Washington State
Department of Transportation

54

The Gray Notebook

WSDOT's quarterly performance report on transportation systems, programs, and department management

Quarter ending June 30, 2014 • Published August 2014

Lynn Peterson, Secretary of Transportation

Maintaining our marine highways

How WSDOT works to preserve the state's ferries, terminals

p. 12

WSDOT's bridges meet high standards

Funding shortfalls could challenge future infrastructure preservation

p. 4

In for the long haul

WSDOT keeps freight moving by land, sea and air

p. 28

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PERFORMANCE HIGHLIGHTS reported for the quarter ending June 30, 2014

92% of WSDOT's **bridges** were in fair or better condition in 2014

9.3% of bridges on the **National Highway System**, when measured by deck area, are **structurally deficient**

88% of the ferries' **terminals** are in **fair** or **better** condition

1 of three new Ferries, the **M/V Tokitae**, is complete and started service this summer

5 the number of Puget Sound area **commute corridors** with travel time changes more than 2 minutes

6 M ferry **riders**

↑95.5% of ferry trips were **on time** this quarter

43% of all freight rail shipments in Washington are **farm products** and **coal**

↑2.5% increase in the number of freight trucks crossing the **Canadian border** into **Washington**

9 number of Fish and Wildlife permits **WSDOT** used for **337** environmental activities

355 OF 421 Nickel and TPA **projects** complete since 2003

TWO NEW PROJECTS COMPLETED THIS QUARTER

33 scheduled Pre-existing Funds projects advertised **on time** this quarter

15 *projects added to* ***Watch List***

$5.7 B Nickel and TPA projects **completed** since 2003

66 NICKEL AND TPA PROJECTS IN THE CURRENT TRANSPORTATION BUDGET ARE NOT YET COMPLETE

↓ 58% decrease in turnaround time for WSDOT's **Public Disclosure Request** responses

12 OF 36 WSDOT LEAN PROJECTS ARE COMPLETE

2,500 **hours of staff time saved** in 2013 by using general environmental permits

$ 18.4 M economic **benefit** provided by WSDOT Incident Response

11.4 average number of minutes WSDOT incident response teams took to **clear** traffic incidents

13,153 INCIDENTS **CLEARED** BY WSDOT

439 **fatalities** occurred on Washington's public roads in 2013

40% of roadway fatalities from 2011-2013 involved vehicles **running off the roadway**

↓ 3.7% decrease in passengers using **Amtrak Cascades stations** in the second quarter of 2014

On the cover: *The Motor/Vessel* Wenatchee *cuts its way across the Puget Sound with the Olympic Mountains serving as a serene backdrop.*

Navigating the *Gray Notebook* 54

Setting WSDOT's Direction

This 54th edition of the *Gray Notebook* follows the first steps of Results WSDOT, the agency's strategic plan (p. viii), as it moves Washington forward. The plan represents a shift in the way WSDOT does business to get the most capacity of the entire multimodal transportation system, leveraging limited funding and engaging with communities and partners.

Results WSDOT aligns with Gov. Jay Inslee's Results Washington (see p. vii) while supporting reforms proposed to the Legislature in 2013 by Transportation Secretary Lynn Peterson (see *Gray Notebook* 53, p. ix-x) WSDOT's progress toward reaching the agency's goals will be reported in the *Gray Notebook*.

Accountability drives *Gray Notebook* reporting

This issue features annual articles on bridges, ferry terminal and vessels, general environmental permits (formerly programmatic permits), and trucks, goods and freight. Other features in this issue include semi-annual articles on travel time trends, and quarterly reports ranging from incident response and passenger rail to Lean.

The "beige pages" address the delivery of projects funded in the 2003 Nickel Transportation Funding Package, 2005 Transportation Partnership Account, and Pre-existing Funds.

The *Gray Notebook* is published quarterly in February, May, August and November. Contents include quarterly and annual reports on key agency functions, providing regularly updated system and program performance information.

The *Gray Notebook* is available electronically at http://wsdot.wa.gov/publications/fulltext/graynotebook/Jun14.pdf; the publication, with hyperlinks, can be downloaded and printed as needed. Readers can scan Quick Response (QR) codes that provide instant links to background information for those who want to know more of the story. Read more about QR codes on p. 48.

WSDOT also publishes a quarterly highlights folio of selected performance topics from the *Gray Notebook*, called *Gray Notebook Lite*.

Statewide transportation policy goals

Laws enacted in 2007 established policy goals for transportation agencies in Washington (RCW 47.04.280).

The six statewide transportation policy goals are:

- **Safety:** To provide for and improve the safety and security of transportation customers and the transportation system;
- **Preservation:** To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services;
- **Mobility (Congestion Relief):** To improve the predictable movement of goods and people throughout Washington;
- **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.

State and federal measures reported

WSDOT is an active participant in Results Washington, Gov. Inslee's plan for building a working Washington. At the same time, WSDOT is preparing for future federal transportation reporting requirements (read about Moving Ahead for Progress in the 21st Century in *Gray Notebook* 49, p. vii, and in this issue on pp. v-vi.

These three efforts — WSDOT's new strategic plan, Results Washington and MAP-21 — play a vital role in guiding future performance reporting.

The transportation progress report

The Washington State Office of Financial Management (OFM) sets objectives and establishes performance measures for the state's transportation policy goals. OFM reports on the attainment of the goals and objectives. The most recent *Attainment Report*, for 2012, is available online at http://www.wsdot.wa.gov/Accountability/PerformanceReporting/Attainment.htm.

Gray Notebook credits

The work of many people goes into the production of the *Gray Notebook*. Produced by WSDOT's Office of Strategic Assessment and Performance Analysis, each article features bylines indicating contributors. WSDOT's graphics team, including Jinger Hendricks, Diana Lessard, Fauziya Mohamedali, Erica Mulherin and Steve Riddle, create the majority of the graphics, while WSDOT communicators typically take the photographs. The *Gray Notebook* is printed in house by a team including Deb Webb, Trudi Phillips and Larry Shibler. Linda Pasta coordinates distribution.

54 WSDOT's Goals, Performance and Trends

Policy goal/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 (VMT) statewide (Annual measure: calendar years 2012 & 2013, data for 2013 considered preliminary)	0.77	0.77	1.00	✓		↓
Rate of **recordable incidents** for every 100 WSDOT workers[1] (Annual measure: calendar years 2012 & 2013)	5.5	5.7	5.0	—	(Two-year trend)	↓
Preservation						
Percentage of state **highway pavement** in fair or better condition by vehicle miles traveled (Annual measure: calendar years 2011 & 2012)	91.9%	91.9%	92.0%	—		↑
Percentage of **state bridges** in fair or better condition by bridge deck area (Annual measure: fiscal years 2013 & 2014)	91.7%	91.8%	90.0%	✓		↑
Mobility (Congestion Relief)						
Highways: Annual (weekday) vehicle **hours of delay** statewide at **maximum throughput speeds**[2] (Annual measure: calendar years 2010 & 2012)	31.6 million	30.9 million	N/A	N/A		↓
Highways: Average **incident clearance times** for all Incident Response program responses (Calendar quarterly measure: Q1 2014 & Q2 2014)	12.4 minutes	11.4 minutes	N/A	N/A	(Five-quarter trend)	↓
Ferries: Percentage of trips departing on time[3] (Fiscal quarterly measure: year to year Q4 FY2013 & Q4 FY2014)	95.3%	95.8%	95%	✓		↑
Rail: Amtrak Cascades ridership[4] (Calendar quarterly measure: year to year Q2 2013 & Q2 2014)	210,000	202,000	N/A	N/A		↑
Environment						
Number of WSDOT **stormwater management facilities** constructed (Annual measure: fiscal years 2012 & 2013)	146	169	N/A	N/A		Not applicable
Cumulative number of WSDOT **fish passage barrier improvements** constructed (Annual measure: calendar years 2012 & 2013)	270	285	N/A	N/A		↑
Stewardship						
Cumulative number of Nickel and TPA **projects completed,** and **percentage on time**[5] (Calendar quarterly measure: Q1 2014 & Q2 2014)	353/ 88%	355/ 87%	90% on time	—	(Five-quarter trend)	↑
Cumulative number of Nickel and TPA **projects completed** and **percentage on budget**[5] (Calendar quarterly measure: Q1 2014 & Q2 2014)	353/ 91%	355/ 91%	90% on budget	✓	(Five-quarter trend)	↑
Variance of total project costs compared to **budget expectations**[5] (Calendar quarterly measure: Q1 2014 & Q2 2014)	under budget by 1.6%	under budget by 1.7%	on budget	✓	(Five-quarter trend)	Not applicable

Notes: N/A = not available: new reporting cycle data not available or goal has not been set. Dash (—) = goal was not met in the reporting period. 1 WSDOT began reporting the recordable incident rate in January 2012; trend shows two years. 2 Compares actual travel time to travel time associated with "maximum throughput" (defined as 70 to 85 percent of the posted speeds), where the greatest number of vehicles occupy the highway at the same time. 3 WSDOT Ferries Division's "on-time" departures include any trip recorded by automated tracking as leaving the terminal within 10 minutes of scheduled time. 4 On-time performance is not reported due to data availability and construction work on the rail line. 5 Budget and schedule expectations are defined in the last approved State Transportation Budget. See p. 35 for more information.

Striving for performance-driven outcomes

President Barack Obama signed the Moving Ahead for Progress in the 21st Century Act (MAP-21) in July 2012. The cornerstone of this law, which is specific to transportation, is the transition to a performance- and outcome-based federal aid program. The *Gray Notebook* is an example of how WSDOT conducts performance management and reporting. Since this legislation was established, the U.S. Department of Transportation Federal Highway Administration (FHWA) created rules to implement this act.

USDOT publishes planning rule for public comment in June 2014

In June 2014, FHWA published the Metropolitan and Statewide Planning rule for public comment. This rule continues the transition to performance-driven, outcome-based approaches. With respect to planning, this rule introduces critical changes to the planning process, requiring states, Metropolitan Planning Organizations (MPOs) and public transportation providers to link investment priorities to performance target achievements.

MPOs are transportation policy-making organizations made up of representatives from local government transportation authorities for urbanized areas with populations greater than 50,000. Congress created MPOs to ensure existing and future expenditures of government funds for transportation projects and programs are based on a continuing, cooperative, and comprehensive planning process.

The proposed planning rule plays a central role in implementing MAP-21's performance management framework. Key changes reflected in the rule include:

- Establishing performance targets to address safety, infrastructure condition, congestion, system reliability, emissions and freight movement;
- Having MPOs include targets in their metropolitan transportation plans once they are set in 2015; and
- Requiring states, MPOs, and public transportation providers to develop other performance-based plans and processes.

Washington state planning partners continue to work on transportation

Long-range transportation planning in Washington is performed by several distinct governments and organizations. Washington state has a strong history of collaboration between WSDOT, MPOs and the 14 Regional Transportation Planning Organizations (RTPOs). The RTPOs are voluntary organizations of local government that perform transportation planning functions in areas of the state not included within MPOs. Collaborative efforts continue with review of the proposed planning rule.

Additional MAP-21 rules expected to be released later in 2014

Other performance-related rules are expected to be released throughout the rest of 2014 and will focus on pavement, bridges, asset management, congestion, emissions, highway system performance, freight, and public transportation. Collectively, these rules aim to transform the federal-aid transportation programs and provide more efficient investments by:

- Focusing on national transportation goals;
- Increasing accountability and transparency; and
- Improving transportation investment decision-making.

Once all of the rules related to MAP-21 have been released for public comment and finalized by FHWA, states will have 12 months to set performance targets. MPOs will have 18 months to set their targets.

To review the planning rule language or to provide comments, go to http://www.regulations.gov/#!docketDetail;D=FHWA-2013-0037.

MAP-21 federal performance reporting requirements

MAP-21 goals by program area	Federal threshold/ benchmark[1]	MAP-21 target[2]	Penalty[3] Y/N	Date draft rule was released	Existing WSDOT performance measures for this program area
Highway Safety Improvement Program					
Rate of **traffic fatalities** per 100 million vehicle miles traveled (VMT) on all public roads	No	TBD[4]	Yes	3/11/14	Traffic fatality rates using the NHTSA[5] methodology, see *Gray Notebook* 54, p. 1
Rate of **serious traffic injuries** per 100 million vehicle miles traveled (VMT) on all public roads	No	TBD	Yes	3/11/14	Serious injury rates using the NHTSA[5] methodology, see *Gray Notebook* 54, p. 1
Number of **traffic fatalities** on all public roads	No	TBD	Yes	3/11/14	Traffic fatalities using the NHTSA[5] methodology, see *Gray Notebook* 54, p. 1
Number of **serious traffic injuries** on all public roads	No	TBD	Yes	3/11/14	Serious injuries using the NHTSA[5] methodology, see *Gray Notebook* 54, p. 1
Rate of per capita **traffic fatalities** for drivers and pedestrians 65 years of age or older	No	TBD	No	Guidance provided 10/1/2012	Traffic fatalities for pedestrians 65 years of age or older. See Gray Notebook 48, p. 8, for review of MAP-21 implications. The rate of traffic fatalities for older pedestrians is part of Washington state's *Target Zero*[6] campaign
Rate of fatalities on high-risk rural roads	No	TBD	Yes	Guidance provided 10/1/2012	Traffic fatality rates on high-risk rural roads as part of Washington state's *Target Zero* campaign
Highway-railway crossing fatalities	No	TBD	No	Guidance provided 2/22/2013	Fatalities at highway-railway crossings
National Highway Performance Program					
National Highway System and Interstate **pavement condition**	TBD	TBD	Yes		Pavement structural and functional condition. See Gray Notebook 52, p. 6, for an update on MAP-21 implications for pavement
Condition of bridges on the National Highway System	<10% of deck area on SD[7] bridges	TBD	Yes		Several measures of bridge condition including good/fair/ poor condition rating and structural deficiency (SD) rating, see *Gray Notebook* 54, p. 4
Measures to be determined through federal rule-making	No	TBD	No		The *2013 Corridor Capacity Report* details highway travel time and reliability trends in Washington state
National Freight Movement Program					
Measures to be determined through federal rule-making	No	TBD	No		WSDOT's freight mobility plan will address trucking, rail and marine freight. See Gray Notebook 49, p. 41, for review of MAP-21 freight implications
Congestion Mitigation and Air Quality (CMAQ) Program					
Measures to be determined through federal rule-making	No	TBD	No		The *2013 Corridor Capacity Report* details the highway travel time and congestion trends in Washington state
Measures for on-road mobile source emissions to be determined through federal rule-making	No	TBD	No		No existing performance measure
Project Delivery					
Duration of NEPA[8] documentation preparation	No	TBD	No		Percent of projects completed early or on time, percent completed on or under budget, and duration of NEPA[7] document preparation

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

Notes: 1 Minimum threshold or benchmark to be established by the U.S. Department of Transportation, Secretary of Transportation. 2 Performance targets to be set for each performance measure by WSDOT in coordination with metropolitan planning organizations (MPOs) statewide. 3 Penalties apply for some measures if the DOT or MPO does not attain the target within a given time frame. Penalties include minimum allocations of federal funding toward programs to progress toward the desired target. 4 TBD = To be determined. 5 NHTSA = National Highway Traffic Safety Administration. 6 State strategic highway safety plan. 7 SD = structurally deficient. 8 NEPA= National Environmental Policy Act.

Results Washington 54

Results Washington, the state's performance management system, outlines Gov. Jay Inslee's priorities. This strategic framework sets the state's vision and mission, as well as the foundational expectations for state agencies to achieve goals collaboratively. Results Washington has five focus areas: World Class Education; Prosperous Economy; Sustainable Energy and a Clean Environment; Healthy and Safe Communities; and Efficient, Effective and Accountable Government. For more information, see http://1.usa.gov/1nZOt1g.

Results Washington measures by goal area		Previous period	Current period	On target[1]	Current trend	Desired trend
Measures for which WSDOT is the lead agency						
Goal 2: Prosperous Economy						
Based on current funding levels, control the percent of state and local bridges[2] in poor condition from increasing over 10% by 2017[3] (Annual measure: fiscal years 2013 & 2014)		9.2%	9.1%	Yes	↓	↓
Based on current funding levels, control the percent of state and local pavements[2] in poor condition from increasing over 10% by 2017[3] (Annual measure: calendar years 2010 & 2012)		6.5%	6.5%	Yes	↓	↓
Based on current funding levels, control the percent of ferry terminal systems that are past due for replacement from increasing over 6% by 2020; control the percent of ferry vessel systems that are past due for replacement from increasing over 10% by 2020[3] (Annual measure: fiscal years 2013 & 2014)	Terminals	5.4%	6.0%	Yes	↑	↓
	Vessels	5.3%	6.8%	Yes	↑	↓
Maintain percentage of transit fleet that exceeds Federal Transit Administration minimum useful life scheduled at 2012 baseline levels of X%[4]		*Measure is under development. Expected to report in December 2014*				
Increase the percentage of Washingtonians using alternative transportation commute methods to 33% by 2015 (Annual measure: calendar years 2011 & 2012)		26.7%	27.8%	No	↑	↑
Improve travel and freight reliability on strategic corridors resulting from economic growth to within 5% of 2012 baseline		*Measure is under revision. Expected to report in December 2014*				
Maximize existing capacity of strategic corridors by increasing people and/or goods moved per corridor mile from X%[4] in 2012 to X%[4] in 2015		*Measure is under development. Expected to report in December 2014*				
Reduce the number of pedestrian and bicyclist fatalities on public roadways from 84 in 2012 to zero in 2030 (Annual measure: calendar year 2012)		N/A	84	N/A	N/A	↓
Measures for which WSDOT is not the lead agency, but has an interest[5]						
The following measures are led by other state agencies and will include accomplishments from WSDOT and other entities:						
Increase state agency and educational institution utilization of state-certified small businesses in public works and other contracting and procurement by 2017 to: Minority-owned businesses, 10%; Women-owned businesses, 6%; Veteran-owned businesses, 5%		*Measure is under development. Expected to report in December 2014*				
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 (Annual measure: calendar years 2009 & 2010)		42.6	42.2	No	↓	↓
Reduce the average emissions of greenhouse gases for each vehicle mile traveled in Washington by 25% from 1.15 pounds in 2010 to 0.85 pounds by 2020 (Annual measure: calendar year 2010)		1.15	N/A	N/A	N/A	↓
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 (Annual measure: calendar years 2011 & 2012)		19.2	19.3	No	↑	↑
Increase the number of plug-in electric vehicles registered in Washington from approximately 8,000 in 2013 to 50,000 by 2020 (Annual measure: calendar years 2012 & 2013)		2,757	7,896	Yes	↑	↑
Increase miles of stream habitat opened from 350 to 450 by 2016 (Annual measure: calendar years 2012 & 2013)		350	572	Yes	↑	↑
Increase number of fish passage barriers corrected per year from 375 to 500 by 2016 (Annual measure: calendar years 2012 & 2013)		375	431	Yes	↑	↑
Goal 4: Healthy and Safe Communities						
Decrease number of traffic-related fatalities on all roads from 454 in 2011 to zero in 2030 (Annual measure: calendar years 2012 & 2013)		438	439	No	↑	↓

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

Notes: 1 "On target" is defined as on track to meet the target. 2 This measures assets on the National Highway System. 3 This measure has been revised since the last report. 4 These target and baseline levels are to be determined. 5 In addition to the measures listed in the table above, WSDOT contributes performance information that will be combined and reported with data from all state agencies in Goal 5: Efficient, Effective and Accountable Government.

54 Results WSDOT – Setting WSDOT's direction

The strategic plan Results WSDOT directs the agency to work with partners and communities, emphasizes multimodal integration, strategic investments and technology, and focuses on how the agency makes investments and delivers projects with limited resources. For a copy of Results WSDOT go to http://www.wsdot.wa.gov/Secretary/ResultsWSDOT.htm.

WSDOT is developing cross-program work plans to define actions and deliverables to reach agency goals. Progress will continue to be reported in the *Gray Notebook* (GNB). WSDOT is also continuing to improve performance and accountability by implementing its 10 reforms. The reforms will put into action common-sense changes that foster efficient, effective and accountable government. See GNB 53, p. ix-x for information on WSDOT's reforms.

Results WSDOT Sets Agency Direction ***2014 through 2017 Strategic Plan***	**Recent *Gray Notebook* articles**
Goal 1: STRATEGIC INVESTMENTS Effectively manage system assets and multimodal investments on strategic corridors to enhance economic vitality	-Brides: GNB 54, pp. 4-11. -Ferries preservation: GNB 54, pp. 12-17. -Highway maintenance: GNB 52, pp. 12-13. -Pavement conditions: GNB 52, pp. 6-11. -Capital facilities: GNB 51, pp. 3-6.
Goal 2: MODAL INTEGRATION Optimize existing system capacity through better interconnectivity of all transportation modes	-Ferries: GNB 54, pp. 18-19. -Trucks, goods and freight: GNB 54, pp. 28-32. -Rail: Amtrak Cascades: GNB 53, pp. 10-11. -Aviation: GNB 51, pp. 7-9. -Trip reduction: GNB 51, pp. 16-18.
Goal 3: ENVIRONMENTAL STEWARDSHIP Promote sustainable practices to reduce greenhouse gas emissions and protect natural habitat and water quality	-General permitting: GNB 54, pp. 26-27. -Air quality: GNB 53, pp. 15-16. -Wetlands preservation: GNB 53, pp. 19-21. -Environmental compliance: GNB 52, p. 25. -Fish passage barriers: GNB 52, pp.23-24. -Water quality: GNB 51, pp. 19-21.
Goal 4: ORGANIZATIONAL STRENGTH Support a culture of multi-disciplinary teams, innovation and people development through training, continuous improvement and Lean efforts	-Lean: GNB 54, pp. 33-34. -Worker safety: GNB 53, p. 1. -Worker training: GNB 53, pp. 28-29.
Goal 5: COMMUNITY ENGAGEMENT Strengthen partnerships to increase credibility, drive priorities and inform decision making	-Highway system safety: GNB 54, pp. 1-3. -Bicyclist & pedestrian safety: GNB 52, pp. 2-5.
Goal 6: SMART TECHNOLOGY Improve information system efficiency to users and enhance service delivery by expanding the use of technology	-Commerical Vehicle Information Systems & Networks: GNB 53, pp. 22-23. -Travel information: GNB 53, p. 14. -Tolling: GNB 52, pp. 31-33.

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

Highway System Safety Programs Annual Report 54

Notable results

- *Washington continues its historic low level trend with 439 collision fatalities in 2013*
- *In 2013, there were 1,916 serious injuries resulting from collisions, a 28% decrease from 2009*
- *Run-off-the-road events accounted for approximately 40% of fatalities and 30% of serious injuries from 2011 to 2013*
- *Intersection-related events accounted for approximately 19% of fatalities and 35% of serious injuries from 2011 to 2013*

Traffic fatalities trending downward in Washington

Since 2009, there has been an 11 percent reduction in fatalities on all public roadways in Washington, declining from 492 fatalities to 439 fatalities in 2013. For the same time period, a 28 percent reduction in serious injuries occurred, with 2,646 serious injuries in 2009 and 1,916 in 2013. The state has experienced a general reduction in the number of traffic fatalities since 2007.

Although Washington has had consistent annual fatality reductions in recent years, there was an increase of one fatality on all public roadways from 2012 to 2013. However, serious injuries decreased by 13 percent for the same time period.

Preliminary status of 2013 traffic fatality data

Traffic fatality-related data for 2013 is considered preliminary until January 1, 2015. The data presented in this article may change as more information about collisions is collected throughout the year.

State annual traffic fatalities remain steady while serious injuries decrease during last five years
2009 through 2013

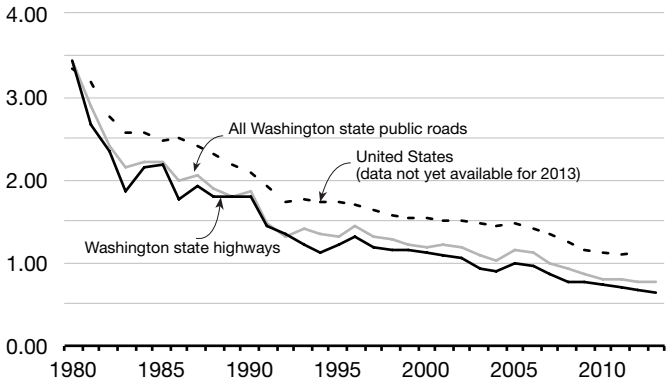
Year	2009	2010	2011	2012	2013[1]
All public roadways					
Fatalities	492	460	454	438	439
Serious injuries	2,646	2,482	2,136	2,200	1,916
State highways only					
Fatalities	238	233	228	213	200
Serious injuries	1,032	1,009	837	814	758

Data sources: Washington State Traffic Safety Commission, Fatality Analysis Reporting System (FARS); WSDOT Transportation Data and Geographic Information Systems Office.
Note: 1 FARS data for 2013 is preliminary and may change until January 2015.

Traffic fatality and serious injury rates remain at historically low levels

Traffic-fatality and serious-injury rates are commonly expressed as rates per 100 million vehicle miles traveled (VMT). In 2003, U.S. Secretary of Transportation Norman Mineta set a national target to lower the fatality rate to 1.00 fatality per 100 million VMT by 2008. Washington state met the national target with a fatality rate of 1.00 in 2007 and since then has been consistently below the national benchmark. Like in 2012, Washington experienced a fatality rate of 0.77 fatalities per 100 million vehicle miles traveled in 2013, lower than the fatality rate of 0.80 for both 2010 and 2011. In 2012, the fatality rate for the nation was 1.13. The 2013 U.S. fatality estimate is not yet available. From 2009 through 2013, the serious injury rate in Washington dropped 29 percent from 4.69 to 3.35 per 100 million VMT.

Traffic fatality rates in Washington state continue to be below the U.S. average
1980 through 2013[1]; fatalities per 100 million vehicle miles traveled



Data sources: U.S. Fatality Analysis Reporting System (FARS) Encyclopedia; Washington Traffic Safety Commission, FARS; WSDOT Transportation Data and Geographic Information Systems Office.
Note: 1 FARS data for 2013 is preliminary and may change until January 2015.

Washington is driving toward state goals

Target Zero: Aiming for zero traffic deaths and serious injuries by 2030

Washington's Strategic Highway Safety Plan, "Target Zero," represents the state's vision for zero traffic fatalities and serious injuries by 2030 on all public roadways. Target Zero is a high-level strategic plan which:

- Sets statewide priorities over a three- to four-year period;
- Provides a resource for potential strategies; and
- Monitors outcomes at a statewide level.

To focus efforts, the primary contributing factors in fatal and serious injury collisions have been grouped into three priority levels. The levels are based on the percentage of traffic fatalities and serious injuries associated with these factors. Priority Level One (see table at right) includes the factors associated with the highest percentage of fatalities and serious injuries in the state. For Priority Level One factors, the number of fatalities have generally increased from 2012 to 2013 while the number of serious injuries have generally decreased.

While traffic data systems is not a cause of fatal or serious injuries, this factor is considered a Level One priority because better data is needed to improve the analysis of traffic collisions.

For more information on Target Zero, which includes Priority Levels two and three, see http://www.TargetZero.com.

Washington State Target Zero - Priority Level One
2011 through 2013; Number of fatalities and serious injuries

Year	2011	2012	2013[2]
Alcohol and/or drug impaired driver-involved			
Fatalities	199	202	185
Serious injuries[3]	479	501	411
Run-off-the-road[4]			
Fatalities	188	158	189
Serious injuries	627	612	579
Speeding-involved			
Fatalities	169	161	182
Serious injuries	586	579	527
Young driver; age 16 to 25			
Fatalities	146	126	152
Serious injuries	803	738	664
Distracted driver-involved			
Fatalities	131	121	113
Serious injuries[4]	251	212	494
Intersection-related[4]			
Fatalities	89	75	90
Serious injuries	757	751	668
Traffic data systems[6]	**	**	**

Data sources: Washington State Traffic Safety Commission - Fatality Analysis Reporting System (FARS), WSDOT - Transportation Data and Geographic Information System Office.
Notes: 1 Data for factors should not be added together as a collisions many involve more than one contributing factor 2 2013 fatality data is preliminary. 3 Not consistently confirmed by toxicology 4 WSDOT collision data is source for both injury categories. 5 Distracted driving coding was modified in 2013. 6 See *Gray Notebook* 46, p. 6 for a description.

WSDOT addresses run-off-the-road safety issues throughout Washington

There were 1,331 traffic fatalities and 6,252 serious injuries from 2011 through 2013. Of the 1,331 fatalities, 907 (68.1 percent) involved driver impairment, speeding, run-off-the-road, or a combination of these factors. There were 195 fatalities (14.7 percent) that involved all three factors. Each factor's contribution to fatalities has remained fairly steady for the last three years, with impaired driving occurring in 44 percent of the fatalities, and speed and run-off-the-road apparent in approximately 40 percent of all fatalities. Of the 6,252 serious injuries, 1,818 (29 percent) were a result of run-off-the-road collisions (see diagram, p. 3).

WSDOT addresses collision outcomes resulting from run-off-the-road collisions, largely with cable barrier and/or rumble strips. *Gray Notebook* 45, p. 5 explains how WSDOT is studying the effects of using a combination of centerline and shoulder rumble strips to reduce fatal and serious injury collisions on state highways. An ongoing pilot project is underway regarding rumble strips that are quieter for nearby neighbors but still provide enough noise to alert drivers when they stray from their lane.

More than half of all fatal and serious injury run-off-the-road collisions occur on roadway curves. To improve curve safety, WSDOT is installing additional and larger curve warning signs. Upgrades are planned for curves statewide that have a high speed difference between posted and advisory speeds of 15 mph or more.

A third option being tested involves applying a High Friction Surface Treatment (HFST) to curves with a high number of run-off-the-road collisions. HFSTs are pavement surface treatments with exceptional skid-resistant properties not typically provided by conventional pavement materials. WSDOT's Southwest Region applied HFST to the State Route 14 on ramp

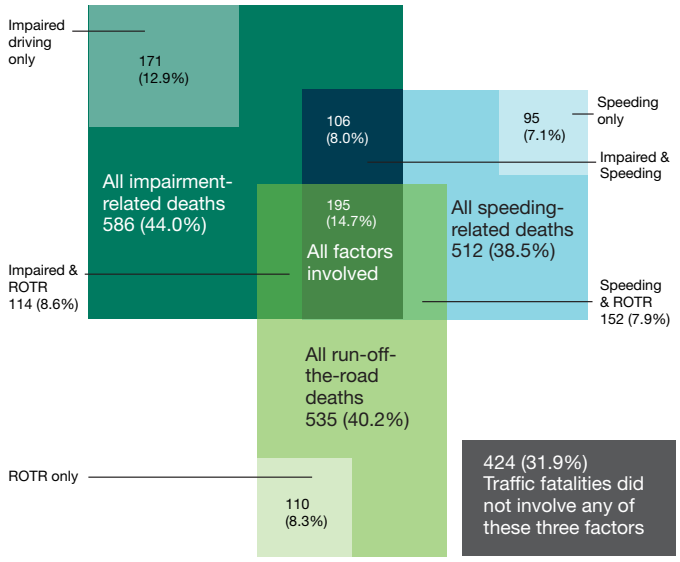
WSDOT making progress on Target Zero safety issues

from Southeast 164th Avenue. Initial results showed a reduction from 5.8 collisions per year prior to the installation to 1.3 collisions per year after the installation. These results are promising enough that five additional locations will be treated during the 2015-2017 biennium.

For more information on HSFT, see the Federal Highway Administration's brochure at http://www.fhwa.dot.gov/everydaycounts/edctwo/2012/pdfs/hfst_brochure.pdf.

The role of impairment, speed or run-off-the-road in traffic fatalities, 2011 through 2013[1]

Data derived from 1,331 total traffic fatalities; 68.1 percent or 907 deaths involved driver impairment, speeding or run-off-the-road (ROTR), or a combination of these factors



Data sources: Washington State Traffic Safety Commission, Fatality Analysis Reporting System (FARS); WSDOT Transportation Data and Geographical Information System Office.
Note: 1 FARS data for 2013 is preliminary and may change until January 2015.

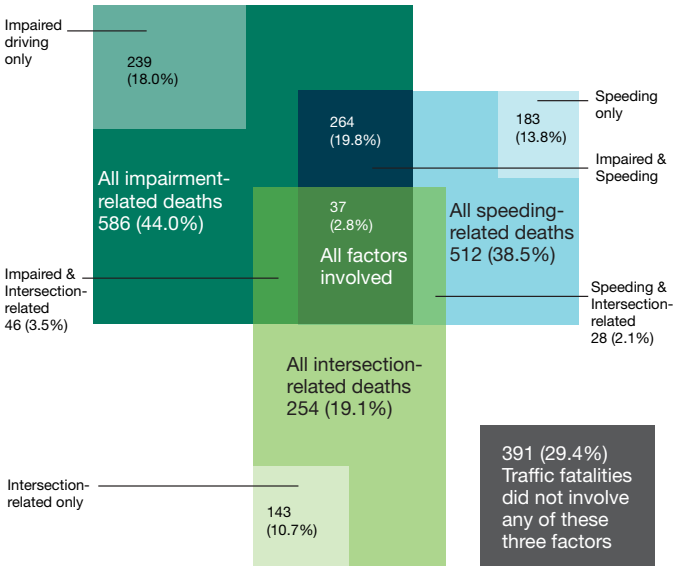
WSDOT takes action on statewide intersection-related safety issues

The following diagram shows the same factors of driver impairment or speeding in relationship to intersections. Among the same 1,331 fatalities noted, 940 (70.6 percent) involved driver impairment, speeding, intersection-related, or a combination of these factors. There were 37 fatalities (2.8 percent) that involved all three factors simultaneously. Intersection-related collisions accounted for 254 fatalities (19 percent) and 2,176 serious injuries (35 percent).

WSDOT plans to install low-cost signing and striping improvements at approximately 300 state highway

The role of impairment, speed or intersection-related in traffic fatalities, 2011 through 2013[1]

Data derived from 1,331 total traffic fatalities; 70.6 percent or 940 deaths involved driver impairment, speeding or intersection-related, or a combination of these factors



Data sources: Washington State Traffic Safety Commission, Fatality Analysis Reporting System (FARS);WSDOT Transportation Data and Geographic Informaiton System Office.
Note: 1 FARS data for 2013 is preliminary and may change until January 2015.

intersections without traffic signals during the 2015-2017 biennium. A large percentage of all intersection collisions (40 to 50 percent) occur at 9 percent of the state's unsignalized intersections. Applying these safety improvements at unsignalized intersections can provide benefits at a relatively low cost.

For more information on low-cost systemic approaches to intersections, see http://safety.fhwa.dot.gov/intersection/resources/intersaf_ipp0709/fhwasa10010.pdf, pp. 5-12.

WSDOT is also testing dynamic intersection warning systems. These systems detect approaching vehicles and then warn mainline or side street traffic about the approaching traffic. Other states have tested this system and have seen positive results.

More information about dynamic intersection warning systems can be found at the Federal Highway Administration's website http://safety.fhwa.dot.gov/intersection/resources/fhwasa11015/sa11015.cfm.

Contributors include Mike Bernard, Mike Dornfeld, Mark Finch, Staci Hoff, Jennene Ring, Pat Whittaker, Dan Davis and Sreenath Gangula

54 Asset Management: Bridge Annual Report

Notable results

- *Ninety-two percent of state and local bridges measured by deck area are in fair or better condition; 8% are structurally deficient*
- *Of the 3,286 bridges WSDOT manages, 137 have weight restrictions*
- *Measured by deck area, 9.3% of bridges on the National Highway System in Washington are structurally deficient*
- *WSDOT cleaned 44 fracture critical bridges in fiscal year 2014*

Bridge conditions remain steady from previous year

Ninety-two percent of the state-owned bridges by deck area were in fair or better structural condition as of June 2014, the same as in June 2013. In terms of the number of bridges, 96 percent of state-owned bridges were in fair or better condition as of June 2014.

The percentage in fair or better condition is greater in terms of the number of bridges compared to the percentage of deck area because several large bridges — the State Route (SR) 99 Alaskan Way Viaduct and the SR 520 floating bridge — are classified as structurally deficient.

Combined, these two bridges (which are currently being replaced) account for 2 percent of the state-owned bridge deck area in Washington. When construction is completed on these projects in 2017, the percentage of bridge deck area in fair or better condition is expected to improve to 94 percent. In total, there are 24 bridges that account for 1.3 million square feet (2.7 percent of WSDOT-managed bridge deck area) that are in poor condition but are under contract for repair. Once these 24 bridge repairs or replacements have been completed and inspected, they will no longer be considered in poor condition.

Measuring bridge conditions by deck area provides a more comprehensive measure than by number of

WSDOT's percent of bridges by deck area in good condition declines between 2009 and 2014
Number of bridges and percent of bridges by deck area by condition category; Deck area in millions of square feet

STRUCTURAL CONDITION		2009	2014	Trend	Overall Desired Trend
GOOD/VERY GOOD Bridges in good condition range from those with no problems to those having some minor deterioration of structural elements.	Number of bridges	2,828	2,855	↓	↑
	Percent of bridges	89.3%	86.9%		
	Bridge deck area	37.9	37.3	↓	
	Percent of deck area	82.4%	80.1%		
FAIR All primary structural elements are sound; may have minor section loss, deterioration, cracking, spalling or scour. This is the most cost-effective time to rehabilitate before the underlying structure is damaged. By doing this, the agency manages to the lowest life cycle cost.[1]	Number of bridges	261	290	↑	↓
	Percent of bridges	8.2%	8.8%		
	Bridge deck area	5.3	5.5	↑	
	Percent of deck area	11.5%	11.7%		
POOR A bridge in poor condition has advanced deficiencies such as section loss, deterioration, scour, or seriously affected structural components, and may have weight restrictions. A bridge in poor condition is still safe for travel.	Number of bridges	78	141	↑	↓
	Percent of bridges	2.5%	4.3%		
	Bridge deck area	2.8	3.8	↑	
	Percent of deck area	6.1%	8.2%		

Data source: WSDOT Bridge and Structures Office.

Notes: The above condition data only includes state-owned bridges.1 Lowest life cycle cost methodology uses preventative maintenance to preserve the useful life of an asset and minimize maintenance costs over the life of an asset. This method assures that an asset is maintained at an acceptable condition, maximizing safety and useful life.

WSDOT manages 141 structurally deficient bridges

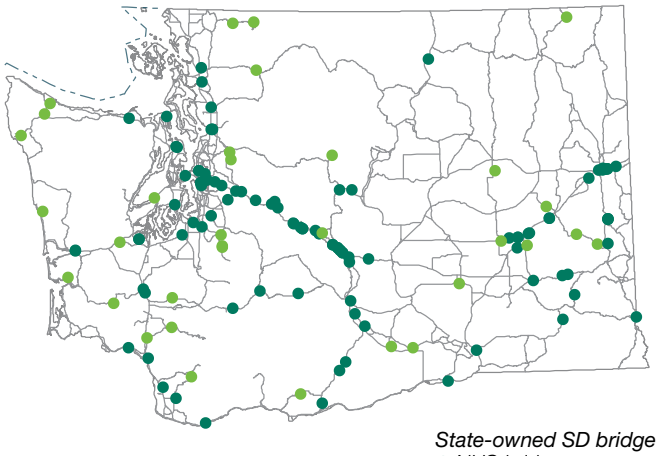
bridges because it factors in bridge size and magnitude. Reporting by deck area aligns with federal requirements of Moving Ahead for Progress in the 21st Century regulations (see table below and gray box in *Gray Notebook* 50, p. 13) and Gov. Jay Inslee's performance management system, Results Washington (see p. vii).

Eight percent of bridges by deck area are structurally deficient

Structurally deficient bridges represented 8 percent (4.9 million square feet) of the total 61.8 million square feet of bridges in Washington as of June 2014. By number of bridges, 4.7 percent (341 bridges) of the 7,313 total bridges in the state were considered structurally deficient. A bridge is considered structurally deficient if it has deterioration on the deck, superstructure (everything above the supporting structure, such as the roadway beams and girders), and/or substructure. A bridge with a rating of four or lower on a scale of one to nine is rated as structurally deficient and also rated as poor by WSDOT (see table in *Gray Notebook* 50, p. 14).

Of the 341 state and local structurally deficient bridges in Washington as of June 2014, 141 were state-owned bridges managed by WSDOT, a slight increase from 138 in 2013. WSDOT's 141 structurally deficient bridges account for 3.8 million square feet of deck area, which is

141 State-owned structurally deficient (SD) bridges — *of these* — **99** are on the National Highway System (NHS)



Data source: WSDOT Bridge and Structures Office
Note: Some dots overlap due to proximity

The map above shows the locations of state-owned structurally deficient bridges. These bridges represent 3.8 million square feet of deck area, or 8.2 percent of the total deck area for bridges managed by WSDOT. In addition to the bridges shown above, there are 175 locally-owned structurally deficient bridges in Washington, 28 of which are on the National Highway System.

Structurally deficient bridges in Washington state
As of June 2014; Deck area in millions of square feet; Percent of bridges and deck area considered structurally deficient (SD)

	National Highway System		Statewide	
	Number of bridges	Deck area	Number of bridges	Deck area
State-owned	2,259	39.2	3,286	46.6
Amount SD (%)	99 (4.4%)	3.6 (9.1%)	141 (4.3%)	3.8 (8.2%)
Locally-owned[1]	199	3.8	4,027	15.2
Amount SD (%)	28 (14.1%)	0.4 (11.8%)	200 (5.0%)	1.1 (7.4%)
Total	2,458	43.0	7,313	61.8
Amount SD (%)	127 (5.2%)	4.0 (9.3%)	341 (4.7%)	4.9 (8.0%)

Data source: WSDOT Bridge and Structures Office.
Notes: Structurally deficient is equal to the state's poor condition rating.
1 Bridges owned by counties and cities.

8.2 percent of the bridge deck area owned by WSDOT and 6.2 percent of all (state and local) bridge deck area in Washington. The number of state-owned structurally deficient bridges is projected to decrease to 137 bridges by 2019. This forecast is based on an expectation of how current funding will be applied to the bridge network, as well as likely bridge deterioration such as concrete deck and timber bridge deterioration, and steel bridge corrosion resulting from postponed painting.

The total deck area of structurally deficient bridges on the National Highway System (NHS) in Washington fell 3 percent, from 4.1 million in 2013 to 4.0 million in 2014. See p. 6 for a description of the National Highway System.

State and federal performance measures focus on bridges

New federal legislation, Moving Ahead for Progress in the 21st Century (MAP-21), will require that states have no more than 10 percent of bridge deck area classified as structurally deficient on the NHS. States failing to

Bridge condition reporting requirements
Condition targets by performance reporting system

Performance reporting system	Target	Which bridges are included?
Moving Ahead for Progress in the 21st Century (MAP-21) (see p. v)	≤10% of deck area on structurally deficient (poor condition) bridges	All NHS bridges (state- and locally-owned)
Results Washington (see p. vii)	≤10% of deck area on structurally deficient (poor condition) bridges	All NHS bridges (state- and locally-owned)
Governmental Accounting Standards Board (GASB)	≥90% of bridge deck area in fair or better condition	All state-owned bridges (NHS and non-NHS)

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

Bridge load restrictions help ensure public safety

meet this target for three consecutive years must then devote National Highway Performance Program funds to improve bridge conditions. Results Washington (see p. vii) and MAP-21 set a target of having no more than 10 percent of National Highway System bridge deck area classified as structurally deficient (poor condition).

In addition, the state is required to follow Generally Accepted Accounting Principles, which include pronouncements from the Governmental Accounting Standards Board (GASB). This board governs the financial reporting of infrastructure assets, and requires WSDOT to maintain an up-to-date inventory of assets for which it performs and documents condition assessments. For the purpose of GASB reporting, WSDOT has a bridge condition goal of 90 percent of state-owned bridge deck area in fair or better condition.

Most WSDOT managed bridges are on the National Highway System

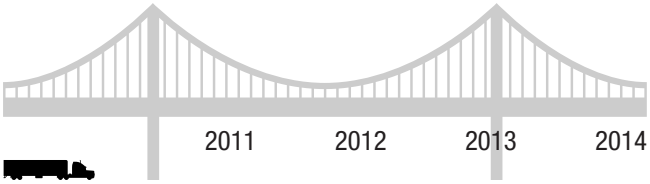
The NHS is a network of strategic highways within the United States, and includes both state and local highways and roads serving major airports, ports, rail and/or truck terminals, pipeline terminals and other transport facilities. Washington's NHS includes 2,458 bridges, 2,259 (92 percent) of which are managed by WSDOT. The remaining 199 (8 percent) are managed by cities and counties.

According to the Federal Highway Administration (FHWA), Washington ranked 13th highest in the nation in terms of the amount of structurally deficient bridge deck area on the NHS for state and local bridges in 2013.

FHWA rates bridges for structural deficiency by calendar year, using the same data and condition rating scale WSDOT uses for good, fair and poor condition. Unsafe bridges are closed and are not counted in WSDOT's rating.

Bridges rated as poor or structurally deficient have some deficiencies and are in need of future repair or replacement. The majority of WSDOT's bridge assets are in good condition today, and keeping bridges in good shape in the future requires the continued ability to maintain and preserve bridges to maximize their full service life. A bridge reaches its full service life when it is restricted from carrying legal size loads due to structural deterioration.

WSDOT has 137 load posted or load restricted bridges
Fiscal years (July through June), 2011-2014; Number of bridges with weight restrictions



	2011	2012	2013	2014
[redacted] LOAD POSTED	17	15	14	13
[redacted] LOAD RESTRICTED	125	133	126	124
TOTAL	**142**	**148**	**140**	**137**

Data source: WSDOT Bridge and Structures Office.
Note: On load posted bridges, truck weights are restricted to a posted weight limit that is less than typical legal limits. On load restricted bridges, trucks must comply with reduced axle weights that are lower than typical legal limits.

Number of load posted and restricted bridges declines

A total of 137 WSDOT bridges were load posted or restricted in 2014, down from 140 in 2013. As part of the bridge inspection program, WSDOT performs load rating tests to verify whether bridges can safely carry the weight of trucks using them. Bridges are designed to carry the standard truck weight load when they are built. If results show the structure cannot safely carry certain loads, WSDOT implements weight restrictions to reduce the risk of further damage:

- On load posted bridges, truck weights are restricted to posted weight limits that are less than typical legal limits.
- On load restricted bridges, trucks must comply with reduced axle weights that are lower than typical limits.

No load posted bridges on major freight corridors in Washington

About one-third (40 bridges) of WSDOT's load posted or restricted bridges are on T-1 or T-2 freight corridors. Most of these are load restricted bridges, which affect large loads that are over legal weight limits. Trucking companies must obtain a special permit to haul loads that are over the legal limit. When a bridge is load restricted, trucks can be equipped with special trailers to distribute the weight or drivers can take an alternate route. Most bridge restrictions impact the movement of large equipment. Trucking companies that use alternate routes must factor the cost of transporting their freight as part of

WSDOT performs 1,892 bridge inspections in FY2014

their operating costs. An increase in these transportation costs will eventually be transferred to consumers.

As of June 2014, there were no load posted bridges on T-1 freight corridors (routes carrying more than 10 million annual tons), and two load posted bridges on T-2 freight corridors (routes carrying four to 10 million annual tons). Bridges with load postings below the legal weight limit can impact routine freight movement, such as garbage trucks or trucks delivering goods to grocery stores. An online map of load restricted and load posted bridges in Washington state is available at http://www.wsdot.wa.gov/commercialVehicle/Restrictions/Default.aspx.

WSDOT's bridge inventory grows

The state-owned bridge inventory WSDOT manages included 3,829 structures as of June 2014. These add up to 46.6 million square feet of deck area, which is equal to about 736 lane miles, approximately the distance on Interstate 5 between Federal Way and Sacramento, California.

WSDOT has added 16 vehicular bridges (plus another 19 bridge structures) to its inventory since June 2013, primarily due to new bridges being built. The average age of WSDOT's vehicular bridges is 44 years. WSDOT has 283 bridges that are 75 years old or older, which have 1.95 million square feet of total deck area.

WSDOT bridge inventory increases by 35 in FY2014
Inventory of WSDOT bridges as of June 2014

	Number
Vehicular bridges longer than 20 feet	3,093
Structures less than 20 feet long	402
Culverts longer than 20 feet	131
Pedestrian structures	76
Ferry terminal structures	68
Tunnels and lids	43
Border bridges maintained by border state[1]	6
Border bridges maintained by WSDOT[2]	5
Railroad bridges	5
Total WSDOT bridge structures	**3,829**

Data source: WSDOT Bridge and Structures Office.
Notes: Total of 3,829 does not equal the total number of state bridges on p. 5 (3,286), because it includes additional structure types.
1 WSDOT funds 50 percent of the preservation for 11 border bridges. Six of these bridges are maintained by the border state (five with Oregon and one with Idaho). 2 Four of these bridges are shared with Oregon and one with Idaho.

WSDOT plans to perform 1,892 bridge inspections
Fiscal year 2014[1]; Number of inspections by type

Type of inspection	Number
WSDOT routine bridge inspection	1,504[2]
WSDOT under bridge inspection truck (UBIT) bridge inspections	267[3]
Local agency UBIT inspections	69
WSDOT routine ferry terminal inspections	24
Fracture critical ferry terminal inspections	20
Local agency routine inspections	8
Total WSDOT bridge inspections	**1,892**

Data source: WSDOT Bridge and Structures Office.
Notes: 1 July 2013 through June 2014. 2 Of these, 151 are on a four-year inspection frequency. 3 Of these, 92 are for fracture critical bridges.

Inspection program ensures that bridges open to public are safe

WSDOT manages bridges through inspection, maintenance, rehabilitation and replacement. These are essential aspects of bridge management to prolong their service life, keep costs down and maintain bridge safety.

The Federal Highway Administration (FHWA) mandates that all publicly-owned bridges be inspected at least once every two years with a few exceptions. WSDOT performs federally mandated inspections on all state-owned bridge structures as outlined in the National Bridge Inspection Standards to determine bridge conditions, and preservation and maintenance needs. Local agencies follow the same guidance for inspections as the state; bridges are inspected at least once every two years using the same national inspection standards. Even though most local governments inspect their own bridges, WSDOT conducts field reviews and provides training and technical assistance to Washington cities and counties for inspecting bridges on local roads.

While the majority of WSDOT's bridges are inspected on a two-year cycle, there are eight bridges with specific watch items that are inspected annually. Currently, a total of 453 concrete bridges that are in good condition and meet defined FHWA criteria are inspected on a four-year cycle.

Bridge engineers also perform specialized work to determine the condition of selected elements of a bridge (such as fracture critical members and mechanical elements on movable bridges), along with the routine inspections.

WSDOT strategically preserves bridge assets

WSDOT develops a plan for cleaning fracture critical bridges in the state

WSDOT received a letter from the FHWA in December 2013, outlining corrective actions and underscoring the need to clean fracture critical bridges so they could be properly inspected. A bridge or structure is classified as fracture critical if it contains any support members (a piece/member of a bridge structure that is under tension, where failure would likely cause a portion of or the entire bridge to collapse). For information on fracture critical bridge conditions in Washington, see *Gray Notebook* 50, p. 7. The letter outlined specific actions to address the issue:

- Action 1: Identify a prioritized list of state-owned fracture critical member bridges needing to be cleaned. This was completed by WSDOT in March 2014.
- Action 2: Institute and fund a bridge cleaning program to clean state-owned bridges prior to performing a bridge inspection. WSDOT increased maintenance spending by $2 million starting in the 2013-2015 biennium to implement the cleaning plan. Bridge cleaning and inspection of state fracture critical bridges began in January 2014; all of these bridges will be inspected and washed on an annual cycle by January 2017.
- Action 3: Develop a local agency bridge list and plan for addressing bridge cleaning, which was done by WSDOT in March 2014. This list includes about 70 structures for which local agencies are responsible to fund the cleaning efforts. The plan of corrective action will be amended to incorporate the local agency prioritized list of bridges and specific action items.
- Action 4: Report on progress of bridge cleaning for state and local bridges quarterly beginning in March 2014. During the first year of the program (fiscal year 2014), WSDOT completely cleaned 44 state bridges and partially cleaned six. Despite the current bridge cleaning backlog, WSDOT expects to be caught up by 2017. Of the 70 local agency bridges, half have been inspected to date.

Maintenance plans $10.6 million in bridge repairs during biennium

WSDOT employs various strategies to extend the service life of its assets, while minimizing life cycle costs. These strategies include performing day-to-day maintenance repairs as well as bridge preservation work to ensure bridge assets do not deteriorate to a condition that is beyond repair. Bridge maintenance work is mainly performed by WSDOT regional crews and is often completed within a matter of days.

Hundreds of maintenance repairs are needed each year on bridges throughout the highway system. During the 2013-2015 biennium, crews plan to perform $10.6 million in structural bridge repairs, which include a combination of Priority 1 (highest priority) through Priority 3 (lowest priority) repairs. In FY2014, 54 percent of Priority 1 repairs were completed, leaving a 46 percent backlog. Refer to *Gray Notebook* 50, p. 7, for more information on bridge maintenance.

WSDOT uses cost-effective strategies to preserve bridges

Through the use of strategic asset management, timely bridge maintenance and preservation, WSDOT can maximize the useful service life of bridges. This work helps keep bridges safe and serving the public at the least cost to taxpayers.

In contrast to maintenance repairs, WSDOT mainly hires private sector contractors to perform preservation work. Bridge preservation strategies WSDOT uses include rehabilitating or replacing bridge elements, repainting steel bridges, and overlaying concrete bridge decks. A bridge is considered for replacement when the problem causing the structural deficiency may reduce the load-carrying capacity of the bridge, and the cost of rehabilitation is more than 50 percent of the replacement cost.

Strategy: Replace deteriorated bridge elements

WSDOT had nine rehabilitation projects underway between July 2013 and June 2014, which repaired or replaced bridge elements. This work included completing the

Between January and early spring 2014, WSDOT replaced 33 expansion joints across northbound and southbound I-5 in downtown Seattle. The original 50-year-old expansion joints were replaced with new, watertight joints that can bend and flex as the concrete expands and contracts with changing traffic and weather patterns, improving safety for drivers.

One third of steel bridges are due for painting

Interstate 5 (I-5) Skagit River bridge, replacing bridge expansion joints along I-5 in downtown Seattle, replacing anchor cables on the two I-90 floating bridges across Lake Washington, and completing expansion joint repairs on the eastbound Tacoma Narrows Bridge.

Bridge rehabilitation projects address specific bridge elements needing repair; the most common types of repairs include expansion joint replacement, concrete column repair, and anchor cable replacements on floating bridges.

Strategy: Repainting steel bridges keeps bridges in fair or good condition

WSDOT has completed painting on three bridges and plans to complete 11 repainting projects on eight steel bridges by the end of the 2013-2015 biennium, with a total estimated cost of $54.8 million. These bridges include the State Route (SR) 99 George Washington Aurora Avenue Bridge in Seattle, six steel trusses on I-5 from Woodland to Ferndale and four other bridges across the state. In addition, WSDOT will share the cost of repainting the U.S. 101 Columbia River Astoria Bridge with Oregon.

WSDOT needs $694 million for 10-year steel bridge painting plan

Fiscal years (FY) 2013 through 2023; Planned projects and spending for 2013-2015 biennium; Dollars in millions

Painting needs	Number of bridges	Cost to repaint
Currently due or past due[1]	110	$467.0
11 projects planned for 2013-2015 biennium[2]	8.5[3]	$54.8
Remaining backlog	**101.5**	**$412.2**
Due within the next 10 years	43	$282.0
10-year total need	**144.5**	**$694.2[3]**

Data source: WSDOT Bridge and Structures Office.

Notes: 1 There are 56 bridges that are currently past due and 54 that are due for painting. 2 WSDOT painted three bridges, and plans to complete 11 additional projects on eight bridges, and share the cost of the U.S. 101 Astoria bridge with Oregon in the 2013-2015 biennium. 3 The projected 10-year total need increased from $486.2 million since being reported in Gray Notebook 50, p. 9, due to the cost of paint increasing from $40 to $50 per square foot.

Both spans of the Interstate 5 Nooksack River Bridge near Ferndale (pictured above) are scheduled for painting in 2014. To protect the bridge for years to come, crews will remove rust, old paint and other debris, and put on fresh coats of primer and paint.

A protective paint coating on a steel bridge is essential for preventing corrosion, extending the bridge's service life and keeping the bridge in fair or better condition. Keeping up with painting can stretch taxpayer dollars and prevent the number of bridges in poor condition from increasing.

Bridges are prioritized for repainting based on the amount of corrosion and the route on which they are located. Bridges on primary freight routes are given top priority. Steel truss bridges should be repainted every 20 to 25 years on average and newer steel girder bridges should be painted approximately every 40 years. Bridge painting is a major repair project with significant costs due to the complexity of safety, environmental regulations and containment system requirements. On average, a steel truss bridge is considered in poor condition if it has been due for painting for at least five years, or 10 years for steel girder bridges.

Cost of painting for due or past due bridges totals $467 million

WSDOT manages 323 steel bridges of which 110 are currently due or past due to be repainted. The estimated cost to paint these 110 bridges is $467 million. Forty-three additional bridges are expected to become due for painting in the next 10 years with a total estimated cost of $282 million. This biennium's planned funding to complete painting on eight bridges plus provide half the cost of the U.S. 101 Astoria Bridge represents about $54.8 million, which is 7.9 percent of the total 10-year need.

WSDOT completes routine bridge cleaning research

Bridge washing programs around the country were established and are executed in order to allow for easier structural inspections based on the idea that bridge washing extends the life of the bridge coating.

In partnership with the University of Washington, WSDOT conducted a search of current literature and a survey of other state departments of transportation to quantify the benefits of cleaning steel bridges versus the costs associated with the expected deterioration if a bridge is not cleaned. The research project was unable to demonstrate a clear cost-benefit basis for the annual washing of steel bridges.

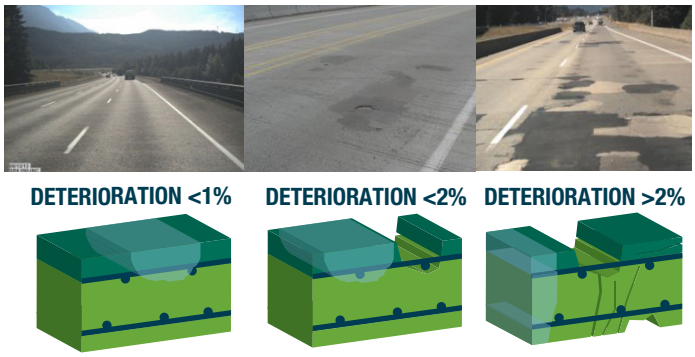
WSDOT completes 11 bridge deck overlay projects

Strategy: Repairing concrete bridge decks extends service life

WSDOT completed 11 bridge overlay projects to date within a total budget of $8.4 million for the 2013-2015 biennium. WSDOT is also in the process of replacing the concrete deck on the I-5 Stillaguamish River southbound bridge north of Marysville. This project has a total budget of $8.5 million. WSDOT has one concrete overlay project planned for the 2015-2017 biennium. In addition to these overlay projects, WSDOT maintenance crews plan to spend $2.8 million for bridge deck repairs. For the first half of the biennium (fiscal year 2014), 31,000 square feet of bridge deck repairs have been completed.

A concrete overlay repairs an existing concrete bridge deck, providing corrosion protection for the steel reinforcing and roadway surface. WSDOT crews routinely provide temporary repairs in the form of quick-cure patching materials to keep bridges in service. These repairs normally have a service life of a few years. A full bridge deck rehabilitation and concrete overlay provides a longer service life of at least 25 years and is more cost-effective for bridge decks that have repeated deterioration, yet is less expensive than replacing the entire deck or bridge.

A bare concrete deck is due for repair and overlay when 2 percent or more of the area is deteriorated or has had previous maintenance repairs. This is also the trigger that will classify a bridge as structurally deficient. Bridges programmed for overlay are prioritized based on the total square footage of deterioration and the type of freight route on which the bridge is located. Bridges on the most important freight routes are prioritized first.



A bridge deck is in good condition (shown above left) with less than 1 percent deterioration. A concrete bridge deck is classified as fair (above center) when the surface shows 2 percent patching, but the underlying structure is not damaged. This is the most cost-effective time to perform repairs. Waiting until a deck is in poor condition (above right) costs more because damage cannot be repaired and the deck must be replaced. These decks are at high risk to damage vehicles and often require emergency repairs which disrupt traffic.

National Transportation Safety Board presents findings for Skagit River Bridge collapse

The National Transportation Safety Board (NTSB) held a board meeting on July 15, 2014, to present their findings and safety recommendations for the Interstate 5 Skagit River Bridge collapse. On May 23, 2013, a span of the Skagit River Bridge collapsed after an over-height truck struck the top of the low-clearance steel through-truss bridge. Between 2008 and 2013, 10 through-truss bridges in Washington have been struck a total of 15 times. Including the Skagit River Bridge, four bridges in Washington have failed due to over-sized vehicles (see *Gray Notebook* 46, p. 13, for more information on historical WSDOT bridge failures).

WSDOT is currently working to enact the recommendations of the NTSB. This includes improving freight industry access to route data so that trucking companies can better plan travel routes of oversized loads. A copy of the presentation as well the NTSB's preliminary report can be accessed at http://www.ntsb.gov/investigations/2013/mt_vernon_wa/mt_vernon_wa.html.

Results Washington Leading Indicator

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

Status: At risk (yellow)

Strategies:

1. **Replacing deteriorated bridge elements** - WSDOT performs major preservation repairs by addressing specific bridge elements to improve a bridge with a low condition rating. The most common types of repairs include floating bridge anchor cable replacement, expansion joint replacement and concrete column repair.
2. **Repainting steel bridges** - A protective paint coating on a steel bridge is essential to prevent corrosion, extend the bridge's service life and keep the bridge in fair or better condition. Continuing to keep up with painting can prevent the number of bridges in poor condition from increasing.
3. **Repairing concrete bridge decks** - WSDOT is working to reduce the number of bridges classified as structurally deficient by addressing bridges with the highest benefits and the most cost savings. One strategy to do so is to repair and rehabilitate concrete bridge decks to extend their service life.

Percent of bridges on the NHS that are structurally deficient (by deck area)	
State-owned (see p. 5)	9.1%
Locally-owned (see p. 5)	11.8%
Combined (see p. 5)	9.3%

Immediate mitigation for at risk or off plan status:

WSDOT is seeking funding of a new transportation revenue package with funding for asset preservation.

Bridge Asset Management Plan prioritizes investments

City, county bridges remain in good condition
Local agency bridge conditions as of June 2014

	County bridges		City bridges		Total[1]	
Condition	**% of bridges**	**% of deck area**	**% of bridges**	**% of deck area**	**% of bridges**	**% of deck area**
Fair or better	**96%**	**96%**	**94%**	**90%**	**96%**	**93%**
Good	83%	85%	77%	75%	82%	80%
Fair	13%	11%	17%	15%	14%	13%
Poor	**4%**	**4%**	**6%**	**10%**	**5%**	**7%**

Data source: WSDOT Local Programs Office.
Note: The percent of deck area of bridges in each rating category is calculated out of total deck area of all county- or city-owned bridges.
1 Percents may not add to 100 due to rounding.

Most local bridges are in good condition

There are 7,300 bridges across Washington on city streets, county roads and state highways. Of these, more than 4,000 are locally owned and support an average of 10 million crossings per day. Approximately 5 percent of Washington's local bridges are considered to be in poor condition in 2014, remaining steady from 2013. Keeping them in good repair is necessary to avoid much larger replacement costs in the future.

From an analysis of the deck area that cities and counties maintain, it is clear they have similar roles to WSDOT in managing Washington's local bridges. Federal funding has helped local agencies maintain their bridges with limited funding since 1978. The most critical near-term local bridge needs include:

- A statewide study to determine seismic vulnerability of local bridges
- Flexibility to conduct bridge strengthening as part of preservation (previously ineligible for federal funding)
- Improving weight restricted and load posted bridges
- Addressing identified bridge "bottlenecks"
- Partnership funding for regionally significant bridges
- Flexibility to fund priority projects on community access bridges longer than 20 feet (previously ineligible for federal funding)

In order to maintain the current bridge condition ratings for locally-owned bridges and avoid more weight restrictions and load posted bridges, continued investment in preservation is needed.

Contributors include Rico Baroga, Kyle McKeon, Bruce Thill, DeWayne Wilson and Alison Wallingford

Bridge Asset Management Plan

WSDOT's Bridge Asset Management Plan focuses on achieving the greatest return through available investments. WSDOT utilizes the lowest life cycle cost (LLCC) model, which uses incremental preventative maintenance activities to preserve the life of the asset while avoiding more costly repairs. WSDOT's bridge asset management goals are based on the following critical categories, ranked from highest to lowest priority:

1. Border bridges: These are interstate responsibilities with Oregon or Idaho, which are the highest obligation held by WSDOT in bridge asset management. For more information on WSDOT's border bridges, see *Gray Notebook* 50, p. 12.

2. Scour critical bridges: "Scour" refers to the erosion of stream bed material from under bridge foundations; bridges are classified as "scour critical" if they have the potential for scour depth to be lower than the foundation. Scour failure is the most common reason for bridge collapse in Washington and the U.S. Addressing scour critical bridges is a high priority due to safety concerns and to avoid emergency repairs. WSDOT currently has one bridge under contract for scour repair (SR 108 Wildcat Creek bridge near McCleary; see *Gray Notebook* 50, p. 11).

3. Bridge repairs: Including anchor cable replacements on floating bridges and repairs to keep movable bridges functional.

4. Bridge painting: LLCC methodology says to paint a bridge when it is due, before serious deterioration of the coating system occurs. Waiting until significant corrosion attacks the steel is a "worst first" methodology that wastes money and is more expensive.

5. Bridge deck repair and overlays.

6. Replacement and rehabilitation of structurally deficient bridges.

7. Seismic retrofits: All planned projects are under contract or have been completed. Due to current bridge preservation needs and a lack of funding, no new projects are planned.

8. Miscellaneous structures (sign bridges, walls, etc.)

9. Timber bridges: WSDOT's long-term plan is to eliminate all timber bridges (there are about 90 remaining) due to the long-term maintenance concerns and the difficulty in inspection.

10. Functionally obsolete bridges: A bridge is functionally obsolete if its design is not suitable for current traffic needs. More than a quarter of the bridges owned by WSDOT are classified as functionally obsolete.

54 Ferries Vessel and Terminal Preservation Annual Report

Notable results

- *One of three new 144-car vessels, the M/V* Tokitae*, is complete and started service this summer*
- *The number of vessel systems that are past due for replacement increased from 7% in calendar year 2012 to 9% in fiscal year 2014*
- *More than 88% of WSDOT Ferries Division's terminal systems are in fair or better condition*
- *WSDOT is using a new economic-based asset management model to help prioritize its ferry terminal projects*

Vessel systems backlog grows in fiscal year 2014

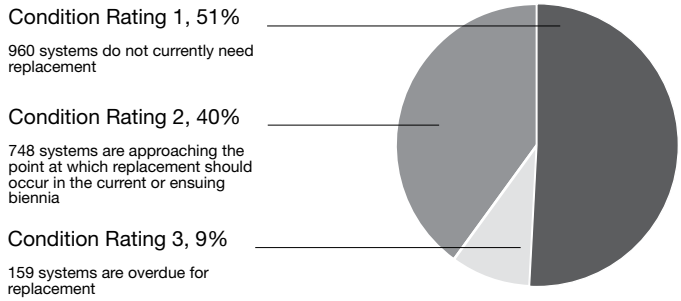
The preservation backlog for the 1,867 systems — ranging from rudders and rescue boats to mechanical systems — in WSDOT Ferries Division's 22 vessel fleet increased in fiscal year (FY) 2014 (from July 2013 to June 2014) compared to calendar year (CY) 2012. Systems that are currently overdue for replacement make up the vessel system backlog.

WSDOT uses a risk assessment guide to help rate the condition of its vessel systems, assigning 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 graph below).

For example, when a propulsion system fails, the vessel is immediately taken out of service, with repairs potentially taking several months to complete. Removing a vessel from service can result in trip cancellations or delays in service if no suitable spare vessel is available. Due to this high consequence of failure and to ensure continued service, propulsion systems are elevated to Condition Rating 3 earlier in their life cycle than other, less critical systems. Conversely, topside vessel paint coating is less critical because the probability of disrupting service is low, even as it passes the end of its useful life. The consequences of failure are less critical, but may result in the slow process of corrosion (rust).

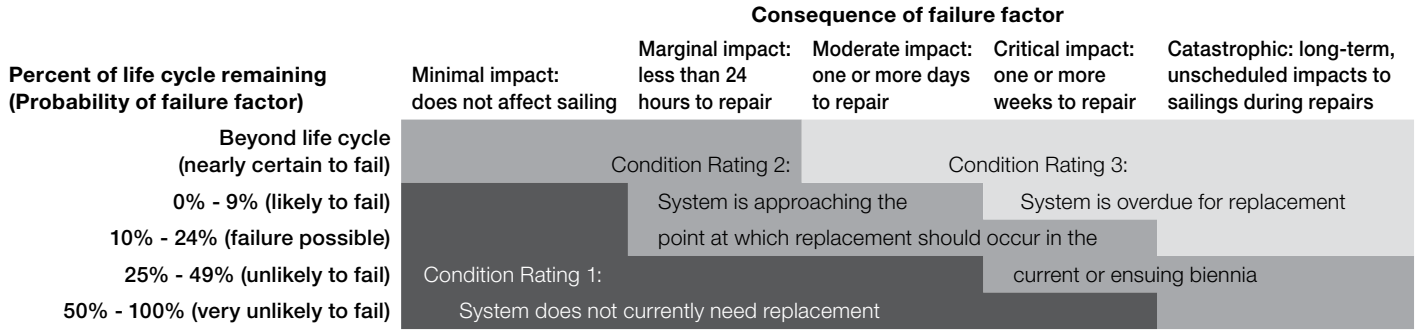
The number of vessel systems included in Condition Rating 1 (systems not needing replacement) decreased

Nine percent of WSDOT Ferries vessel systems are past due for replacement
Fiscal year 2014; Inspection results by number of systems



Data source: WSDOT Ferries Division.

WSDOT risk assessment matrix 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 Division.

More vessel systems are past due for replacement

7 percentage points from 58 percent overall in CY2012 to 51 percent in FY2014 (the timing of this article has changed from *Gray Notebook* 49 to align with fiscal years). Meanwhile, the number of vessel systems with a rating of 2 (approaching the need for replacement) increased from 35 percent to 40 percent and the number of systems with a rating of 3 (overdue for replacement) increased from 7 percent to 9 percent. These numbers do not include the 60-year-old Motor/Vessel (M/V) *Evergreen State*, which is scheduled to be retired by the end of the 2013-2015 biennium.

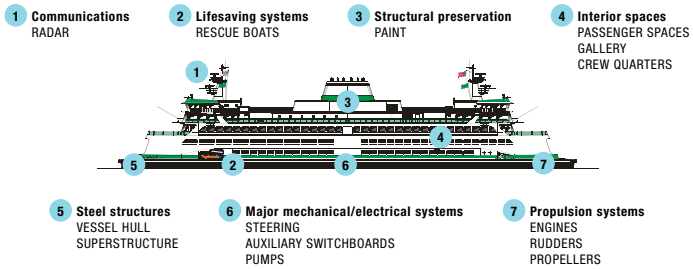
More than half of Ferries' 1,867 vessel systems are not in need of replacement
Fiscal year 2014; Inspection results by vessel

	Number of Ferry vessels systems	Year built or rebuilt	Percent of systems in Condition Ratings[1] 1	2	3
M/V *Tacoma*	96	1998	47%	49%	4%
M/V *Wenatchee*	96	1998	51%	46%	2%
M/V *Puyallup*	96	1999	52%	43%	5%
M/V *Spokane*	90	1972	54%	39%	7%
M/V *Walla Walla*	90	1973	54%	38%	8%
M/V *Hyak*	90	1967	33%	44%	22%
M/V *Kaleetan*	90	1967	46%	43%	11%
M/V *Yakima*	89	1967	42%	46%	12%
M/V *Elwha*	91	1967	30%	48%	22%
M/V *Tokitae*	81	2014	90%	10%	0%
M/V *Issaquah*	81	1979	46%	47%	7%
M/V *Kitsap*	82	1980	48%	48%	5%
M/V *Kittitas*	83	1980	43%	52%	5%
M/V *Cathlamet*	83	1981	43%	52%	5%
M/V *Chelan*	87	1981	48%	44%	8%
M/V *Sealth*	82	1982	43%	48%	10%
M/V *Klahowya*	81	1958	37%	49%	14%
M/V *Tillikum*	81	1959	36%	53%	11%
M/V *Chetzemoka*	81	2010	86%	14%	0%
M/V *Salish*	81	2011	90%	10%	0%
M/V *Kennewick*	81	2012	88%	12%	0%
M/V *Hiyu*	55	1967	22%	42%	36%
Total vessel systems	**1,867**	**Avg. 1982**	**51%**	**40%**	**9%**
M/V *Evergreen State*[2]	80	1954	31%	41%	28%

Data source: WSDOT Ferries Division.
Notes: M/V = Motor/Vehicle 1 Systems included in Condition Rating 1 do not currently need to be replaced; those with a condition rating of 2 should be monitored for replacement within the current or ensuing biennium; those with a condition rating of 3 are past due for replacement. 2 The M/V *Evergreen State* is not included in the totals and is scheduled to be retired by the end of the 2013-2015 biennium. Numbers may not add due to rounding.

When vessel systems condition ratings are weighted by the total dollar value of systems, Condition Rating 3 items account for 7 percent ($66.2 million), while Condition Rating 2 items are 44 percent ($427.0 million), and Condition Rating 1 items are 49 percent ($481.4 million) in FY2014 (see chart on p. 14).

WSDOT regularly monitors the dollar value of its systems included in Condition Rating 3 to determine whether ongoing efforts to reduce the number of these past due systems are succeeding. In March 2013, the dollar value of items in Condition Rating 3 was $51.9 million. The June 2014 dollar value of items in this category was $66.2 million, marking a 28 percent ($14.5 million) increase in the dollar amount of items that are overdue for replacement.



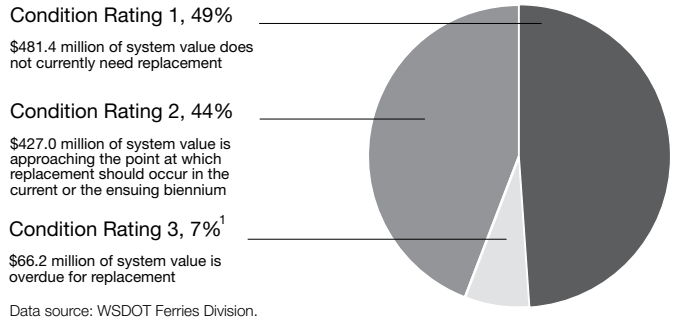
Forty percent of WSDOT ferry vessel systems are being monitored for replacement in near future
Fiscal year 2014 and calendar year 2012; Inspection results by type of vessel system

Types of ferry vessel systems	Number of systems	Percent of systems in Condition Ratings[1] 1	2	3
Piping systems	150	38%	41%	21%
Propulsion systems	274	10%	72%	19%
Communication, navigation, lifesaving systems	599	65%	28%	7%
Major mechanical/electrical systems	315	52%	40%	8%
Structural preservation (paint) systems	192	60%	38%	2%
Steel structures	170	64%	35%	2%
Passenger and crew spaces	65	54%	46%	0%
Security systems	102	63%	37%	0%
Total/average FY2014[2, 3]	**1,867**	**51%**	**40%**	**9%**
Total/average CY2012[2]	**1,737**	**58%**	**35%**	**7%**

Data source: WSDOT Ferries Division.
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 with a condition rating of 2 should be monitored for replacement within the current or ensuing biennium; those with a condition rating of 3 are past due for replacement. 2 Excludes the M/V *Evergreen State*, which is scheduled to be retired by the end of the in 2013-2015 biennium. 3 Reporting period has been changed to fiscal years.

Conditions of ferry terminal systems see improvement

Seven percent of the total value of WSDOT Ferries vessel systems past due for replacement
Fiscal year 2014; Percent of total dollar value



Data source: WSDOT Ferries Division.

Note: 1 Has been rounded up and doesn't match the 6.8 percent on p. vii.

Terminal preservation work leads to condition improvements

Approximately 88.3 percent of WSDOT Ferries Division's terminal systems — which assist in the safe movement of people and vehicles to and from ferry vessels — were in good or fair condition in CY2013. This is an improvement of 1.4 percentage points over the 86.9 percent in CY2012. WSDOT also reduced the number of systems in the poor or very poor condition category by 0.9 percent, from 12.5 percent in CY2012 to 11.6 percent in CY2013.

WSDOT Ferries continues to focus on replacing aging landing aid systems

Ongoing preservation work since the beginning of CY2013 is focusing on replacing landing aids, which have the highest percentage poor or very poor condition ratings (22.6 percent). Landing aids (wingwalls and dolphins) help guide vessels to the docks and are still the biggest contributor to the poor/very poor condition category as many of the older systems are constructed of creosote-soaked wood pilings which have deteriorated in saltwater over the decades.

The fixed landing aids in the terminal system include:

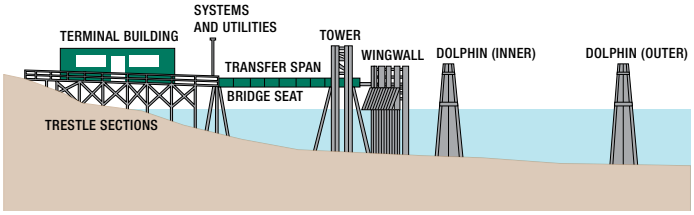
- 97 steel dolphins (71.3 percent of fixed dolphins)
- 39 timber dolphins (28.7 percent of fixed dolphins)
- 30 steel wingwalls (79.0 percent of wingwalls)
- Eight timber wingwalls (21.0 percent of wingwalls)

In CY2013, WSDOT replaced three creosote, wooden dolphins with more environmentally-friendly steel pile dolphins (two at Friday Harbor, and one at Orcas Island). The new steel dolphins are better able to handle hard landings by vessels, reducing temporary delays or loss in service for emergency repairs.

To date, the Ferries system has replaced more than two-thirds of its creosote timber dolphins and four-fifths of its creosote timber wingwalls. In addition to replacing these aging systems, this work also improves environmental conditions near the terminals.

Replacement of a vehicle transfer span and lift system at the Port Townsend terminal helped reduce the percentage of its systems in the poor and very poor category by 18.5 percentage points from 37 percent in CY2012 to 18.5 percent in CY2013.

The terminal at Vashon saw the largest increase in the poor and very poor category with 7.7 percent in CY2012 increasing to 15.4 percent in CY2013. This 7.7 percentage point increase was the result of additional landing aids and trestle systems becoming due for replacement.



WSDOT Ferries terminal systems' structural conditions improve slightly for 2013
Calendar years 2012-2013; Inspection results by category

Type of facility or system	Number of systems	Good or fair (70-100)	Poor or very poor (0-69)	Not rated
Buildings	136	99.3%	0.0%	0.7%
Landing aids[1]	177	77.4%	22.6%	0.0%
Overhead loading systems	66	89.4%	10.6%	0.0%
Passenger-only-ferry facilities	15	86.7%	13.3%	0.0%
Pavement	78	89.7%	10.3%	0.0%
Trestle & bulkheads	70	91.4%	8.6%	0.0%
Vehicle transfer spans	210	88.6%	11.4%	0.0%
Total/average 2013	**752**	**88.3%**	**11.6%**	**0.1%**
Total/average 2012	**757**	**86.9%**	**12.5%**	**0.5%**

Data source: WSDOT Ferries Division.

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. See *Gray Notebook* 49, p. 13 for a description of the ratings.

Ferries invests $24.1 million in vessels, terminals in 2013

WSDOT has completed four planned terminal preservation projects so far in the 2013-2015 biennium, spending about $2 million, approximately $1.7 million under budget. Savings were achieved by combining similar projects, reducing dolphin sizes to meet current needs, a competitive bidding environment, and a reduced scope of work on the Kingston dolphins. So far in the 2013-2015 biennium, WSDOT has had one emergency repair to its terminal systems, spending $50,000 on the wingwall following a hard landing at Lopez Island.

More than 88 percent of WSDOT Ferries terminal systems in good or fair condition
Calendar year 2013; Inspection results by terminal

Terminal	Number of systems	Good or fair (70-100)	Poor or very poor (0-69)	Not rated
Anacortes	81	81.5%	18.5%	0.0%
Bainbridge Island	52	92.3%	7.7%	0.0%
Bremerton	45	84.4%	15.6%	0.0%
Clinton	42	100.0%	0.0%	0.0%
Coupeville	17	77.5%	23.5%	0.0%
Eagle Harbor Maintenance facility	76	72.4%	26.3%	1.3%
Edmonds	24	100.0%	0.0%	0.0%
Fauntleroy	35	94.3%	5.7%	0.0%
Friday Harbor	17	76.5%	23.5%	0.0%
Kingston	56	96.4%	3.6%	0.0%
Lopez Island	18	94.4%	5.6%	0.0%
Mukilteo	23	87.0%	13.0%	0.0%
Orcas Island	20	90.0%	10.0%	0.0%
Point Defiance	19	89.5%	10.5%	0.0%
Port Townsend	27	81.5%	18.5%	0.0%
Seattle	83	84.3%	15.7%	0.0%
Shaw Island	17	94.1%	5.9%	0.0%
Southworth	25	100.0%	0.0%	0.0%
Tahlequah	18	100.0%	0.0%	0.0%
Vashon	39	84.6%	15.4%	0.0%
Total/average 2013	**752**	**88.3%**	**11.6%**	**0.1%**

Data source: WSDOT Ferries Division.

Ferries uses life cycle costs to prioritize preservation spending

Ferries uses a life cycle cost model (LCCM) to estimate its future terminal and vessel preservation needs per Legislative mandate. This model is used to develop Ferries' budget request for preservation funding to address the backlog of maintenance and repair projects. Ferries has invested $24.1 million in terminals and vessels so far in the 2013-2015 biennium in an effort to reduce the number of systems in the preservation backlog.

Preservation backlog reduction is measured as a percentage of the value of terminal systems needing replacement at the beginning of the biennium plus the value of systems coming due for replacement during the biennium. The latter adds to the overall need at the end of the biennium, but is offset somewhat by the percentage of the value of systems preserved. In order to reduce the backlog of preservation need for the biennium, the value of systems preserved must exceed the value of systems needing replacement at the beginning of the biennium as well as those that came due for replacement during the biennium.

Ferries vessel preservation work aims to reduce current backlog of needs

The 2013-2015 biennium vessel preservation plan is projected to reduce the backlog of needed preservation from 24.6 percent to 20.6 percent.

The total preservation need of Ferries' fleet is 28.1 percent, representing the sum of preservation need of 24.6 percent at the beginning of the biennium plus 3.5 percent added during the biennium (see chart on p. 16).

WSDOT budgeted $77.1 million to support the 2013-2015 preservation plan. The plan aims to reduce preservation needs by 7.5 percent, resulting in an end-of-biennium preservation need equal to 20.6 percent of the value of all vessel systems (24.6 percent + 3.5 percent - 7.5 percent). WSDOT spent $15.9 million preserving vessel systems during the first year of the 2013-2015 biennium, reducing the preservation need by 1.2 percent.

This reduction was primarily due to ferry vessel preservation projects on the M/V *Yakima*, M/V *Puyallup*, M/V *Kaleetan*, M/V *Chelan*, M/V *Walla Walla*, M/V *Chetzemoka*, and M/V *Salish*.

In order to accomplish the plan, WSDOT will use the remaining $61.2 million in vessel preservation investments to reduce the need an additional 6.3 percent by the end of the biennium. Major projects on the M/V *Tacoma*, M/V *Kaleetan* and M/V *Kitsap* will be part of the work needed to reach this goal.

New economic-based asset management model starts

Ferries terminal preservation backlog sees increase in 2013-2015 biennium

Under the terminal life cycle cost model preservation plan, the preservation backlog of systems past due for replacement increases from 12.2 percent to 13.6 percent of the value of all terminal systems throughout the 2013-2015 biennium.

The total preservation need of Ferries' terminals is 14.6 percent and represents the sum of preservation need of 12.2 percent at the beginning of the biennium plus 2.4 percent added during the biennium. WSDOT budgeted $35.3 million to support the preservation plan. The plan aims to reduce preservation needs by 1.0 percent, resulting in an end of biennium preservation need of 13.6 percent (12.2 percent + 2.4 percent -1.0 percent). This means the plan will not reduce the backlog of preservation below its level at the beginning of the biennium. WSDOT has spent $8.1 million during the first year of the 2013-2015 biennium preserving terminal systems, reducing the preservation need by 0.1 percent.

In order to accomplish the plan, the remaining $27.2 million in terminal preservation investments will be used to reduce the need an additional 0.9 percent by the end of the biennium. Terminal projects planned to reduce backlog for the rest of biennium include rehabilitation work at the Bainbridge Island terminal, dolphin replacement at the Point Defiance terminal, and a timber wingwall replacement at the Bremerton terminal.

New asset management model assists project prioritization

As funding challenges continue for state programs, WSDOT has developed a new economic-based asset management model to aid in project prioritization and the deferral of terminal preservation needs. As with the life cycle cost model, the economic asset management model measures preservation needs and backlog reduction using the preservation needs percentage (PNP). Ferries uses the PNP, which tracks the value of systems past due for replacement, to help determine what projects it will address each biennium.

The M/V Spokane *makes its way across the Puget Sound toward the Kitsap Peninsula.*

Ferries is using the model to meet goals set forth by Gov. Jay Inslee in his management plan, Results Washington (see sidebar on p. 17).

By considering additional economic factors, the economic asset management model builds on the existing life cycle cost model (LCCM), which determines when systems are due for replacement based on standard service life adjusted for condition by inspection results.

These factors include risk of failure, cost of failure (both reactive and societal), as well as the costs of planned and corrective maintenance. In many cases, when comparing the consequences of a system's failure along

WSDOT Ferries Division comparison provides different views of preservation backlog
2013-2015 biennium; Dollars in millions; Based on life cycle cost model and preservation need percent

	Condition-based vessel needs	Condition-based terminal needs	Economic-based terminal needs
Original backlog at beginning of biennium	24.6%	12.2%	5.4%
Additions to backlog during the biennium	3.5%	2.4%	0.7%
Total backlog prior to preservation investments	28.1%	14.6%	6.1%
Projected impact of planned preservation investments	7.5%	1.0%	0.2%
End of biennium backlog based on preservation plan	20.6%	13.6%	5.9%
Preservation spending as of June 2014 (percent of biennial budget)	$15.9 of $77.1 (21.0%)	$8.1 of $35.3 (23.0%)	$8.1 of $35.3 (23.0%)
Actual backlog as of June 2014	**26.9%**	**14.5%**	**6.0%**

Data source: WSDOT Ferries Division

Ferries meeting both of its Results Washington goals

Painting to improve the transfer span, wingwalls and towers wrapped up in January 2014 at the Orcas Island terminal.

with its additional maintenance costs to the actual cost of replacement, system replacement is deferred. This model evaluates all costs and determines an adjusted economic-based year of replacement for each terminal system.

An example of this how this model works is the trestle at the Point Defiance Terminal. Initially the system had been slated for replacement in 2017, but using the economic PNP model the replacement would be deferred until 2040.

The new economic-based terminal asset management model shows a lower percent of replacement need than the life cycle cost model on which it is based. The life cycle PNP was 12.2 percent at the beginning of the 2013-2015 biennium. The economic asset management model suggests that some life cycle-based preservation needs can be deferred, and reports an economic PNP of 5.4 percent at the beginning of the biennium. As WSDOT transitions to using the economic model for prioritization and defers some terminal projects, the annual terminal capital preservation budget size could decrease while maintenance costs and risk exposure increase by a lesser degree.

When applied to the 2013-2015 biennium, initial results of the economic asset management model show an economic PNP of 6.1 percent for terminal systems at the end of the biennium unless funds are invested to preserve the systems. Planned preservation would lower the economic PNP to 5.9 percent.

The economic PNP in July 2013 — the beginning of the 2013-2015 biennium — was 5.4 percent, meaning even if the biennial preservation plan was delivered based on current funding there would be a 0.5 percentage point increase in the terminal preservation system backlog. Further refinements to the model are needed to estimate the increase in maintenance funds as construction projects are deferred.

Contributors include Jean Baker, John Bernhard, Tim Browning, Tom Castor, Jim Hasselbalch, Ron Logghe, Nicole McIntosh, Mehrdad Moini, Sio Ng, Kynan Patterson, Tim Smith and Joe Irwin

Results Washington Leading Indicator

Control the percent of ferry vessel systems that are past due for replacement from increasing to more than 10 percent by 2020.

Status: On plan (green) — 7 percent as of June 30, 2014

Strategies:

1. **Maintain vessel systems** - Focus capital program preservation and operating program maintenance resources on vessel systems designated by the U.S. Coast Guard as "vital" and employ least life cycle cost analysis to determine how long other systems should be operated beyond their life cycles.
2. **Efficient, effective use of resources** - Integrate capital program preservation and operating program maintenance planning and contracting to achieve the most effective and efficient use of resources.
3. **Use 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. **Keep policy makers in the loop** - Inform policy makers about the strategic resource situation by using the life cycle cost model to establish preservation performance objectives, project the performance of the current and alternative investment plans and measure performance of actual program delivery.

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 more than 6 percent by 2020.

Status: On plan (green) — 5.4 percent as of June 30, 2014

Strategies:

1. **Reprioritize projects as needed** - Use new 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 adjusted years of replacement, then compare results to planned budget amounts in future biennia to confirm program sizing.

54 WSDOT Ferries Division Quarterly Update

Notable results

- *Ferries exceeded the reliability goal of 99% and remained above the 95% on time performance goal for 40,823 scheduled trips*
- *Ferries farebox revenues were up 6.1% ($2.6 million) compared to the same quarter in fiscal year 2013*

Ferries farebox revenues hit highest level for quarter

WSDOT Ferries Division's (Ferries) farebox revenues continue their upward trend, coming in at $45.6 million for the fourth quarter of fiscal year (FY) 2014, the highest yet for the spring quarter (April through June). Farebox revenues were $2.6 million (6.1 percent) more than the fourth quarter of FY2013 — and $2.9 million (1.8 percent) more than September 2013 projections that were based on the state's economic and population growth forecasts.

Ridership increases continuing

Ridership also continues to trend upward. During the fourth quarter of FY2014, riders took almost six million trips on ferries (roughly three times the population of King County). This is about 206,000 (3.6 percent) more than projected in September 2013. At the same time, ridership was 232,400 more (4.1 percent) than the same quarter in FY2013.

Ferries tops annual reliability goal despite tides and weather issues

Ferries missed 74 fewer trips in the fourth quarter of FY2014 than during the same period in FY2013, 206 compared to 280. Ferries canceled 328 trips and was able to replace 122 of them, which resulted in the 206 net missed trips for the quarter (see graph on p. 19).

There were 40,823 regularly scheduled trips during the fourth quarter of FY2014. Ferries made 99.5 percent (40,617) of them, exceeding its annual reliability performance goal of 99 percent (see table below).

Tides and adverse weather accounted for 108 cancellations with all of those occurring on the Port Townsend – Coupeville route. Ten different vessels experienced some type of mechanical issue as well, accounting for 76 cancellations in the fourth quarter. Mechanical difficulties with the Motor/Vessel (M/V) *Issaquah* resulted

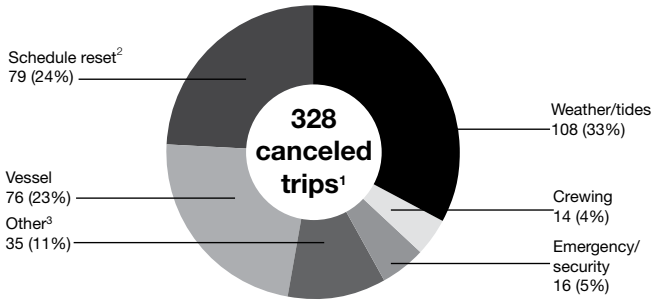
Ferries' on time performance and trip reliability exceed goals for the fourth quarter of fiscal year 2014
Fourth quarter (April through June), FY2013 and FY2014; Annual on time goal = 95 percent; Annual reliability goal = 99 percent

	On time performance				Trip reliability			
Route	**FY2013**	**FY2014**	**Status**	**Trend**	**FY2013**	**FY2014**	**Status**	**Trend**
San Juan Domestic	91.3%	90.3%	-1.0%	↓	99.3%	99.7%	+0.4%	↑
Anacortes/Friday Harbor – Sidney, B.C.	89.5%	91.6%	+2.1%	↑	98.9%	99.1%	+0.2%	↑
Edmonds – Kingston	99.3%	99.3%	0.0%	↔	99.9%	99.9%	0.0%	↔
Fauntleroy – Vashon – Southworth	92.0%	94.0%	+2.0%	↑	99.0%	99.4%	+0.4%	↑
Port Townsend – Coupeville	92.4%	96.7%	+4.3%	↑	95.6%	96.6%	+1.0%	↑
Mukilteo – Clinton	99.5%	99.1%	-0.4%	↓	99.8%	99.7%	-0.1%	↓
Point Defiance – Tahlequah	99.0%	99.7%	+0.7%	↑	99.8%	99.8%	0.0%	↔
Seattle – Bainbridge Island	95.6%	94.7%	-0.9%	↓	100.0%	99.8%	-0.2%	↓
Seattle – Bremerton	99.2%	98.5%	-0.7%	↓	99.6%	99.7%	+0.1%	↑
Total	**95.3%**	**95.8%**	**+0.5%**	↑	**99.3%**	**99.5%**	**+0.2%**	↑

Data source: WSDOT Ferries Division.
Note: FY = fiscal year. A trip is considered delayed when a vessel leaves the terminal more than 10 minutes later than the scheduled departure time.

Ferries meets on time performance goal of 95 percent

Weather, tides top reasons for canceled ferries trips
Fourth quarter (April through June), fiscal year 2014



Data source: WSDOT Ferries Division.
Notes: 1 Ferries replaced 122 of the 328 canceled trips. 2 A schedule reset typically occurs when a vessel (or vessels) can no longer stay on its sailing schedule due to mechanical problems, heavy volumes, crewing issues or weather. 3 "Other" includes events like disabled vehicles, issues at terminals or non-ferries related incidents that can impact operations.

in 11 trip cancellations on a single day, which affected service on the Fauntleroy – Vashon – Southworth route.

Crewing issues accounted for 14 cancellations in the quarter, three fewer than the same quarter last year. The number of cancellations due to crewing issues has fluctuated recently as the U.S. Coast Guard is requiring more staff with higher levels of training on multiple vessel classes. Filling these new positions and those opened through the retirements of more experienced senior staff has decreased the pool of available qualified crewing replacements.

Ferries on time performance improves for the quarter

On time performance was 0.5 percentage points higher than the same quarter in FY2013, increasing from 95.3 percent to 95.8 percent for the fourth quarter of FY2014. Ferries met its annual on time performance goal of 95 percent for its 40,823 scheduled trips this quarter.

On average, 19 out of 446 daily trips did not leave the terminal within 10 minutes of the scheduled departure time in the fourth quarter of FY2014. This is a 10 percent decrease from the 21 daily trips that were late during this period last year.

The Port Townsend – Coupeville route had a 4.3 percentage point increase over the same quarter last year. It was the ferry system's largest increase and was due the completion of the transfer span replacement project at Port Townsend last year, which provides more operational flexibility (see related ferries preservation article, pp. 12-17). Overall, on time performance increased at four of the nine terminals in the fourth quarter over the same quarter last year.

The largest decrease in on time performance this quarter was a 1 percentage point drop at the San Juan Domestic route as compared to the same quarter last year. The primary reason for the late departures was heavy traffic, which matches the 8 percent increase in ridership the San Juan Domestic route experienced from the fourth quarter of FY2014 compared to the fourth quarter of FY2013.

Rider complaints decrease due to improved on time performance

In total, Ferries received 328 complaints and 39 compliments from the six million riders served during the fourth quarter of FY2014. This is a decrease from the 436 complaints and 35 compliments from the same quarter in FY2013. The largest decrease in complaints as compared to the same quarter FY2013 was in the "On time performance" category, which decreased from 40 to 11. This decrease was related to the improved on time performance on the Port Townsend – Coupeville route compared to the same quarter last year (see chart on page 18). The next largest decrease was fewer complaints associated with loading and unloading which dropped from 57 to 42 compared to the same quarter a year ago.

Employee behavior complaints increased from 50 to 69 in the fourth quarter compared to last year, and schedule complaints increased from six to 24 when compared to the same quarter in FY2013. While there was no common theme in the increase of behavior complaints, schedule complaints were due to issues with the new summer schedule, released in mid-June.

Contributors include Matt Hanbey, Kynan Patterson and Joe Irwin

Riders in good hands with Ferries

My congratulations to the crew of the *Wenatchee* for the rescue of the man overboard… I saw as some crew members directed the search and others prepared to launch the rescue skiff… once spotted the ferry speed kicked in and within seconds… the skiff was launched. Add a minute or two and the victim was in the skiff. Did anyone time the rescue? Amazing… you left no doubt that (our) lives are in good (professional) hands on the (state ferries).

54 Incident Response Quarterly Update

Notable results

- ***WSDOT teams helped clear 13,153 incidents this quarter, providing an estimated $18.4 million in economic benefit***
- ***Teams cleared incidents in 11.4 minutes on average, the fastest time for the quarter since WSDOT's first* Gray Notebook *in 2001***

WSDOT teams provide help at 13,153 incidents

WSDOT Incident Response (IR) teams responded to 13,153 incidents in the second quarter of 2014 (April through June). This averages to a WSDOT IR team assisting at an incident every 10 minutes during the quarter. WSDOT responded to 1,369 more incidents — roughly 11.6 percent — during the second quarter in 2014 than the same quarter in 2013. Incident Response teams cleared incidents in an average of 11.4 minutes. This is the fastest clearance time for the quarter since WSDOT began publishing the *Gray Notebook* in 2001.

WSDOT's goal is to clear incidents as quickly and safely as possible, as this means less incident-induced delay and less chance for secondary collisions to occur. Secondary collisions are incidents that occur in traffic resulting from another 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 probability of new incidents. A table summarizing the IR program's performance and benefits for the quarter is on p. 21.

WSDOT's assistance at incident scenes provided an estimated $18.4 million in economic benefit by reducing the impacts of incidents to drivers. These benefits are provided in two ways. First, by clearing incidents quickly, WSDOT reduces the time and fuel motorists waste in incident-induced traffic delay. About $10.2 million of IR's economic benefit for the quarter is from reduced traffic delay. Second, by proactively managing traffic at incident scenes, WSDOT helps prevent secondary collisions. About $8.2 million of IR's economic benefit is from preventing an estimated 2,500 secondary collisions and related delay. Based on WSDOT's budget for IR (see box at lower left), every dollar spent on the program this quarter provided drivers more than $16 in economic benefit.

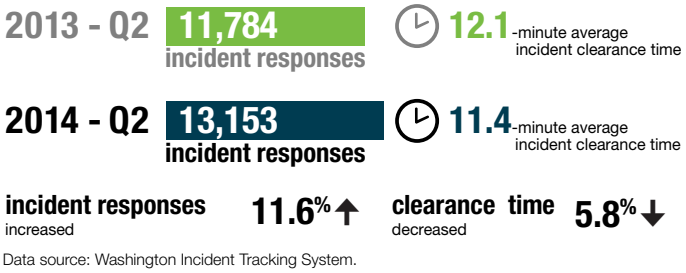
$ The mission of WSDOT's Incident Response program is to clear traffic incidents safely and quickly, minimizing congestion and the risk of secondary collisions. The program is active in all six WSDOT regions with a biennial budget of $9 million, funding about 47 full-time equivalent positions (approximately 80 trained IR drivers) and 62 dedicated vehicles. Teams patrol 493 centerline miles of state highway on major corridors during peak traffic hours.

WSDOT reduces incident-related delay, providing $18.4 million in benefit

Traffic delay that occurred on state highways cost motorists $41 million in wasted time and fuel during the second quarter of 2014. This is about $2.1 million more than in the same quarter of 2013. Without WSDOT's assistance, the cost would have been $59.4 million ($18.4 million in prevented delay and secondary incidents plus $41 million in actual delay).

For more information on how WSDOT calculates these costs see the Incident Response Phase 3 research from the Washington State Transportation Center (TRAC) at the University of Washington at http://www.wsdot.wa.gov/Research/Reports/700/761.1.htm.

WSDOT Incident Response clearance times faster while total number of responses increase
Second quarter (April through June) 2013 and 2014



Data source: Washington Incident Tracking System.

Notes: Data above only account for incidents to which an IR unit responded. IR data reported for the current quarter (Q2 2014) are considered preliminary. In *Gray Notebook* 50, WSDOT reported that IR teams responded to 11,784 incidents in the second quarter of 2013. In the first quarter of 2014, WSDOT responded to 11,333 incidents, clearing them in an average of 12.4 minutes. These numbers have been confirmed and are now finalized.

Feedback indicates Incident Response a valued service

WSDOT's Incident Response prevents $18.4 million in delay and secondary collisions
April through June 2013; Incidents by duration; Time in minutes; Costs and benefits in dollars

Incident duration	Number of incidents[1]	Percent blocking[2]	Average *incident* clearance time[3]	Average *roadway* clearance time[4]	Cost of incident-induced delay	Economic benefits from IR program[5]
Less than 15 minutes	10,468	15.6%	5.0	4.4	$13.1 million	$10.3 million
Between 15 and 90 minutes	2,547	42.6%	28.9	23.4	$20.1 million	$6.4 million
Over 90 minutes	138	79.7%	172.6	157.0	$7.7 million	$1.7 million
Total	**13,153**	**21.5%**	**11.4**	**18.3**	**$41.0 million[6]**	**$18.4 million**
Percent change from second quarter 2013	↑ **11.6%**	↑ **1.4%**	↓ **5.8%**	↓ **10.3%**	↑ **5.8%**	↑ **5.7%**

Data source: Washington Incident Tracking System.
Notes: 1 Teams were unable to locate 597 of the 13,153 incidents. These incidents are included in the total count because an IR team attempted to respond 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 the IR team's first awareness of an incident (when a call comes in or the incident is spotted by a patrolling IR unit) and when the last responder has left the scene. 4 Roadway clearance time is the time between the IR team's first awareness of an incident and when all lanes are available for traffic flow. This metric applies to blocking incidents. 5 Estimated economic benefits include benefits from delay reduction and prevented secondary collisions. See *Gray Notebook 43*, p. 21, and the *2012 Congestion Report*, p. 72, for WSDOT's benefits calculation methods from reduced delay and prevented secondary incidents, respectively. 6 Cost of delay numbers do not add up to total due to rounding, actual calculated costs were $13,129,226, $20,125,410 and $7,709,702 adding up to $40,964,338.

Despite extraordinary incidents, over-90-minute incidents cleared faster

WSDOT IR units were deployed to 138 incidents that lasted more than 90 minutes during the second quarter of 2014. This is 17 more incidents (14 percent) than the same quarter in 2013. While these over-90-minute incidents accounted for 1 percent of incidents, they contributed 18.8 percent of all incident-related costs.

Nine of the over-90-minute incidents took six hours or more to clear (referred to as extraordinary incidents). This is one more extraordinary incident than occurred during the second quarter of 2013. The nine extraordinary incidents took seven hours and 18 minutes to clear on average. Five of the extraordinary incidents involved commercial vehicles such as semi trucks. All extraordinary incidents involved collisions, two of which resulted in fatalities and five in injuries. Together these nine incidents accounted for 17.7 percent of delay costs caused by over-90-minute incidents.

Even with the high number of extraordinary incidents, IR crews cleared over-90-minute incidents in an average of two hours and 53 minutes. This is 10 minutes faster than in the same quarter in 2013. If the extraordinary incidents are excluded, WSDOT's average clearance time for over-90-minute incidents this quarter would have been two hours and 34 minutes.

Performance data reported in this article is from WSDOT's Washington Incident Tracking System, which tracks incidents to which a WSDOT IR team responded.

Contributors include Paula Connelley, Vince Fairhurst, Ida van Schalkwyk and Bradley Bobbitt

The Incident Response's mission is clearing roads and helping drivers on Washington state highways. These two essential functions help keep all motorists safe during incidents and help keep traffic moving.

Customer feedback: Incident Response teams provide a valued service

WSDOT IR teams give comment cards to drivers they assist. Below are sample comments from people who received help during the second quarter of 2014:

- "Service was great. Ken really took care of me and seemed concerned with my safety first. Great workers. Great program."
- "This service saved me time and stress. Words can't express how grateful I am to know that if I am stuck on the side of the road there is a service to help."
- "We were on I-5 on the side of the road - lots of cars - I was scared. Within 10 minutes the tire was changed and we were on our way. Thanks."
- "The response was quick and helped make a difficult situation much safer. Thanks."

54 Rail: Amtrak Cascades Quarterly Update

Notable results

- *Passengers getting on or off trains increased at six of the 12 stations in Washington during the second quarter of 2014*
- *About 29% of all Amtrak Cascades passengers traveled through Seattle's King Street Station*

More than 400,000 riders move through rail stations

There were a total of 404,600 passengers who got on or off trains at Amtrak Cascades stations in the second quarter of 2014. This is a 3.7 percent decrease from 420,200 passengers in the same quarter of 2013. Referred to as "on-offs," this measures the number of passengers moving through stations by counting how many riders get on and off the trains at each station. For example, someone who rides Amtrak Cascades from Vancouver, Washington, to Seattle is counted as one passenger using the Vancouver station (where the person boards the train), and as one passenger using the Seattle station (where the person gets off the train).

King Street Station in downtown Seattle and Union Station in Portland, Oregon, serve the largest number of passengers. More than a quarter (116,600) of passengers getting on or off Amtrak Cascades trains during the second quarter of 2014 did so at King Street Station, an increase of 600 passengers from the second quarter of 2013.

Amtrak Cascades is an intercity rail service linking Vancouver, British Columbia, to Eugene, Oregon (467 miles). The route generally parallels Interstate 5, stopping at 18 stations, 12 of which are located in Washington. The stations are owned by different entities including city governments, local transit agencies and Amtrak. Many stations also serve light rail, bus and pedestrian facilities, which provide multimodal connections for travelers.

The operation of the Amtrak Cascades is jointly funded by WSDOT and the Oregon Department of Transportation. WSDOT funds four daily round trips between Seattle and Portland and two daily round trips between Seattle and Vancouver, British Columbia. ODOT funds two daily round trips between Eugene and Portland.

Total number of passengers getting off or on trains[1] at Amtrak Cascades stations decline 3.7 percent
Second quarter (April through June), 2013 and 2014

Station[2]	April - June 2013	April - June 2014	Trend
Vancouver, B.C.	39,300	41,900	↑
Bellingham	15,600	13,900	↓
Mount Vernon	4,700	4,900	↑
Stanwood	1,200	1,200	-
Everett	5,900	5,900	-
Edmonds	5,800	5,400	↓
Seattle	116,000	116,600	↑
Tukwila	7,700	6,800	↓
Tacoma	22,800	23,800	↑
Olympia/Lacey	12,600	12,600	-
Centralia	5,100	5,300	↑
Kelso/Longview	6,000	6,400	↑
Vancouver, Wash.	18,700	18,900	↑
Portland	114,000	102,800	↓
Oregon City	2,400	3,600	↑
Salem	12,200	10,100	↓
Albany	6,200	5,000	↓
Eugene	16,900	13,600	↓
Total[3]	**420,200**	**404,600**	↓

Data source: WSDOT Rail Division.
Notes: 1 Measures the number of passengers moving through stations by counting the number of riders that get on or off the train at each station. 2 The stations are owned by different entities, primarily city governments and local transit agencies. WSDOT owns one station (Stanwood) and Amtrak owns two stations (Edmonds and Tacoma). 3 Includes RailPlus passengers, riders whose origin or destination was unknown, and passengers who deferred their trip to another day. These accounted for 7,100 passengers in the second quarter of 2013 and 5,700 passengers in the second quarter of 2014.

To view the most recent interactive map of federally funded rail projects visit http://bit.ly/GNBrailmap.

WSDOT makes progress on federally funded rail projects

The Tukwila Station project is replacing the temporary wooden structure (top picture) with a new multimodal station (bottom picture).

Tukwila Station multimodal improvements are underway

Construction at the Tukwila Station began in July 2013, and the station is anticipated to be completed in October 2014. This project includes a new multimodal station that replaces the current temporary wooden structure. The improvements will enhance access to Amtrak Cascades and Sound Transit *Sounder* service with 40 dedicated long-term parking stalls for Amtrak Cascades and more efficient pedestrian and bus connections.

The project has a construction budget of $46 million, of which up to $7.9 million is being funded by the Federal Railroad Administration. The project includes a 390-stall parking lot and a new driveway connecting to Strander Boulevard. Bicyclists can use this roadway to connect to nearby bicycle trails. This project is a cooperative effort between WSDOT, Sound Transit, the cities of Tukwila and Renton, King County Metro Transit, BNSF Railway, Amtrak and the Boeing Company.

WSDOT to purchase up to eight diesel-electric locomotives

WSDOT has joined the departments of transportation (DOTs) of Illinois, California, Michigan and Missouri in selecting Siemens for the construction and delivery of 35 diesel-electric passenger locomotives, of which up to eight will be purchased by WSDOT. WSDOT is a member of the Next Generation Equipment Committee, a national committee of states and industry stakeholders working to develop standards and specifications for new American-made locomotives and passenger cars. The locomotive procurement project is led by the Illinois DOT, and includes CalTrans (representing California), Michigan, Missouri and Washington state. By participating in this multi-state procurement, WSDOT will save costs while purchasing American-made locomotives.

The locomotives, which will be capable of traveling at speeds of up to 125 mph, are scheduled to be delivered between fall 2016 and early 2017. WSDOT expects to have them in service by July 2017. The locomotives will be manufactured at the Siemens plant in Sacramento, California.

Contributors include Jason Beloso, Chris Dunster, Teresa Graham, Laura Kingman, Gayla Reese Walsh and Alison Wallingford

The new Amtrak Cascades locomotives (shown in the rendering above) will be capable of traveling at speeds of up to 125 mph.

Eleven of 20 federally funded rail projects are under construction or complete

WSDOT had eight passenger rail projects in the construction phase, nine in the design phase and three completed during the second quarter of 2014. Work includes purchasing new locomotives, adding tracks to handle increased train traffic, and upgrading tracks, signals and stations. More than 96 percent ($774.7 million) of the $803 million in federal funding for these projects comes from the American Recovery and Reinvestment Act of 2009.

When the program is completed in 2017, passengers will benefit from the addition of two daily round trips between Seattle and Portland with an expected travel time reduction of 10 minutes, and 88 percent of trains traveling from Portland to Seattle and Seattle to Vancouver, British Columbia, arriving at their destination on time.

54 Travel Time Trends Semi-Annual Report

Notable results

- *Puget Sound area traffic volumes and travel times in the second half of 2013 were impacted by a slightly improving economy*
- *Five commute routes on I-5 and I-405 experienced significant changes in travel times while 13 others had no changes*

Puget Sound area travel mirrors economic activity

Puget Sound area travel trends observed during the first half of 2013 continued into the second half of 2013. The slight increases in both traffic volumes and travel times on Puget Sound area freeways mirror a slight improvement in the region's economy.

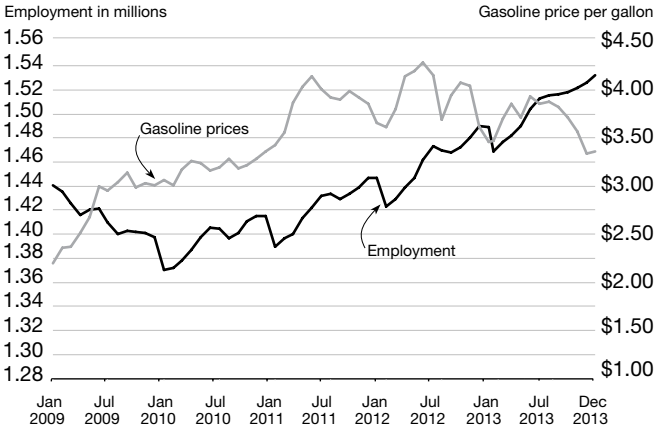
This travel time trends analysis looks at traffic conditions for the second half of 2013 (July through December) and changes relative to the same time period in 2012. Key observations include:

- ***Economy:*** Employment levels increased by 2.9 percent between December 2012 and December 2013 in the Seattle-Bellevue-Everett metropolitan area, indicating continued economic growth.
- ***Traffic volumes:*** During peak periods (Monday-Friday, 5-10 a.m. and 2-8 p.m.), 13 out of the 18 commute routes showed minor changes in traffic volumes (changes of 2 percent or less). The remaining five commute routes experienced significant variations in traffic volumes, ranging from a 7 percent decrease to a 7 percent increase.
- ***Travel times:*** Peak period travel times remained unchanged (fluctuating by two minutes or less) for 13 of the 18 commute routes. Of the five remaining routes, four morning commutes on Interstate 5 (I-5) and I-405 had three- to five-minute increases in travel times while one evening commute via I-405/State Route (SR) 520 from Bellevue to Seattle had a four-minute improvement.

Modest growth in employment puts more traffic on the roads

Employment in the region grew during the second half of 2013, continuing an upward trend that began in 2011. Seattle-Bellevue-Everett employment increased by 2.9 percent from 1,489,200 jobs in December 2012 to 1,532,400 jobs in December 2013. The employment data used in *Gray Notebook* 52, pp. 14-16, has been revised and is no longer a 5.2 percent increase but rather a 2.7 percent increase between June 2012 and June 2013.

Washington employment rises, gas prices stabilize
January 2009 through December 2013; Seattle-Bellevue-Everett metropolitan area



Data source: Bureau of Labor Statistics – Current Employment Statistics; U.S. Department of Energy – Energy Information Administration.
Note: Gasoline prices are inflation-adjusted using the Consumer Price Index.

As experienced in 2008, large fluctuations in gas prices can influence traffic volumes and travel times. However, during the past year the average price per gallon did not fluctuate more than 15 cents from first half of 2013 to second half of 2013. This indicates the fluctuations were within a relatively narrow range for regular unleaded gasoline, with lower prices toward the end of the year.

Definitions:

Commute routes typically experience two peak periods during a work day – one in the morning and the other during the evening. The morning peak period is defined from 5-10 a.m., while the evening peak period is defined from 2-8 p.m.

The peak period traffic volume and travel time comparative analyses produced for the cross-lake (Lake Washington) and north-south corridors are for the second halves of 2011, 2012 and 2013.

I-5, I-405 corridors experience increased congestion

Lake Washington commutes stabilize

Between 2012 and 2013, travel times along SR 520 and I-90 commute routes remained unchanged (fluctuating by two minutes or less) on seven of the eight cross-lake commute routes. The remaining 10-mile Bellevue to Seattle evening commute saw a travel time drop of four-minutes, from 25 minutes in 2012 to 21 minutes in 2013. This improved travel time was realized despite a 3 percent increase in traffic volume on SR 520 due to available capacity.

SR 520 traffic volumes increased up to 7 percent depending on the direction of travel and the time of day. The morning westbound traffic volume on SR 520 increased 7 percent between 2012 and 2013, with no significant increase to the commute travel time. The Bellevue to Seattle evening commute via SR 520 accommodated 3 percent more traffic while experiencing four-minute faster travel times. Similarly, the Bellevue to Seattle evening commute via I-90 had 3 percent more traffic with no significant increase in trip time.

North-south corridors experience longer travel times in 2013

Between 2012 and 2013, travel times along the north-south (I-5, I-405, SR 167) commute routes remained unchanged on six out of 10 commute routes. The remaining four largest and most congested trips occurred on I-5 and I-405 during the morning commute. The increase in travel time ranged between three and five minutes.

I-5 corridor: I-5 experienced minor traffic volume changes during the peak periods. The Everett to Seattle and Federal Way to Seattle morning commutes on I-5 experienced increased travel times while the evening commutes saw no significant change.

The 24-mile morning trip from Everett to Seattle, which at a posted speed of 60 mph should take approximately 24 minutes, instead took about 52 minutes in 2013. This is five minutes longer than the 47-minute travel time experienced in 2012 and 13 minutes longer than the 39-minute travel time experienced in 2011. This increase in travel time might be related to bottlenecks on the commute corridor at the I-5/I-405 interchange near Lynnwood, near the King/Snohomish County line, and a section of I-5 from Northgate to the Ship Canal Bridge.

The 22-mile commute between Federal Way and Seattle takes 22 minutes when traveled at the posted speed. However, the morning commute took 52 minutes in 2013, four minutes longer than the 48-minute travel time experienced in 2012 and eight minutes longer than the 44-minute travel time experienced in 2011. This increase in travel time might be related to distinct bottlenecks on the commute corridor between Federal Way and Des Moines at the north end of Boeing Field and entering downtown Seattle.

I-405 corridor: The I-405 saw minor traffic volume changes during the peak periods except on the Everett to Bellevue morning commute, which experienced a 7 percent reduction in travel volume. Both the Everett to Bellevue and Tukwila to Bellevue morning commutes had increased travel time of three minutes while the evening commutes saw no significant change.

The 24-mile morning trip from Everett to Bellevue, which at a posted speed of 60 mph should take approximately 24 minutes, instead took about 57 minutes in 2013. This is three minutes longer than the 54-minute travel time experienced in 2012 and nine minutes longer than the 48-minute travel time experienced in 2011. The increase in travel time despite a reduction in traffic volume might be due to the construction activity associated with the I-405 Express Toll Lanes project.

Based on the trip length, the Tukwila to Bellevue morning commute should have a travel time of 13 minutes. However, due to congestion on I-405 it took 37 minutes in 2013, an increase from 34 minutes in 2012, which is almost three times the travel time experienced at the posted speed. Data shows there was no significant change in traffic volume experienced on this route.

SR 167 corridor: SR 167 saw a 5 percent decline in traffic volume on the Auburn to Renton morning commute while the Renton to Auburn evening commute traffic volume remained unchanged. For both of these commutes, travel times remained unchanged at 18 minutes in both directions of the 10-mile trip.

A list of the 18 sampled high demand Puget Sound area commute travel times and volume changes during the second half of 2013 can be accessed at http://wsdot.wa.gov/publications/fulltext/graynotebook/GNB54_Extra/2013_SecondSemi-AnnualTravelTimes.pdf.

Contributors include Matt Beaulieu, Mark Hallenbeck, John Ishimaru, Trevor Skelton and Sreenath Gangula

54 General Environmental Permits Annual Report

Notable results

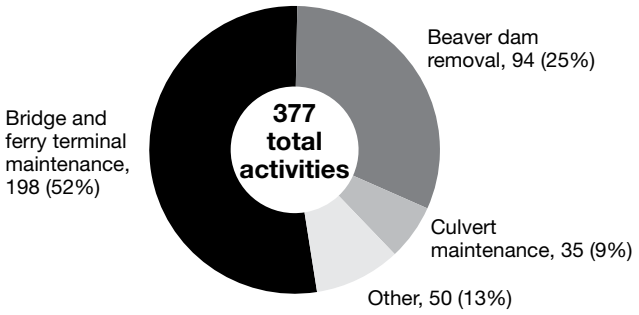
- *WSDOT estimated it saved about 2,500 hours of staff time in 2013 by using general permits to streamline activities*
- *In 2013, WSDOT used the Bridge and Ferry Terminal Washing National Pollution Discharge Elimination System permit for 23 activities, up from 16 in 2012*

WSDOT saves time by using general permits

WSDOT estimated it saved about 2,500 hours of staff time in 2013 by using nine different general permits issued by Washington State Department of Fish and Wildlife (Fish and Wildlife) and four from the Washington State Department of Ecology (Ecology). WSDOT saves four hours for every activity conducted under the Fish and Wildlife permit and Ecology's weed and mosquito permit, and 40 hours for each use of the bridge and ferry terminal washing permit. The time saved results in not having to apply for an individual permit for each activity. The time saved is more than one full time employee, who typically works 2,080 hours in a given year.

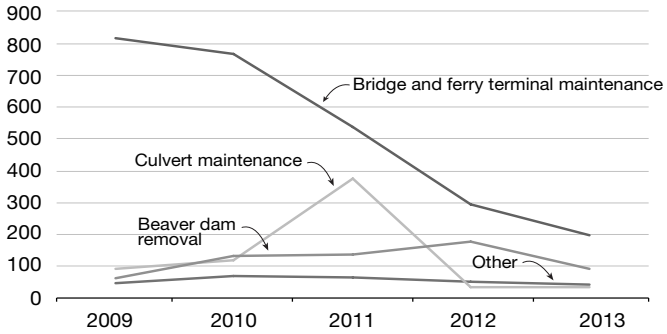
General permits help save time and expedite the delivery of transportation projects and maintenance activities, while assuring the agency continues to maintain its high environmental standards. General permits were referred to as programmatic permits in past *Gray Notebooks* (see *Gray Notebook 50*, pp. 25-26). This change was done to align the article with WSDOT's general permits web page at http://www.wsdot.wa.gov/Environment/Permitting/General.htm.

WSDOT uses nine Fish and Wildlife permits for 377 activities in 2013



Data source: WSDOT Environmental Services Office.
Note: Other category includes channelized stream maintenance, maintenance of existing fishway facilities, removing and relocating debris from bridge piers or footings, geotechnical test boring in fresh and marine waters, and removing and replacing piles in marine waters. Percentages may not equal100% due to rounding.

WSDOT's five-year Fish and Wildlife permit activity trend
2009 through 2013; Number of activities



Data source: WSDOT Environmental Services Office.

The bridge and ferry terminal maintenance permit was used the most of all the general permits issued by Fish and Wildlife; 198 activities or 52 percent in 2013. This permit allows WSDOT to conduct maintenance activities on its bridges and ferry terminal structures. The decline in use is due to less in- and over-water work associated with beaver dam removal and bridge maintenance. Some of the work activities covered by this permit include:

- Cleaning and washing decks and drains
- Deck overlay (pavement surface) replacement
- Painting (including preparatory cleaning, marine growth removal, and abrasive blasting)
- Replacing damaged or worn out components

For additional information on bridge maintenance refer to p. 4, and for ferries preservation refer to p. 12.

Each activity conducted under these general permits has specific provisions WSDOT maintenance staff or contractors must implement to protect fish and their habitat. For example, before bridges are washed they must first be cleaned using dry methods (scraping, sweeping, vacuuming) to prevent debris and substances from entering into lakes, streams or rivers.

Department of Ecology issues four permits to WSDOT

Permit helps expedite WSDOT culvert maintenance work in Washington

The culvert maintenance general permit allows WSDOT to perform maintenance work on culverts in freshwater without having to apply for individual Hydraulic Project Approval (HPA) permits from Fish and Wildlife for each activity. Some of the activities performed under this permit include:

- Culvert inspections and repair
- Bank stabilization and repair
- Repositioning of woody material
- Sediment removal

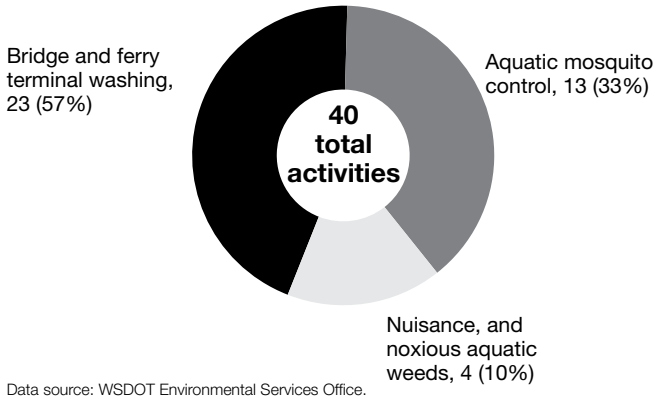
The HPA permit has more than 50 provisions aimed at minimizing impacts to fish habitat. One of the provisions includes timing limitations to avoid impacting spawning fish. The allowable work dates are listed by county and state waters (rivers, creeks, tributaries) and can be found at http://www.wsdot.wa.gov/NR/rdonlyres/358B2CE4-EEC4-438F-B23C-9D286A7F644F/0/FreshWorkTimesApril14.pdf.

Some of the other provisions included in the permit address fish removal and screening, water quality, temporary stream bypasses, equipment, and erosion. Each year, WSDOT collaborates with city and county maintenance staff, providing field training and education on how to conduct in-water work in an environmentally-sensitive way.

Bridge and ferry terminal washing sees increase in 2013 from 2012

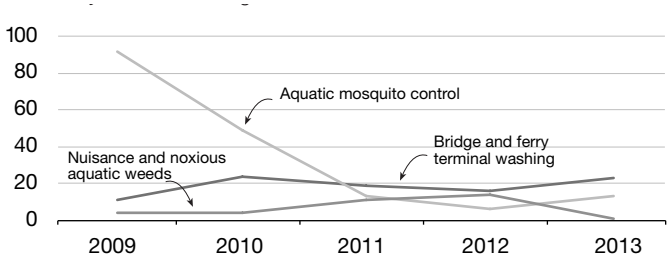
In 2013, WSDOT used the Bridge and Ferry Terminal Washing National Pollution Discharge Elimination System (NPDES) permit for 23 activities, up from 16 in 2012.

WSDOT uses four Ecology permits to complete 40 activities in 2013



Data source: WSDOT Environmental Services Office.

WSDOT's five-year Ecology permit trend
Calendar years 2009 through 2013



Data source: WSDOT Environmental Services Office.

This permit saved WSDOT 1,280 hours of staff time, as part of the total 2,500 hours. Previously, it took on average about 40 hours to process one NPDES permit. The bridge and ferry terminal washing NPDES permit allows WSDOT to discharge wash water into rivers and lakes provided certain permit conditions are met. In 2010, WSDOT conducted studies to determine the impact of wash water on surface and ground waters. These studies were the basis for Ecology to approve and issue the permit.

WSDOT uses permits developed for general use by Ecology

The other permits administered by Ecology (noxious and nuisance aquatic weeds, mosquito control applications) were developed for state and local agencies and the private sectors to use, provided they meet specific permit conditions. For example a person applying pesticide must have the appropriate Washington State Department of Agriculture license and certification, and is responsible for the use of pesticides during application.

Herbicides, commonly referred to as "weed killers," are efficient and effective tools for weed control. WSDOT uses herbicides in two ways:

- To maintain a vegetation-free strip at the edge of the pavement where necessary; and
- To selectively control and eliminate undesirable plants.

Occasionally, WSDOT applies herbicides to control noxious weeds or other undesirable vegetation growing in the water. The use of these permits is dependent on the needs in any particular year and the amount of dedicated funding to complete the work. The graph above shows permit use during the past five years.

Contributors include Ken Schlatter, Eric Wolin and Joanne Wearley

54 Trucks, Goods and Freight Annual Report

Notable results

- *The number of trucks crossing the Canadian border into Washington grew 2.5% in 2013*
- *On average, more than 10,000 trucks per day traveled through the South Puget Sound via Interstate 5 in 2013*
- *In 2012, farm products and coal accounted for 43% of all freight rail shipments*
- *Waterborne freight shipments in Washington state remained steady between 2012 and 2013, reflecting national trends*

Truck border crossings continue to trend upward

The total number of trucks entering Washington from Canada increased 2.5 percent, from 604,308 total truck crossings in 2012 to 619,446 total truck crossings in 2013. This continues the upward trend observed since 2009, with moderate annual increases. Since 2009, the annual number of trucks entering Washington from Canada has increased nearly 11 percent.

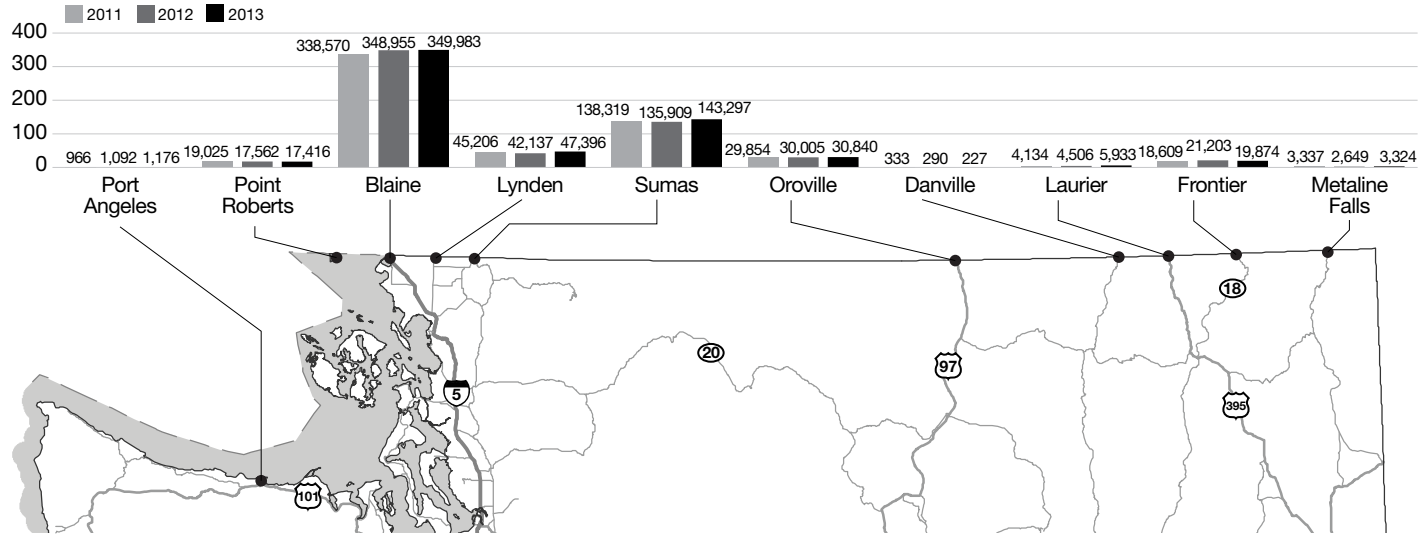
The high volume western Washington border crossings of Blaine and Sumas carry 80 percent of Washington's total truck land border crossings entering from Canada. The border crossing in Blaine consistently has the most traffic. In 2013, 349,983 trucks entered Washington from Canada at the Blaine border crossing. The Sumas border crossing, with the second highest number of southbound truck crossings, saw 143,297 trucks entering Washington in 2013.

WSDOT measures truck freight volumes on economic corridors

The Truck Freight Economic Corridors serve as the arteries of the state's truck freight system, and are essential to the state's economy. WSDOT defines the Truck Freight Economic Corridors as follows:

- Highway corridors carrying more than 10 million tons per year are designated as T-1 and those carrying four to 10 million tons per year T-2 freight corridors. Of the 83,000 centerline miles of roadway in Washington state (which includes more than 7,000 miles of state routes), 3,141 centerline miles are designated as T-1 or T-2 freight corridors. Of these, 2,589 miles (82 percent) of T-1 and T-2 corridors are along state routes.
- Alternate freight routes to the main highway (T-1) freight routes that experience severe weather closures.
- Routes identified as first or last mile connectors to freight intensive land uses. These include routes connecting

Number of trucks entering Washington from Canada trends upward
2011 through 2013; Number of trucks in thousands



Data source: U.S. Department of Transportation, Bureau of Transportation Statistics.

Most truck freight moves along state routes

T-1 and T-2 truck routes with strategic national defense facilities, significant intermodal facilities such as airports, marine terminals, and barge loaders, distribution centers, other industrial/commercial lands, and agricultural processing centers.

For a complete definition of the criteria used to classify Truck Freight Economic Corridors, see http://www.wsdot.wa.gov/Freight/EconCorridors.htm.

South Puget Sound region sees more than 10,000 trucks per day in 2013

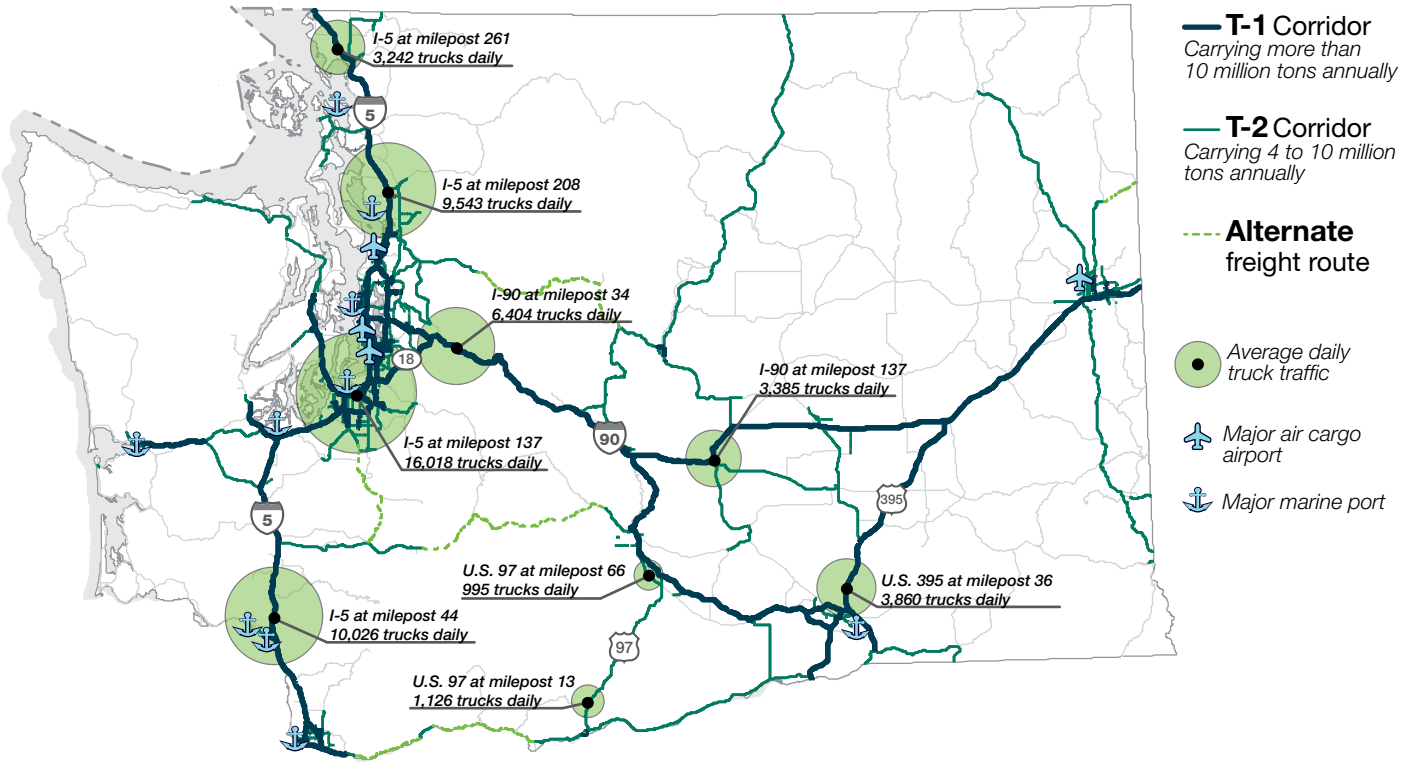
In 2013, the largest average daily truck volumes were observed along Interstate 5 (I-5) between Olympia and Fife. The south Puget Sound saw average daily truck volumes of 12,658 on I-5 near Olympia (milepost 106), 15,056 near Tacoma (milepost 131), and 16,018 near Fife (milepost 137). On I-90, average daily truck volumes were 6,404 near North Bend (milepost 34) and 3,385 near Vantage (milepost 137). Average daily truck volumes on State Route (SR) 18 were measured as 5,413 near Auburn (milepost 5) and 3,586 near Snoqualmie (milepost 27).

The 2013 average annual daily truck volume data is not comparable to previous years of data due to a change in the collection process. WSDOT updated the traffic counting equipment in 2013, improving truck classification.

Freight is essential to Washington's economy

WSDOT supports Washington freight systems and freight-dependent industries by directly managing the state's interstate and highway systems, the ferry system, a short-line railroad, and several freight rail programs. WSDOT also provides policy analysis for the state's marine freight interests on the Columbia and Snake rivers and statewide air freight transportation systems.

The state's freight system is an intermodal network of highways and local roads, mainline and short-line railroads,



Data Source: WSDOT Freight Office

The above map shows average daily truck volumes at select locations throughout the state. The size of the circles is proportional to the number of average daily trucks travelling through that location. In addition, it shows the State Truck Freight Economic Corridors, which are comprised of T-1 and T-2 freight corridors, routes that serve as alternatives to the T-1 freight routes, and first/last mile connector routes between freight-intensive land uses and T-1 and T-2 freight corridors. Of the 83,000 centerline miles of roadway in Washington state (which includes more than 7,000 miles of state routes), 3,141 centerline miles are designated as T-1 or T-2 freight corridors. Of these 2,589 miles (82 percent) of T-1 and T-2 corridors are along state routes. Maps of Truck Freight Economic Corridors by Washington region or metropolitan area can be accessed online at http://www.wsdot.wa.gov/Freight/EconCorridors.htm.

Washington is the fourth most trade-dependent state

navigable waterways and deep water ports, and air cargo facilities. Washington's freight system supports both the national and state economies in three primary ways:

- Serving as a global gateway that connects Asian trade flows to the U.S., Alaska to the lower 48 states, and Canada to the U.S. West Coast;
- Transporting "Made in Washington" products to domestic and international customers; and
- Carrying consumer goods such as food and fuel to state residents.

Freight-dependent industries play an important role in the state's economy and accounted for about 1.27 million jobs, 44 percent of Washington's total jobs in 2013:

- 644,700 jobs in the "Delivering Goods to You" industry sectors such as retail and wholesale
- 541,300 jobs in the "Made in Washington" industry sectors such as agriculture, construction, and manufacturing
- 84,700 in the "Global Gateways" industry sectors such as multimodal transportation and warehousing

On a per capita basis, Washington was the fourth most trade-dependent state in the nation with total imports and exports valued at $123.2 billion and gross business income for freight-dependent industry sectors valued at $475 billion.

WSDOT is awarded grant for innovative data collection

WSDOT was awarded a $150,000 competitive grant through the Implementation Assistance Program, which is part of the federal Strategic Highway Research Program 2, to support innovative local freight data collection. The agency will use the funds to investigate how key state supply chains will respond to different policies aimed at reducing freight emissions and their impacts on the state freight system. The research, which is being conducted by the University of Washington and Washington State University, started in August 2014, and is expected to be complete by January 2016.

WSDOT will focus on two of Washington state's important supply chains, the food distribution supply chain in the central Puget Sound and the cross-state wheat supply chain. WSDOT plans to collect food distribution supply chain data at the sub-regional level in the central Puget Sound. The data will be categorized and scaled to incorporate into WSDOT's State Freight Supply Chain model — a Geographic Information System-based portrayal of the state's multimodal freight network — to evaluate supply chains' responses to emission-reducing policy scenarios. The wheat supply chain data will be collected at the statewide level.

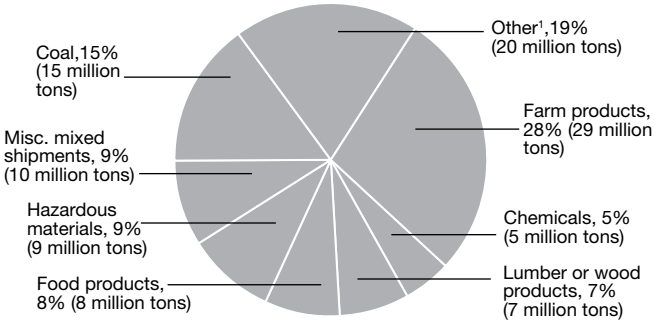
WSDOT will use the data to fill a gap that currently exists in the understanding of commodity movements in Washington. Additionally, the agency expects the information will help highlight how price changes affect choices of companies in the cross-state wheat supply chain.

Freight rail shipments decline by 2 percent between 2011 and 2012

Overall freight rail traffic declined 2 percent from 105.6 million tons in 2011 to 103.3 million tons in 2012 largely due to reductions in shipments for both farm products and coal. Farm products and coal are the two largest commodities shipped by freight rail, accounting for 28 percent and 15 percent of total freight rail tonnage in 2012, respectively. Each of these commodity types decreased by two million tons from 2011 volumes due to a reduced demand for exports, a 7 percent decrease for farm products and an 11 percent decrease for coal. Increases in food, lumber, hazardous materials and mixed shipments slightly offset the reductions. Lumber and food products saw increases of 17 percent and 15 percent, respectively, between 2011 and 2012.

Rail shipments terminating at ports or being purchased within Washington state continued to far outpace rail shipments moving through or

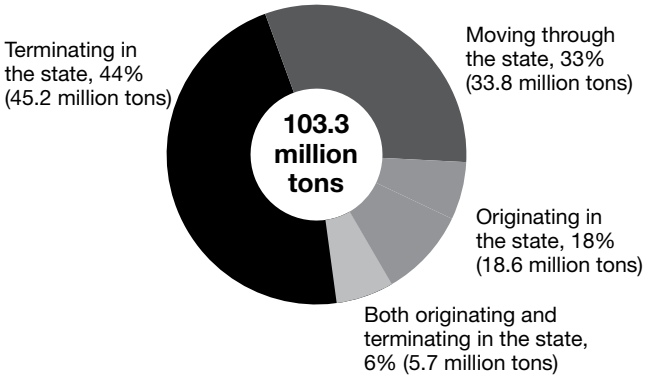
Farm products comprise more than a quarter of Washington's freight rail shipments
Calendar year 2012; Tons of goods shipped by commodity



Data source: WSDOT Freight Systems Division, Surface Transportation Waybill Data.
Note: 1 Includes commodities that comprised 4 percent or less of all commodities shipped by freight rail in 2012. This category includes crude oil, which accounted for 85,360 tons (0.08 percent) of freight rail shipments in 2012.

Two-thirds of Washington waterborne freight is foreign

Most of Washington rail freight ends in the state
2012; Tons of goods shipped by type of movement



Data source: WSDOT Freight Systems Division, Surface Transportation Waybill Data.

originating in the state, indicating that the largest share of freight rail traffic is used to transport goods (mostly grain and other farm products) for export.

Intrastate freight shipments, or those that both originate and terminate within Washington state, had the largest percentage increase of tonnage carried between 2011 to 2012, continuing the growth trend that started in 2009. Because intrastate shipments tend to be relatively short distance trips, they are often done by trucks on state highways. The 4.9 percent increase in intrastate rail shipments between 2011 and 2012 is associated with fewer goods being shipped by trucks.

WSDOT secures funding for short line railroad inventory to assess needs

During the 2014 session, the Washington State Legislature directed WSDOT to use $150,000 to develop an inventory of short line rail system infrastructure to support a data-driven approach to identifying system needs. This project, expected to be complete in 2015, will focus on the following goals:

- Provide a detailed inventory of short-line railroads in the state and their existing infrastructure conditions.
- Define state of good repair and highlight existing gaps noting how the rail systems support regional economic development goals.
- Review a selection of other state's grant and loan programs to inform policy recommendations for Washington state.
- Define a programmatic response to the inventory that includes funding options for the existing grant and loan program. The inventory should better define the specific maintenance and preservation needs of the state's short line rail system, which will inform and suggest funding for the grant and loan program based on actual need.
- Explore existing load centers around Washington state and the potential for additional facility development.

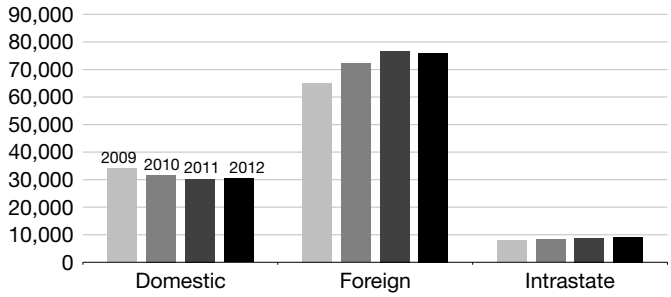
Waterborne freight tonnage declines less than 1 percent

Washington's waterborne freight activity, measured in total tonnage, was 115.6 million tons in 2012 (the most recent year for which waterborne freight data is available). This was less than a 1 percent decrease from 2011 levels, when 115.8 million tons of waterborne freight shipped in Washington.

There are two primary economic waterways in the state, the Puget Sound and the Columbia-Snake River System. The Columbia-Snake System plays a critical role in transporting agricultural and other products between eastern Washington and the lower Columbia seaports, as well as between eastern Washington and the Midwest. In addition, Washington's ports on the Puget Sound function as gateways for containerized commerce between North America and the rest of the world.

Waterborne freight is categorized as foreign, domestic and intrastate depending on both origin and destination. In 2012, nearly 66 percent of Washington's waterborne freight was foreign, 26 percent was domestic, and the remaining 8 percent stayed within Washington state. Between 2011 to 2012, domestic and foreign waterborne shipments remained relatively stable, each changing less than 1 percent. Intrastate waterborne freight, the smallest category, increased 5 percent between 2011 and 2012. Washington's waterborne freight activity continues to closely mirror national trends.

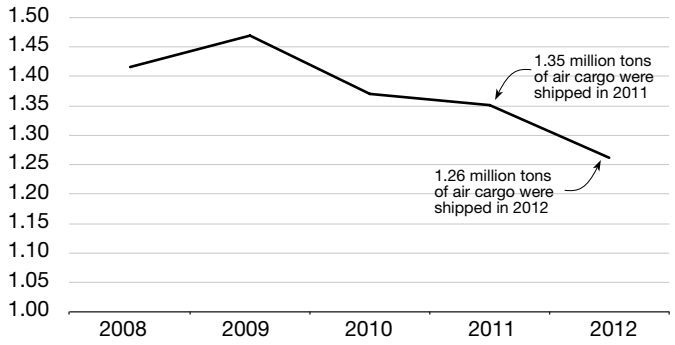
Two-thirds of the state's waterborne freight is foreign
2009 through 2012; Waterborne tonnage in thousands of tons; Domestic, foreign and intrastate waterborne freight



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

Air cargo tonnage declines due to rising fuel costs

Total Washington air cargo tonnage trends down
2008 through 2012; Tonnage measured in millions; Plane plus cargo weight



Data source: Federal Aviation Administration.

Air cargo tonnage falls by nearly 7 percent between 2011 and 2012

Washington airports handled 1.26 million tons of air cargo in 2012, measured in plane plus cargo weight as reported by the Federal Aviation Administration (FAA). This represents a 6.6 percent decrease from 2011 air cargo levels of 1.35 million tons. Rising fuel prices have been a factor in declining air cargo traffic over the last decade. In some cases, air cargo has been diverted to other modes such as truck and marine transportation, which tend to be less sensitive to fuel costs.

Of the 134 public-use airports in Washington state, 24 report air cargo activity. In 2012, the Sea-Tac, Boeing Field/King County, and Spokane international airports handled 51 percent, 31 percent and 17 percent of the state's total air cargo tonnage, respectively. These airports have been designated by the FAA to receive Federal Cargo Apportionment funding based on meeting the qualifying threshold of moving more than 100 million pounds (50,000 tons) of cargo annually.

High-value and time-sensitive goods move through Washington's airports, which play a key role in supporting the state's service sectors as well as the manufacturing and agricultural sectors. Roughly 85 percent of Washington's air freight activity is domestic, involving the movement of air freight between the state and other points in the U.S. Around 16 percent of Washington's air freight activity is international, with Asian (6 percent) and European (8 percent) activity representing the two most significant segments.

Contributors include Chris Herman, Rachel Knutson, Wenjuan Zhao, Alison Wallingford and Zoe Zadworny

Freight Mobility Plan will help guide investments

WSDOT anticipates releasing the final 2014 Freight Mobility Plan soon after the public comment period closes in August 2014. When adopted in its final form, the Washington State Freight Mobility Plan will be used to guide state and federal policies and investments in the state's freight systems. The structure and content of the plan complies with the federal Moving Ahead for Progress in the 21st Century (MAP-21) Act guidance for state freight plans, as well as state requirements.

WSDOT's previous freight plan was completed in 2006, and had a less data-driven focus. The new draft State Freight Mobility Plan was released for public comment in June 2014. (For the full version of the draft freight plan, see http://www.wsdot.wa.gov/Freight/freightmobilityplan.) This plan applies advanced analysis and extensive public outreach to answer many important questions such as:

- Where are the state's high-value supply chains?
- What roads, highways, freight rail lines, waterways and intermodal facilities make up Washington state's freight system? How should WSDOT objectively define the State's Freight Economic Corridors?
- What are the recommended performance goals for the State Freight Economic Corridors? What measures should WSDOT use to evaluate performance?
- Gauged against current performance, what locations on the Freight Economic Corridors have preservation needs and/or poor mobility performance?
- How can WSDOT prepare for future demand on the Freight Economic Corridors?
- How should WSDOT evaluate the economic impacts of highway projects with freight benefits?
- What are the state's priority freight policies, operational and capital project recommendations?

The State Freight Mobility Plan is multimodal. It includes the freight rail findings and recommendations of the Washington State Rail Plan, other state transportation plans, and many of the recommendations found in the recently published Washington Freight Advisory Committee report.

Lean Process Improvements Quarterly Update

54

Notable results

- ***WSDOT and the Department of Licensing reduced the time it takes to approve a new license plate design by 84%***
- ***WSDOT has completed 12 of 36 Lean projects undertaken in the past 18 months***

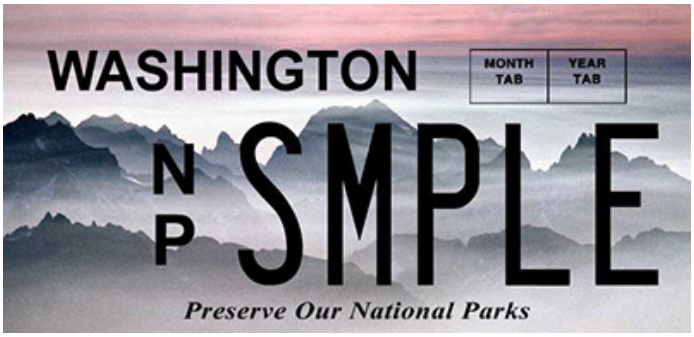
Agencies expedite new license plate designs by 84 percent

Organizations pre-approved for specialty license plates will get through the design process faster, in just about one month, which is a decline from about six months. Washington state residents are becoming increasingly familiar with a wide range of vehicle license plate designs, many of which support non-profit organizations, universities, and causes such as conservation efforts. Vehicle owners are charged an additional $30 fee annually for most types of specialty plates; $28 is revenue for the sponsoring organization. The Washington State Department of Licensing (DOL) works closely with WSDOT and the Washington State Patrol (WSP) to ensure the new designs meet criteria for reflectivity and the ability to be read by WSDOT's electronic tolling system.

In March 2014, DOL, WSDOT and WSP formed an interagency Lean team to improve the process for approving new license plate designs. With input from WSDOT, DOL is now able to provide the sponsoring organizations with clearer guidelines regarding the color spectrum that will likely help to meet tolling requirements the first time around, reducing the number of times the plates need to be re-worked.

Early on, DOL communicates legislative processes to the sponsoring organizations to give them ample time to meet deadlines. The DOL starts talking with organizations as early as two years before the plate gets to the legislative session.

In addition, plate samples manufactured by Correctional Industries were originally sent to DOL staff, who would forward them to WSDOT. Now, they will go directly to WSDOT to test for compatibility with the electronic tolling system.



One of the many specialty design license plates available to Washington state drivers. Fees from this plate help support the state's national parks.

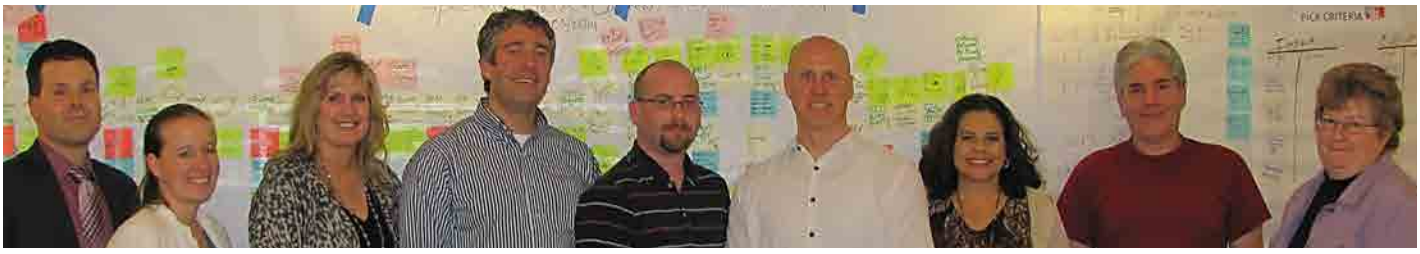
Instead of providing written approval or feedback by mail when returning the test plates, WSDOT now sends an email to DOL, which triggers the next step in the process while the sample plates are in the mail to DOL. These changes alone improved the approval timeline by up to 10 days.

The benefits expected by the team include:

- Cutting the process steps in half (22 down to 11),
- Shortening the approval timeline by 84 percent (206 days down to 33 days), and
- Eliminating eight hand-offs (17 down to nine).

These actions save time and effort by agency staff and, more importantly, expedite delivery of what customers want: specialty plate designs that support the causes they care about.

More information about the specialty design license plates that are currently approved and available is located online at http://www.dol.wa.gov/vehicleregistration/specialdesign.html.



This team expedited delivery of new license plate designs: Rob Huss and Melissa Van Gorkom (WSP); Julie Knittle, Josh Johnston, Matt Lewin, George Price, Toni Wilson, Tom Richardson, and Ellen West (DOL). Not pictured: Tony Marti and Tyler Patterson (WSDOT) and Nancy Williams and Jamie Black (facilitators).

Lean projects streamline processes, eliminate errors

WSDOT has completed 12 of the 36 Lean projects initiated since August 2012 (see *Gray Notebook* 53, pp. 30-32) to improve the effectiveness of processes and better meet customers' needs. WSDOT is incorporating the Lean process to improve the way the agency does business. This quarter's progress and benefits of projects are presented here — one of these projects was completed in a prior quarter and is being reported now due to availability of information. Twenty Lean projects not reported here are also underway; results will be reported when they are available.

Lean projects improve WSDOT's effectiveness and help meet customer needs
April through June 2014; Progress reported on select projects

Project title, program	Changes to process	Measuring success	As a result
NEW: Reduce roadway toll systems vendor deliverable reviews *Toll Operations Office (Toll Division)*	■ Reduced deliverable outline reviews from five to three days. ■ Eliminated meeting to discuss review comments (shortened review cycle by two days).	■ Reduced timeline for deliverable review by 22% from 18 days to 14 days.	Vendors can plan for shorter schedules when delivering products to WSDOT. WSDOT and consultant staff are able to focus their time and resources on more value-added activities.
Standardize Ferries' digital schedule updating *Ferries Division*	■ Added "mistake-proof" features to fields within the data entry process for publishing the ferry schedule online.	■ Less time spent entering data, from 40 hours per schedule update to 24 hours, a 40% reduction.	Customers will receive the vessel sailing schedule with fewer errors, resulting in more satisfied customers, while reducing the staff effort to correct published errors.
Improve claims recovery process *Records and Information Services Office (Enterprise Risk Management Division)*	■ Eliminated batch processing of claims. ■ Eliminated internal approvals for setting up payment plans and sending bills to collections by creating checklists with criteria and steps to complete when considering these actions.	■ Reduce time to make recoveries. ■ Increase percentage of recoveries. ■ Increase standardization of work and reduce internal confusion. ■ Move toward paperless processing.	Each customer will be treated consistently throughout the process of reimbursing WSDOT for damages to WSDOT property or vehicles. WSDOT will recover as much of the damage costs as possible in a timely manner.
Improve Ferries Division purchasing *Ferries Division*	■ Revised policy to reduce number of signatures required on most Ferries Division contracts and purchase orders from seven to three per item. ■ Conduct uniform fitting during new employee orientation on site.	■ Reduced signatures required on documents from seven to three (57% reduction) ■ Saved time by needing fewer signatures. ■ Reduce number of uniforms being returned due to poor fit.	Purchasing department staff (six people) can free up about 1.5 hours per day by needing fewer signatures. Employees will receive correctly fitted uniforms, resulting in fewer returns.
COMPLETED: Improve Public Disclosure Request response process *Records and Information Services Office (Enterprise Risk Management Division)*	■ Began using visual management and twice weekly team huddles to review workload, share information and remove barriers to work flow. ■ Continued using standardized work for employees and customers. ■ Developed awareness campaign and training on records and public disclosure and began statewide training program in April 2014. ■ Began collecting customer feedback using surveys in May 2014. ■ Implemented team Idea Board in May 2014.	■ Reduced average days a Public Disclosure Request is open from 24 days in 2013 to 10 days in 2014, a 58% reduction.	Customers will receive appropriate and timely notifications regarding their public disclosure requests, and they will receive a high-quality response in accordance with the intent of public disclosure laws.
COMPLETED: Toll Division calendar management *Toll Operations Office (Toll Division)*	■ Began using printed calendars outside of shared conference rooms to illustrate room availability. ■ Implemented standard processes regarding updating meeting room calendars electronically.	■ 78% of staff who responded to a recent survey indicated that the calendars have saved them time. ■ 66% of staff have used the printed calendars to find an available conference room when a room has been double-booked.	Staff are saving time that they used to spend trying to schedule meetings or find an available conference room. They refocus that time on the activities that matter to customers.

Data source: WSDOT Toll, Ferries, and Enterprise Risk Management divisions; Washington State Department of Licensing.

Contributors include Jean Baker, Jean Denslow, John Milton, Sayee Vaitheesvaran, Patrick Watson, Ellen West and Anna St. Martin

Capital Project Delivery Programs Quarterly Update

54

Notable results

- *WSDOT completed two Transportation Partnership Account projects this quarter*
- *WSDOT added 15 projects to the Watch List and removed 14 during the quarter; there are 27 projects currently on the list*

WSDOT completes two TPA projects this quarter

WSDOT listed two Transportation Partnership Account (TPA) projects as operationally complete in the fourth quarter of the 2013-2015 biennium (April through June 2014). Operationally complete means the project is open to motorists, but not all work (landscaping, lane striping, etc.) may be finished.

Ten projects are operationally complete so far in the 2013-2015 biennium (July 2013 through June 2014; the biennium goes through June 2015). Of these projects, 60 percent were on time and 70 percent were on budget. The projects' current cost at completion is about $172.7 million, which is about 11 percent less than the baseline estimate of $194.1. million.

A total of 355 of 421 Nickel and TPA projects have been completed since July 2003, with 87 percent on time and 91 percent on budget. The 355 projects' current cost at completion is $5.7 billion, about $100 million (1.7 percent) less than the $5.8 billion baseline cost at completion originally projected by WSDOT.

Goal is 90%

355 projects complete **87** % on time **91** % on budget

Data source: WSDOT Capital Program Development and Management.
Notes: Projects complete are cumulative since July 2003. A project is "on time" if it is operationally complete within the quarter planned in the last approved schedule, and "on budget" if the costs are within 5 percent of the last approved budget. The goal for both measures is 90 percent or higher.

WSDOT completes 355 Nickel and TPA projects
July 2003 through June 2014; Dollars in millions

Project status	Number of projects	Baseline cost at completion
Projects completed in earlier biennia that are *not* included in the current transportation budget	131	$732.9
Projects completed in earlier biennia that *are* included in the current transportation budget	224	$5,073.2
Completed projects subtotal:	**355**	**$5,806.2**
Projects included in the current transportation budget that are not yet complete	66	$10,525.4
Total:	**421**	**$16,331.6**

Data source: WSDOT Capital Program Development and Management.
Note: Numbers may not add exactly due to rounding.

Nickel, TPA funding falling short of original projections

Fuel tax collections show that the revenue forecasts from 2003 and 2005 — used to determine WSDOT's project lists — did not foresee the economic recession in projecting future growth in fuel tax revenues. The 2003 Nickel and 2005 TPA gas taxes that fund projects are fixed tax rates per gallon and do not fluctuate with the price of fuel. As a result, reduced gasoline and diesel consumption results in less tax revenues.

The 2003 Nickel transportation package was originally developed as a 10-year plan, with revenues forecasted to total $1.9 billion from 2003 through 2013. Fuel tax revenues collected during this period fell short of the original March 2003 projections.

Four Nickel projects have been deferred indefinitely while other projects will continue past the original 10-year period. Funding from the 2005 TPA package has also come in short of original March 2005 projections. The original projection for the TPA account was $4.9 billion over a 16-year period from 2005 through 2021. The current projections through 2021 are estimated to be $3.9 billion, a $1 billion reduction (20.6 percent) from the original 2005 projection. WSDOT has deferred nine TPA projects indefinitely due to this revenue shortfall.

Nickel and TPA gas tax revenues are used to pay the debt on the bonds sold to finance the projected projects. Once all the bonds are sold, all revenues collected will be used to pay the debt. In the legislatively enacted 2014 supplemental budget, Nickel bonds are projected to be sold through the 2015-2017 biennium and TPA bonds are expected to be sold through 2023.

Contributors include Mike Ellis, Mitzi Frick, Penny Haeger, Heather Jones, Claudia Lindahl, Charles Rosalin, Theresa Scott, Dean Walker and Joe Irwin

Agency Workforce

WSDOT workforce numbers decrease from last year

As of June 30, 2014; Compared to June 30, 2013

2164 **Highway construction program workforce**

4 % **less** than the 2,258 employed one year ago

Data sources: Department of Enterprise Services Department of Personnel Data Warehouse, Human Resource Management System, WSDOT and Ferries Division payroll and Capital Program Development and Management.

Notes: Highway construction full-time equivalent (FTE) counts are not just permanent full-time positions, but also include temporary hires and part-time workers. The FTE count is based on the number of hours worked. The Legislature has directed WSDOT to reduce the size of its highway construction workforce to a level of 2,000 FTEs by June 30, 2015.

Current Legislative Evaluation and Accountability Program (LEAP)

WSDOT's Nickel and TPA to-do list down to 66 projects

Highway construction performance summary shows about $5.8 billion in projects completed

As of June 30, 2014; Dollars in millions

Combined Nickel and TPA programs		**Number of projects**	**Value of program**
Subtotal of completed projects		**355**	**$5,806.2**
Projects completed in earlier bienniums that are not included in the current transportation budget		*131*	*$732.9*
Projects completed that are included in the current transportation budget		*224*	*$5,073.2*
Projects included in the current transportation budget but not yet complete		66	$10,525.4
Total number of projects[1] in improvement and preservation budget		**421**	**$16,331.6**
Schedule and budget summary Nickel & TPA combined: Results of completed projects in the current Legislative Transportation Budget and prior budgets.	**Completed in 2013-2015 biennium budget**	**Total in current legislative budget**	**Cumulative program[2]**
Number of projects completed	10	224	355
Percent completed early or on time	60%	85%	87%
Percent completed under or on budget	70%	92%	91%
Baseline cost at completion	$194.9	$5,073.2	$5,806.2
Current cost at completion	$172.6	$4,976.9	$5,707.5
Percent of total program over or under budget	11.5% under	1.9% under	1.7% under
Advertisement record: Results of projects entering into the construction phase or under construction are detailed on pp. 39-40.			**Combined Nickel & TPA**
Total current number of projects in construction phase as of June 30, 2014			22
Percent advertised early or on time			82%
Total number of projects advertised for construction in 2013-2015 biennium to date (July 1, 2013 through June 30, 2014)			5
Percent advertised early or on time			40%
Projects to be advertised: Results of projects now being advertised for construction or planned to be advertised, detailed on p. 38.			**Combined Nickel & TPA**
Total projects being advertised for construction bids July 1, 2014 through December 31, 2014			6
Percent on-target for advertisement on schedule or early			50%
Budget status for the 2013-2015 biennium:			**WSDOT biennial budget**
Budget amount for 2013-2015 biennium			$2,922.6
Actual expenditures to date 2013-2015 biennium (July 1, 2013 through June 30, 2015)			$1,089.0
Total 2003 Transportation Funding Package (Nickel) expenditure			*$91.8*
Total 2005 Transportation Partnership Account (TPA) expenditure			*$467.6*
Total Pre-existing Funds (PEF) expenditures[3]			*$529.6*

Data source: WSDOT Capital Program Development and Management.

Notes: Numbers have been rounded. 1 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. 2 Cumulative projects completed from July 1, 2003 to June 30, 2014. 3 For full details of the Pre-existing Funds program, see pp. 44-45. Note: Numbers may not total 100 due to rounding.

Ferries completes construction of M/V *Tokitae*

WSDOT completed one Nickel Ferries project this quarter, wrapping up construction of the M/V *Tokitae* in June. Cumulatively, WSDOT has completed 18 rail projects and 21 WSDOT Ferries Division projects since 2003. Nickel and Transportation Partnership Account (TPA) funding supported approximately $103.3 million in rail projects and another $403.4 million in ferries projects to date. Four Nickel- and TPA-funded rail projects, with awards amounting to $158 million, are under construction or entering the construction phase. One Nickel Ferries project, with an award amounting to $109.4 million, is also under construction or entering the construction phase.

WSDOT finishes 18 rail construction projects since 2003
As of June 30, 2014; Dollars in millions

	Nickel (2003)	TPA (2005)	Combined Nickel & TPA
Schedule, scope, and budget summary: Completed projects			
Cumulative to date (July 1, 2003 through June 30, 2014)	11	7	18
Percent completed early or on time[1]	100%	100%	100%
Percent completed within scope[1]	100%	100%	100%
Percent completed under or on budget[1]	100%	100%	100%
Baseline cost at completion	$62.4	$41.0	$103.3
Current cost at completion	$62.4	$41.0	$103.3
Percent of total program on or under budget[1]	100%	100%	100%
Advertisement record: Projects under construction or entering construction phase			
Cumulative to date (July 1, 2003 through June 30, 2014)			
Total advertised	2	2	4
Percent advertised early or on time	100%	100%	100%
Total award amounts to date	$130.9	$27.1	$158.0

Data source: WSDOT Capital Program Development and Management.
Notes: 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). Numbers may not total 100 due to rounding.

WSDOT finishes 21 Ferries' construction projects since 2003
As of June 30, 2014; Dollars in millions

	Nickel (2003)	TPA (2005)	Combined Nickel & TPA
Schedule, scope, and budget summary: Completed projects[1]			
Cumulative to date (July 1, 2003 through June 30, 2014)	11	10	21
Percent completed early or on time[2]	100%	100%	100%
Percent completed within scope[2]	100%	100%	100%
Percent completed under or on budget[2]	100%	100%	100%
Baseline cost at completion	$59.9	$343.5	$403.4
Current cost at completion	$59.9	$343.5	$403.4
Percent of total program on or under budget[2]	100%	100%	100%
Advertisement record: Projects under construction or entering construction phase[3]			
Cumulative to date (July 1, 2003 through June 30, 2014)	1	0	1
Percent advertised early or on time[2]	100%	100%	100%
Total award amounts to date	$109.4	0	$109.4

Data source: WSDOT Capital Program Development and Management.
Notes: 1 Ferries completed projects record includes one 144-car vessel, the Motor/Vessel (M/V) *Tokitae*, which started service in June 2014, and three 64-car vessels, the M/V *Chetzemoka,* which started service in November 2010, the M/V *Salish*, which started service in July 2011, and the M/V *Kennewick*, which started service in February 2012. 2 The Legislature funds ferry projects at a grouped-project or Budget Identification Number 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). 3 Decrease in projects under construction this quarter is due to the completion of the M/V *Tokitae* in June 2014. Numbers may not total 100 due to rounding.

WSDOT finishes 10 projects in current biennium

Biennial summary: WSDOT relying more on Transportation Partnership Account funds for capital projects

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

Cumulative to date	Fund type	On time advertised	On time completed	Within scope	Baseline estimated cost	Current estimated cost	On-budget completed
Current quarter reporting on capital project delivery							
2013-2015 biennium summary[1] This information is updated quarterly throughout the biennium.	1 Nickel 9 TPA	6 on time 4 late	6 on time 4 late	10	$194.1	$172.7	7 on budget 3 over budget
Earlier reporting on capital project delivery							
2011-2013 biennium summary See *Gray Notebook* 50, p. 31.	5 Nickel 36[1] TPA	31[1] on time 10 late	32[1] on time 9 late	41[1]	$1,485.5[1]	$1,459.6[1]	37[1] on budget 4 over budget
2009-2011 biennium summary[2] See *Gray Notebook* 42, p. 45.	16 Nickel 74 TPA	73 on time 17 late	80 on time 10 late	90	$1,641.6	$1,597.0	85 on budget 5 over budget
2007-2009 biennium summary See *Gray Notebook* 34, p. 58.	42 Nickel 69 TPA	91 on time 20 late	96 on time 15 late	111	$1,685.7	$1,685.2	102 on budget 9 over budget
2005-2007 biennium summary See *Gray Notebook* 26, p. 5.	52 Nickel 24 TPA	71 on time 5 late	68 on time 8 late	76	$673.9	$668.8	67 on budget 9 over budget
2003-2005 biennium summary See *Gray Notebook* 19, p. 5.	27 Nickel	25 on time 2 late	27 on time 0 late	27	$124.6	$124.4	25 on budget 2 over budget

Data source: WSDOT Capital Program Development and Management.

Notes: 1 Numbers have been updated since *Gray Notebook* 51 to reflect the addition of a completed project that was reported after the biennium. 2 In editions of the *Gray Notebook* published before the 2009-2011 biennium, WSDOT used a project count of 391 combined Nickel and TPA projects for project completion data. In conjunction with the 2009-2011 biennium wrap-up, the tables were reorganized to present the completed information for the current project count of 421. In the revised count, several projects that were developed as part of larger programs, like bridge, rail, and roadside safety, were included in the new count though they had been completed earlier. Dollars rounded up. Prior *Gray Notebooks* may be accessed at http://www.wsdot.wa.gov/Accountability/GrayNotebook/gnb_archives.htm.

Projects to be advertised

Six projects in the six-month delivery pipeline for July through December 2014

Transportation Partnership Account (TPA) projects planned to be advertised; Dollars in millions

Project description (County)	Fund type	Baseline planned ad date	Current planned ad date	On schedule	Baseline estimated cost at completion	Current estimated cost at completion
SR 167/SR 18 Interchange West-North Ramp North-East Ramp Overcrossing – Seismic Retrofit	TPA	Nov-2014	Oct-2014	√	$0.3	$0.3
SR 3/Belfair Area – Widening and Safety Improvements	TPA	Jun-2013	Oct-2014		$18.2	$19.3
SR 162/Puyallup River Bridge – Replace Bridge	TPA	Dec-2013	Sep-2014		$15.6	$15.6
SR 167/I-5 to SR 161 Stage Two – New Freeway	Nickel	Dec-2014	Dec-2014	√	$26.1	$25.7
I-205/Mill Plain Interchange to Northeast 18th Street – Build Interchange – Stage 2	TPA	Apr-2014	Aug-2014		$94.2	$62.6
SR 167/8th Street East Vicinity to South 277th Street Vicinity – Southbound Managed Lane	TPA	Nov-2014	Aug-2014	√	$82.0	$82.0

Data source: WSDOT Capital Program Development and Management.

WSDOT shows Nickel and TPA advertisement progress

Twenty-two WSDOT projects in construction phase as of June 30, 2014

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

Project description Cumulative to date (County)	Fund type	On time advertised	Ad date	Contractor	Operationally complete date	Award amount
I-5 Concrete Rehabilitation Program (King)	Nickel	√	Jul-2009	multiple contractors	May-2023	$9.8
Multiple contractors continue to work on this project.						
I-5/Northeast 134th Street Interchange (I-5/I-205) – Rebuild Interchange – Stage 2 (Clark)	Nickel	√	Apr-2012	Max J. Kuney	Dec-2014	$54.9
SR 99/Alaskan Way Viaduct – Replacement (King)						
This project replaces an aging viaduct with a new viaduct on the south end and adds a tunnel in downtown Seattle.						
• SR 99/South Massachusetts Street to Union Street – Electrical Line Relocation	TPA	√	May-2008	Frank Coluccio Construction	Nov-2009	$17.0
This subproject has several contract components; the contract awarded to Skanska USA in May 2010 began removal of the southern portion of the viaduct. Work was delayed from October 2013 because nearby bridge construction and a busy sports season reduced the number of available days for road closures.						
• SR 99/Battery Street Tunnel – Safety Improvements	TPA	√	Nov-2009	Signal Electric	Nov-2010	$2.4
Additional sign-bridges have some elements that were not initially planned. Additional environmental right of way work and review was needed.						
• SR 99/South King Street Vicinity to Roy Street – Viaduct Replacement	Nickel/ TPA	√	May-2010	Seattle Tunnel Partners	Dec-2015	$1,089.7
• SR 99/South Holgate Street to South King Street – Viaduct Replacement	TPA	√	Oct-2009 May-2010	Signal Electric Skanska USA Civil West	Jan-2014 Jan-2014	$4.9 $114.6
This subproject has several contract components; the contract awarded to Skanska USA in May 2010 began removal of the southern portion of the viaduct. Work was delayed from October 2013 because nearby bridge construction and a busy sports season reduced the number of available days for road closures.						
U.S. 395/North Spokane Corridor (NSC) – Design and Right of Way – New Alignment (Spokane)	Nickel/ TPA					
The U.S. 395/North Spokane Corridor project is ongoing and several phases still require funding.						
• U.S. 395/NSC – Francis Avenue Improvements	Nickel	√	Apr-2012	Graham Construction	Nov-2013	$14.4
I-5/Mellen Street Interchange to Grand Mound Interchange – Add Lanes (Thurston, Lewis)	TPA					
• I-5/Blakeslee Junction Railroad Crossing to Grand Mound Interchange – Add Lanes	TPA	√	Feb-2010	Tri-State Construction	Dec-2011	$19.7
• I-5/Mellen Street to Blakeslee Junction – Add Lanes, Interchange Improvements	TPA	√	Mar-2012	Cascade Bridge	Dec-2015	$21.6
The operationally complete date was delayed due to schedule adjustments needed for complex traffic revisions, demolitions, repairs and painting of nearby bridges.						
• I-5/Mellen Street Interchange – Interchange Improvements	TPA	√	Combined with project above for construction efficiencies.			
I-5/Chehalis River – Flood Control (Lewis)	Nickel	√	Mar-2012	Cascade Bridge	Dec-2014	$21.6
The operationally complete date was delayed to allow additional time for environmental and geotechnical analysis and to finalize designs for drainage and intersections.						
SR 502/I-5 to Battle Ground – Add Lanes – Stage 2 (Clark)	TPA	√	Jan-2014	Rotschy	Oct-2016	$27.5
SR 105/North River Bridge – Replace Bridge (Pacific)	TPA	√	Jun-2012	Scarsella Bros.	Sep-2014	$23.0
SR 105/Smith Creek Bridge – Replace Bridge (Pacific)	TPA	√	Combined with SR 105/North River Bridge project (above) for efficiency.			
U.S. 101/Middle Nemah River Bridge – Replace Bridge (Pacific)	TPA	√	Jun-2012	SB Structures	Aug-2014	$3.3
U.S. 101/Hoh River (Site No. 2) – Stabilize Slopes	TPA	√	Apr-2014	Strider Construction	Oct-2014	$2.2
SR 522/Snohomish River Bridge to U.S. 2 – Add Lanes (Snohomish)	Nickel	√	Apr-2010	Scarsella Bros.	Nov-2014	$88.7
SR 9/84th St. Northeast (Gethchell Road) Improve Intersection (Snohomish)	TPA	√	Nov-2013	Rodarte Constructon	Nov-2014	$3.7
SR 6/Rock Creek Bridge East – Replace Bridge (Lewis)	TPA	Late	Dec-2013	Scarsella Bros.	Sep-2015	$6.9
Advertisement was delayed to address permitting issues with several agencies.						
SR 6/Rock Creek Bridge West – Replace Bridge (Lewis)	TPA	Late	Dec-2013	Scarsella Bros.	Sep-2015	$4.7
Advertisement was delayed to address permitting issues with several agencies.						

Table continued on p. 40.

WSDOT shows Nickel and TPA advertisement progress, *continued*

Table continued from p. 39

Project description Cumulative to date (County)	Fund type	On time advertised	Ad date	Contractor	Operationally complete date	Award amount
SR 520/Bridge Replacement and HOV (King)	TPA					
• SR 520/Pontoon Construction (Grays Harbor, Pierce)	TPA	√	Aug-2009	Kiewit-General, A Joint Venture	Jul-2014	$367.3
Portions of this project are now in construction, but were not previously captured in *Gray Notebook* "Projects to be advertised" tables.						
• SR 520/I-5 to Medina – Evergreen Point Floating Bridge and Landings	TPA	√	Dec-2010	Kiewit-General, A Joint Venture	Dec-2014	$586.6
• SR 520/Medina to SR 202 Vicinity – Eastside Transit and HOV	TPA	√	May-2010	Eastside Corridor Constructors	Aug-2014	$306.3
Contractor delays due to pontoon construction repairs continue, and delayed the operationally complete date from Match to July 2014.						
SR 6/Willapa River Bridge – Bridge Replacement (Pacific)	TPA	√	Mar-2013	Rotschy	Nov-2014	$7.1
I-5/Tacoma HOV Improvements (Pierce)	Nickel/ TPA					
• I-5/M Street to Portland Avenue – Add HOV Lanes	Nickel	√	Mar-2014	Pending	Feb-2017	Pending
• I-5/Port of Tacoma Road to King County Line – Add HOV Lanes	Nickel	Late	Jun-2009	Tri-State Construction	May-2011	$31.0
Advertisement date was delayed due to design challenges associated with stormwater and floodplain issues, resulting in a formal consultation with U.S. Fish and Wildlife and National Oceanic and Atmospheric Administration. Inflation factor applied in early July 2008 added $6.6 million to project cost estimate. This project has received federal American Reinvestment and Recovery Act funds.						
• I-5/SR 16 Interchange – Rebuild Interchange	TPA	√	Jul-2008	Guy F. Atkinson Construction	Jun-2011	$119.9
• I-5/SR 16/Eastbound Nalley Valley – HOV	Nickel/ TPA	√	Jun-2011	Mowat Construction Company	Jul-2014	$74.7
Adverse weather reduced the number of workable days in the schedule and delayed the operationally complete date from March to July 2014.						
I-405/Kirkland Vicinity, Stage 2 – Widening (Snohomish, King)	Nickel/ TPA					
• I-405/SR 520 to SR 522 – Widening Stage 2	Nickel	Early	Nov-2010	Gary Merlino Construction	Dec-2015	$10.7
• I-405/Northeast 195th Street to SR 527 – Northbound Widening	TPA	Early	May-2009	Kiewit Pacific	Jun-2010	$19.3
SR 161/24th Street East to Jovita – Add Lanes (Pierce)	Nickel	Late	Feb-2011	Tri-State Construction	May-2014	$11.9
Advertisement date was delayed to coordinate with local agencies. Project operationally-complete date delayed from June 2012 due to an error in the electronic bidding system, which required re-advertisement. Operationally complete date has been delayed from September 2013, marking a change from *Gray Notebook* 50, p. 33.						
SR 302/Key Peninsula Highway to Purdy Vicinity Safety and Congestion	TPA	Late	May-2014	Tucci and Sons	Feb-2015	$1.3
The advertisement date was delayed to complete right of way acquisition and utility work.						
I-90/Snoqualmie Pass East – Hyak to Keechelus Dam – Corridor Improvement (Kittitas)	TPA					
• I-90/Snoqualmie Pass East, Phase 1A Hyak to Crystal Springs – Detour	TPA	Early	Feb-2009	KLB Construction	Oct-2009	$3.3
• I-90/Snoqualmie Pass East, Phase 1B Hyak to Snowshed Vicinity – Add Lanes and Bridges	TPA	√	Nov-2009	Max J. Kuney Company	Oct-2013	$76.7
• I-90/Snowshed to Keechelus Dam Phase 1C – Replace Snowshed and Add Lanes	TPA	Late	Apr-2011	Guy F. Atkinson Construction	Oct-2017	$177.1
Advertisement was delayed to address fire and safety issues with the original snowshed design, resulting in long-term savings.						

Data source: WSDOT Capital Program Development and Management.

Original Legislative Evaluation and Accountability Program (LEAP)

WSDOT completes 118 Nickel-funded highway projects

The performance summaries below and those on p. 42 provide status reports on WSDOT's delivery of the Nickel and Transportation Partnership Account (TPA) programs compared to the original legislative funding package as presented in the 2003 and 2005 Legislative Evaluation and Accountability Program (LEAP) lists.

The Legislature has approved changes to these funding packages and assigned funds to different projects since these two funding packages were created. As a result, the data listed below and on the next page show the original funding package (LEAP), which differs from the current legislative budgets on pp. 36-37.

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

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

WSDOT project delivery and budget update: Original 2003 Transportation Funding Package (Nickel)
As of June 30, 2014; Dollars in millions

	Total program		Highways		Ferries		Rail	
Project delivery update	**Number of projects**	**Percent of total**	**Number of projects**	**Percent of program**	**Number of projects**	**Percent of program**	**Number of projects**	**Percent of program**
Project number and phase	**156**		**127**		**5**		**24**	
Completed projects	118	75%	102	80%	2	40%	14	58%
Total projects underway	25	18%	22	17%	2	40%	1	4%
In pre-construction phase	*13*		*12*		*1*		*0*	
In construction phase	*12*		*10*		*1*		*1*	
Projects starting in the future	1	1%	0	0%	0	0%	1	4%
Projects deferred or deleted from program	12	6%	3	2%	1	20%	8	33%
Number of legislatively-approved scope changes	*20*		*18*		*0*		*2*	
Pre-construction starts within six months	*0*		*0*		*0*		*0*	
Construction starts within six months	*1*		*1*		*0*		*0*	

Data source: WSDOT Capital Program Development and Management.
Notes: Totals do not include local programs projects. Percents may not equal 100% due to rounding.

	Total program		Highways		Ferries		Rail	
Project budget update	**Budget**	**Percent of total**	**Budget**	**Percent of program**	**Budget**	**Percent of program**	**Budget**	**Percent of program**
Total original legislative planned budget	**$3,887.5**		**$3,380.1**		**$297.9**		**$209.5**	
Original plan, 2003 through 2011-2013 biennium	$3,887.5	100%	$3,380.1	100%	$297.9	100%	$209.5	100%
Actual expenditures, 2003 through 2011-2013 biennium	$3,700.8	95%	$3,297.7	98%	$271.6	91%	$131.5	63%
Original plan through 2013-2015 biennium	$3,887.5	100%	$3,380.1	100%	$297.9	100%	$209.5	100%
Current plan through 2013-2015 biennium	$4,222.7	109%[1]	$3,626.2	107%[1]	$461.6	155%[1]	$134.9	64%
Actual expenditures, 2003 through June 30, 2014	$3,875.8	100%	$3,389.5	100%	$354.7	119%[1]	$131.6	63%

Data source: WSDOT Capital Program Development and Management.
Notes: 1 The state Legislature added $130 million for construction of a second 144-vehicle ferry for the WSDOT Ferries Division and for highway construction during the first quarter (July through September) of the 2013-2015 biennium. These funds put the program above its original funding level and will result in continued over-performance by this program. Expenditures are Nickel funds only. Totals do not include local programs projects.

WSDOT completes seven TPA-funded rail projects

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

As of June 30, 2014; Dollars in millions

Project delivery update	Total program		Highways		Ferries		Rail	
	Number of projects	Percent of total	Number of projects	Percent of program	Number of projects	Percent of program	Number of projects	Percent of program
Project number and phase	**248**		**229**		**4**		**15**	
Completed projects	184	74%	177	77%	0		7	47%
Total projects underway	46	19%	41	18%	1	25%	4	27%
In pre-construction phase	*20*		*19*		*0*		*1*	
In construction phase	*26*		*22*		*1*		*3*	
Projects starting in the future	6	2%	2	1%	1	25%	3	20%
Projects deferred or deleted from program	14	6%	11	5%	2	50%	1	7%
Number of legislatively-approved scope changes	*23*		*23*		*0*		*0*	
Pre-construction starts within six months	*1*		*1*		*0*		*0*	
Construction starts within six months	*4*		*4*		*0*		*0*	

Data source: WSDOT Capital Program Development and Management.
Notes: Totals do not include local programs projects. Percents may not equal 100% due to rounding. Since the Transportation Partnership Account (TPA) program was passed in 2005, the Legislature has approved changes to WSDOT Ferries Division's construction program so that the current budget does not match the original budget. Among the changes, TPA funding was provided for the 64-car ferries. For definitions about terminology used in Original LEAP, see *Gray Notebook* 53, p. 40.

Project budget update	Total program		Highways		Ferries		Rail	
	Budget	Percent of total	Budget	Percent of program	Budget	Percent of program	Budget	Percent of program
Total original legislative planned budget	**$6,982.1**		**$6,678.5**		**$185.4**		**$118.3**	
Original plan, 2005 through 2011-2013 biennium	$4,084.8	59%	$3,886.3	58%	$87.7	47%	$110.9	94%
Actual expenditures, 2005 through 2011-2013 biennium	$3,804.3	54%	$3,656.2	55%	$77.0	42%	$71.1	60%
Original plan through 2013-2015 biennium	$5,641.4	81%	$5,386.8	81%	$136.3	74%	$118.3	100%
Current plan through 2013-2015 biennium	$5,165.5	74%	$5,004.7	75%	$79.8	43%	$81.0	69%
Actual expenditures, 2005 through June 30, 2014	$4,271.8	61%	$4,123.7	62%	$77.0	42%	$71.1	60%

Data source: WSDOT Capital Program Development and Management.
Notes: Expenditures are TPA funds only. Totals do not include local programs projects.

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

During the quarter ending June 30, 2014, WSDOT approved two change orders costing $500,000 or more. These change orders totaled approximately $3.1 million, $2 million of which addressed the re-design work and moorage for the State Route (SR) 520 floating bridge pontoons. A $1.1 million change order on the SR 99 Bored Tunnel Alternative Design-Build project addressed a sales tax discrepancy that arose during the project. After an extensive review, which can involve subject matter experts, contract specialists, and permit agencies or 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://1.usa.gov/Sb96L8.

WSDOT completes two TPA projects during the quarter

WSDOT completed two Transportation Partnership Account (TPA) projects in the fourth quarter of the 2013-2015 biennium (April through June 2014). These projects included replacing a single-lane bridge on State Route (SR) 9 at Pilchuck Creek with a wider structure, and improving fish passage in Padden Creek beneath SR 11.

Project delivery performance on completed projects' budgets and schedules is measured against the latest approved budgets in accordance with criteria established by the Legislature. For this quarter, it is the 2014 transportation budget.

In addition to the projects' last approved budgets and schedules, original legislative budgets and schedules are included to show changes that may have occurred during design and construction phases. Nickel and TPA budgets and schedules reset whenever changes are made in the last approved legislative budget. For information on previously completed 2003 Nickel and 2005 TPA projects, visit http://www.wsdot.wa.gov/projects/completed.

SR 9/Pilchuck Creek – Replace Bridge
TPA (Snohomish County)

This project replaced the single-lane Pilchuck Creek Bridge on SR 9 in north Snohomish County with a wider, two-lane bridge and realigned the roadway to improve sight distance.

Project benefits: Replacing the single-lane bridge with a wider, two-lane bridge with shoulders reduces the potential for collisions and relieves congestion along the SR 9 corridor. The realigned roadway also improves sight distance for drivers.

Highlights/challenges: The roadway alignment approaching both ends of the bridge did not meet design standards. A solution more comprehensive than replacing the bridge was developed by a Cost Risk Assessment/Value Engineering study team in December 2009. This solution included reducing the speed limit from 60 mph to 55 mph; using retaining walls to reduce the right of way acquisition and environmental impacts; constructing a curved steel plate girder bridge; and consolidating local access at the south end of the bridge.

These changes increased the cost by $13.4 million from $6.3 million to $19.7 million. The cost was later reduced when the project's construction was awarded for 27 percent less than the engineer's estimate. The completion date was delayed as two full construction seasons were needed to complete the project.

The removal of the existing functionally obsolete bridge, which no longer meets traffic needs on SR 9, is estimated at $1.7 million and will be delivered as a separate project. (See related article on bridge preservation work on p. 4)

Budget performance: The project was completed for $15.8 million, on target with the last approved budget, and approximately $9.8 million more than the original 2006 budget of $6 million.

Schedule performance: The project was completed in May 2014, on target with the last approved schedule and more than two years later than the original schedule of March 2012.

SR 11/Padden Creek – Fish Barrier Removal
TPA (Whatcom County)

This project replaced a portion of a brick tunnel that channelized Padden Creek and was a barrier to fish passage with a new bridge on SR 11. WSDOT worked with the city of Bellingham to remove the tunnel so the city could create a natural streambed that receives more daylight.

Project benefits: Removing the old brick tunnel and replacing it with a shorter bridge improves fish passage and enhances the environment of the stream by creating a more natural habitat.

Highlights/challenges: A design change altered construction plans in favor of building a bridge instead of a larger culvert. This modification increased costs by $1.3 million. The project was awarded 6 percent higher than the engineer's estimate for construction of the project. The onset of winter weather delayed the paving and subsequent opening of the bridge from December 2013 to May 2014.

Budget performance: The project was completed for approximately $2.75 million, $60,000 more than the last approved budget of $2.69 million, and approximately $1.61 million more than the original 2009 budget of $1.14 million.

Schedule performance: The project was completed in May 2014, on target with the last approved schedule and almost three years later than the original schedule of June 2011.

Contributors include Mike Ellis, Mitzi Frick, Penny Haeger, Theresa Scott and Joe Irwin

WSDOT advertises 33 Pre-existing Funds projects

WSDOT advertised 33 Pre-existing Funds (PEF) projects in the fourth quarter of the 2013-2015 biennium (April through June 2014). Of these advertised projects, six were early, 14 were on time, eight resulted from unexpected events, like the landslide on State Route (SR) 530 near Oso, and five were late. Ten projects scheduled for the quarter were delayed to future quarters, four were deferred out of the biennium and four were deleted (see *Gray Notebook* 51, p. 38, for definitions of PEF terms).

The current cost to complete the 33 PEF projects advertised this quarter is approximately $141.8 million, about $7.1 million (4.8 percent) less than the original value of $148.9 million. Work to clear slide debris from SR 530 accounted for $47.1 million of this total.

Since the beginning of the 2013-2015 biennium there have been 157 advertisements. The current cost to complete them is approximately $281.7 million, about $57.8 million (17 percent) less than the original value of $339.5 million. The cost reduction is due to competitive bids resulting in savings to these projects. In total, WSDOT has 258 PEF advertisements planned during the 2013-2015 biennium. The current estimated cost to complete them is $401.7 million, about $172.8 million (30 percent) less than the original value of $574.5 million.

Unlike Nickel and Transportation Partnership Account (TPA) projects, which come from a fixed list of projects set by the Legislature and funded with line item budgets, PEF projects are primarily funded at the program level through federal, state and local sources. This gives WSDOT flexibility to tackle a variety of projects, such as paving work, bridge repairs and fish passage improvements on an as-needed basis.

Cost to complete WSDOT's project advertisements indicates continued savings through June 2014
2013-2015 biennium (July 2013 through June 2015); Quarter ending June 30, 2014; Dollars in millions

	Number of projects	Original value	Current cost to complete
Total PEF advertisements planned 2013-2015 biennium	258	$574.5	$401.7
Planned advertisements through June 30, 2014	177	$367.2	$236.5
Actual advertisements through June 30, 2014	157	$339.5	$281.7

Data source: WSDOT Capital Program Development and Management.

WSDOT completes 91 percent of Pre-existing Funds project advertisements on time for biennium
2013-2015 biennium (July 2013 through June 2015)

Project status	Quarter[1]	Cumulative[2]
Projects advertised early	6	6
Projects advertised on time	14	128
Emergent projects advertised	8	13
Late projects advertised	5	10
Total projects advertised	**33**	**157**
Projects delayed within the biennium	10	31
Projects deleted	4	5

Data source: WSDOT Capital Program Development and Management.
Notes: 1 The quarter refers to April through June 2014.
2 Cumulative refers to July 2013 through June 2014. July 1, 2013 marked the beginning of the 2013-2015 biennium.

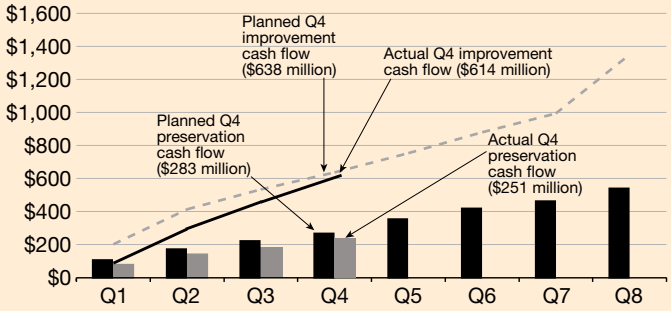
Improvement and preservation projects cost less than planned

WSDOT planned to spend $638 million on improvement projects, but spent $24 million less ($614 million) during the fourth quarter of the biennium. This 4 percent reduction was due to many contracts being awarded under estimate, along with continued project savings. The improvement program funds projects that optimize highway capacity, enhance safety, and reduce the environmental impact of construction projects.

WSDOT planned to spend $283 million on preservation projects during the fourth quarter of the 2013-2015 biennium, but spent $251 million. The 11 percent reduction, which amounts to about $32 million, was due to favorable bids, and using project prioritization to restrict funding to the most needed projects, while delaying less pressing projects. The preservation program includes pavement, bridges and other projects that maintain the structural integrity of the existing highway system.

Contributors include Dean Walker and Joe Irwin

WSDOT Pre-existing Funds preservation and improvement cash flows edge toward planned levels
2013-2015 biennium; Quarter ending June 30, 2014; Planned vs. actual expenditures; Dollars in millions



Data source: WSDOT Capital Program Development and Management.
Note: Q4 refers to the fourth quarter (April through June) of the 2013-2015 biennium (July 2013 through June 2015).

WSDOT addresses eight emergent projects

WSDOT advertises 33 Pre-existing Funds projects this quarter

April through June 2014

Early (6)	
I-5/Vicinity Tumwater Boulevard to Gravelly Lake Drive – Paving	SR 14/Bingen to Maryhill Road Vicinity Including Spur – Chip Seal
I-5/NE 39th Street Vicinity to NE 99th Street – Paving	U.S. 197/Oregon State Line to SR 14 – Chip Seal
U.S. 12/0.8 Miles West of Chapman Road – Erosion Protection	I-90/Barker Road to Idaho State Line – Paving
On time (14)	
I-5/NE 117th Street to SR 104 – Pavement Repair	SR 4/0.3 Miles West of Cathlamet – Fish Passage
SR 18/Green River (Neeley) Bridge – Painting	SR 4/0.42 Miles West of Cathlamet – Fish Passage
SR 28/Rock Island Road – Intersection Improvements	U.S. 97/Biggs Rapids Bridge – Painting
SR 8/South of East Fork Wildcat Creek Bridge to South of Cooper Road – Paving	SR 141/White Salmon River Bridge – Painting
SR 108/North of Curran Street to South of Little Creek Casino – Chip Seal	SR 141/Bingen to Skamania County Including Spur – Chip Seal
SR 161/South of Lynch Creek Road to North of South Creek Bridge – Chip Seal	SR 508/I-5 to SR 7 – Chip Seal
Southwest Region: Region Wide Basic Safety – Signing	SR 167/Express Toll Lanes Continuous Access
Emergent (8)	
I-82/Selah Creek Eastbound/Westbound RV Dump Station Rehabilitation	U.S. 101/Hoh River (Site No. 2) – Stabilize Slopes
SR 530 Slide	SR 302/Key Peninsula Highway to Purdy Vicinity – Safety and Congestion
SR 532/Davis Slough Bridge Replacement – Flood Prevention	I-90/West of Ryegrass Rest Area Westbound – Paving
SR 3/Chico Creek – Construct Weir	SR 241/Mabton-Sunnyside Bridge – Emergent Need Repair
Late (5)	
I-82/Prosser RV Dump Station Rehabilitation Project delayed to allow funding of higher priority projects.	SR 507/Yew Street – Intersection Improvements Project delayed to allow completion of right of way certifications.
I-90/Sprague Lake Eastbound RV Dump Station Rehabilitation Project delayed to allow funding of higher priority projects.	U.S. 97/Branch Road/Railroad crossing – Install Gates and Stop Refuge Project delayed to allow Yakima County to add track surfacing work to contract.
SR 3/SR 304 to SR 303 – Paving Project delayed to combine with another project for efficiencies.	
Delayed (10)	
Olympic Region Wide Basic Safety – Guardrail Project delayed for engineering of a scope change.	SR 25/China Bend North Railroad Crossing – Safety Improvements Project delayed to complete agreements and order materials.
U.S. 101/Hoquiam River-Simpson Avenue Bridge – Bridge Painting Project delayed for completion of load rating analysis on Simpson Avenue Bridge.	SR 27/Palouse and Garfield Railroad Crossing – Safety Improvement Project delayed to complete agreements and order materials.
SR 410/North of Meyers Road East to 214th Avenue East – Paving Project delayed to avoid conflicts with other projects.	SR 206/Elliot Road Drainage – Headwall Retrofit Project delayed to allow county to secure right of way permit.
Southwest Region Wide Basic Safety – Guardrail Project delayed for workforce balancing.	SR 272/Palouse East Railroad Crossing – Safety Improvement Project delayed to complete agreements and order materials.
U.S. 2/Junction SR 206 Intersection Analysis of Alternatives Project delayed complete purchase of right of way.	SR 902/Medical Lake Railroad Crossing – Safety Improvement Project delayed to complete agreements and order materials.
Deferred (4)	
SR 224/SR 225 – Benton City – Construct Intersection Improvements Project deferred to allow completion of a funding agreement with FHWA	I-5/Gee Creek Northbound RV Dump Station Rehabilitation Project deferred to allow funding of higher priority projects.
U.S. 2/Junction I-90 to Euclid Ave. – Paving Project deferred to allow funding of higher priority projects.	SR 14/Nelson Creek Road Vicinity to Bingen – Chip Seal Project deferred to allow funding of higher priority projects.
Deleted (4)	
I-5/Vicinity of Center Drive – Interchange Improvements Project deemed unneeded and deleted. Work to be done with other projects.	SR 27/Indiana Junction – Union Pacific Railroad Crossing – Safety Improvements Project deemed unneeded and deleted. Work to be done with other projects.
I-5/SR 16 Interchange South-North Ramp – Seismic Retrofit Project deemed unneeded and deleted. Bridge to be replaced by another project.	U.S. 2/East of Coulee City – Railroad Crossing Improvements Project deemed unneeded and deleted. Work to be done with other projects.

Data source: WSDOT Capital Program Development and Management.

Watch List

WSDOT adds 15 projects to Watch List, removes 14

WSDOT added 15 projects to its Watch List and removed 14 this quarter (April through June 2014). As of June 30, there were 27 projects remaining on the Watch List.

WSDOT maintains the Watch List to deliver on the agency's commitment to "No Surprises" reporting and continuously monitors its projects' performance to ensure issues affecting schedule or budget are brought to the attention of executives, legislators and the public. The Watch List provides information on issues currently affecting projects, and those that could potentially impact the schedules and budgets of WSDOT projects. The Watch List helps WSDOT track these projects, providing status reports, explaining the factors affecting delivery and what WSDOT is doing to address them. Projects are removed from the Watch List when these issues are resolved.

See *Gray Notebook* 51, p. 40 for a list of common issues that might move a project to the Watch List. To read more about the Watch List items, visit http://www.wsdot.wa.gov/Projects/Reports/.

WSDOT's Watch List projects with schedule or budget concerns
Quarter ending June 30, 2014

Project (County)	Date added	Date removed	Watch List issue
SR 16/Tacoma Narrows Bridge - Replace Maintenance Traveler (Pierce)	Jun 2014	Jun 2014	The bid for the project was higher than anticipated and WSDOT opted to award the contract rather than delay it. This project was removed from the Watch List.
I-205/Mill Plain Interchange to NE 18th St - Build Interchange - Stage 2 (Clark)	Jun 2014		The advertisement date was delayed until July 2014 to incorporate practical design changes.
I-5/Klickitat Drive Slide (King)	May 2014		Emergency work is required to repair a slope and elevated walkway after heavy rains in March 2014 caused landslide damage in the city of Tukwila.
I-5/McAllister Creek Bridge – Special Repair (Thurston)	May 2014	May 2014	Due to the better-than-anticipated condition of bridge pilings, the project was deferred four years. This project was removed from the Watch List.
U.S. 101/North of Salmon Creek Bridge – Stabilize Slope (Grays Harbor)	May 2014		Ongoing landslide movement on the side slope threatens to close U.S. 101. The scope and schedule are at risk and continued drainage efforts are necessary.
U.S. 12/0.8 Miles West of Chapman Rd. – Erosion Protection (Lewis)	Apr-2014		The project schedule was advanced to meet the in-water work window on the Cowlitz River, increasing the project estimate.
I-90/Easton Hill Vicinity to Kachess River Bridge Eastbound – Replace/Rehabilitate Concrete (Kittitas)	Apr-2014		Design element changes increased the scope of work from one lane to two, delaying the project advertisement four months and increasing the project estimate.
U.S. 101/Hoquiam River-Simpson Ave. Bridge – Bridge Painting (Grays Harbor)	Apr-2014		The project schedule has been delayed nine months due to a required bridge load rating analysis, increasing the project estimate.
SR 241/SR 22 Mabton Vicinity/Railroad Crossing – Install Beacons and Stop Refuge (Yakima)	Apr-2014		The project is facing a potential delay due to coordination required with Burlington Northern Santa Fe Railroad (BNSF) for their portion of the design and construction work. This may change the project estimate.
North Spokane Corridor (Spokane)	Mar-2014		Changes to the locations of noise walls as well as public input continue to postpone this portion of the project and has resulted in a delay.
SR 530 Slide (Snohomish)	Mar-2014		Emergency repair work on SR 530 is required to restore use of the highway after a catastrophic landslide occurred March 22, 2014.
I-90 Columbia River Vantage Bridge – Painting (Grant, Kittitas)	Mar-2014		Additional analysis to determine wind load and its potential impacts on painting equipment and platforms has delayed the project advertisement date.
U.S. 101/Hoh River (Site No. 2) – Stabilize Slopes (Jefferson)	Feb-2014	Apr-2014	Environmental permit processing due to a design change that is anticipated to reduce costs delayed the project's advertisement date. The project was removed from the Watch List.
U.S. 2 Junction/SR 25 – Analysis of Alternatives (Spokane)	Jan-2014		There is a potential project scope change after reviewing alternatives to the planned roundabout and the schedule is delayed as a result.
SR 11/Padden Creek – Fish Barrier Removal (Whatcom)	Jan-2014	May-2014	Paving bridge-ends, and setting a pedestrian rail were delayed due to winter weather. The project was completed in May and removed from the Watch List.
SR 104/Hood Canal Bridge – Special Repair (Jefferson, Kitsap)	Jan-2014		Additional work was added to this anchor cable replacement project, which increased the cost and delayed the advertisement date and start of the project.
SR 202/Little Bear Creek – Fish Barrier Removal (King)	Jan-2014		Design changes to this project increase the depth of a retaining wall on a culvert replacement project and increase the cost of the project.
SR 99/South King St. Vicinity to Roy St. – Viaduct Replacement (King)	Dec-2013		The tunnel boring machine's progress has been halted since December 2013 due to mechanical issues. Work is scheduled to resume in March 2015.

Table continued on p. 47

WSDOT eyes 27 projects on its Watch List

Project (County)	Date added	Date removed	Watch List issue
SR 162/Puyallup River Bridge – Replace Bridge (Pierce)	Dec-2013		The schedule was delayed due to permitting issues that delayed the project's advertisement.
SR 20/Race Rd. to Jacobs Rd. – Safety Improvements – Phase 2 (Island)	Dec-2013		The project has design element changes stemming from stakeholder meetings and discussions, a cost increase, and a schedule delay.
SR 99/George Washington Bridge – Painting (King)	Dec-2013		The schedule is delayed to provide WSDOT time to examine the bridge to determine whether additional repairs are required.
U.S. 101/Siebert Creek – Remove Fish Barrier (Clallam)	Dec-2013		The cost has increased and the schedule was delayed due to redesigning this project to eliminate restrictions to fish passage.
SR 520/I-5 to Medina – Evergreen Point Floating Bridge and Landings (King)	Dec-2013	Jun 2014	Project cost increases which arose due to delays and repairs on SR 520 pontoon construction, were funded by the Legislature. The project was removed from the Watch List.
SR 520 Pontoon Construction (Grays Harbor, King)	Dec-2013	Jun 2014	Construction materials problems delayed the schedule and construction will now be completed in 2015. The project was removed from the Watch List.
SR 520/Medina to SR 202 Vicinity – Eastside Transit and HOV (King)	Dec-2013		Contractor delays due to pontoon construction repairs continue to delay the HOV project.
I-5/Portland Ave. to Port of Tacoma Rd. – Southbound HOV (Pierce)	Oct-2013		The advertisement was delayed due to the cancellation of the bid opening for the related I-5/Portland Ave. to Port of Tacoma Rd. – Northbound HOV project.
I-90/Snowshed to Keechelus Dam Phase 1C – Replace Snowshed and Add Lanes (Kittitas)	Sep-2013		The completion date has been delayed one year due to delays in the contractor's schedule which reflect design revisions. Also delaying the project is slower-than-expected progress on construction of a wall supporting the westbound lanes due to unanticipated voids in the existing embankment.
SR 302/Key Peninsula Highway to Purdy Vicinity – Safety & Congestion (Pierce)	Sep-2013	May 2014	The advertisement date may be delayed to complete right of way acquisition and utility relocation work. The project was removed from the Watch List.
SR 532/Davis Slough Bridge Replacement – Flood Prevention (Island, Snohomish)	Apr-2013	Apr-2014	Design work due to ongoing environmental permitting issues delayed the schedule. The project was removed from the Watch List.
I-5/Portland Ave. to Port of Tacoma Rd. – Northbound HOV (Pierce)	Feb-2013		The schedule is at risk due to ongoing negotiations on project impacts with the Puyallup Tribe of Indians. These issues have delayed the schedule and the bid opening has been canceled.
SR 3/Belfair Area – Widening and Safety Improvements (Mason)	Feb-2013		The schedule is at risk due to a complex right of way acquisition.
WSDOT Watch List projects reprioritized, deferred or delayed due to funding constraints *Quarter ending June 30, 2014*			
I-90/Mercer Slough Bridge – Deck Overlay (King)	May 2014	May 2014	This project is in the design phase The schedule has been delayed 10 years due to re-prioritization. This project was removed from the Watch List.
U.S. 101/Snow Creek Bridge – Scour Repair (Jefferson)	May 2014	May 2014	The schedule was deferred four years to address higher-priority scour repairs, which has increased the estimate. This project was removed from this list.
U.S. 101/Bogachiel River Bridge – Scour Repair (Clallam)	May 2014	May 2014	The schedule was deferred four years to address higher-priority scour repairs, which has increased the estimate. This project was removed from this list.
SR 548/Dakota Creek Bridge – Replace Bridge (Whatcom)	May 2014	May 2014	The schedule has been deferred 10 years due to bridge re-prioritization, increasing the estimate. This project was removed from this list.
SR 20/Gulch Bridge – Replace Bridge (Skagit)	Apr-2014	Apr-2014	The schedule has been deferred 10 years due to bridge re-prioritization, increasing the estimate. This project was removed from this list.
SR 302/Purdy Bridge – Bridge Rehabilitation (Pierce)	Apr-2014	Apr-2014	The schedule has been deferred four years due to bridge re-prioritization, which has increased the estimate. This project was removed from this list.
SR 507/Lacamas Creek Tributary to Muck Creek – Fish Barrier Removal (Pierce)	Oct-2013		This project has been delayed until additional funding is acquired. Construction was deferred to accelerate scoping and design on other projects. The project is being deferred for approximately three years.
SR 542/Hedrick Creek – Fish Barrier Removal (Whatcom)	Oct-2013		This project has been delayed until additional funding is acquired. Construction was deferred to accelerate scoping and design on other projects.
SR 16/Anderson Creek Tributary to Sinclair Inlet – Fish Barrier Removal (Kitsap)	Oct-2013		Cultural resource work and additional work zone traffic control are resulting in schedule and cost increases. The project is being deferred for approximately two years to accelerate scoping and design on other projects.
SR 307/Dogfish Creek – Fish Barrier Removal (Kitsap)	Oct-2013		This project has been delayed until additional funding is acquired, and is being deferred for two years to accelerate scoping and design on other projects.

Data source: WSDOT Capital Program Development and Management, WSDOT Regions.

54 Quick Response Codes and A Guide to Understanding Reporting Periods

Codes offer convenience

Quick Response codes, also known as QR codes, accompany some *Gray Notebook* articles. Many mobile devices have the ability to "read" QR codes and link the reader to Web pages. Readers with mobile devices can scan the codes to read other information related to articles found in this issue of the *Gray Notebook* (search for "QR codes" to find a variety of these applications – while the *Gray Notebook* does not endorse any applications, some have been found to work better than others). A sampling of codes is presented here.

Gray Notebook sampling of Quick Response codes

Scan to access additional information

Subject and hyperlink[1]	Scan QR code
WSDOT website http://www.wsdot.wa.gov	
Gray Notebook online subject index http://www.wsdot.wa.gov/Accountability/*GrayNotebook*/SubjectIndex.htm	
Gray Notebook archives http://www.wsdot.wa.gov/Accountability/*GrayNotebook*/gnb_archives.htm	
2012 Biennial Transportation Attainment Report http://www.wsdot.wa.gov/Accountability/PerformanceReporting/Attainment.htm	

Note: 1 As an alternative to scanning the QR code, readers can type the hyperlink address into their Web browsers.

To improve readability, many of the numbers in the *Gray Notebook* tables have been rounded from their exact values and may not equal 100.

A guide to understanding reporting periods

Some performance measures addressed in the *Gray Notebook* (GNB) refer to calendar years and their corresponding quarters, others to state fiscal years/quarters, and still others to federal fiscal years/quarters. While an effort is made to standardize reporting periods, WSDOT programs make the determination on the best time period in which to report their data. For example, a program that receives substantial federal funds may report performance based on the federal fiscal year.

The chart below illustrates the quarters discussed in the pages of the *Gray Notebook*. GNB 54 reports quarterly performance data for April through June 2014, which is the second quarter of the calendar year (Q2 2014). This time period is also considered the fourth quarter of the state's current fiscal year (Q4 FY2014) as well as the third quarter of the federal fiscal year (Q3 FFY2014).

Calendar, fiscal and federal fiscal quarters

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GNB 53			GNB 54			GNB 55			GNB 56		
Q1 2014			Q2 2014			Q3 2014			Q4 2014		
Q3 FY2014			Q4 FY2014			Q1 FY2015			Q2 FY2015		
Q2 FFY2014			Q3 FFY2014			Q4 FFY2014			Q1 FFY2015		

Notes: A calendar year begins January 1 and ends December 31. Washington state's fiscal year (FY) begins July 1 and ends June 30. The federal fiscal year (FFY) begins October 1 and ends September 30.

There is also the matter of biennial quarters. The Washington State Legislature sets a biennial budget. This issue highlights the fourth quarter of the 2013-2015 biennium. These quarters are as follows:

2013-2015 biennial quarters

Period	Biennial Quarter	Period	Biennial Quarter
July – September 2013	Q1	July – September 2014	Q5
October – December 2013	Q2	October – December 2014	Q6
January – March 2014	Q3	January – March 2015	Q7
April – June 2014	**Q4**	April – June 2015	Q8

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2002	5 / Mar 31, 2002 (Q3 FY2002)	6 / Jun 30, 2002 (Q4 FY2002)	7 / Sep 30, 2002 (Q1 FY2003)	8 / Dec 31, 2002 (Q2 FY2003)
2003	9 / Mar 31, 2003 (Q3 FY2003)	10 / Jun 30, 2003 (Q4 FY2003)	11 / Sep 30, 2003 (Q1 FY2004)	12 / Dec 31, 2003 (Q2 FY2004)
2004	13 / Mar 31, 2004 (Q3 FY2004)	14 / Jun 30, 2004 (Q4 FY2004)	15 / Sep 30, 2004 (Q1 FY2005)	16 / Dec 31, 2004 (Q2 FY2005)
2005	17 / Mar 31, 2005 (Q3 FY2005)	18 / Jun 30, 2005 (Q4 FY2005)	19 / Sep 30, 2005 (Q1 FY2006)	20 / Dec 31, 2005 (Q2 FY2006)
2006	21 / Mar 31, 2006 (Q3 FY2006)	22 / Jun 30, 2006 (Q4 FY2006)	23 / Sep 30, 2006 (Q1 FY2007)	24 / Dec 31, 2006 (Q2 FY2007)
2007	25 / Mar 31, 2007 (Q3 FY2007)	26 / Jun 30, 2007 (Q4 FY2007)	27 / Sep 30, 2007 (Q1 FY2008)	28 / Dec 31, 2007 (Q2 FY2008)
2008	29 / Mar 31, 2008 (Q3 FY2008)	30 / Jun 30, 2008 (Q4 FY2008)	31 / Sep 30, 2008 (Q1 FY2009)	32 / Dec 31, 2008 (Q2 FY2009)
2009	33 / Mar 31, 2009 (Q3 FY2009)	34 / Jun 30, 2009 (Q4 FY2009)	35 / Sep 30, 2009 (Q1 FY2010)	36 / Dec 31, 2009 (Q2 FY2010)
2010	37 / Mar 31, 2010 (Q3 FY2010)	38 / Jun 30, 2010 (Q4 FY2010)	39 / Sep 30, 2010 (Q1 FY2011)	40 / Dec 31, 2010 (Q2 FY2011)
2011	41 / Mar 31, 2011 (Q3 FY2011)	42 / Jun 30, 2011 (Q4 FY2011)	43 / Sep 30, 2011 (Q1 FY2012)	44 / Dec 31, 2011 (Q2 FY2012)
2012	45 / Mar 31, 2012 (Q3 FY2012)	46 / Jun 30, 2012 (Q4 FY2012)	47 / Sep 30, 2012 (Q1 FY2013)	48 / Dec 31, 2012 (Q2 FY2013)
2013	49 / Mar 31, 2013 (Q3 FY2013)	50 / Jun 30, 2013 (Q4 FY2013)	51 / Sep 30, 2013 (Q1 FY2014)	52 / Dec 31, 2013 (Q2 FY2014)
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