Sealth* also had propellers, saltwater piping and sprinkler systems, draft indicators, and hull steel replaced as a major part of preservation work (\$3.1 million) performed in FY2017.

RESULTS WASHINGTON Leading Indicator

Based on current funding levels, control the percent of ferry terminal systems that are past due for replacement from increasing to over 6% by 2020.
Status: On plan (green) — 5.2% as of June 30, 2017

Strategies:

- 1) Reprioritize projects as needed - Use economic based life cycle model to prioritize projects to match available capital budget.
- 2) Extend the useful life of systems - Increase maintenance actions to extend the useful life on systems targeted for deferral by the economic model.
- 3) Reduce reliability risks - Target preservation dollars to reduce risk to degradation of service reliability.
- 4) Review asset conditions - Periodically review system asset conditions and adjust the years of replacement, then compare results to planned budget amounts in future biennia to confirm program sizing.

How the Preservation Needs Percentage works

The preservation backlog is measured as a Preservation Needs Percentage, which is the percent of the value of terminal or vessel systems needing replacement.

The PNP differs from the vessels' condition categories and terminals' condition ratings because it only tracks whether a system is past its originally planned year of replacement based on its life cycle. WSDOT makes adjustments as needed to the life cycle of terminals by comparing an item's condition to historical information of a similar item in similar condition.

WSDOT determines the baselines for the backlog at the beginning of each biennium, projecting what the backlog will be at the end of the biennium while considering the value of systems coming due for replacement.

The success of both the terminal and vessel preservation budgets is measured by comparing the target percent of the value of terminal assets beyond their condition-based life cycle at the end of the biennium to the actual percent of value achieved. To achieve this, WSDOT must reduce the backlog of preservation needs over the biennium so the value of systems preserved exceed the value of systems coming due for replacement during the two-year period.

Terminal preservation backlog sees increases from beginning of biennium

Using the terminal Economic Based Model preservation plan, the preservation backlog of the value of systems past due for replacement would have increased from 3.7% at the beginning of the 2015-2017 biennium (July 2015) to 5.4% at the end of the biennium (June 2017) if no preservation inventory items are addressed. See chart below for details.

WSDOT budgeted \$66.5 million to support the terminal preservation plan and to reduce the economic-based terminal needs backlog to 5.1% in the 2015-2017 biennium. At the end of the biennium (June 2017), with the investment, the backlog was at 5.2%.

During the second half of the 2015-2017 biennium WSDOT replaced over 20% of the Vashon trestle, removing more than 121 tons of creosote piles.

WSDOT also replaced the transfer span towers at Coupeville, and the slip 2 wingwalls at Bremerton. Terminal preservation ended the 2015-2017 biennium spending \$46.0 million (69.2%) of the \$66.5 million biennial preservation budget. Delays in contracts on the Seattle Terminal Building and North Trestle Replacement project were the main reason for underspending the preservation budget.

Contributors include John Bernhard, Tim Browning, Tom Castor, Jim Hasselbalch, Nicole McIntosh, Mehrdad Moini, Sio Ng, Kynan Patterson, Manny Quinteiro, Dustin Motte and Joe Irwin

Vessel and terminals backlog overview: Ferries vessel preservation needs decrease while terminal needs increase

Through June 2017; Based on Life Cycle Cost Model and economic-based needs

Backlog status	Life cycle-based vessel needs	Economic-based terminal needs ¹
Original backlog at beginning of biennium	26.3%	3.7%
Additions to backlog during the biennium	6.0%	1.7%
Total backlog prior to preservation investments	32.3%	5.4%
Projected impact of planned preservation investments	4.2%	0.3%
End of biennium backlog based on preservation plan	28.1% ²	5.1%
Preservation spending as of June 2017 – mid-biennium (percent of biennial budget)	\$49.3 million of \$68.6 million (71.9%)	\$46.0 million of \$66.5 million (69.2%)
Actual backlog as of June 2017	23.6%	5.2%

Data source: WSDOT Ferries.

Notes: **1** WSDOT Ferries economic-based model was fine-tuned in FY2016, while inspection and maintenance efforts were updated. As a result, the information above is not directly comparable to that provided for FY2015 in Gray Notebook 58. This measure is also used for Results Washington. **2** Projections for biennium backlog did not include the early retirement of the M/V *Klahowya* and the arrival of the M/V *Chimacum*.

67 ASSET MANAGEMENT: CAPITAL FACILITIES ANNUAL REPORT

As WSDOT's primary buildings continue to age, majority are in "fair" or "poor" condition

WSDOT strives to keep agency buildings and systems operating smoothly to support its workforce as it delivers services to the public. Twenty-two (7.8%) of WSDOT's 283 primary buildings (agency-owned buildings larger than 2,000 square feet) achieved a condition rating of "good" in 2017. The "good" rating means they are new construction and/or meet current industry standards. This is an increase from 6.7% (19) in 2014. Facility condition data, normally assessed biennially, was unavailable in 2016.

Forty-eight percent (135) of WSDOT's primary buildings received a condition rating of "fair" indicating that the facility does not meet current standards but remains functional and is in adequate condition, with some component deficiencies. This compares to 52% (147) in 2014. Forty-five percent (126) of WSDOT's primary buildings earned a condition rating of "poor." A poor rating indicates that a building is at or beyond its service life, with multiple major deficiencies that could lead to unexpected repairs and resulting costs. This value increased from 42% (118) in 2014, continuing a 10-year upward trend.

Out of its inventory of nearly 1,300 owned and leased buildings and structures, WSDOT owned 283 primary buildings as of September 2017. These buildings support the majority of agency staff. They may also provide shop and storage space for vehicles, equipment and supplies. Primary buildings represent approximately 21% of WSDOT capital facilities and 63% of total building area by square footage.

Majority of WSDOT's primary¹ buildings in "fair" or "poor" condition

Number and percent of WSDOT primary buildings by condition as of September 2017, compared to July 2014

Condition rating	July 2014	Sept 2017
Good	19 (6.7%) ²	22 (7.8%) ²
Fair	147 (52%) ²	135 (48%) ²
Poor	118 (42%) ²	126 (45%) ²
Total	284	283

Data source: WSDOT Capital Facilities Office.

Note: 1 Primary buildings are agency-owned buildings 2,000 square feet or larger.

2 Percentages do not add to 100 due to rounding.

WSDOT's primary buildings average 44 years old; 98 (35%) are more than 50 years old

The average age of WSDOT's 283 primary buildings is 44 years old. Less than one-third of the primary building inventory (29%; 81 buildings) is 25 years old or younger, and 37% (104) of primary buildings fall into the 26-50 years old

Notable results

- WSDOT-owned primary buildings have an average age of 44 years; 35% are more than 50 years old
- WSDOT's 10-year unmet needs backlog for capital facilities is \$475 million
- Pilot projects are underway to remove tall cubicle walls in an effort to modernize WSDOT's work environment



Agency Emphasis Area PRACTICAL SOLUTIONS

WSDOT's Capital Facilities program applies practical space design to existing and new offices, streamlining offices to achieve a modern work environment, with a focus on flexibility and choice.

Approximately one-third of WSDOT's primary buildings are more than a half-century old; 55% will be older than 50 years by 2027

Number and percent of WSDOT primary buildings by age as of September 2017, compared to September 2016 and projected for September 2027

Building age	Sept 2016	Sept 2017	Sept 2027 ²
25 years or less	84 (30%) ¹	81 (29%) ¹	28 (10%)
26 to 50 years	102 (36%) ¹	104 (37%) ¹	99 (35%)
Older than 50 years	98 (35%) ¹	98 (35%) ¹	156 (55%)
Total	284	283	283

Data source: WSDOT Capital Facilities Office.

Note: 1 Percentages do not add to 100 due to rounding. 2 Projected based on current inventory.

category. The number of primary buildings older than 50 years stayed the same between September 2016 and September 2017; with 35% (98) of WSDOT's inventory in this category. Three buildings aged into the "26 to 50 years" category, including the Mount Saint Helens office and storage building, the Union Gap vehicle and storage building, and the Union Gap project development modular office. The Wenatchee project engineering field office was removed from this category when it was demolished to make room for the new North Central Region administration building in December 2016.

Many WSDOT primary facilities are functionally obsolete

Within 10 years, 90% of WSDOT's current primary building inventory will be 26 years old or older. By 2027, 156 primary buildings will be older than 50 years.

As buildings age beyond 25 years, design features become outdated and typically cannot be changed without major renovation or replacement. Many older maintenance shops cannot accommodate modern roadway work equipment such as larger trucks, wider plow blades or taller cranes and hoists that WSDOT road

crews use to maintain the highways. Outdated office and crew spaces are less flexible to operational changes, which may lead to inefficient facility use or operational impacts to the program being supported. Crew rooms, supervisor offices, restrooms, data outlets and electrical service may be undersized or inadequate to support a modern work environment.

Emergency repair costs for WSDOT's aging facilities continues to rise

The current WSDOT Facilities Preventive Maintenance Plan completion rate is 82%. This exceeds the target goal of 71%, but is down from the 88% reported in 2015 (see [Gray Notebook 59, p. 10](#)).

Under the current maintenance model, only the most critical preventive maintenance activities are planned. As facilities continue to age, costs for emergency repairs continue to significantly increase. Emergency repairs include but are not limited to broken water lines, leaking roofs and non-functioning heating systems.

One example of an emergency repair was failed boilers at WSDOT's Northwest Region Headquarters in Seattle that left the building without heat for several days. Fixing the boilers at the Northwest Region Headquarters meant diverting funding from other facility programs.

During the 2013-2015 biennium, funding was diverted from other facility maintenance programs—such as preventive maintenance—to increase emergency repair funding to \$4 million (a 12% increase from the

As WSDOT's primary buildings age, preservation and replacement backlog increases to \$235 million

Number and percent of WSDOT primary buildings by age as of September 2017, compared to July 2014; backlog and replacement cost in millions of dollars

Building age	July 2014		Sept 2017		
	Number	Total backlog	Number	Total backlog	Replacement cost
25 years or less	90	\$24.6	81	\$33.2	\$127.8
26 to 50 years	109	\$107.8	104	\$116.0	\$280.6
Older than 50 years	85	\$76.3	98	\$86.2	\$182.4
Total	284	\$208.7	283	\$235.4	\$590.9

Data source: WSDOT Capital Facilities Office.

prior biennium). Before the biennium was done, another \$500,000 was needed. A total of \$4.5 million was spent on emergency repairs, up from \$2 million two biennia ago (a 125% increase).

When costs for emergency repairs exceed available resources, funding from other facility activities and planned preventive maintenance is diverted. The overall trend of emergency repair is comparable to not changing the oil in your car so that you can instead buy a used tire to replace a blown out tire; it is simply not sustainable.

As primary facilities age, total backlog increases

The current total preservation and replacement backlog for WSDOT's 283 primary buildings increased to \$235.4 million in 2017, up nearly \$27 million, or 13%, compared to 2014 estimates.

Unmet needs backlog estimate confirmed at \$475 million

In 2015, WSDOT's Capital Facilities strategic plan identified a \$475.5 million backlog of unmet needs for the next 10 years for more than 800 facilities statewide, including the 283 primary buildings noted above (see [Gray Notebook 59, p. 9](#)). WSDOT completed its first round of primary building condition assessments using the Facility Inventory and Condition Assessment Program (FICAP) developed by Washington State University. The FICAP system generated a total backlog estimate of \$474.7 million; this data provides new and independent support for the 2015 estimate.

WSDOT makes progress on two new regional headquarters buildings

As reported in [Gray Notebook 63, p. 13](#), the 2015 Connecting Washington funding package includes two capital facilities projects.

WSDOT is in the construction phase of a new North Central Region administration building on Euclid Avenue in Wenatchee. The project's Design-Build contract was awarded in October 2016 and the project is on schedule for completion in spring 2018.

WSDOT is developing a design-build contract for the new Olympic Region headquarters to be located on Marvin Road in Lacey. The project is scheduled for completion in summer 2021.

WSDOT slates \$4.34 million for minor projects in the biennium

WSDOT allocated \$4.34 million in the 2017-2019 biennium to support ongoing preservation and repairs projects. For examples of projects, see [Gray Notebook 63, p. 14](#).

WSDOT begins project to reduce energy consumption

WSDOT began work in summer 2017 on a \$12.5 million energy conservation upgrade project that will reduce energy use in more than 60% of its buildings, utilizing an Energy Savings Performance Contract. Energy and water savings are projected to be nearly \$1 million each year once the project is complete in summer 2018.



Strategic Plan Goal 6 SMART TECHNOLOGY

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

WSDOT's first round of primary building condition assessments using the Facility Inventory and Condition Assessment Program (FICAP) is a departure from previous assessment processes. FICAP incorporates more detailed building profiles and infrastructure analysis. The system uses Web-based technology and allows for evaluation of facilities in real time, on site, and with a higher degree of accuracy. FICAP supports detailed assessment and cost estimating for:

- Building utility systems such as heating, ventilation, lighting, electrical, water and sewer, and
- Building components like structural beams, roofs, doors, windows, elevators, exterior siding and finishes.

The project is funded by a combination of grants (\$350,000), utility rebates and incentives (\$1.1 million), and a loan financed through the Office of the State Treasurer (\$11 million). Budget savings from reduced utility costs will be redirected from utilities to pay back the loan.

This project allows WSDOT to save energy and improve facilities, including lighting fixtures, plumbing components, mechanical systems and some minor building modifications, with no up-front capital costs.

Statewide building energy improvements are expected to have significant environmental and economic benefits. LED fixtures last for many years, while existing fluorescent fixtures may only last months. Having to change bulbs less often means maintenance staff will be able to reallocate hours to more critical tasks.

WSDOT expects 69% of total project savings to come from more efficient lighting, 24% from improved building heating and cooling, and 7% from reduced water usage. The project is also expected to avoid more than 10 million pounds of carbon dioxide equivalent (CO₂e) emissions annually.

WSDOT is building a Modern Work Environment

As reported in [Gray Notebook 65, p. 32](#), WSDOT has undertaken projects to implement Gov. Jay Inslee's Executive Order 16-07, "Building a Modern Work

Environment" initiative. The projects modernize the physical environment, provide greater workplace flexibility and enable a more mobile workforce.

Capital Facilities, Accounting & Financial Services host pilot projects

The agency's Capital Facilities office in Tumwater and the Accounting and Financial Services office at the Headquarters building in Olympia serve as pilot projects. Modern work environment changes were completed in September and October 2017.

WSDOT used employee survey results, and discussion and engagement tools to capture employee perspectives on space design. Staff input guides decisions on mobility options, space amenities and design elements; such input is the foundation of the new modern workplace process.

The Capital Facilities project removed tall and short modular panels, added fully adjustable sit/stand work surfaces to all work stations, repurposed offices into meeting areas, and more. Wireless connectivity was added to the work area, and laptop computers replaced some desktop computers. Internal as well as external mobility, such as working from home, is supported when possible.

In the Accounting and Financial Services project, no offices remain, open meeting areas were incorporated into wing conferencing for two to six people, tall cubicle



The photos above show the before and after, respectively, of the Modern Workplace Pilot at the Accounting and Financial Services office at WSDOT headquarters in Olympia.

walls were removed, and modular furniture panels were minimized. All work stations now have fully adjustable sit/stand work stations, and accent paint was added to walls for improved aesthetics.

Employees impacted by the pilot projects will have a follow-up survey next year to solicit feedback and suggestions for improvement. At least six more modern work environment projects are tentatively planned and in varying stages of development at WSDOT.

Contributors include Tim Hall, Steve Holloway, Jim Hurst, Zak Swannack and Yvette Wixson

67 INCIDENT RESPONSE QUARTERLY UPDATE

Incident Response teams help improve driver safety at 16,356 incidents

WSDOT's Incident Response (IR) teams assisted at 16,356 incidents during the third quarter (July through September) of 2017. This averages to a WSDOT team responding to an incident scene roughly every eight minutes and six seconds during the quarter. There were 1,254 more incidents during the third quarter of 2017 than during the same period in 2016, an 8.3% increase.

WSDOT teams cleared these incidents in an average of 12 minutes and 36 seconds. This is 36 seconds more than the average incident clearance time for the same quarter in 2016. During the current quarter, there was an 18.5% increase in incidents lasting more than 90 minutes while incidents lasting 15-90 minutes increased 19.5%, and incidents lasting less than 15 minutes increased 5.2%. The proportion of incidents which blocked at least one lane was 24.6% for this quarter compared to 24.0% 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 \$25.8 million in economic benefits during the third 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 \$14.6 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 \$11.2 million of IR's economic benefits result from preventing an estimated 3,088 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 \$17.19 in economic benefit.

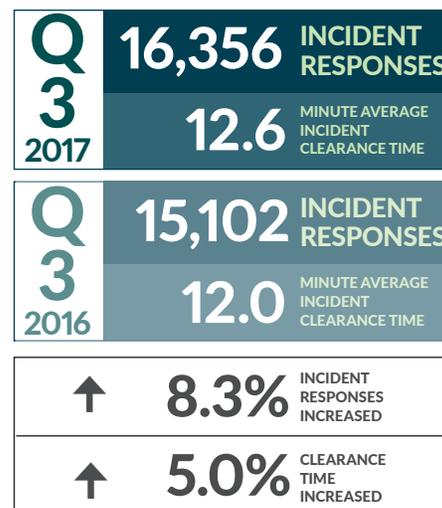
WSDOT teams respond to 205 over-90-minute incidents

WSDOT Incident Response units provided assistance at the scenes of 205 incidents that lasted more than 90 minutes during the third quarter of 2017. This is 32 more incidents—an 18.5% increase—than the same quarter in 2016. While these over-90-minute incidents accounted for only 1.3% of

Notable results

- WSDOT responded to 16,356 incidents during the quarter, providing about \$25.8 million in economic benefits
- WSDOT cleared incident scenes in an average of 12 minutes and 36 seconds, reducing traffic delay and the risk of secondary incidents

Third quarter (July through September)
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 (Q3 2017) is considered preliminary. In the previous quarter (Q2 2017), WSDOT responded to 16,029 incidents, clearing them in an average of 12.0 minutes. These numbers have been confirmed and are now finalized.



Agency Emphasis Area WORKFORCE DEVELOPMENT

Train the Trainer contributes to Workforce Development by teaching safe and effective management of incidents and improving coordination among first responders from different sectors.

all incidents, they resulted in 20.4% of all incident-related delay costs.

Twelve of the 205 over-90-minute incidents took six hours or more to clear (referred to as extraordinary incidents). This is the same number of incidents as in the third quarter of 2016. The 12 extraordinary incidents took an average of eight hours and 15 minutes to clear, accounting for 3.9% 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 51 minutes. This is about 10 minutes faster than in the same quarter in 2016. Excluding the 12 extraordinary incidents, WSDOT's average clearance time for over-90-minute incidents was two hours and 42 minutes. Performance data reported in this article comes from WSDOT's Washington Incident

Tracking System, which tracks incidents to which a WSDOT IR team responded.

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.](#)

Train the Trainer (TtT) training conducted in October 2017

Washington Traffic Incident Management (TIM) held Train the Trainer (TtT) training October 25-26, 2017, in Quincy and Bellevue. The purpose of the Train-the-Trainer (TtT) course is to provide participants with the knowledge and materials they need to conduct TIM training for TIM responders in their area or state. The training

helps ensure safe and efficient management of incidents, improving coordination among first responders from each sector to work together on highway incident and safety (See <http://www.watimcoalition.org/>).

Contributors include Vince Fairhurst, Michele Villnave, Takahide Aso, Dustin Motte

Customer feedback:

I wanted to show my appreciation and gratitude for Wayne's quick response and attendance at the scene of an accident I was involved in. He made the scene safe for me to pass and assisted me to the shoulder of the road. Thank you Wayne and WSDOT for your assistance!

WSDOT's Incident Response provided an estimated \$25.8 million in economic benefit

July through September 2017; Incidents by duration; Times in minutes; Costs and benefits in millions of dollars

Incident duration	Number of incidents ¹	Percent blocking ^{2,5}	Average incident clearance time ^{3,5} (all incidents)	Cost of incident-induced delay ⁵	Economic benefits from IR program ^{4,5}
Less than 15 min.	12,449	15.5%	4.6	\$14.5	\$6.8
Between 15 and 90 min.	3,702	52.5%	30.7	\$31.8	\$14.0
Over 90 min.	205	84.6%	171.7	\$11.9	\$5.0
Total	16,356	24.6%	12.6	\$58.3	\$25.8
Percent change from 3Q 2016	↑8.3%	↑0.6%	↑5.0%	↑13.6%	↑13.5%

Data source: Washington Incident Tracking System.

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

- 1 Teams were unable to locate 915 of the 16,356 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 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.
- 4 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.
- 5 Performance measure result figures exclude the number of IR team unable to locate.

67 WSDOT FERRIES QUARTERLY UPDATE

Ferries service reliability decreases to 97.4%

There were 42,717 regularly scheduled ferry trips during the first quarter of Fiscal Year (FY) 2018 (July through September 2017). WSDOT Ferries completed 97.4% (41,585) of these trips. This is below the annual service reliability performance goal of 99% and is 2.4 percentage points lower than the same quarter in FY2017 (see table on the next page).

In the first quarter of FY2018, Ferries canceled 1,581 trips and was able to replace 449 of them, resulting in 1,132 net missed trips. This was 1,029 more net missed trips as compared to the same quarter in FY2017. The number of net missed trips for the quarter was at or near historic levels and resulted in prolonged service disruptions on several ferry routes.

Last quarter, four vessels went out of service for several weeks due to unplanned maintenance. The Motor/Vessel (M/V) Kitsap was out of service for more than two weeks beyond a planned maintenance period in July due to a failure of an engine crankshaft. The M/V Yakima was out of service for three weeks in July and August due to corrective maintenance to a propulsion generator. The M/V Samish was out of service for over two months to replace a propulsion shaft coupling. In August, the M/V Salish ran aground on approach to the terminal at Coupeville and, upon inspection, additional damage was discovered due to crab pot entanglement of the propeller shaft.

WSF has a standby vessel which is used as needed; however, with multiple vessels out for unplanned maintenance this was insufficient to cover service during the quarter. Without additional standby capacity, it was necessary to reduce the Port Townsend-Coupeville route to one vessel service and this resulted in a loss of 480 trips. The impact to San Juan Island routes was a loss of 216 sailings, including a temporary loss of service on the Anacortes-Sidney route. It was also necessary to redeploy vessels already assigned to other routes. Due to the redeployment, 282 sailings were missed on the Fautleroy-Vashon-Southworth route as service was reduced from a three-boat to a two-boat schedule at times during the quarter. As shown in the chart on this page, 638 cancellations (40%) were due to unplanned maintenance and vessel mechanical issues contributed to 356 (23%) of the 1,581 total cancellations.

Ridership increases during the fall quarter

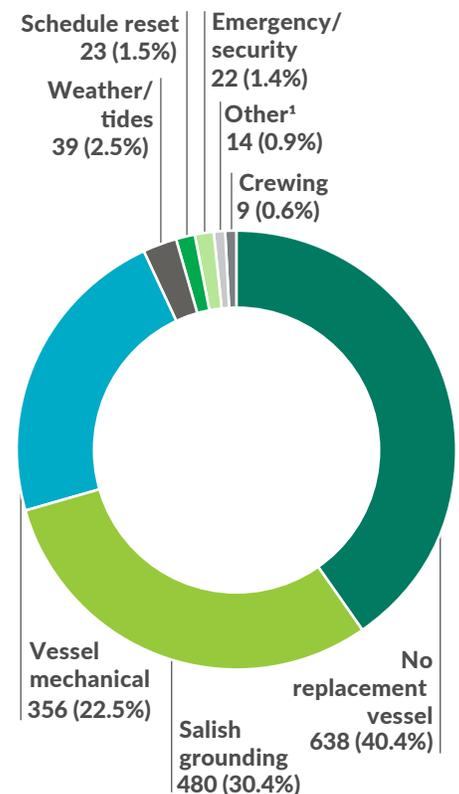
WSDOT Ferries' ridership was approximately 7.5 million during the first quarter of FY2018. This was about 74,400 (1.0%) higher than WSDOT projected for the quarter and about 53,500 (0.7%) more in total ridership than the corresponding quarter in FY2017. Most of the ridership increase for the quarter was related to a 1.6% increase in foot passengers. Vehicle drivers and vehicle passengers both increased 0.1% when compared to the same quarter one year prior.

Notable results

- Ferries made 97.4% of its regularly scheduled trips in the first quarter of fiscal year 2018
- Ferries ridership was approximately 7.51 million in the first quarter of fiscal year 2018, about 53,500 (0.7%) more than the corresponding quarter in FY2017

Vessel issues top reason for cancellations during quarter

First quarter (July - September) FY2018



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 issues at terminals, and events like disabled vehicles, environmental reasons and non-vessel related incidents that can impact operations.
² Ferries replaced 449 of the 1,581 canceled trips for a total of 1,132 net missed trips.



The online version of this article links to an interactive map at bit.ly/GNBferriesmap.

Ferries' on-time performance and trip reliability decrease in the first quarter of fiscal year 2018

July through September FY2017 and FY2018; Annual on-time goal = 95%; Annual service reliability goal = 99%

Route	On-time performance (fourth quarter)				Trip reliability (fourth quarter)			
	FY2017	FY2018	Status	Trend	FY2017	FY2018	Status	Trend
San Juan Domestic	84.3%	76.2%	-8.1%	↓	99.8%	97.0%	-1.8%	↓
Anacortes/Friday Harbor – Sidney, B.C.	88.0%	83.6%	-4.4%	↓	100.0%	93.5%	0.0%	↓
Edmonds – Kingston	94.2%	91.3%	-2.9%	↓	99.8%	100.0%	+0.2%	↑
Fauntleroy – Vashon – Southworth	89.8%	88.5%	-1.3%	↓	99.8%	97.3%	-2.5%	↓
Port Townsend – Coupeville	94.2%	86.7%	-7.5%	↓	98.6%	84.0%	-14.6%	↓
Mukilteo – Clinton	92.8%	90.5%	-2.3%	↓	99.8%	99.3%	-0.5%	↓
Point Defiance – Tahlequah	99.1%	98.5%	-0.6%	↓	100.0%	99.9%	-0.1%	↓
Seattle – Bainbridge Island	86.9%	85.1%	-1.8%	↓	99.9%	99.5%	-0.4%	↓
Seattle – Bremerton	94.4%	89.1%	-5.3%	↓	99.8%	96.9%	-2.9%	↓
Total system	90.9%	87.5%	-3.4%	↓	99.8%	97.4%	-2.4%	↓

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.

On-time performance decreases

On-time performance dropped compared to the same quarter in FY2017, decreasing from 90.9% to 87.5% for the first quarter of FY2018. The quarterly rate is below Ferries' annual on-time performance goal of 95%.

On-time performance decreased on all nine routes compared to the first quarter of FY2017. The San Juan Domestic route had the largest decrease (8.1%) compared to the same quarter last year due to heavy traffic and service modification to accommodate vessel shortages. On average in the first quarter of FY2018, 56 out of 452 daily trips did not leave the terminal within 10 minutes of the scheduled departure time, an increase from an average of 42 out of 462 trips for the same quarter last fiscal year.

Passenger and employee injuries see decreases

The rate of passenger injuries per million riders decreased from 0.94 in the first quarter of FY2017 to 0.80 in the first quarter of FY2018, representing a drop from seven to six total passenger injuries. The passenger injury rate during the 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 increased from 3.0 in the first quarter of FY2017 to 4.7 during the same period in FY2018. This represents five more injuries than the same quarter in FY2017, 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 \$61.5 million for the first quarter of FY2018. Farebox revenue was about \$395,100 (1.0%) more than the same quarter in FY2017, and about \$841,100 (1.4%) above projections.

Passenger complaints up for the quarter

Ferries received 477 complaints and 46 compliments during the first quarter of FY2018. Most complaints (143) centered around loading and unloading, up 46 from the first quarter of FY2017. The category with the largest improvement was employee behavior, which had 19 fewer complaints (74) than the same period in FY2017.

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

67 RAIL: AMTRAK CASCADES QUARTERLY UPDATE

On-time train performance declines in fiscal year 2017

On average, only 56.3% of Washington's Amtrak Cascades trains were on time in fiscal year (FY) 2017 (July 2016 through June 2017), down from 74.8% in FY2016.

During FY2017, 33.8% of delays between Portland and Vancouver, British Columbia (the portion of the Amtrak Cascades corridor which WSDOT oversees), were caused by slow speed restrictions due to track conditions including congestion, raised bridges and weather. Speed restrictions accounted for more than 42,000 minutes of delay throughout FY2017, and affected trains on the Canadian part of the corridor a total of 1,311 times.

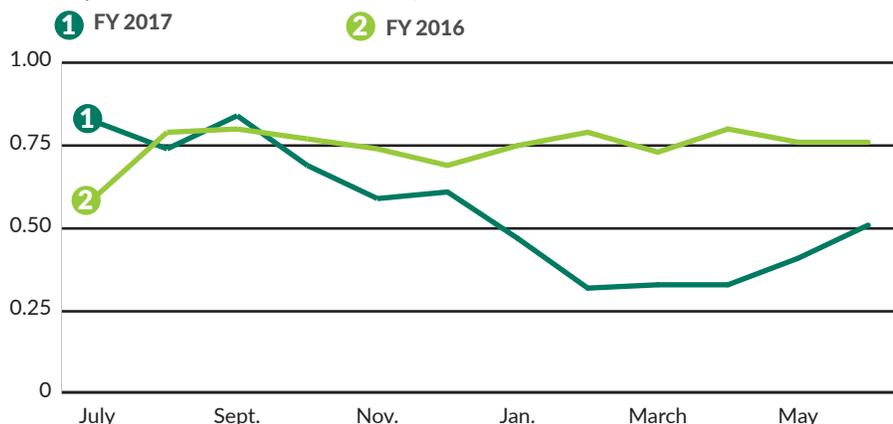
Landslides that reached railroad tracks—each of which triggers a 48-hour moratorium for passenger trains—led to more than 163 disrupted trains and more than 74 canceled trains in FY2017 (almost four times more than in FY2016). All of these landslides occurred during February, March and April of 2017; during those three months, only 32.6% of trains were on time.

Two-thirds of the landslides that caused delays during FY2017 were in a new landslide area in Clark County, between Kelso and Vancouver. These landslides occurred below bluffs that experienced an increased amount of new housing development in recent years; WSDOT is working with Clark County officials to address concerns that there may be a link between this land development and the increased occurrence of landslides. The remainder of the landslides were primarily in the historically landslide-prone areas near Everett and Mukilteo.

Between 2013 and 2016, WSDOT completed mitigation work in six landslide-prone locations on the corridor. No landslides have reached the tracks in those locations since the work was completed.

February, March and April see largest drops in on-time performance

Fiscal years 2016 and 2017; Percent of trains on time



Data source: WSDOT Rail, Freight and Ports Division.

Notes: Data is for trains traveling on Washington segments only.

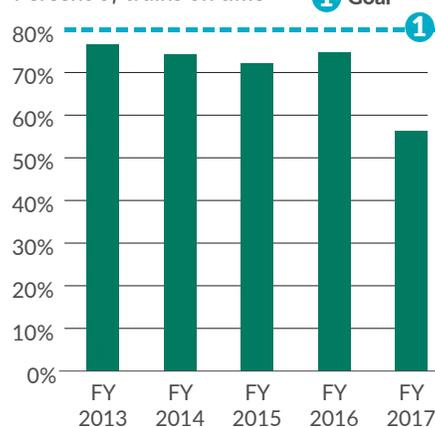
Notable results

- On-time performance of Washington's Amtrak Cascades trains dropped from 74.8% in FY2016 to 56.3% in FY2017
- Nineteen of 20 federally funded rail projects were complete and one was in construction as of September 30, 2017

FY2017 on-time performance drops

Fiscal years 2013 through 2017;

Percent of trains on time



Data source: WSDOT Rail, Freight and Ports Division.

Note: See definition of "on time" in [Gray Notebook 55, p. 13](#). Data is for trains on Washington segments only.

Amtrak Cascades' new goal will be 88% on time

Once WSDOT's rail capital improvement projects are complete (see p. 32), Amtrak Cascades will have a new goal of 88% on-time reliability in FY2018. WSDOT has negotiated contractual service outcome agreements with BNSF, Amtrak and Sound Transit to report delays, assign responsibility, and institute corrective actions if the goal is not reached.

WSDOT's rail capital program receives honors

WSDOT's Rail, Freight and Ports Division and its partner BNSF recently received the W.W. Hay Award for Excellence from the American Railway Engineering and Maintenance-of-Way Association for their work on the 20-project Cascades High-Speed Rail Capital program.

Work on this federally funded capital program has been recognized with several other awards, including:

- The 2017 TransComm Skill Contest award from the American Association of State Highway and Transportation Officials for the Stay Back from the Tracks safety campaign;
- The 2016 WSDOT Environmental Excellence Award for work with BNSF and several state and local agencies to fast track an improved wetlands mitigation project in Kalama;
- The 2016 Outstanding Achievement for Historic Preservation, Planning, Policy or Initiative award from the Tacoma Landmarks Preservation for work designing the new Amtrak Cascades station in the historic Freighthouse Square building;
- Three awards for work on the historic King Street Station in Seattle, including one from the National Trust for Historic Preservation.

New Amtrak Cascades service starting December 18, 2017

Amtrak Cascades will add two round trips between Seattle and Portland starting on December 18, 2017. This addition to the service brings the total number of daily trains between the two cities to 12.

The two new trips—one in the morning and another in the evening in each direction—are the result of the 20-project Cascades High-Speed Rail Program, which was funded by nearly \$800 million in federal American Recovery and Reinvestment Act grants. WSDOT met strict federal timelines for completion of the projects. The agency also closely managed the grants to ensure all work could be completed, spending 96% of the allocated funds.

In addition to the two new daily trips, completion of the projects is expected to allow Amtrak Cascades to reduce travel time between Seattle and Portland by 10 minutes to 3 hours 20 minutes, and improve on-time reliability to 88% for the entire corridor.

WSDOT completes 19 of 20 High-Speed Rail projects

WSDOT has completed the 19th of its 20 high-speed rail capital projects—the purchase of eight new Charger locomotives. The \$58.3 million purchase was funded with federal American Recovery and Reinvestment Act funds.

The new locomotives, which were made in the United States by Siemens, are lighter and quieter than the locomotives currently used by Amtrak Cascades, and meet the strictest Environmental Protection Agency emission standards. The new locomotives also have on-board safety equipment that will be part of a new corridor-wide positive train control system. Once in place, this system will be able to automatically stop trains to avoid dangerous situations. The new locomotives will be used on all routes and are expected to be more reliable than the existing aging fleet.

WSDOT completes new Tacoma Dome Station

Construction on the new Amtrak Tacoma Dome Station is complete, although the station will not open to the public until new service begins on December 18, 2017. The 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 new station is part of the larger Point Defiance Bypass project, which reroutes trains along Interstate 5 between Tacoma and DuPont to save time and avoid a route frequently used by freight trains. WSDOT has finished its work on the Point Defiance Bypass, but the project will not be fully operational until Sound Transit completes work on the Tacoma Trestle prior to the December opening.

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

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2017 CORRIDOR CAPACITY REPORT EXECUTIVE SUMMARY

Increase in drivers contributing to congestion

Washington state saw an increase in drivers in 2016 as passenger vehicle registrations increased 3.2% and the number of licensed drivers up 4.3% between 2014 and 2016.

- More drivers in 2016 contributed to a 4.8% increase in the number of vehicle miles traveled (VMT) on all public roadways, up from 58.060 billion in 2014 to a new high of 60.851 billion miles.
- More drivers also had a hand in a 6.4% increase in VMT exclusively on state highways, which hit a new high of 34.227 billion in 2016, up from 32.177 billion in 2014.
- Total VMT on the five monitored major corridors in the central Puget Sound region (I-5, I-405, SR 520, I-90 and SR 167) increased by 2.8% between 2014 and 2016.

Higher VMT, likely due to an improving economy, higher population and a stronger job market, resulted in increased congestion on many major corridors throughout the state. Total congestion on the five monitored freeway corridors in the central Puget Sound region increased by 22.3% between 2014 and 2016, surpassing 2007 pre-recession levels for the third consecutive year. (Statewide delay data for 2016 was unavailable at the time of this publication).

- High occupancy vehicle (HOV) lanes accounted for 42% of person miles traveled on central Puget Sound region freeways in 2016.
- After I-405 express lane tolling began on September 27, 2015, the number of drivers using these lanes continues to grow saving motorists an average of 11 to 14 minutes during peak periods.

WSDOT Incident Response teams responded to 25.4% more incidents (58,235) in 2016 than in 2014, with average clearance times around 12 minutes for both 2014 and 2016.

- Proactive work by Incident Response teams resulted in nearly \$88 million in economic benefit in 2016, an 18.4% increase from 2014.

Urban transit on commute corridors

More people are taking transit than before. Transit ridership on urban commute corridors during daily peak periods increased 8%, from roughly 88,150 in 2014 to 95,300 in 2016.

- The number of miles passengers traveled using transit during daily peak periods increased 2% on urban commute corridors, from 1.19 million miles in 2014 to 1.23 million miles in 2016.

Notable results

- *Passenger vehicle registrations increased 3.2% while licensed drivers increased 4.3% between 2014 and 2016*
- *Transit ridership on urban commute corridors during daily peak periods increased 8% from 88,150 in 2014 to 95,300 in 2016*
- *The number of travelers using WSDOT Ferries increased 4%, from 23.2 million in 2014 to 24.2 million in 2016*
- *Passenger miles traveled on Amtrak Cascades increased by 4.8% from 111.7 million miles in 2014 to 117.1 million miles in 2016*
- *Bike/walk trips on the I-90 trail avoided over 242,000 vehicle miles traveled in 2016, the first full year for which data from a permanent counter was available*

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2017 CORRIDOR CAPACITY REPORT

DASHBOARD OF INDICATORS

	2012	2013	2014	2015	2016	Difference 2014 vs. 2016
Demographic and economic indicators						
State population (in millions)	6.82	6.88	6.97	7.06	7.18	3.1%
Gasoline price per gallon (annual average)	\$4.01	\$3.75	\$3.61	\$2.73	\$2.47	-31.6%
Washington total employment (in thousands of workers)	2,919	2,986	3,065	3,154	3,244	5.8%
Taxable retail sales (in billions of dollars)	\$114.0	\$120.7	\$126.6	\$137.1	\$146.4	15.7%
Statewide multimodal performance measures						
Drive alone commuting rate	72.2%	72.7%	72.4%	72.4%	72.1%	-0.3%
Carpool commuting rate	10.7%	10.1%	10.1%	9.8%	9.9%	-0.2%
Bicycling and walking commuting rate	4.5%	4.3%	4.5%	4.7%	4.6%	0.1%
Public transit commuting rate	5.8%	6.3%	6.3%	6.2%	6.4%	0.1%
Transit ridership (in millions)	218.1	221.2	227.2	227.4	233.3	2.7%
WSDOT Ferries ridership (in millions)	22.2	22.5	23.2	23.9	24.2	4.4%
Amtrak Cascades ridership (in thousands)	725	694	700	672	735	5.0%
Statewide congestion indicators						
Per person, total vehicle miles traveled on all public roads, state highways only						
All public roads vehicle miles traveled (VMT) (in billions)	56,607	57,211	58,060	59,653	60,851	4.8%
All public roads per person VMT (miles)	8,303	8,313	8,332	8,448	8,471	1.7%
State highways VMT (in billions)	31,214	31,649	32,177	33,335	34,227	6.4%
State highways per person VMT (miles)	4,578	4,599	4,618	4,721	4,765	3.2%
Congestion on state highway system						
Total state highway lane miles	18,659	18,662	18,680	18,699	18,715	0.2%
Percent of state highway system congested	5.5%	5.5%	5.8%	N/A	N/A	N/A
Per person, total, and cost of delay on state highways						
Annual hours of per person delay on state highways	4.7	4.7	4.7	N/A	N/A	N/A
Total vehicle hours of delay (in millions of hours)	30.9	32.5	32.3	N/A	N/A	N/A
Cost of delay on state highways (in millions)	\$773	\$823	\$834	N/A	N/A	N/A
Results Washington system performance measures						
Throughput productivity	95.7%	95.2%	94.6%	94.0%	93.1%	-1.5%
Reliability index	1.17	1.19	1.24	1.26	1.30	4.5%
Reliability index—% difference from 3-year average	3.3%	3.2%	6.4%	5.1%	5.5%	-1.0%
Corridor-specific congestion indicators (84 commutes statewide)						
Annual Maximum Throughput Travel Time Index (MT ³ I)	1.29	1.34	1.38	1.42	1.47	7.2%
Number of commute routes with MT ³ I > 1	59	61	66	68	71	7.6%
WSDOT congestion relief projects (cumulative)						
Number of completed Nickel and Transportation Partnership Account mobility projects as of December 31 each year	91	94	98	99	103	5.1%
Project value (in millions of dollars)	\$3,851	\$3,985	\$4,287	\$4,669	\$5,058	18.0%

Data sources: Washington State Office of Financial Management, U.S. Energy Information Administration, Bureau of Labor Statistics – Consumer Price Index, Washington State Employment Security Department, Washington State Department of Revenue, WSDOT State Highway Log, U.S. Census Bureau - American Community Survey, National Transit Database, Washington Department of Ecology.

Notes: N/A = Not available. For a full, footnoted version of this dashboard, refer to p. 4 of the 2017 *Corridor Capacity Report*, at <http://www.wsdot.wa.gov/accountability/congestion/>.

67 WATER QUALITY ANNUAL REPORT

WSDOT maps segments of stormwater system to improve maintenance efficiency

WSDOT mapped its stormwater conveyance system along 99.1 centerline miles of highways during fiscal year (FY) 2017 (July 2016 through June 2017), exceeding the requirement to map 79.5 centerline miles per year set in WSDOT's municipal stormwater permit (see box below right).

Stormwater systems collect and convey water running off roadways, and include components like catch basins, ditches, pipes, and stormwater treatment and flow control facilities. Mapping WSDOT's stormwater system will help the agency more efficiently manage and maintain these components, making it easier to identify where water quality can be better protected.

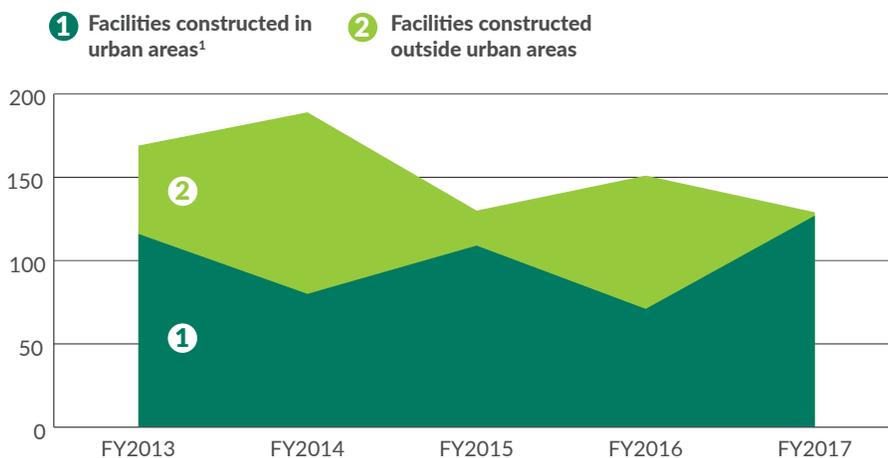
WSDOT builds 129 new stormwater facilities

WSDOT built 129 stormwater treatment and flow control facilities during FY2017 to help prevent adverse effects to rivers, lakes and other water bodies. Of the 129 facilities, 127 were constructed in urban areas of the state covered by the agency's municipal stormwater permit.

These 129 stormwater facilities were all components of larger WSDOT transportation projects. For example, when WSDOT adds new lanes to a highway, the agency may be required to add a stormwater facility such as a biofiltration swale (a vegetated ditch that helps remove pollutants from stormwater before it flows into a river, lake, or groundwater). The number of transportation projects under construction is the primary influence on the number of new stormwater facilities WSDOT builds each year; the more transportation projects the agency has under construction, the more stormwater facilities it will build.

Most stormwater management facilities constructed in urban areas in FY2017

Fiscal years 2013-2017; number of facilities constructed



Data source: WSDOT Environmental Services Office.

Notes: 1 Urban areas are defined as areas covered by the municipal stormwater permit (see box at right).

Notable results

- WSDOT mapped 99.1 centerline miles of its stormwater conveyance system during FY2017, exceeding its goal of 79.5 centerline miles
- WSDOT built 129 stormwater treatment and flow control facilities in FY2017
- WSDOT inspected 98% of its 1,949 existing stormwater management facilities in FY2017, exceeding its annual goal of 95%



Agency Emphasis Area PRACTICAL SOLUTIONS

Mapping WSDOT's stormwater system supports Practical Solutions by helping the agency improve its management of stormwater-related assets and its maintenance of stormwater facilities, and by making it easier to identify where WSDOT can better protect water quality.

What the municipal stormwater permit does

WSDOT's municipal stormwater permit, issued by the Washington State Department of Ecology, authorizes WSDOT to discharge stormwater into state waters from its stormwater system in urban areas and sets requirements for pollution reduction. For more information, see bit.ly/WSDOTmunicipalstormwaterpermit.



Agency Emphasis Area **PRACTICAL SOLUTIONS**

Inspecting and maintaining stormwater facilities supports Practical Solutions by helping WSDOT identify and correct deficiencies that might limit the facilities' effectiveness.

Sediment

Sediment is loose particles of sand, clay, silt and other substances produced by erosion and decomposing material. It can be deposited in, transported by or suspended in water. Sediment that reaches a body of water can decrease water clarity, prevent sunlight from reaching aquatic plants, smother fish spawning areas and cause a variety of other problems.



A WSDOT employee empties sediment and liquid from a vacuum truck at a maintenance facility in Spokane Valley. WSDOT uses these trucks to remove sediment from catch basins and stormwater facilities.

WSDOT meets inspection and maintenance targets for stormwater facilities

WSDOT inspected 1,914 (98%) of its 1,949 existing stormwater facilities in FY2017, exceeding the municipal stormwater permit's requirement to inspect 95% of stormwater facilities annually.

In FY2017, WSDOT performed all typical maintenance on stormwater management facilities within the one-year time frame required by the municipal stormwater permit. Typical maintenance often includes vegetation control and debris removal.

WSDOT also completed all non-typical maintenance costing less than \$25,000 within the required two-year time frame. Non-typical maintenance may include major vegetation removal or structural repairs.

Approximately 1% (23) of WSDOT's stormwater facilities require repairs costing more than \$25,000. Non-typical maintenance that costs more than \$25,000 is prioritized and carried out as funding becomes available.

WSDOT meets permit conditions for facilities that lacked design documentation

In [Gray Notebook 55](#), WSDOT reported that 367 stormwater facilities lacked the design

documentation the agency uses to determine maintenance needs. WSDOT was required to complete maintenance work on all of these facilities by December 31, 2016, in order to remain in compliance with its municipal stormwater permit.

As of the deadline, WSDOT had completed the appropriate actions to remain in compliance with the permit. These actions included maintenance, removal from the inventory (for reasons such as determining that the facility belongs to a city), or placement on the list of facilities needing non-typical maintenance costing more than \$25,000.

WSDOT prevents sediment from reaching water bodies

During FY2017, WSDOT collected 4,347.5 cubic yards of sediment—enough to fill about half of the Goodyear Blimp. Once removed, WSDOT tests sediment for pollutant levels and can dispose of it or use it as fill based on the results.

WSDOT began tracking how much sediment it removes from its catch basins and stormwater facilities along highways in July 2015. In FY2017, the agency began tracking the amount of sediment it removes from ferry terminals as well.

Contributors include Gregor Myhr, Sheena Pietzold, Robert Price, Jana Ratcliff, Cory Simon, Trett Sutter, Shrvan Aeneni, Helen Goldstein and Cara Motte

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CAPITAL PROJECT DELIVERY PROGRAMS QUARTERLY UPDATES

WSDOT completes three TPA projects

WSDOT completed two Transportation Partnership Account (TPA) projects during the first quarter of the 2017-2019 biennium (July through September 2017), and reported completion of a third previously completed project.

Operationally complete projects included:

- The \$1.3 billion SR 520/I-5 to Medina - Evergreen Point Floating Bridge and Landings project
- The \$26.5 million SR 3/Belfair Area - Widening and Safety Improvements project, and
- The \$7 million SR 16/Anderson Creek Tributary to Sinclair Inlet - Remove Fish Barriers project.

To date, WSDOT has completed 380 of 421 Nickel and TPA construction projects since July 2003, with 87% on time and 91% on budget. The agency has six Nickel and TPA projects underway; see [p. 45](#) for details.

The cost at completion for the 380 Nickel and TPA construction projects is \$9.41 billion, 1.5% less than the baseline cost of \$9.69 billion. As of September 30, 2017, WSDOT has 19 Nickel and TPA projects yet to be completed. These remaining projects have a total value of approximately \$5.92 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 (18.6%) 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, Cara Motte, Joe Irwin and Kate Wilfong

Notable results

- WSDOT completed three Transportation Partnership Account projects, bringing the total completed to 380 of 421 Nickel and TPA projects
- WSDOT removed 15 projects from its Watch List during the first quarter of the 2017-2019 biennium; 11 remain
- WSDOT advertised 27 of 32 Pre-existing Funds projects on time during the quarter



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 380 construction projects completed to date, 87% have been on time and 91% have been on budget.

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CURRENT LEGISLATIVE EVALUATION & ACCOUNTABILITY PROGRAM QUARTERLY UPDATE

Combined Nickel & Transportation Partnership Account (Status of projects to date; 2003 through September 30, 2017)	Number of Projects	Value of Program¹
Subtotal of completed construction projects ²	380	\$9,689.8
<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	19	\$5,916.0
<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	\$16,281.2
Schedule and budget summary Nickel & TPA combined: Results of completed construction projects in the current Legislative Transportation Budget and prior budgets.	Completed in 2017- 2019 Biennium Budget	Cumulative Program
Total number of projects completed	3	380
<i>Percent completed early or on time</i>	33%	87%
<i>Percent completed under or on budget</i>	67%	91%
Baseline cost at completion	\$2,713.0	\$9,689.8
Current cost at completion	\$2,714.6	\$9,541.2
Percent of total program over or under budget	0.1% under	1.5% 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 September 30, 2017	6	
<i>Percent advertised early or on time</i>	100%	
Total number of projects advertised for construction in the 2015-2017 biennium (July 1, 2017, through June 30, 2019)	0	
<i>Percent advertised early or on time</i>	0%	
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 March 31, 2018)	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	\$845.1	
Actual total expenditures in 2015-2017 biennium to date (July 1, 2015, - September 30, 2017)	\$89.1	
<i>Total 2003 Transportation Funding Package (Nickel) expenditures</i>	\$29.1	
<i>Total 2005 Transportation Partnership Account expenditures</i>	\$48.2	
<i>Total Pre-existing Funds expenditures⁶</i>	\$11.8	

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 editions prior to GNB 63. **1** Dollars in millions. **2** Cumulative projects completed from July 1, 2003, to September 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. 47-48.

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

Current Legislative Evaluation and Accountability Program rail projects as of September 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 September 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 September 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 September 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 September 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 September 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).

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COMPLETED PROJECTS & CONTRACTS UPDATE



Agency Emphasis Area PRACTICAL SOLUTIONS

WSDOT embraced a Practical Solutions approach on the SR 520/I-5 to Medina - Evergreen Point Floating Bridge and Landings project by adding a bike/pedestrian lane that will provide multimodal travel options when completed.

Contract reporting

The Gray Notebook differentiates completed projects from completed contracts. Contracts are basically smaller segments of larger projects (for example pavement repairs to a section of I-5 that are part of a larger concrete rehabilitation program). Completing contracts may be may not mean these larger projects are finished.

WSDOT reports two TPA projects completed in the quarter; one from previous quarter

WSDOT completed two Transportation Partnership Account (TPA) projects in the first quarter of the 2016–2018 biennium (July through September 2017). Additionally, one TPA project completed in a previous quarter is now being reported.

SR 520/I-5 to Medina - Evergreen Point Floating Bridge and Landings

KING COUNTY

This project replaced the original State Route (SR) 520 floating bridge and landings, including the connections to the existing structure east of Foster Island and to the existing roadway in Medina. The new bridge meets current design standards for high winds and earthquakes.

Project benefits: The new bridge improves safety, relieves congestion, protects the environment by capturing and filtering roadway runoff, and improves reliability by providing multimodal travel options.

Budget performance: This project was delivered for \$1.28 billion, 4% below the initial and last approved budgets of \$1.34 billion.



The new State Route 520 bridge crosses Lake Washington in King County.

Schedule performance: This project was delivered in August 2017 on time with respect to the last approved schedule.

Highlights/challenges: WSDOT was able to build a highway in an urban environment while keeping traffic moving across Lake Washington. WSDOT's work on the floating bridge and west bridge approach projects overcame challenges with design and repair of the concrete bridge pontoons, and while removing existing structures on the lake.

SR 3/Belfair Area - Widening and Safety Improvements

MASON COUNTY

This project made roadway improvements on SR 3 from SR 106 to Northeast Belfair Street, including continuation of the two-way left turn lane from the vicinity of the intersection of SR 3 and Romance Hill to the intersection of SR 3 and SR 106. Improvements were made to pedestrian and bicycle facilities and stormwater treatment facilities.

Project benefits: The improvements enhance motorists' safety, aid in relief of traffic congestion and help improve water quality in nearby waterways.

Budget performance: This project was completed for \$26.5 million, 10.5% above the last approved budget of \$24 million. The initial 2013 budget was \$15.7 million.

Schedule performance: This project was delivered in August 2017, on time with respect to the last approved schedule, and four years later than the initial schedule set in 2013.

Highlights/challenges: Installed drainage ponds were redesigned and reconstructed due to a shallow water table. There were delays due to design challenges, right-of-way acquisitions and relocation of utilities.

SR 16/Anderson Creek Tributary to Sinclair Inlet - Remove Fish Barriers

KITSAP COUNTY

- Completed in the eighth quarter of 2015-2017 biennium (April through June)

This project replaced an existing drainage structure with a fish passable structure.

Project benefits: The wider culverts improve fish passage by simulating natural waterways and enhance access to approximately one mile of fish habitat.

Budget performance: This project was delivered for \$7 million, 3% below the initial and last approved budget of \$7.2 million.

Schedule performance: This project was delivered in May 2017, about seven months later than the last approved schedule, and approximately two and a half years later than the initial schedule set in 2014.

Highlights/challenges: This project continues progress toward fulfilling the federal injunction requiring the correction of fish passage barriers. The project's major challenges included several design delays, increased excavation, unfavorable weather and archaeological needs due to the presence of a historical fish camp in the vicinity.

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 is 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, initial 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.

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WATCH LIST QUARTERLY UPDATE

For more information on specific projects on the Watch List, visit: <http://bit.ly/ProjectDeliveryReportsArchive>.

WSDOT's Watch List expands to 11 projects

WSDOT added 18 new projects to its existing five projects on the Watch List and removed 15 this quarter (July through September 2017), leaving 11 projects on the Watch List as of September 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 Program Development & Management Office. Projects are removed from the Watch List when issues are resolved or a resolution is assigned.

Project (County)	Funding	Date added	Date removed	Watch List issue
Projects remaining on the Watch List				
SR 99/South King St. Vicinity to Roy St. - Viaduct Replacement (King) ¹	Nickel, TPA	Dec-2013	-	Seattle Tunnel Partners' current schedule shows that the tunnel will be complete in October 2018, one month early. The 2017 Legislative session provided the program with an additional \$77 million. Of this amount, \$18 million will be covered by local funding. WSDOT requested an additional \$54 million in funding for the 2018 supplemental budget. The agency will continue to assess risks and adjust future budget requests accordingly.
I-5/Northbound Spokane St. to Lake Washington Ship Canal Bridge - Special Bridge Repair (King)	PEF	Feb-2017	-	The estimated cost has increased by \$1.3 million due to potential risks involving weekend construction safety risks and closures, lack of access to the work site, overtime pay, and competition within the area for the same labor pool. This addition has delayed the operationally complete date by one year to fall 2020.
I-5/Northbound I-90 Vicinity to James St. Vicinity - Concrete Pavement Replacement (King)	Nickel	Apr-2017	-	The overall cost of this project has increased by \$2.9 million due to an updated engineer's estimate reflecting potential project risks involving weekend construction safety risks and closures, lack of access to the work site, overtime pay, and competition within the area for the same labor pool. In addition, a potential schedule risk is the construction duration could be delayed to a third season, delaying the operationally complete date to fall 2020.
I-5/Northbound Boeing Access Rd. to Northeast Ravenna Bridge - Pavement Repair (King)	Nickel	Feb-2017	-	The cost of this project has further increased by \$4 million due to potential project risks, the need for additional reinforced concrete paneling, and the addition of an incentive for contractors to reduce the number of weekend closures. The completion date could be delayed by one year to fall 2020.
I-5/Northbound South Spokane St. Vicinity - Concrete Pavement Replacement (King)	Nickel	Apr-2017 ²	-	The estimated cost of this concrete replacement project has increased by \$2.4 million due to project risks involving weekend construction safety risks and closures, lack of access to the work site, overtime pay, and competition within the area for the same labor pool. The operationally complete date has been delayed one year to fall 2018.
SR 150/No-See-Um Rd. - Intersection Improvements and Realignment (Chelan)	CW	Jul-2017	-	This project involves relocating the No-See-Um intersection approximately 530 feet west of its existing location by constructing a four-leg roundabout. There are currently two budget risks which include right of way and construction. These risks are being managed by WSDOT. In addition, there are contractor claims that are in negotiations.

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

Notes for Watch List 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.

Project (County)	Funding	Date added	Date removed	Watch List issue
Projects remaining on the Watch List				
SR 20/Sharpes Corner Vicinity - Improvements (Skagit)	CW	Aug-2017	-	This project will reduce the risk of collisions and provide relief at the Sharpes Corner and Fidalgo Bay Road intersections. The advertisement date of this project is October 2017 and is currently at risk. The potential schedule delay is due to delays with right-of-way acquisition to obtaining the last three parcels needed for the project. WSDOT is monitoring this risk.
SR 6/Two Tributaries to Chehalis River - Fish Passage (Lewis)	PEF	Aug-2017	-	This project will remove two fish passage barriers. The total estimated cost of this project is \$5.5 million and is currently at risk of increasing. Three alternative strategies are being considered. Preliminary estimated costs for each strategy indicate that they will likely exceed the original total cost estimate. WSDOT is monitoring this risk.
SR 14/Wind River Rd. - Intersection Improvements (Skamania)	CW	Sep-2017	-	This project will reconstruct the intersection at Wind River Road and SR 14 making Wind River Road more easily utilized by all traffic. The total estimated cost has increased by approximately \$1 million. This increase is due to a need for a significant geotechnical investigation related to a large excavation area proposed in a historic landslide.
U.S. 97/Satus Creek Bridge - Bridge Replacement (Klickitat)	PEF	Sep-2017	-	This project replaces a deteriorating bridge with a new structure. This project is located on a reservation and has been delayed due to extra time needed for tribal coordination. The advertisement date is delayed until June 2020.
SR 508/South Fork Newaukum River Bridge Replacement (Lewis)	PEF	Sep-2017	-	This project replaces a structurally deficient bridge with a bridge designed to current standards. The total cost has increased by \$200,000 due to a potential project re-design. This cost increase has resulted in the delay of the advertisement date to November 2017. As a result, the completion date has been delayed to December 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/Northeast 134th St. Interchange (I-5/I-205) - Rebuild Interchange (Clark)	Nickel	Jul-2017	Jul-2017	This project will reconstruct the Northeast 134th Street Intersection at the junction of I-5 and I-205 to maintain safety and keep traffic moving. The total estimated cost has increased by \$321,000, to a total of \$85.7 million. This increase is due to post-construction record of survey and construction of an access road that was needed to repair a stormwater pond, neither of which were included in the 2017 budget. This project has been reported and removed from the Watch List.
I-90/Homer M. Hadley Bridge - Replace Anchor Cables (King) and I-90/Lacey V. Murrow Bridge - Replace Anchor Cables (King)	PEF	Jul-2017	Jul-2017	To maintain safety and preserve the structural integrity of the Homer M. Hadley Bridge and Lacey V. Murrow Bridge, 32 anchor cables will be replaced. Originally 27 anchors needed replacing; but after further evaluation, five additional anchor cables were determined to have reached the end of their service life. This increased the estimated cost by \$2.1 million to \$7.9 million. This project has been reported and removed from the Watch List.
I-90/Eastgate to SR 900 - Peak Use Shoulder Lanes (King)	CW	Jul-2017	Jul-2017	This project will reconstruct the roadway shoulders in both directions of I-90 from Eastgate to Issaquah to serve as additional lanes during morning and afternoon commutes. The original Request for Proposal date has been delayed three months, to January 2018, to allow the consultant to incorporate stakeholder feedback within the scope of work. This project has been reported and removed from the Watch List.
SR 164/Pussyfoot Creek - Fish Passage (King)	PEF	Jul-2017	Jul-2017	This project will remove an existing fish passage barrier and replace it with a fish passable structure. After a more refined estimate following a stream simulation, the size of the fish passable structure has increased. This change has increased the cost of this project by \$807,000, to \$9.1 million. This project has been reported and removed from the Watch List.
SR 524/Yew Way - Railroad Crossing Improvements (Snohomish)	PEF	Dec-2016	Jul-2017	This railroad crossing project installs traffic signals and track circuits to prevent vehicles stopping on the tracks when a train is present. Due to delays in negotiations with Snohomish County, the advertisement date was further delayed by one year to fall 2018. As a result, the construction completion has been delayed to fall 2019. This project has been reported and removed from the list.
I-90/Vantage Vicinity - Emergency Guardrail Repair (Kittitas)	PEF	Aug-2017	Aug-2017	This project will replace over 5,000 linear feet of guardrail on I-90 near the Vantage Bridge that was damaged by a series of wildfires in June and July 2017. WSDOT approved a Declaration of Emergency on August 1, 2017. The estimated cost of this project is \$450,000. 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 524/Great Dane Creek - Fish Passage (Snohomish)	PEF	Aug-2017	Aug-2017	This project will replace an existing fish passage barrier and replace it with a fish passable structure. The advertisement date has been further delayed by five months, to spring 2018. The schedule delay is due to continuing coordination between WSDOT and the Muckleshoot Tribe to obtain stakeholder agreement. This has been achieved and the schedule risk has been retired. This project has been reported and removed from the Watch List.
U.S. 97/Swauk Creek Campground - Fish Passage Retrofit (Kittitas)	PEF	Aug-2017	Aug-2017	This project involves replacing two existing fish passage barriers with fish passable structures. Project completion now remains on schedule for a fall 2018 project completion, and will not be delayed to fall 2019 as previously reported. The estimated cost has now increased by \$2.5 million, to \$5.9 million due to new findings within the design report, unsuitable soil, and an updated engineer's estimates to reflect the most current bid item costs. This project has been reported and removed from the Watch List.
I-81/Red Mountain Vicinity - Construct Interchange (Benton)	CW	Feb-2017	Aug-2017	This project will construct a new interchange on I-82 east of Benton City, providing direct access to West Richland and the surrounding Red Mountain area, and a new connection to SR 224. This project has been delayed five months to March 2018 due to delays associated with obtaining the required Interchange Justification Report. This has delayed the advertisement date by one year to fall 2020 and project completion date by one year to fall 2021. This project has been reported and removed from the Watch List.
SR 99/George Washington Bridge - Painting - Stage 1 (King) and SR 99/George Washington Bridge Painting - Stage 2 (King)	PEF	Dec-2014	Sep-2017	WSDOT has separated this bridge painting into two projects to address funding constraints and allow for more competitive bidding. These projects involve cleaning and painting the George Washington Bridge in order to preserve its structural integrity. The advertisement date for Stage 2 remains on schedule for fall 2017, but the construction duration has changed from two seasons to three, resulting in the delay of the project completion date by one year, to fall 2020. The estimated cost has increased by \$2.1 million, to \$29.2 million. This project has been reported and removed from the Watch List.
SR 409/Columbia River Bridge at Puget Island - Painting (Wahkiakum)	PEF	Jul-2017	Sep-2017	This project includes cleaning and repainting the Columbia River Bridge. The estimated cost has increased by \$4.5 million, to \$13.6 million due to underestimating the quantity and price of the paint. The advertisement date has been delayed six months, from April 2017 to October 2017 due to combining this project with an existing project. The operationally complete date has been delayed 2.5 years, to May 2021. This project has been reported and removed from the Watch List.
I-90/Peoh Rd. Bridge to Elk Heights Rd. Vicinity Westbound - Replace/Rehab Concrete (Kittitas)	Nickel	Aug-2017	Sep-2017	This project will add an unbonded concrete overlay over both westbound lanes of I-90 and replace asphalt shoulders to extend the life span of the pavement. The total cost estimate has increased by \$3.4 million to \$26.6 million due to the favorable bids at the time of award. This reduced cost is now at risk due to the discovery of unfavorable soils under the existing shoulders, resulting in the need for a new traffic control strategy. WSDOT is currently in negotiations with the contractor for this change in condition. This project has been reported and removed from the Watch List.
SR 92/Little Pilchuck - Fish Passage (Snohomish)	PEF	Sep-2017	Sep-2017	This project will remove an existing fish passage barrier and replace it with a fish passable structure. The total estimated cost has increased by \$1.3 million, to \$5.9 million, following hydraulic modeling and stakeholder coordination. Advertisement for this project is scheduled for fall 2017 with construction completion in 2018. This project has been reported and removed from the Watch List.
U.S. 12/Naches River Nelson Bridge Eastbound and Westbound - Bridge Painting (Yakima) ¹	PEF	Sep-2017	Sep-2017	These projects will maintain the structural integrity of the eastbound and westbound US 12 Naches River Nelson Bridge by cleaning and repainting the steel surfaces. The total estimated cost has increased by \$1.2 million, to \$7.9 million. Due to the lead-based paint used, WSDOT revised the Steel Bridge Containment standard specifications to better meet federal and state environmental regulations, which resulted in the cost increase. These projects have been reported and removed from the Watch List.
I-90/Renslow Bridge Eastbound - Deck Rehabilitation (Kittitas)	PEF	Sep-2017	Sep-2017	This project repairs and resurfaces the existing bridge deck on the eastbound I-90 Renslow Bridge to maintain structural integrity, continue safe operation of the highway, and extend the life of the bridge. The total estimated cost has increased by \$1 million, to \$1.9 million. This cost increase is due to the unanticipated condition of the reinforcing steel in the bridge deck which required extensive repairs. The construction completion date remains on schedule for fall 2017.

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

Note: 1 U.S. 12/Naches River Nelson Bridge Eastbound and Westbound - Bridge Painting includes two projects.

67 ADVERTISEMENT RECORD QUARTERLY UPDATE

Connecting Washington Account projects in construction ¹ Through Sept. 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
I-5/Mounts Rd. Vicinity - Variable Message Signs (Pierce)	√	Jul-2017	Mar-2018
US 195/Colfax to Spangle - Add Passing Lanes - Phase 2 (Whitman, Spokane)	√	Aug-2018	Nov-2018
I-5/116th St. Northeast Interchange - Tulalip Tribe Lead (Snohomish)		Sep-2017	Dec-2018

Nickel & TPA projects in construction Through Sept. 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
Work associated with the I-5/Northbound South Spokane St. Vicinity - Concrete Pavement Replacement, and I-5/Northbound I-90 Vicinity to James St. Vicinity - Concrete Pavement Replacement is 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
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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	Oct-2017	\$0.4
US 395/NSC Freya St. - Structures	TPA	N/A	Dec-2016	Nov-2018	\$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
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.

Data source: WSDOT Capital Program Development and Management.

Note: 1 Connecting Washington projects (CW) shows projects currently in construction during the quarter, and does not represent a comprehensive list of completed CW projects.

67 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
2017-2019 biennium summary <i>This information is updated quarterly during the biennium</i>	0 Nickel 3 TPA	1 on time 2 late	1 on time 2 late	1	\$2,713.0	\$2,714.6	1 on budget 2 over budget
2015-2017 biennium summary	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	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	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	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	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	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	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 September 30, 2017, WSDOT approved one change order of \$500,000 or more. The change order, valued at about \$1.43 million, involved relocating rock crushing operations and establishing a two-lane westbound concrete barrier prior to winter to improve traffic safety on the I-90/Snowshed to Keechelus Dam 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>.

67 PRE-EXISTING FUNDS QUARTERLY UPDATE

WSDOT advertises 27 Pre-existing Funds projects during the quarter

WSDOT advertised 27 of 32 Pre-existing Funds (PEF) projects in the first quarter of the 2017-2019 biennium (July through September 2017).

Of the 32 total projects, 27 were on time and five were delayed within the biennium. See p. 48 for this quarter's PEF advertisements.

WSDOT's current cost to complete the 27 PEF projects actually advertised through the first quarter of the 2017-2019 biennium is \$42.1 million, about \$1.8 million (4.1%) less than the original value of \$43.9 million.

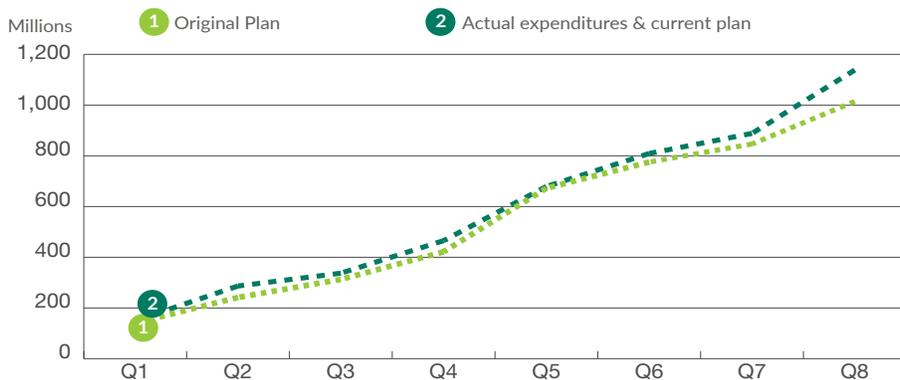
Improvement and preservation cash flows more than projections

Cumulatively, WSDOT planned to have \$140.4 million in the combined improvement and preservation cash flow during the first quarter of the 2017-2019 biennium, but had \$150.1 million instead (approximately 9.9% more).

This \$9.7 million variance between the original allotment plan and the current plan was due to reappropriation of funds and over programmed projects.

Cumulative Pre-existing Funds preservation and improvement combined cash flows higher than planned during the 2017-2019 biennium

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



Data source: WSDOT Capital Program Development and Management.

Note: Q1 refers to the first quarter (July through September 2017) of the 2017-2019 biennium (July 2017 through June 2019).

Actual cost to complete project advertisements about \$1.8 million less than the original value

2017-2019 biennium (July 2015 through June 2017); Quarter ending September 30, 2017; Dollars in millions

	Number of projects	Original value	Current cost to complete
Total PEF advertisements planned for the 2017-2019 biennium	532	\$1,060.8	\$884.4
Actual advertisements through Sept. 30, 2017	27	\$43.9	\$42.1

Data source: WSDOT Capital Program Development and Management.

WSDOT advertises 29 Pre-existing Funds project advertisements during the 2017-2019 biennium

Project status	Quarter ¹	Cumulative ²
Projects advanced ³	0	0
Projects advertised on time	27	27
Emergent projects advertised	0	0
Projects advertised late	0	0
Total projects advertised	27	27
Projects advertised early ⁴	0	0
Projects delayed within the biennium	5	5
Projects deferred out of the biennium	0	0
Projects deleted	0	0

Data source: WSDOT Capital Program Development and Management.

Notes:

- 1 Quarter refers to July through September 2017.
- 2 Cumulative refers to July 2017 through June 2019.
- 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 27 Pre-existing Funds projects on time

July-September 2017

On time (27)	
Regionwide Strategic Pavement Preservation (2017-2019)	I-5/SR 11 Vicinity to SR 548 Vicinity - Cable Barrier Upgrade
Eastern Region Strategic Pavement Preservation 2017-2019	SR 18/Soosette Creek Vicinity to Issaquah Hobart Rd. Vicinity - Cable Barrier
Southwest Region - Strategic Pavement Preservation 2017-2019	SR 20/SR 536 Vicinity to Pulver Rd. Vicinity - Cable Barrier Upgrade
I-5/West of Carpenter Rd. Northbound - Stormwater Retrofit	SR 99/Tukwila International Blvd. to Holden St. Vicinity - Cable Barrier Upgrade
SR 504/Wooster Creek - Culvert Replacement Chronic Environmental Deficiency	SR 522/North Creek Vicinity to Northeast 195th St. - Cable Barrier Upgrade
Olympic Region Strategic Pavement Preservation 2017-2019	SR 539/Ten Mile Rd. Vicinity to Nooksack River Overflow Bridge - Cable Barrier
South Central Region 2017-2-19 Region Wide - Strategic Pavement Preservation	US 12/2 miles East of Clear Creek Falls Viewpoint - Rockfall Mesh Repair
I-90/Vantage Vicinity - Emergency Guardrail Repair	US 101/Hoodsport Vicinity Slide - Debris Fence Repair
SR 26 and US 195 Safety Improvements	I-90/Lacey V. Murrow Bridge - Replace Anchor Cables
North Central Region Strategic Pavement Preservation 2017-2019	I-90/Homer M. Hadley Bridge - Replace Anchor Cables
Southwest Region - Strategic Bridge Preservation 2017-2019	US 12/US 101/Aberdeen Signals - Rebuild Signals
Olympic Region Strategic Bridge Preservation 2017-2019	US 101/SR 105/SR 109/Aberdeen-Hoquiam Signals - Rebuild Signals
I-5/300th St. Northwest to Anderson Rd. - Cable Barrier Upgrade	I-5/Lake Samish Vicinity - Stormwater Pipe Replacement
I-5/SR 11 to Samish River Vicinity - Cable Barrier Upgrade	
Projects delayed within the biennium (5)	
I-5/Northbound Interstate Bridge - Restore Bearing Clearances and Gear Alignment	I-5/Bowhill Eastbound/Westbound Safety Rest Area - Rehabilitate Manholes - Northwest Region
I-90/Eastbound East Channel Bridge - Modular Expansion Joint Replacement	SR 906/Travelers Rest Safety Rest Area - Roof Repair - South Central Region
I-5/Elm St. to North Kelso Ave. Interchange - Illumination Rebuild	

Data source: WSDOT Capital Program Development and Management.

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STATEWIDE TRANSPORTATION POLICY GOALS
& GRAY NOTEBOOK INFORMATION GUIDE

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 (Marci 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		
Calendar	Q1 2017			Q2 2017			Q3 2017			Q4 2017		
Fiscal	Q3 FY2017			Q4 FY2017			Q1 FY2018			Q2 FY2018		
Fed. Fiscal	Q2 FFY2017			Q3 FFY2017			Q4 FFY2017			Q1 FFY2018		

2017-2019 biennial quarters (used by Legislature)

Period	Quarter	Period	Quarter
Jul – Sep 2017	Q1	Jul – Sep 2018	Q5
Oct – Dec 2017	Q2	Oct – Dec 2018	Q6
Jan – Mar 2018	Q3	Jan – Mar 2019	Q7
Apr – Jun 2018	Q4	Apr – Jun 2019	Q8

The Gray Notebook is prepared by:

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310 Maple Park Ave SE, Olympia, WA 98504

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