Washington State
Department of Transportation

The Gray Notebook

50

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

Quarter ending June 30, 2013 • Published August 26, 2013

Lynn Peterson, Secretary of Transportation

Taking (care of) the high road

WSDOT balances preservation funding and needs as bridge system ages

p. 4

Green lighting the environmental permitting process

WSDOT's programmatic permits streamlined to save state time, taxpayers money

p. 25

Figuring the dollars and cents of future projects

How WSDOT calculates costs to forecast expenses on construction contracts

p. 41

50 Table of Contents

Introduction iii
Navigating the *Gray Notebook* iv
Table of Tables and Graphs v
QR Codes / A Guide to Understanding Quarters and Years vi
WSDOT's Performance Dashboard vii
Moving Ahead for Progress in the 21st Century (MAP-21) viii
Safety ◆ Preservation at a glance 1
Highway System Safety Quarterly Focus 2
Worker Safety Quarterly Update 3
Asset Management: Annual Bridge Report 4
Mobility ◆ Environment at a glance 15
2013 *Capacity Report* (working title) Preview 16
Washington's Transportation Options Special Report 17
Incident Response Quarterly Update 19
Washington State Ferries Quarterly Update 21
Rail: Amtrak Cascades Quarterly Update 23
Programmatic Permitting Annual Report 25
Stewardship at a glance 27
WSDOT's Capital Project Delivery Programs 28
Beige pages 29
Construction Contracts Annual Report 41
Lean Quarterly Update 43
Workforce Level and Training Quarterly Update 45
Gray Notebook Edition Index 46
Americans with Disabilities Act (ADA) and other information 46

PERFORMANCE HIGHLIGHTS reported for the quarter ending June 30, 2013

3,129
WSDOT-owned **bridges** are in fair or better condition

$ 273.6 M
bridge preservation **planned funds** for 2013-2015 biennium

$ 1.07 B
bridge preservation funds **needed** in the next 10 years

2,000
estimated staff hours **saved** using programmatic **permits**

95 OF 131
construction **contracts** awarded **below** engineer's estimates

$ 310 M
amount of WSDOT construction contracts, down since FY2012 by
↓ **48%**

80.2%
of state-supported **Amtrak** Cascades trains reached their destinations **on time**

5.74 M
ferry riders this quarter

$ 43 M
ferry farebox revenues this quarter

↓ **33%**
reduction in traffic **fatalities** in Washington since 2005

50
issues of the ***Gray Notebook*** published in 12.5 years

344
Nickel and TPA projects complete since 2003

NO NEW PROJECTS COMPLETED Q2

36 OF 56
scheduled Pre-existing Funds projects advertised Q2 2013

9
projects added to ***Watch List***

$ 5.6 B
Nickel and TPA projects **completed** since 2003

77 PROJECTS IN THE CURRENT TRANSPORTATION BUDGET ARE NOT YET COMPLETE

↓ **68%**
reduction in the collision record data entry backlog achieved through the **Lean** process

WSDOT HAS MORE THAN A DOZEN LEAN PROJECTS

↓ **675,000**
the number pounds of **carbon dioxide** avoided through transit use in Puget Sound area daily

$ 17.4 M
economic **benefit** provided by WSDOT Incident Response

12.1
average number of minutes WSDOT teams took to **clear** roadway incidents

11,784 INCIDENTS CLEARED BY WSDOT

6,573
WSDOT permanent **employees** as of June 30, 2013

2,258
FTE employees in WSDOT's **highway construction** program as of June 30, 2013

10
of the nation's top **vanpool** programs operate here

73.3%
Washington **commuters** drive alone to work

Introduction 50

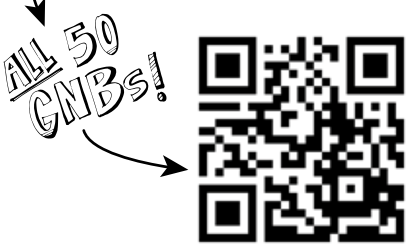
Meet our "new" publication - the old gold standard takes aim at platinum

The *Gray Notebook* is celebrating its 50th edition. After 12 and a half years of performance reporting — four issues per year — we are continuing to evolve. Loyal readers of this *Gray Notebook* who looked twice, thinking they may be missing something, are right — this publication features about half as many pages as our most recent past issues. The *Gray Notebook's* standard annual, quarterly and special reports are presented here, but in a new lean way. We are telling the WSDOT performance story using fewer pages and numbers, with more examples and analogies. Doing so while maintaining our relevance is a delicate balance, and it has taken careful planning. The evolution began with *Gray Notebook* 45, when we moved performance measures up front in articles. With *Gray Notebook* 46, we debuted a magazine-style front cover and wrote more active headlines. *Gray Notebook* 48 eliminated "gray bar" highlights in favor of telling the performance story "at a glance" on the section divider pages. In *Gray Notebook* 49, we introduced WSDOT's new Secretary of Transportation Lynn Peterson. We also added "notable results" to each article.

Long recognized nationally as the "gold standard" of performance reporting, the *Gray Notebook* takes aim at moving the bar higher, toward a new platinum standard. Today's busy readers want to quickly understand the bottom line, but they also want easy access to more information. So in addition to notable results, we've included Quick Response codes, also known as "QR" codes, that take the reader from a paper copy to additional information via a smart phone, iPad, or other electronic reading devices. (Read more about QR codes on p. vi). The QR code on this page, for example, will take you to an archive of all 50 issues of the *Gray Notebook*. We have added more infographics — presenting data through simple illustrations — to tell the performance story in a way that is engaging yet meaningful, transparent and accountable. And our Internet version of this edition includes hyperlinks to additional information, for easy reference. Readers may notice a change in our introduction, as well. We've replaced the typical bullets describing article contents with performance highlights on the Table of Contents page.

We may have reached 50 issues, but we are not content to rest on our laurels. Because the *Gray Notebook* is committed to continuous improvement, we invite readers to share their ideas about the evolving *Gray Notebook* by emailing GrayNotebook@WSDOT.wa.gov.

What's this?
Quick Response (QR) Codes point readers to additional information:



To scan QR codes, first download a QR reader to your mobile device. Then point, scan and read. This QR links to the Gray Notebook *archives.*

About our graphics

The graphics appearing in the *Gray Notebook* are designed and built by WSDOT's talented graphics staff including Steve Riddle, Jinger Hendricks, Diana Lessard, Jessie Lin and Fauziya Mohamedali.

On the cover

WSDOT maintenance crews clean the U.S. 101 Sol Duc River Bridge near Forks. The process to obtain the necessary permits was expedited through interagency agreements between WSDOT and the Department of Fish and Wildlife (pp. 25-26). Cleaning bridges throughout the state regularly is a low-cost process that saves WSDOT money on preservation in the long run. Find out more about this in the annual bridge report (pp. 4-14).

Some performance measures addressed in the *Gray Notebook* refer to calendar years and their corresponding quarters, others to state fiscal years/quarters, and still others to federal fiscal years/quarters. For a guide, turn to p. vi.

50 Navigating the *Gray Notebook*

Transparency, accountability continue to drive *Gray Notebook* reporting

The 50th edition of the *Gray Notebook*, WSDOT's nationally-recognized performance reporting journal takes on a new look and feel. This is part of the continuous improvement process, making the publication more reader-friendly while maintaining the transparency and accountability that are the publication's hallmark.

The *Gray Notebook* is still available electronically; the publication, with hyperlinks, can be downloaded as a PDF and printed as needed. One recent improvement allows readers to scan Quick Response (QR) codes that provide instant links to background information for those who want to know more of the story. QR codes are found on some articles that cite additional sources. Read more about QR codes on p. vi.

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.

Information pertaining to project delivery, finance and WSDOT's workforce appears in the Stewardship section. The "beige pages," still printed on beige paper, address the delivery of projects funded in the 2003 Transportation Funding Package (Nickel), 2005 Transportation Funding Package (TPA), and Pre-existing Funds (PEF).

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

WSDOT's new strategic plan in development

WSDOT's Secretary of Transportation Lynn Peterson is leading the agency in the development of a new strategic plan, taking the agency in a new direction for the future while taking into account the programs and budgets authorized by the state Legislature and Governor.

WSDOT is an active participant in *Results Washington*, Governor Jay Inslee's plan for building a working Washington. At the same time, WSDOT must respond to future federal reporting requirements for transportation (read about Moving Ahead for Progress in the 21st Century in Gray Notebook 49, p. vii, and in this issue on p. viii).

Statewide transportation policy goals

Laws enacted in 2007 established policy goals for transportation agencies in Washington (Chapter 516, Laws of 2007).

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.

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

The transportation progress report

The Washington State Office of Financial Management (OFM) is responsible for setting objectives and establishing performance measures for the state's transportation policy goals. OFM reports on the attainment of the goals and objectives to the Governor and Legislature each biennium. The most recent *Attainment Report*, for 2012, is available online at http://www.wsdot.wa.gov/Accountability/PerformanceReporting/Attainment.htm, or on OFM's performance and results website, http://www.ofm.wa.gov/performance/.

Navigating the WSDOT website

An array of detailed information can be found online at the WSDOT website by scanning the QR code above or going to http://www.wsdot.wa.gov. WSDOT's online project reporting uses several different tools, including the *Gray Notebook* (as a downloadable PDF), web-based project pages, and Quarterly Project Reports (QPRs). This *Gray Notebook* and all past editions are available online at http://www.wsdot.wa.gov/Accountability/GrayNotebook/gnb_archives.htm.

Table of Tables and Graphs

50

Table or graph title	page
Introduction	
WSDOT's performance dashboard	vii
MAP-21	
MAP-21 federal performance reporting requirements	viii
Safety ◆ Preservation	
Highway System Safety	
Washington annual traffic fatalities continue to decline	2
Traffic fatality rates in Washington below the national average for three decades	2
Worker Safety	
WSDOT's recordable incident rate and "days away" rate	3
Annual Bridge Report	
Bridge preservation funding and 10-year needs	4
Majority of bridge deck area in good condition in 2013	4
WSDOT owns 138 structurally deficient bridges	5
Condition of WSDOT bridges by deck area and number	5
WSDOT inventory shows most bridges carry vehicles	6
Condition of fracture critical bridges	7
WSDOT has 140 load post or restricted bridges	7
WSDOT plans rehabilitation work for 10 bridges	8
WSDOT will replace 16 bridges and one bridge deck	9
WSDOT 10-year steel bridge painting needs	9
WSDOT 10-year concrete bridge deck overlay needs	10
City and county bridge conditions remain good	12
An overview of bridge condition rating systems	14
Mobility ◆ Environment	
Incident Response	
Clearance time improves on highways statewide	19
Incident Response prevents $17.4 million in delay	20
Disabled vehicles, collisions create most incidents	20
Washington State Ferries	
Ferries' on-time performance, trip reliability	21
Vessel issues and schedule resets top cancellations	22
Rail: Amtrak Cascades	
Ridership, ticket revenues for state-supported trains	23
On-time performance hits goal in second quarter	23
Federally-funded passenger rail projects	24
Programmatic Permitting	
Nine Fish and Wildlife permits streamline 561 activities	25
Fish and Wildlife programmatic permit five-year activity trend	25
Four ecology permits streamline 36 WSDOT activities	26
Ecology programmatic permit five-year activity trend	26
Stewardship	
Beige Pages	
WSDOT completes 344 Nickel and TPA projects	28
Nickel and TPA project delivery infographic	28
Highway construction performance summary	29
WSDOT finishes 18 rail construction projects	30
WSDOT finishes 20 ferries construction projects	30
Biennial summary: Completed gas tax projects	31
Six projects in the six-month delivery pipeline	31
Twenty-eight projects in construction phase	32
Project delivery update: Original 2003 Transportation Funding Package (Nickel)	34
Project budget update: Original 2003 Transportation Funding Package (Nickel)	34
Project delivery update: Original 2005 Transportation Partnership Account (TPA)	35
Project budget update: Original 2005 Transportation Partnership Account (TPA)	35
More than 44 percent of Pre-existing Funds project advertisements were on time	36
WSDOT advertises 14 Pre-Existing Funds projects on time this quarter	37
Actual cost to complete outpaces original value of planned advertisements for the quarter	38
Actual advertised projects just shy of planned levels	38
Improvement program cash flow	38
Preservation program cash flow	38
Watch List projects with schedule or budget concerns	40
Construction Contracts	
WSDOT contracts $37.2 million less than estimated	41
Ninety-five bids are less than WSDOT's estimate	41
Final contract costs less than WSDOT estimates by $66.6 million, or 10.3 percent	42
Final cost of WSDOT contracts less than estimated	42
WSDOT Lean	
Backlog of collision records declines 68 percent	43
Lean project summary	44
Workforce Level and Training	
Number of permanent full-time employees declines	45
WSDOT employee training course completions improve	45

Quick Response Codes in this issue

Beginning with *Gray Notebook* 50, readers will find Quick Response Codes, also known as QR codes, accompanying many of the articles. Many mobile operating systems have the ability to "read" QR codes and link the reader to Web pages. Readers with mobile operating systems can scan the codes to read other articles related to those found in this issue of the *Gray Notebook* (Google "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* 50 sampling of Quick Response Codes**
Scan to access additional information

Subject and hyperlink[1]

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 *Congestion Report*
http://www.wsdot.wa.gov/Accountability/Congestion/2012.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 browsers.

Calendar year, state fiscal year and federal fiscal year differences explained

Some performance measures addressed in the *Gray Notebook* 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 50 reports quarterly performance data for April through June 2013, which is the second quarter of the calendar year (Q2 2013). This time period is also considered the fourth quarter of the state's current fiscal year (Q4 FY2013) as well as the third quarter of the federal fiscal year (Q3 FFY2013).

Calendar, fiscal and federal fiscal quarters

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GNB 49			GNB 50			GNB 51			GNB 52		
Q1 2013			Q2 2013			Q3 2013			Q4 2013		
Q3 FY2013			Q4 FY2013			Q1 FY2014			Q2 FY2014		
Q2 FFY2013			Q3 FFY2013			Q4 FFY2013			Q1 FFY2014		

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 the matter of biennial quarters. The Washington State Legislature sets a biennial budget. This issue highlights the eighth quarter of the 2011-2013 biennium. These quarters are as follows:

2011-2013 biennial quarters

Period	Biennial Quarter	Period	Biennial Quarter
July – September 2011	Q1	July – September 2012	Q5
October – December 2011	Q2	October – December 2012	Q6
January – March 2012	Q3	January – March 2013	Q7
April – June 2012	Q4	**April – June 2013**	**Q8**

WSDOT's Performance Dashboard

Policy goal/Performance measure	Previous reporting period	Current reporting 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 2011 & 2012)	0.80	0.77	1.00	✓		↓
Rate of **recordable incidents** for every 100 WSDOT workers[1] (Cumulative year to date 2012 & 2013 – trend shows 2 years)	4.3	4.6	5.0	✓		↓
Preservation						
Percentage of state **highway pavement** in fair or better condition (Annual measure: calendar years 2010 & 2011)	92.0%	90.5%	90.0%	✓		↑
Percentage of **state bridges** in fair or better condition (Annual measure: fiscal years 2012 & 2013)	95.0%	96.0%	97.0%	—		↑
Mobility (Congestion Relief)						
Highways: Annual (weekday) vehicle **hours of delay** statewide at **maximum throughput speeds**[2] (Annual measure: calendar years 2010 & 2012)	31.7 million	30.9 million	N/A	N/A		↓
Highways: Average clearance times for **major (90+ minute) incidents** on nine key western Washington corridors (Calendar quarterly measure: Q1 2013 is latest available data – trend shows last 5 quarters)	143 minutes	N/A	155 minutes	N/A		↓
Ferries: Percentage of trips departing on time[3] (Fiscal quarterly measure: year to year Q4 FY2012 & Q4 FY2013)	95.5%	95.3%	95%	✓		↑
Rail: Percentage of Amtrak Cascades trips arriving on time[4] (Calendar quarterly measure: year to year Q2 2012 & Q2 2013)	72.3%	80.2%	80%	✓		↑
Environment						
Number of WSDOT **stormwater management facilities** constructed (Annual measure: fiscal years 2011 & 2012 – trend shows 4 years)	243	146	N/A	N/A		↑
Cumulative number of WSDOT **fish passage barrier improvements** constructed since 1990 (Annual measure: calendar years 2011 & 2012)	257	269	N/A	N/A		↑
Stewardship						
Cumulative number of Nickel and TPA **projects completed,** and **percentage on time**[6] (Calendar quarterly measure: Q1 2013 & Q2 2013 – trend shows last 5 quarters)	344/ 88%	344/ 88%	90% on time	—		↑
Cumulative number of Nickel and TPA **projects completed** and **percentage on budget**[6] (Calendar quarterly measure: Q1 2013 & Q2 2013 – trend shows last 5 quarters)	344/ 91%	344/ 91%	90% on budget	✓		↑
Variance of total project costs compared to **budget expectations**[5] (Calendar quarterly measure: Q1 2013 & Q2 2013 – trend shows last 5 quarters)	under budget by 1.4%	under budget by 1.4%	on budget	✓		N/A

Notes: N/A means not available: new reporting cycle data not available or goal has not been set. Dash (—) means goal was not met in the reporting period.

1 Recordable incident rate reported as the number of incidents for every 100 full-time employees. WSDOT began reporting the recordable incident rate in January 2012, so the trend shows two years of data.

2 Compares actual travel time to travel time associated with "maximum throughput" speeds, where the greatest number of vehicles occupy the highway system at the same time (defined as 70 to 85 percent of the posted speeds).

3 "On-time" departures for Washington State Ferries includes any trip recorded by the automated tracking system as leaving the terminal within 10 minutes of the scheduled time.

4 "On-time" arrivals for Amtrak Cascades are any trips that arrive at their destination within 10 minutes of the scheduled time. See p. 23.

5 Budget and schedule expectations are defined in the last approved State Transportation Budget. See p. 29 for more information on capital projects in the current 2013 Legislative Transportation Budget.

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

MAP-21 is intended to increase the transparency and accountability of states in their investment of taxpayer dollars in transportation infrastructure and services nationwide, and ensure states invest money in transportation projects that collectively make progress toward achieving these national goals. Performance measures will be developed through the federal rule-making process. Final rules are anticipated by March 2015. For an overview of the anticipated timeline, refer to *Gray Notebook* 49, p. vii.

MAP-21 federal performance reporting requirements

MAP-21 goals by program area	Federal threshold/ benchmark[1]	MAP-21 target[2]	Penalty[3] Y/N	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	Traffic fatality rates using the NHTSA[5] methodology, see p. 2
Rate of **traffic serious injuries** per million vehicle miles traveled (VMT) on all public roads	No	TBD	Yes	Serious injury rates using the NHTSA[5] methodology
Number of **traffic fatalities** on all public roads	No	TBD	Yes	Traffic fatalities using the NHTSA[5] methodology see p. 2
Number of **traffic serious injuries** on all public roads	No	TBD	Yes	Serious injuries using the NHTSA[5] methodology
Rate of per capita **traffic fatalities** for drivers and pedestrians 65 years of age or older	No	TBD	No	Traffic fatalities for pedestrians 65 years of age or older. See *Gray Notebook* 48, p. 8, for an update on MAP-21 implications. The rate of traffic fatalities for older pedestrians is part of Washington state's Target Zero campaign
Rate of fatalities on high-risk rural roads	No	TBD	Yes	Traffic fatality rates on high-risk rural roads as part of Washington state's Target Zero campaign
Highway-railway crossing fatalities	No	TBD	No	Fatalities at highway-railway crossings
National Highway Performance Program				
National Highway System and Interstate **pavement condition**	To be determined	TBD	Yes	Pavement structural and functional condition. See *Gray Notebook* 48, p. 16, for an update on MAP-21 implications for pavement
Condition of bridges on the National Highway System	<10% of deck area on SD[6] bridges	TBD	Yes	Several measures of bridge condition including good/fair/poor condition rating and structural deficiency (SD) rating, see p. 4
Measures to be determined through federal rule-making	No	TBD	No	*Capacity Report (working title)* detailing 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 an update on MAP-21 freight implications
Congestion Mitigation and Air Quality (CMAQ) Program				
Measures to be determined through federal rule-making	No	TBD	No	The *2012 Congestion 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	Greenhouse gas emissions by source, including fleet vehicles and ferry vessel operations
Project Delivery				
Duration of NEPA[7] documentation preparation	No	TBD	No	Percent of projects completed early or on time, percent completed on or under budget, and duration for NEPA[7] document preparation

Data source: WSDOT Strategic Assessment Office.

Notes: 1 Minimum threshold or benchmark to be established by the USDOT 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 that advance progress toward the desired target. 4 TBD = To be determined. 5 NHTSA = National Highway Traffic Safety Administration. 6 SD = structurally deficient. 7 NEPA= National Environmental Policy Act.

Safety at a glance

Highway System Safety Quarterly Focus: Target Zero 2

- *Traffic fatalities are down by 33% in Washington state since 2005; preliminary data suggests there were 437 traffic deaths in 2012*
- *Washington's fatality rate is 0.77 per 100 million vehicle miles traveled – lower than the national average rate of 1.1 in 2011*

Worker Safety Quarterly Update 3

- *WSDOT had 138 recordable worker safety incidents in the first half of 2013. The agency is on track to meet its 2013 goal of having five or fewer incidents per 100 full-time employees*

Preservation at a glance

Asset Management: Annual Bridge Report 4

- *WSDOT bridge conditions improved slightly as the amount of bridge deck in poor condition decreased from 4.1 million square feet in fiscal year 2012 to 3.9 million square feet in fiscal year 2013*
- *The number of structurally deficient bridges in the state decreased from 391 to 366 in 2012. These bridges are safe for travel, but are monitored by WSDOT*
- *The Skagit River Bridge reopened June 19, 2013 within 26 days of being hit by an oversize truck, which caused a section of the bridge to collapse*

Safety state policy goal
To provide for and improve the safety and security of transportation customers and the transportation system.

Preservation state policy goal
To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services.

50 Highway System Safety Quarterly Focus: *Target Zero*

Notable results

- ***There were 437 traffic fatalities in Washington in 2012, the lowest number since 1954 when there were 413***
- ***Washington's traffic fatality rate per 100 million vehicle miles traveled in 2012 was the lowest in state history***

Washington continues with the lowest level of traffic fatalities since 1954

Washington is making good progress toward the statewide goal of no traffic fatalities or serious injuries by 2030, *Target Zero* (scan QR code above). Washington has experienced a continuous reduction in the number of traffic fatalities for several years. Since 2005, there has been a 33 percent reduction in traffic fatalities, with preliminary data showing 437 fatalities on all roads in 2012. On state highways only, there has been a 32 percent reduction from 2005 in traffic fatalities with preliminary data showing 212 fatalities in 2012.

Washington traffic fatality rate again dips below national fatality rate

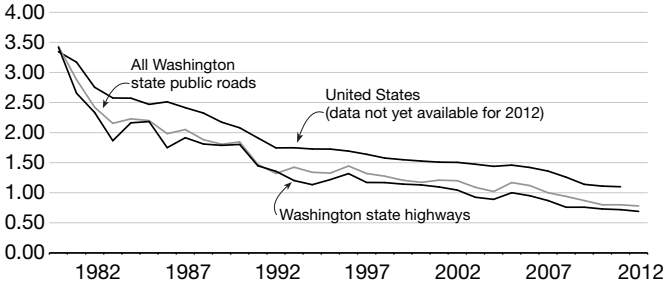
Traffic fatality rates are commonly expressed as deaths per 100 million vehicle miles traveled (VMT). In 2003, then-U.S. Secretary of Transportation Norman Mineta set a national target to lower the fatality rate to 1.0 fatality per 100 million VMT by 2008. In 2007, Washington met the national target with a fatality rate of 1.0, and has since been consistently below the national benchmark. In 2012, Washington experienced a fatality rate of 0.77 fatalities per 100 million vehicle miles traveled, down from 0.8 in both 2010 and 2011. To date, the most currently available fatality rate information for the nation is 1.1 in 2011. National fatality data for 2012 is not yet available for comparison. For state highways, the 2012 preliminary fatality rate is 0.69/100 million VMT, down from 0.99/100 million VMT in 2005.

For Washington state highways only, from 1990 to 2012, fatalities were down 49 percent from 417 in 1990, to 212 in 2012, even though state highway vehicle miles traveled increased 31 percent. This shows that VMT changes are not directly correlated with changes in traffic fatalities.

Contributors include Staci Hoff and Sreenath Gangula

Traffic fatality rates in Washington below the national average for three decades

1980 through 2012; Fatalities per 100 million vehicle miles traveled



Data source: U.S. fatalities/vehicle miles traveled (VMT): Fatal Accident Reporting System (FARS) Encyclopedia, Washington fatalities: FARS; State highway fatalties: WSDOT - Statewide Travel and Collision Data Office (STCDO); Washington VMT: WSDOT-STCDO.

Washington's annual traffic fatalities continue to decline

2005 through 2012

Year	2005	2006	2007	2008	2009	2010	2011[1]	2012[1]
All public roads	649	633	571	521	492	460	454	437
State highways[2]	313	307	281	234	238	233	226	216

Data source: Fatal Accident Reporting System (FARS), WSDOT Statewide Travel and Collision Data Office.

Notes: 1 *Gray Notebook* 46 reported the number of traffic fatalities in 2011 for *all public roads* and *state highways* as 458 and 227, respectively. These numbers have been revised to 454 and 226 due to updates made to FARS. The 2012 numbers are considered to be preliminary until January 2014. 2 State highways include routes designated as state routes, United States Routes and the Interstate system. Washington Traffic Safety Commission has updated the traffic fatalities on state highways only, which are close to number published in *Gray Notebook* 46 but will not match exactly. This is due to the change in definition to match all public roads.

$ WSDOT's 2013-2015 biennium safety program budget is $90 million. The safety program prioritizes projects to reduce risk at locations with known collisions and implements network-wide cost-effective measures to reduce the risk of collisions. Examples of network-wide strategies are installing centerline rumble strips on rural two-lane highways, cable median barrier, curve warning signs, and intersection improvements.

Worker Safety Quarterly Update

50

Notable results

- *WSDOT had 138 recordable worker safety incidents in the first half of 2013, three more than the same period in 2012*
- *Fewer injured WSDOT employees required days away from work in the first half of 2013*

Worker incidents increase but WSDOT still on track to meet annual goal

WSDOT reported 138 Occupational Safety and Health Administration recordable incidents in the first half of 2013 (January 1 to June 30), three more than the 135 in first half of 2012. WSDOT continues to be guided by the core value that every employee should leave work at the end of their shift just as healthy as when they started.

WSDOT's employee recordable incident rate as of June 30, 2013 is 7 percent higher than it was for the first six months of 2012, but at 4.6, the agency is still on track to meet its goal of five or fewer incidents per 100 full-time employees. Scan the QR code above to see *Gray Notebook* 47, p. 2, for additional details about these rates.

Days away, restricted duty, or job transfer incidents down

WSDOT's agency-wide days away, restricted duty, or job transfer (DART) rate was 1.7 for every 100 full-time employees, year to date through June 30, 2013. This is 22.7 percent better than the same period in 2012, when it was 2.2. See table below for information on how the rate is calculated.

The longer term trend for DART rates shows an agency-wide improvement of 51.4 percent, from 3.5 percent of incidents involving days away, restricted duty, and/or job transfer in 2010, to 1.7 percent of incidents from January through June 2013. The improvement is likely due to a safety program that focuses on accident prevention and consistent, statewide employee training.

WSDOT's recordable incident rate[1] and "days away" rate[2] improve

Year to date (January through June) 2012 and 2013; Rate percent change from YTD 2012 to YTD 2013

	Rate of recordable incidents involving days away, restricted duty, and/or job transfer (DART)			Number of recordable incidents for every 100 full-time employees			
Region	**Year to date 2012[3]**	**Year to date 2013**	**Rate % change[4]**	**Year to date 2012**	**Goal 2013**	**Year to date 2013**	**Rate % change[4]**
Eastern	2.6	0.5	-81%	6.2	8.3	11.5	85%
Headquarters	0.3	0.5	67%	2.8	2.5	1.3	-54%
North Central	3.2	0.9	-72%	4.7	6.6	7.8	66%
Northwest	2.0	2.7	35%	3.9	5.2	6.2	59%
Olympic	2.7	2.6	-4%	4.1	5.0	4.8	17%
South Central	4.1	0.4	-90%	6.1	6.1	3.8	-38%
Southwest	3.4	1.9	-44%	4.1	5.6	5.3	29%
Subtotal	**2.1**	**1.5**	**-29%**	**4.1**	**4.9**	**4.8**	**17%**
Ferries Division	2.5	2.3	-8%	4.7	5.0	3.7	-21%
Agency-wide	**2.2**	**1.7**	**-23%**	**4.3**	**5.0**	**4.6**	**7%**

Data sources: WSDOT Office of Human Resources and Safety, Washington State Ferries, Washington State Department of Labor and Industries.

Notes: 1 The recordable incident rate is calculated as the count of recordable incidents multiplied by 200,000 hours (approximate number of hours worked by 100 employees in one year), divided by the total hours worked. 2 The "days away" or DART rate is the count of recordable incidents involving days away, restricted duty, or job transfer, multiplied by 200,000 hours, and divided by the total hours worked. 3 WSDOT identified a formula calculation error in the 2012 data resulting in 23% increase (over reported) in the first two quarters and 30% in the third quarter. The error was corrected by the fourth quarter. Corrected numbers for 2012 are shown in this table and will not match editions of the *Gray Notebook* prior to edition 49. 4 Incident rate changes: improved = decrease (-%); worsened = increase (+%).

Lost workdays decrease

During the second quarter of 2013, WSDOT employees lost 469 workdays to work-related incidents; in the same period in 2012, employees lost 485 workdays. Many factors can impact lost workdays, including such things as when the employee was injured during the quarter, and the age, health and healing ability of the individual.

Contributors include Marlo Binkley, Kathy Dawley, Alana Neal, Ernst Stahn and Yvette Wixson

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WSDOT's annual safety program budget is $1.6 million, about $247/employee. This covers a Hearing Conservation Program, Hepatitis B shots, respirator fit testing, air monitoring, lead testing, Material Safety Data Sheets access, incident tracking software, training, safety support (i.e. research and guidance) and consultation by WSDOT's safety professionals.

50 Asset Management: Annual Bridge Report

Notable results

- *WSDOT-owned bridge deck area in poor condition has decreased from 4.1 million to 3.9 million square feet since June 2012*
- *WSDOT's quick response reopened the Skagit River Bridge within four weeks*
- *In the 2013-2015 biennium, planned bridge preservation funding is $273.6 million; needs will exceed $1 billion in the next decade*
- *The majority (82%) of city- and county-owned bridges are in good condition*

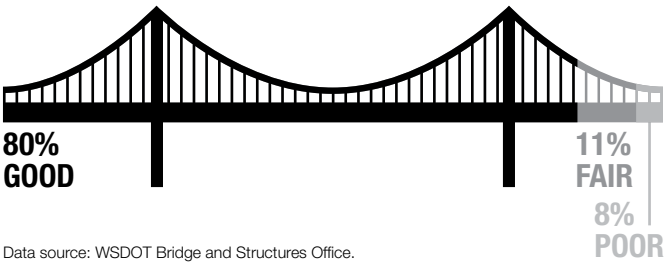
State bridge conditions improve

Ninety-six percent of WSDOT-owned bridges were in fair or better structural condition in fiscal year 2013 (July 2012 to June 2013), up from 95 percent a year ago. When looked at in terms of square footage of bridge deck area, almost 92 percent was in fair or better condition in fiscal year (FY) 2013, a slight improvement from 91 percent in FY2012. See table on p. 5 and definitions of condition ratings on p. 14.

Deck area is a more comprehensive measure of bridge preservation needs because it accounts for bridge size. Counting the number of bridges does not distinguish whether bridges are small or large, which greatly impacts costs for repair and replacement. In FY2013, 4 percent of WSDOT-owned bridges and 8 percent of deck area were in poor condition, indicating some larger bridges were rated poor. These bridges add up to 3.9 million square feet of deck area—the size of 66 football fields. This is an improvement from 4.1 million square feet in poor condition in FY2012.

Bridges rated as poor are still safe for travel. They have some deficiencies and are in need of future repair or replacement. Reporting by deck area aligns with requirements in the federal Moving Ahead for Progress in the 21st Century law (see gray box on p. 13).

Majority of bridge deck area in good condition in 2013
Fiscal year 2013; WSDOT-owned bridge deck area by condition



Data source: WSDOT Bridge and Structures Office.
Note: Percents may not equal 100 percent due to rounding.

WSDOT's bridge preservation funding will decline in the next 10 years. Funding planned for the 2013-2015 biennium totals $273.6 million, which is about half of the funding available for the next 10 years. Bridge preservation funding is projected to drop to $87.6 million for the 2015-2017 biennium and significantly in following biennia, down to $49.1 million in the 2021-2023 biennium. Current projections of State and Federal bridge preservation funding for the next 10 years are expected to meet about 44 percent of the projected needs through the next 10 years, which totals $1.07 billion.

WSDOT bridge preservation funding planned for 2013-2015 biennium and projected 10-year needs
FY2013 through FY2023; Dollars in millions

Preservation type	Major bridge repairs /movable bridges	Bridge replacement /rehabilitation	Painting	Concrete overlay	Seismic	Scour	TOTAL
Planned 2013-2015 biennium	20.4	114.7	79.8	8.8	49.2	0.7	$273.6
Projected 10-year needs	79.6	239.8	486.2	147.2	102.8	14.3	$1,070

Data source: WSDOT Bridge and Structures Office.
Note: Ten-year needs are projected preservation needs that are not currently funded, meaning funding that is planned for the 2013-2015 biennium is not included in the projected needs.

Deck area and number of structurally deficient bridges declines

The total deck area of state- and locally-owned structurally deficient bridges in Washington decreased 15 percent, from 8 million in 2011 to 7 million in 2012. Structurally deficient bridges have deteriorated conditions but are safe for travel. The Federal Highway Administration (FHWA) rates bridges for structural deficiency by calendar year, using the same data and condition rating scale that WSDOT uses for good, fair, and poor condition.

A bridge with a rating of four or less on a scale of nine is rated as structurally deficient and also rated as poor by WSDOT (see table on p. 14). Unsafe bridges are closed and are not counted in WSDOT's rating.

Structurally deficient bridges represent 5 percent of the 7,840 total bridges in the state. The 366 deficient bridges in the state in 2012 is a decrease from 391 in 2011. Of the structurally deficient bridges in Washington, 138 were owned by WSDOT in 2012, a drop from 152 in 2011.

The improvement in the deck area and number of deficient bridges in the state can be attributed to continual preservation projects, some of which were funded by Nickel and Transportation Partnership Account gas tax funding (see p. 28). Washington is ranked 22nd highest in the nation in terms of the amount of structurally deficient bridge deck area in 2012 according to FHWA data.

Condition of WSDOT bridges by deck area and number shows most in fair or better condition

Fiscal year 2013; Square feet in millions

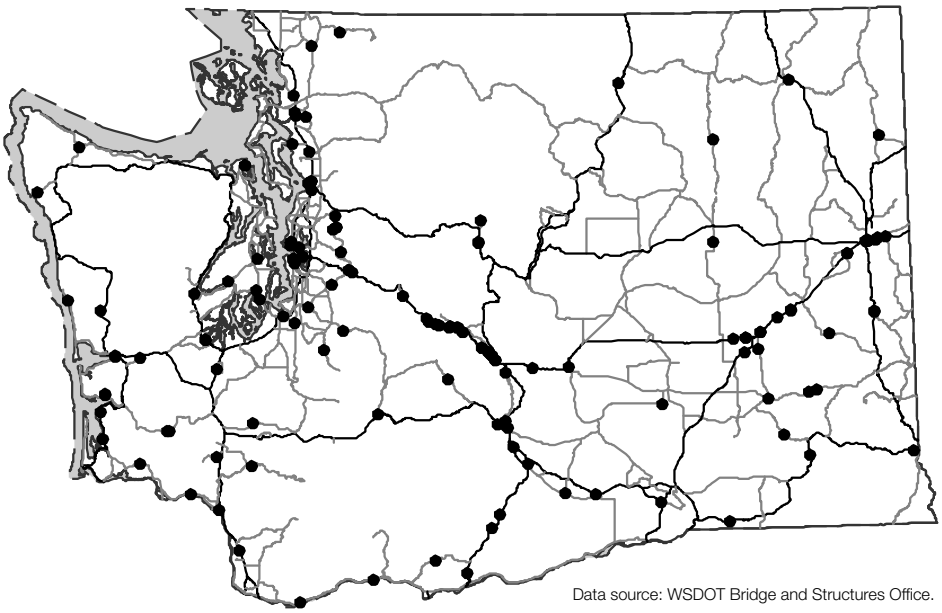
	By deck area		By number of bridges	
Condition	**Square feet**	**Percent**	**Number**	**Percent**
Fair or better	**42.5**	**92%**	**3,129**	**96%**
Good	37.2	80%	2,844	87%
Fair	5.3	11%	285	9%
Poor	**3.9**	**8%**	**138**	**4%**

Data source: WSDOT Bridge and Structures Office.

Notes: Percents may not add to 100 due to rounding for publication. In total, 46.4 of 46.6 million square feet of bridge deck area on 3,267 of 3,794 state-owned bridges were rated for this performance measure in FY2013. See p. 14 for an overview of the bridge condition rating system.

WSDOT owns 138 structurally deficient bridges

Number of structurally deficient bridges in 2012



Data source: WSDOT Bridge and Structures Office.

To see WSDOT's list of structurally deficient bridges, go to http://www.wsdot.wa.gov/NR/rdonlyres/6A570363-EC34-4010-986E-591A89CEA6FB/0/SD_AUG2010v2.pdf.

Safety is WSDOT's first priority

All bridges in Washington are designed, constructed and maintained with one primary goal: safety of the traveling public. Additional considerations include longevity, contributions to the community, and regional economic vitality. Bridges can serve the traveling public for more than 100 years if maintained effectively through their lifespan. Strategic asset management of bridges with maintenance and preservation, such as washing and repainting steel sections and replacing expansion joints, maximizes their useful service life. This work keeps bridges safe and serving the public for the least cost to taxpayers.

This article reports on the current condition of the state's bridge assets and the actions WSDOT is taking to maintain and preserve bridges today and for the future. The majority of WSDOT's bridge assets are in good condition today, and keeping bridges in good shape in the future relies on the continued ability to maintain and preserve bridges to maximize their full service life, keeping them safe for travel.

WSDOT adds 12 vehicular bridges to inventory

WSDOT's bridge inventory increases

The WSDOT-owned bridge inventory includes 3,794 structures as of June 30, 2013. These add up to 46.6 million square feet of deck area, about 1.7 square miles. Of these structures, 3,082 carry vehicles and are 20 feet or longer, with a total of 45.5 million square feet of deck area.

WSDOT has added 12 vehicular bridges to its bridge inventory since July 2012, primarily due to new bridges being built. Each new addition to the inventory of bridges introduces new preservation and maintenance needs. At the same time, as older bridges are replaced the preservation and maintenance needs tend to be lower for the replacement bridge.

The average age of WSDOT's vehicular bridges is 43 years. WSDOT has 279 bridges that are 75 years old or older, totaling 1.8 million square feet of deck area. The replacement of the 77-year old timber trestle Bone River Bridge on U.S. 101 was completed in 2013. This project replaced a structurally deficient and functionally obsolete bridge with a concrete structure that was built to withstand flooding and major earthquakes.

WSDOT inventory shows most bridges carry vehicles
Inventory of WSDOT bridges as of June 30, 2013

	Number
Total WSDOT bridge structures	**3,794**
Vehicular bridges longer than 20 feet[1]	3,082
Structures less than 20 feet long	387
Culverts longer than 20 feet	128
Border bridges maintained by border state[1]	6
Pedestrian structures	75
Tunnels and lids	42
Ferry terminal structures	68
Buildings (I-5 Convention Center)[3]	1
Railroad bridges	5

Data source: WSDOT Bridge and Structures Office.
Notes: 1 The average age of WSDOT vehicular bridges is 43 years; 902 bridges are between 50 and 75 years old, and another 279 bridges are 75 years or older. 2 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). The remaining five border bridges are maintained by WSDOT and included in WSDOT's vehicular bridges category (four with Oregon and one with Idaho). 3. The I-5 Convention Center building is included because it is a structure inventoried by WSDOT.

Bridges inspected every two years

WSDOT performs federally-mandated inspections on all state-owned bridge structures on a 24-month cycle to determine bridge condition and preservation needs.

Bridges with specific watch items are inspected annually. Inspections are performed using national standards and WSDOT works with the Federal Highway Administration to ensure the quality of inspections to ensure all bridges open to the public are safe.

WSDOT also performs maintenance inspections to determine additional repairs, inspect bridge contract work, respond to bridge damage, inspect scour critical bridges during floods, and prioritize maintenance work plans.

For fiscal year 2013, WSDOT has scheduled 1,844 bridges for preservation inspections, to determine bridge condition and preservation needs. Some inspections require special needs, such as under-bridge inspection trucks, which are needed for 246 of the scheduled inspections.

Additionally, WSDOT has 67 underwater dive, 40 ferry terminal, 150 sign bridge, and 13 radio tower inspections planned for 2013. WSDOT also plans to perform 64 inspections for local city and county bridges.

Local inspections follow same national standards

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. WSDOT conducts field reviews and provides training and technical assistance to Washington cities and counties for inspecting bridges along city streets and county roads.

WSDOT and local governments closely follow federal guidelines in their bridge inspection and maintenance procedures and report annual state, city and county data concerning the structural condition and adequacy of all bridges statewide.

Before and after: Replacement of the structurally deficient and functionally obsolete 1936 U.S. 101 Bone River Bridge. The replacement bridge is a concrete structure built to withstand flooding and major earthquakes.

Inspections help WSDOT preserve bridge assets

The art of scheduling bridge inspections

Scheduling the appropriate date for each bridge to be inspected takes coordination. New Federal Highway Administration performance measures require a bridge to be inspected as close as possible to the day that is 24 months after the bridge's previous inspection.

Some bridge inspections require an under bridge inspection truck, those in urban areas or on Interstate routes often must be done during a weekend or between sunrise and 10:00 a.m., sometimes requiring several closures to complete an inspection. Inspections also must be scheduled outside of the nesting periods of migratory birds on about 20 of WSDOT's bridges.

Fracture critical bridges

A bridge or structure is classified as fracture critical if it contains any fracture critical support members (a tension member piece of the bridge structure whose failure will probably cause a portion of or the entire bridge to collapse).

In FY2013, 89 percent of WSDOT's 187 fracture critical bridges were in fair or better condition. There are an additional 111 locally-owned fracture critical bridges, of which 77 percent (85 bridges) are in fair or better condition. Fracture critical bridges have an older average age of 56.1 years compared to 43 years for all WSDOT bridges.

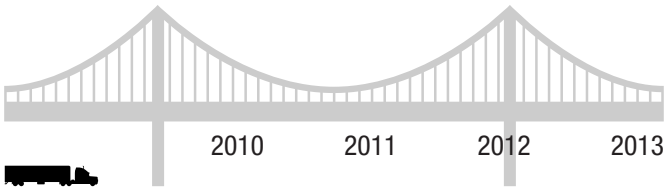
Fracture critical bridges are safe bridges, and are generally large steel structures with exposed sections of bridge structure that must be painted on a regular basis as a proactive preservation activity. Fracture critical bridges are given priority for painting to extend their service life.

Majority of Washington's state and local fracture critical bridges in fair or better condition
Fiscal year 2013

	State		Local	
Condition	**# of bridges**	**Percent of bridges**	**# of bridges**	**Percent of bridges**
Fair or better	166	89%	85	77%
Good	111	59%	65	59%
Fair	55	29%	20	18%
Poor	21	11%	26	23%

Data source: WSDOT Bridge and Structures Office.
Note: Percents may not equal 100 percent due to rounding.

WSDOT has 140 load posted or restricted bridges
FY2010 to FY2013; Number of bridges with weight restrictions



	2010	2011	2012	2013
LOAD POSTED	12	17	15	14
LOAD RESTRICTED	129	125	133	126
TOTAL	**141**	**142**	**148**	**140**

Data source: WSDOT Bridge and Structures Office.

Bridge load ratings ensure public safety

A total of 140 WSDOT bridges were load-posted or restricted in FY2013. Bridges are designed to carry the standard truck weight load at the time they are originally built. As a bridge ages and deteriorates, WSDOT performs load rating tests to verify that the bridge can safely carry the weight of trucks currently using the bridge. If results show the structure is not safe to carry certain loads, traffic on a bridge is restricted to vehicles below the allowable weight.

On load-posted bridges, allowable 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 limits.

About one third of WSDOT's load posted or restricted bridges are on state roadways that carry the most freight - more than four million tons annually.

Preservation and maintenance keeps bridges safe and in service

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

WSDOT crews perform day-to-day repairs

WSDOT regional crews perform the day-to-day maintenance of bridges while private sector contractors are hired for major rehabilitation and bridge replacements. Day-to-day maintenance repairs are a key strategy for prolonging bridge service life, similar to routinely changing the oil in a car.

Repairs and rehabilitation prolong the service life of bridges

In the 2011-2013 biennium, WSDOT crews performed nearly $11 million of day-to-day maintenance repairs. About 60 percent of prioritized maintenance repairs were completed, leaving a 40 percent backlog from the 2011-2013 biennium. This backlog would have been larger if not for additional Legislative funding in the 2009-2011 biennium, which designated $1.5 million to make progress towards catching up with some of the bridge maintenance backlog. For the 2013-2015 biennium, funding levels are projected to be similar for day-to-day maintenance, which is expected to also leave a backlog of maintenance work for the biennium.

How WSDOT prioritizes bridges for rehabilitation or replacement

Bridge preservation work beyond day-to-day maintenance is prioritized for the next 10 years. WSDOT considers a bridge for future replacement or rehabilitation if it has a sufficiency rating of less than 50 and it is classified as structurally deficient.

Often a major preservation repair (also referred to as rehabilitation) is a safe, sufficient and cost effective way to address the reasons the bridge has a low rating or is considered deficient. 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.

WSDOT has prioritized 24 bridges for rehabilitation or replacement in the next 10 years

In addition to projects already underway with planned funding this biennium, as of June 30, 2013, 24 WSDOT bridges are prioritized for replacement or rehabilitation in the next 10 years. These bridges are prioritized based on structural condition, truck volumes, and load restrictions. The cost to replace or rehabilitate these 24 bridges in the next 10 years is estimated at $240 million. This estimate accounts for funding already allocated. In addition to the 10-year projected preservation needs, several projects are or will be underway this biennium.

Replacement of an expansion joint, a common bridge repair, on Interstate 5 in Seattle near Beacon Hill in April 2013.

Ten major bridge rehabilitation projects are planned for 2013-2015 biennium

WSDOT has 10 major structural bridge rehabilitation projects either underway or planned for the 2013-2015 biennium. The planned investment in these projects is $20.4 million for the biennium. This amounts to about one third of the total estimated cost for these projects. As some projects span several years, the rest of the estimated project cost either has been invested in the previous biennium and/or is planned for future biennia.

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

WSDOT plans rehabilitation work for 10 bridges in the 2013-2015 biennium

Planned 2013-2015 biennium funding and total estimated project cost for 10 major bridge repairs; Dollars in millions

Bridge repair project	2013-2015 planned funding	Total project cost[1]
SR 16 Tacoma Narrows – Replace maintenance traveler	$3.5	$3.8
I-5 near Seattle – Replace expansion joint	$3.3	$3.3
SR 104 Hood Canal Bridge – Special repair	$3.1	$6.1
I-90 Floating Bridge – Replace anchor cable	$4.2	$5.5
Remaining six other projects[2]	$6.3	$20.2
Total	**$20.4**	**$38.9**

Data source: WSDOT Bridge and Structures Office.
Notes: 1 Several of these are multi-year projects, and the total estimated project cost often spans other biennia. 2 Six remaining projects are combined for publication purposes only.

Seventeen bridge replacement projects will be under contract by December 2013

WSDOT is replacing 16 bridges and one concrete bridge deck on a steel truss bridge in the 2013-2015 biennium with a planned investment of $114.7 million. Fourteen of these projects are currently under contract; the remaining three will be under contract by December 2013. The planned expenditures this biennium for these projects is 37 percent of the total estimated project costs, the rest of which either has been invested in the previous biennium and/or is planned for future biennia.

Cleaning and repainting steel bridges extends their service life

Mega projects underway to replace the SR 99 Alaskan Way Viaduct and the SR 520 Evergreen Point Floating Bridge are not included in the bridge replacement projects reported here. Information about the Alaskan Way Viaduct project is available at http://www.wsdot.wa.gov/Projects/Viaduct/ and information about the SR 520 Evergreen Point Floating Bridge project is available at http://www.wsdot.wa.gov/projects/sr520bridge/.

Legislative funding this biennium includes $220,000 to study the replacement of the functionally obsolete SR 155 Okanogan River Bridge near Omak.

WSDOT will replace 16 bridges and one bridge deck in the 2013-2015 biennium

Planned 2013-2015 biennium spending and total estimated project cost to replace 16 bridges and one bridge deck; Dollars in millions

Bridge replacement project	2013-2015 planned funding[1]	Total project cost[2]
SR 167 Puyallup River	$27.4	$30.7
I-5 Stillaguamish River (deck replacement)	$17.4	$21.2
SR 9 Pilchuck Creek	$10.9	$17.8
SR 162 Puyallup River	$10.6	$15.6
Remaining 13 other projects[3]	$48.4	$226.3
Total	**$114.7**	**$311.6**

Data source: WSDOT Bridge and Structures Office.
Notes: 1 The $114.7 million planned for bridge replacement projects does not include the Skagit River Bridge, which is funded with an emergency contract and not shown here. 2 All of these are multi-year projects and the estimated total project cost spans into other biennia. 3 Thirteen projects are combined for publication purposes only.

WSDOT to paint 13 steel bridges

WSDOT plans to repaint 13 steel bridges in the 2013-2015 biennium, with a planned spending of $79.8 million. The SR 433 Lewis and Clark and the U.S. 101 Astoria border bridges over the Columbia River, and six bridges on Interstate 5 are some of the bridges funded for painting this biennium.

Steel bridges due or past due for painting

WSDOT owns 289 steel bridges of which 102 are currently due or past due to be repainted. The estimated cost to paint these 102 bridges is $350 million. This biennium's planned funding to paint 13 of these represents about 23 percent of the total cost. The 10-year repainting needs of the remaining current due or past due bridges combined with the 58 bridges expected to become due in the next 10 years amounts to $486 million. This includes 51 painted steel bridges expected to become due for repainting in the next 10 years, two border bridges that will be due for repainting (for which WSDOT shares costs with Oregon), and five unpainted steel bridges.

WSDOT 10-year steel bridge painting needs

FY2013 through FY2023; Bridges due or past due; Planned projects and spending for 2013-2015 biennium; 10-year needs; Dollars in millions

Painting needs	Number of bridges	Cost to repaint
Currently due or past due[1]	102	$350.0
Projects planned for 2013-2015 biennium[2]	13	$79.8
Remaining backlog	**89**	**$270.2**
Due within the next 10 years[3]	58	$216.0
10-year total need	**147**	**$486.2**

Data source: WSDOT Bridge and Structures Office.
Notes: 1 There are 28 bridges that are currently past due and 74 that are due for painting. 2 Thirteen projects are already underway or planned to be painted in the 2013-2015 biennium. 3 Bridges expected to be due within 10 years includes 51 painted bridges at a cost of $192 million, five unpainted weathering steel ($3 million), and two border bridges shared with Oregon ($21 million).

Paint prevents corrosion, extends service life

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 stretch taxpayer dollars.

Bridges are prioritized for repainting based on the amount of steel 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. Nearly all of the bridges on WSDOT's future paint

A containment system covering the Southbound Interstate 5 Nisqually River Bridge will keep old paint and paint removal material from entering the environment as the bridge is repainted.

Concrete overlay can extend bridge deck service life by 25 years

list will need full paint removal, which requires the construction of a containment system around the bridge to keep old paint and the abrasive paint removal material from entering the environment.

Cleaning steel truss bridges may extend life

WSDOT region crews clean and spot paint steel bridges and have about $2 million funded in the 2013-2015 biennium for bridge cleaning.

Cleaning steel bridges entails the removal of dirt and bird manure and properly disposing of it off-site, as required by the National Pollutant Discharge Elimination System waste discharge permit (see p. 25 for more information on programmatic permit use). Once a bridge has had an initial cleaning, it can be flushed with water on an annual cycle, which ideally would occur for all 289 painted steel bridges, however due to funding constraints this is not feasible.

WSDOT evaluates cost and benefit of routine washing

Regular washing of steel bridges is an important cost saving strategy because it prolongs the service life of the paint and prevents corrosion of the steel. WSDOT is currently conducting research through the University of Washington to quantify the benefits of cleaning steel bridges versus the cost caused by the expected deterioration if a bridge is not cleaned.

To date in 2013, WSDOT's Olympic Region has cleaned 16 steel bridges for a cost of $93,600, which equates to about 0.91 cents per square foot of deck area. In comparison, the average cost to repaint a steel truss bridge is nearly $150 per square foot of deck area.

WSDOT will complete 15 concrete overlay projects currently in progress this biennium

WSDOT has a planned budget of $8.8 million for the 2013-2015 biennium to rehabilitate and apply concrete overlays. Nearly all of this funding will be used to complete work that is already in progress on 15 bridges. A concrete overlay is a repair to an existing concrete bridge deck that provides corrosion protection for the steel reinforcing.

There will be no new concrete overlay projects this biennium. Projects in progress address four bridges that are due and 11 that are past due for deck overlay. This fixes 15 out of 81 due or past due bridges. The estimated cost for all 81 due and past due overlay projects is $92 million, leaving a backlog of about $83 million after this biennium's work is complete. Another 10 bridges are expected to become due in the next 10 years.

WSDOT 10-year concrete bridge deck overlay needs

FY2013 through FY2023; Bridges due or past due; Planned projects and spending for 2013-2015 biennium; 10-year needs; Dollars in millions

Concrete deck overlay needs	Number of bridges	Total cost
Currently due or past due[1]	81	$92.0
Projects underway for 2013-2015 biennium[2]	15	$8.8
Remaining backlog	**66**	**$83.2**
Due for overlay within the next 10 years	10	$64.0
10-year total need	**76**	**$147.2**

Data source: WSDOT Bridge and Structures Office.
Notes: 1 Past due bridges for concrete overlay (43 bridges) have had significant maintenance patching work while bridges that are due (38 bridges) have had smaller amounts. 2 Fifteen projects are underway for the 2013-2015 biennium.

Addressing deck deterioration cost effectively

WSDOT has been working since the early 1980s on a systematic program to cost effectively address deterioration on concrete bridge decks, which is generally caused by a variety of factors, including winter salt applications. WSDOT crews routinely provide temporary repairs in the form of quick-cure patching materials to keep the bridge 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.

The average cost to repair and apply a traditional modified concrete overlay is nearly $80 per square foot. This is about 25 percent of the cost to completely replace a bridge deck or 10 percent of the cost to replace an entire bridge.

Criteria for prioritizing repairs and concrete overlays

A bare concrete deck is due for repair and overlay when 2 percent or more of the area is deteriorated or has 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. The top 10 priority bridges are determined by the amount of existing maintenance patching and deterioration. Bridges on the T-1 and T-2 freight routes (most

Puget Sound region emergency routes prioritized for seismic retrofit

important routes for moving goods) are prioritized first, followed by the remaining state-owned bridges.

WSDOT's maintenance deck repair budget was about $2.5 million in the 2011-2013 biennium. With no new overlays planned, maintenance deck repair needs will likely increase during the 2013-2015 biennium to address the expected increase of deck deterioration. For example, WSDOT performed emergent large volume full depth deck repairs on the U.S. 12 Wildcat Creek and U.S. 82 Umatilla bridges in 2013.

Seismic retrofit reduces risk of earthquake damage to bridges

WSDOT plans to have seismic retrofit projects underway for 24 Interstate 5 (I-5) bridges between Tacoma and the I-405 interchange at Southcenter during the 2013-2015 biennium, with a planned budget of about $50 million.

An analysis of the I-5 Ship Canal Bridge to determine project scope and cost estimates of the retrofits, needed to meet the standards for a 1,000 year earthquake, is also funded this biennium.

Seismic retrofit of selected bridges and scour repair of in-water bridge piers are proactive approaches to minimizing the risk of bridge damage due to earthquakes and flooding. WSDOT has prioritized bridges in the Puget Sound region that require a seismic retrofit to minimize the risk of significant damage or collapse during a major earthquake (defined as an earthquake occurring once every 1,000 years).

During the 2013-2015 biennium, WSDOT will conduct an analysis of the I-5 Ship Canal Bridge to assess the cost of retrofits needed to withstand a major earthquake.

Emergency access routes are prioritized for retrofit

The seismic retrofitting of bridges on I-5 between Tacoma and I-405 at Southcenter is the first phase of a 10-year bridge retrofit plan for the Seattle-Bellevue area. WSDOT developed this plan in coordination with emergency management groups in order to best use limited funds. Bridges on southbound I-405 are planned to be retrofitted next, which will give access for emergency response vehicles and critical emergency freight movement throughout the Puget Sound region in the event of a major earthquake. The cost to complete the 10-year prioritized emergency access route for the region is estimated to be at least $100 million.

Steel jackets are most common seismic retrofit

The most common type of seismic retrofit is the addition of steel jackets around the bridge columns and adding more concrete and steel reinforcements to the pier caps (this is also known as a "bolster").

The total cost for seismic retrofit of all bridges that require it on highways across the state is estimated to be about $1.4 billion, (see *Gray Notebook* 46, p. 13, for more information on WSDOT's long-range seismic retrofit needs for all state highway bridges).

Some 18 percent of WSDOT bridges over water at risk of river bed erosion

WSDOT has 270 bridges and culverts longer than 20 feet that are classified as "scour critical." This represents 18 percent of WSDOT's more than 1,500 total such bridges and culverts that are located over water.

Scour is the term used to describe the erosion of stream bed material from under bridge foundations. Scour generally happens during floods, when a river is experiencing high water flows, and is historically the most common reason for bridge collapses in both Washington and the nation. In Washington, 43 bridges have failed due to scour during flood events; the most recent occurred in 1999 on the U.S. 101 Nolan Creek Bridge, which was replaced in 2004.

The term "scour critical" is used by the Federal Highway Administration to classify bridges that have the potential for scour depth to be lower than the existing foundation.

Ninety percent of local bridge deck area in fair or better condition

WSDOT has developed an action plan for responding to scour critical bridges during flood events. When a river or creek under one of these bridges rises to flood level or above, WSDOT will inspect the bridge at least every 24 hours to ensure the bridge is safe for public use. Of the 270 scour critical bridges, 28 will require scour repair in the next 10 years, at total estimated cost of $15 million.

WSDOT's scour repair budget for the 2013-2015 biennium is $705,000, which will be used for a scour repair on the SR 108 Wild Cat Creek Bridge. Once funding has been authorized for a scour repair, it generally takes two to four years to design the repair and obtain the environmental permits to complete the work.

Most local bridges remain in good condition

For bridges owned by cities and counties, 95 percent of bridges and 90 percent of deck area were in fair or better condition as of June 30, 2013, the same rating as one year ago. The lower rating when considered by deck area means some larger bridges are in poor condition.

Within the state of Washington, there are more than 3,900 locally-owned and maintained bridges that support a cumulative average of 10 million crossings each day. The number of bridges fluctuates from year to year as new bridges are added to the system and some older bridges are permanently removed without being replaced. Local agencies face challenges in managing bridges, such as keeping up with traffic demand and prioritizing limited funds, see the *Gray Notebook* 46, p. 14, for details.

City, county bridges remain in good condition

As of June 30, 2013; Local agency structural condition bridge ratings

	County bridges		City bridges		Total	
Condition	**% of bridges**	**% of deck area**	**% of bridges**	**% of deck area**	**% of bridges**	**% of deck area**
Fair or better	**96%**	**93%**	**93%**	**87%**	**95%**	**90%**
Good	84%	83%	76%	74%	82%	78%
Fair	12%	10%	17%	13%	13%	12%
Poor	**4%**	**7%**	**7%**	**13%**	**5%**	**10%**

Data source: WSDOT Highways and 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.

U.S. 97 Biggs Rapids Bridge across the Columbia River. WSDOT leads the maintenance of this border bridge shared with Oregon.

States share border bridges

WSDOT shares with the Oregon Department of Transportation 50 percent of the funding for maintenance and operation of nine border bridges crossing the Columbia River. Both states treat the maintenance and preservation of these border bridges as a high priority. WSDOT leads the maintenance and operations for four of the bridges shared with Oregon:

- SR 433 Lewis and Clark Bridge (1930 steel bridge that was recently repainted)
- U.S. 97 Biggs Rapids Bridge (1962 steel bridge with a deck replacement in 2008, due for repainting by 2015)
- Two I-82 Umatilla bridges (a 1955 steel bridge due for repainting and deck replacement, and a 1988 concrete bridge)

Oregon leads maintenance of the other five shared bridges:

- Two I-5 bridges crossing the Columbia River (one bridge for each direction of traffic), which were built in 1917 and 1958. Oregon rates both bridges in fair structural condition with deficiencies such as vertical clearance and a low amount of remaining service life.
- U.S. 101 Astoria Megler Bridge (built in 1966, primarily a steel structure that is in the process of being repainted)
- I-205 Glenn Jackson Bridge between Vancouver, Wash., and Portland (built in 1982, expansion joints replaced in 2009)
- U.S. 197 Dalles Bridge (1954 built steel bridge, due for deck replacement and repainting by 2016)

WSDOT also shares two bridges with Idaho. WSDOT maintains a bridge crossing the Snake River on U.S. 12 between Lewiston, Idaho and Clarkston, Wash. Idaho maintains a bridge on SR 41 that crosses a rail line in Newport, Wash.

Skagit River Bridge replacement on schedule to open by October

Skagit River Bridge hit draws attention to state bridge conditions

The hit and collapse of the Interstate 5 (I-5) bridge over the Skagit River near Mount Vernon on May 23, 2013 focused attention on the conditions of the nation's bridges. After a southbound truck carrying an oversize (both over-height and over-width) load collided with the steel framework of the bridge, the northern steel truss span of the bridge collapsed, closing I-5 in both directions. Though there fortunately were no fatalities, the collapse of the Skagit River Bridge shut down I-5 near Mount Vernon for 26 days. This section of I-5 is a major transport corridor, and the Skagit River Bridge carries an average of 71,000 vehicles per day. Detour routes and a temporary additional Amtrak trip between Seattle and Bellingham kept goods and people moving through the area.

The bridge reopened on June 19 with a temporary bridge span, achieving the Governor's mid-June goal. The National Transportation Safety Board is investigating the collapse. A $6.9 million permanent replacement span is scheduled to be installed by October 1, 2013. After completing the permanent replacement, a $4.5 million WSDOT project will raise and reinforce the bridge's overhead structural support system, raising the bridge's vertical clearance to 18 feet, which is four feet higher than the legal height limit.

The Skagit River Bridge was built in 1955 and was classified as "functionally obsolete" when it was hit. More information is available at http://www.wsdot.wa.gov/Projects/I5/SkagitRiverBridgeReplacement/default.htm.

Aerial view after May 23

Aerial view of the I-5 Skagit River Bridge near Mount Vernon, which collapsed on May 23, 2013 after a truck collided with the steel framework.

Temporary replacement

The bridge with the temporary span, which reopened on June 19, 2013.

Permanent replacement

Conceptual design of the finished replacement span before it is installed. Image is used with permission from Max J. Kuney Construction and Parsons Brinckerhoff.

New federal law impacts bridge management

The federal Moving Ahead for Progress in the 21st Century (MAP-21) law will require every state to direct infrastructure investments toward the achievement of performance targets. MAP-21 includes funding penalties if a state's targets are not met in a given period of time. See p. viii for requirements.

Federal threshold and penalty is set in law

MAP-21 requires that the deck area of structurally deficient bridges not exceed 10 percent of the total deck area of bridges on a state's National Highway System. If a state does not meet this requirement for three consecutive years, the state must devote National Highway Performance Program funds in an amount equal to 50 percent of the it's federal fiscal year 2009 Highway Bridge Program apportionment. This is $76.5 million for WSDOT to improve bridge conditions during the following fiscal year.

WSDOT currently collects and reports bridge condition data to the Federal Highway Administration annually for bridges on the National Highway System, and will have no issues in collecting or reporting the required data for MAP-21. Reporting on this performance measure will begin in 2016.

Overview of Federal and Washington State bridge rating systems

Federal bridge rating system

WSDOT is required to report data annually on the condition, functional adequacy and essentiality for the public for all bridges statewide to the Federal Highway Administration. The bridge data determines sufficiency ratings and if a bridge is structurally deficient and/or functionally obsolete. The same bridges that are rated for WSDOT's condition rating are also rated in the federal system, in addition to local agency owned bridges across the state.

- **Structurally deficient:** A bridge is deteriorated structurally, as indicated by a superstructure, deck, and/or substructure rating of four or less on a scale of zero to nine. WSDOT's poor condition category uses the same data, criteria, and rating scale (see table on previous page). A bridge is also classified as structurally deficient if it's load-carrying capacity or potential for flooding indicates a priority of replacement; WSDOT's rating does not include these because they are not indicators of the bridge's structural condition.
- **Functionally obsolete:** A bridge does not meet intended traffic needs and is below accepted design standards. This rating is applied if a bridge's approach roadway alignment, deck geometry, under clearance, load-carrying capacity, or flood potential is rated three or less (substandard) on a scale of zero to nine. In 2012, 836 WSDOT bridges were considered functionally obsolete.
- **Sufficiency rating:** Measures the bridge's ability to serve its intended purpose on a scale of zero to 100; lower values indicate higher need of repair or replacement.

WSDOT bridge structural condition rating

WSDOT's bridge condition performance measure classifies a bridge's structural condition as:

- Good: Ranges from no problems to some minor deterioration of structural elements.
- Fair: All primary structural elements are sound; may have minor section loss, deterioration, cracking, spalling or scour.
- Poor: Advanced deficiencies such as section loss, deterioration, scour, or seriously affected structural components; may have weight restrictions. A poor condition bridge is safe for travel. An unsafe bridge will be closed and is not counted in the poor condition rating.

Contributors include Rico Baroga, DeWayne Wilson, Sarah Lowry and Alison Wallingford

An overview of bridge condition rating systems

How the Federal Highway Administration (FHWA) and WSDOT rate bridge conditions

	FHWA			WSDOT	
	Rating scale	Condition category	State and Federal description	Rating scale	Condition category
	9	Excellent	No description given	NA	Not applicable
	8	Very good	No problems noted	8	Good condition = 6-8 *WSDOT rates all excellent bridges with the very good category
	7	Good	Some minor problems	7	
	6	Satisfactory	Structural elements show some minor deterioration	6	
	5	Fair	All primary structural elements are sound but may have minor section loss, cracking, spalling, or scour	5	Fair condition = 5
FHWA structurally deficient rating = 4 and below	4	Poor	Advanced section loss, deterioration, spalling, or scour	4	Poor condition = 3-4
	3	Serious	Loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present	3	
	2	Critical	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored, it may be necessary to close the bridge until corrective action is taken	2	Closed bridges = A bridge with a rating of 2 or below would be closed, and not included in WSDOT's condition rating
	1	Imminent Failure	Major deterioration or section loss present in critical structural components, or obvious loss present in critical structural components, or obvious vertical or horizontal movement affecting structural stability. Bridge is closed to traffic, but corrective action may put it back in service	1	
	0	Failed	Bridge is out of service and is beyond corrective action	0	

Data source: WSDOT Bridge and Structures Office and Federal Highway Administration.

Note: In FY2013, 3,267 of WSDOT's 3,794 bridge structures were rated for the structural condition measure, including all vehicular bridges and culverts longer than 20 feet and 56 ferry terminal structures that carry vehicles. While WSDOT's bridge conditions are reported by fiscal year, the Federal Highway Administration releases structurally deficient bridge data by calendar year.

Mobility at a glance

Capacity Report (working title) Preview 16

- *There were more than 70,600 public transit riders on the central Puget Sound area's 40 high-demand commute corridors in 2012, removing more than 43,000 vehicles daily*

Washington's Transportation Choices Special Report 17

- *Most commuters (73.3%) in Washington state chose to drive alone to work*

Incident Response Quarterly Update 19

- *WSDOT teams responded to 11,784 incidents in the second quarter of 2013, clearing scenes in an average of 12.1 minutes*

Washington State Ferries Quarterly Update 21

- *For the third straight year, Washington State Ferries has surpassed its on-time performance goal during the fourth quarter of the fiscal year (April through June 2013) with 95.3% of trips departing the dock on time*

Rail: Amtrak Cascades Quarterly Update 23

- *WSDOT-supported Amtrak Cascades trains met the 80% on-time performance goal for April 1 through June 30, 2013, a 7.9% improvement from the same quarter in 2012*

Environment at a glance

Programmatic Permitting Annual Report 25

- *WSDOT saved an estimated 2,000 hours of staff time in 2012 by using programmatic permits to streamline 597 activities*

Mobility state policy goal

To improve the predictable movement of goods and people throughout the state.

Environment state policy goal

To enhance Washington's quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment.

2013 *Capacity Report* (working title) Preview

Notable results

- ***Transit use in the central Puget Sound area reduced greenhouse gas emissions by 675,000 pounds daily in 2012***
- ***Travel delay on I-5 through the central Puget Sound area cost each driver between $400 and $1,500 in 2012***

WSDOT introduces multi-modal measures to performance report

WSDOT's 2013 *Capacity Report* (working title — formerly known as the *Congestion Report*) is the agency's 12th annual analysis of system performance on a statewide basis. This report informs the Legislature, stakeholders, education and research institutions, the media, communities and the public about the state of traffic congestion in Washington for the calendar year 2012.

With this edition, WSDOT introduces new performance measures with an emphasis on multi-modal and person-based metrics to supplement the existing highway systems analysis. These measures include greenhouse gas (GHG) emissions, transit boardings, and per-person commute congestion costs on the central Puget Sound area commute corridors, roadways which are considered high-demand because of the number of commuters traveling them each day.

Greenhouse gas emissions estimated for corridors
The greenhouse gas emissions from vehicles on the 40 high-demand commute corridors in the central Puget Sound area totaled 26.8 million pounds of carbon dioxide (CO_2) each day in 2012. To put it in perspective, this means an average commuter who drives in Seattle is responsible for emitting more than 13 pounds of CO_2 daily. This estimate is for a subset of all Seattle area daily travel. These emissions do not include other principal arterials and surface streets in the Seattle area.

Transit takes more than 43,800 cars off the road daily
The central Puget Sound area shows a considerable daily transit usage along the 40 high-demand commute corridors. In 2012, there were more than 70,600 daily transit riders during the morning and evening commute periods combined. This took more than 43,800 cars off the road, which in turn avoided approximately 675,000 pounds of CO_2 emissions daily. For example, both buses and light rail traveling from SeaTac to Seattle in the morning and from Seattle to SeaTac in the evening carried more than 7,600 and 10,200 passengers each day during the peak periods, respectively.

Congestion costs decrease on some corridors
In 2012, commute congestion costs incurred by each person on the I-5 corridor, for round trips to and from work, ranged between $400 and $1,500 per year. These costs include fuel and time wasted sitting in traffic. On an Everett to Seattle round trip, the cost due to congestion per person is $1,500. For a household with two commuters, this means $3,000 extra is spent each year in transportation-related costs.

The commute congestion cost decreased on 19 of 40 high-demand commute corridors in the central Puget Sound area. The largest reductions in commute congestion cost were on the SR 520 corridor, where tolls were implemented in December 2011. This is because a significant number of commuters are choosing to drive alternate routes rather than pay the toll.

Of the 40 high-demand trips monitored by WSDOT, 16 routes experienced average peak travel time changes of more than two minutes during that period; 10 of those routes saw longer travel times, and six routes saw shorter travel times. This pattern represents greater travel time variability than was seen in the previous year's report.

Statewide congestion shows slight improvement
Statewide congestion data for the past six years (2007 through 2012) indicate that 2009 was the least congested year for Washington drivers. The overall congestion indicators statewide in 2012 were still below pre-recession levels, as many indicators of economic growth and activity show the state is still rebounding. For more details, refer to the 2013 *Capacity Report* (working title), expected to be published in fall 2013.

Contributors include Bradley Bobbitt, Sreenath Gangula, Joe Irwin and Anna St. Martin

Washington's Transportation Options Special Report

50

Notable results

- *Ten of the nation's top 50 vanpool programs operate in Washington state*
- *Some 73.3% (2.2. million) Washington commuters drove alone to work in 2011*
- *Light rail passenger trips in Washington state grew by 5.7 million between 2009 and 2011*
- *About 130,000 people walked or bicycled to work in Washington in 2011*

WSDOT supports options to make transportation convenient, accessible

WSDOT supports a full spectrum of programs and projects designed to move people and goods. The state's transportation system policy goals (see p. iv) guide the planning, operation, and investment in the state's transportation system. WSDOT's transportation strategy works to manage demand on the transportation system by striving to make transit, carpools, vanpools, teleworking, walking and bicycling convenient and accessible for all, regardless of income, age or ability. The state's Commute Trip Reduction law also encourages people to choose a transportation mode that reduces drive-alone (single-occupant vehicle) trips. Other options include working from home or adjusting work schedules (for example, compressing a work week by working four, 10-hour days instead of five, eight-hour days). A transportation system that integrates and supports travel by many different modes can work more efficiently while improving residents' quality of life and reducing greenhouse gas emissions.

Most Washington commuters drive alone

The American Community Survey (Survey) estimates that in 2011 (the most current data available), about 827,000 of Washington's workers age 16 and older (26.7 percent) chose some other mode of transportation to work rather than driving alone, a slight decline from 27 percent in 2010. The majority — 2.2 million (some 73.3 percent) — chose to drive alone to work in 2011, compared to 73 percent in 2010.

In 2011, 315,935 (10.2 percent) of Washington's commuters carpooled to work. Washington state's Commute Trip Reduction Task Force defines a carpool as "a motor vehicle occupied by two to six people traveling together for their commute trip that results in the reduction of a minimum of one motor vehicle trip." Even if these carpools

Passengers unload at Sound Transit's Mountlake Terrace Freeway Station.

averaged just two occupants, they would have removed almost 158,000 vehicles from Washington's roadways.

Some 173,454 (5.6 percent) of Washington's commuters used public transportation to get to work in 2011. This is up slightly from the 5.5 percent in 2010. Thirty-one public transit systems served a collective population of 5.9 million in 2011, offering a variety of transit services. WSDOT annually publishes the *Washington State Summary of Public Transportation* which offers definitions of the various modes, as well as detailed statistics on public transportation. The current (2011) version can be found by scanning the QR code above or at http://www.wsdot.wa.gov/publications/manuals/fulltext/m0000/TransitSummary/PTSummary.pdf. Highlights of the 2012 edition are expected to be published in an upcoming *Gray Notebook*.

Light rail sees largest percentage of growth

The largest growth in Washington's public transportation arena between 2009 and 2011 was in light rail, primarily due to the expansion of Sound Transit. The central Puget Sound-area regional transportation system provides regional bus service, commuter rail and light rail. Sound Transit offered its first

Washington leads the nation in vanpooling

commuter train in 2000, and light rail began in 2003. In 2009, there were 3.8 million passenger trips by light rail, which grew by 5.7 million passenger trips, to 9.6 million in 2011.

The American Community Survey (Survey) does not capture vanpool commuting characteristics. A vanpool is larger than a carpool but still prearranged ridesharing, in which seven to 15 people commute together in a van. Washington dominates the nation in vanpooling to work; in 2010, 10 of the 50 largest vanpool agencies in the U.S. were in Washington state, according to the 2012 *Public Transportation Fact Book* published by the American Public Transportation Association. WSDOT's *2011 Summary of Public Transportation* states there were 8.3 million vanpool passenger trips in 2011, up 5.4 percent since 2009.

Ten of largest vanpool agencies are in Washington

The Survey estimates that about 105,000 (3.4 percent) Washington workers age 16 and older walked to work in 2011, while almost 25,000 (0.8 percent) rode their bicycles. WSDOT's latest pedestrian and bicyclist system safety report is in *Gray Notebook* 48, pp. 5-8, which highlights WSDOT's efforts to improve walking and biking conditions for the travelling public.

The Survey reports that some 170,000 (5.5 percent) of Washington's workers age 16 and older worked from home. This number does not necessarily equate to telework, an option wherein an employee works from home or a nearby satellite office rather than commuting to a central workplace. There can be many reasons to work from home, including home-based businesses such as in-home daycare.

WSDOT strives to make transportation convenient and accessible to all. As an employer, the agency is committed to Commute Trip Reduction and has established a model program designed to reduce fuel consumption, air pollution, and traffic congestion.

Factors affect transportation choices

Making multiple transportation choices convenient, cost effective, and reliable can encourage travelers to switch their mode of choice away from single-occupant vehicles. The cost of transportation impacts the choices, too. The average household in the

Washington leads the nation in vanpooling. This commuter combines bicycling with vanpooling.

western United States spent an estimated $8,303 on transportation in 2011, the latest year for which data is available. This is slightly higher than the national average of $8,293. In the Seattle metro area, residents spent $9,485 on transportation. While transportation expenses may drive a consumer's transportation mode choice, other considerations include convenience, quality of life and concern for the environment.

In terms of commute options, walking and bicycling offer a great benefit to the environment. The State's 2012 *Biennial Transportation Attainment Report* reports that "Transportation-related greenhouse gas emissions decreased by three million metric tons between 2008 and 2010, according to the (Washington State) Department of Ecology's Greenhouse Gas Inventory Report."

Congestion improves slightly in Washington

Congestion affects transportation choice when added time behind the wheel becomes inconvenient and tiresome. Congestion has improved slightly in Washington state in the past three years, as the number of vehicle miles traveled have decreased.

The average Washington worker age 16 and older spent about two-and-a-half minutes each day delayed by traffic, or about 10 hours and 52 minutes total in 2011, the latest year for which American Community Survey numbers are available.

Contributors include Bradley Bobbitt and Yvette Wixson

Incident Response Quarterly Update

50

Notable results

- ***WSDOT teams responded to 11,784 traffic incidents, clearing them in an average of 12.1 minutes***
- ***By clearing highway incidents and managing traffic, WSDOT provided drivers in the state about $17.4 million in economic benefits***

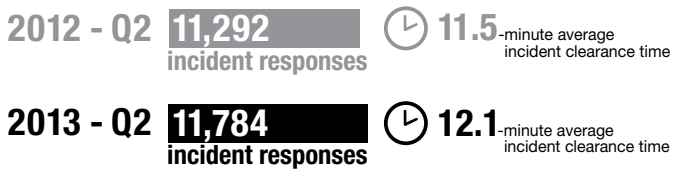
Incident Response provides assistance at 11,784 incidents

WSDOT's Incident Response (IR) teams responded to 11,784 incidents in the second quarter of 2013 (April 1 through June 30), clearing them in an average of 12.1 minutes. WSDOT's assistance provided about $17.4 million economic benefit to Washingtonians. The benefits are provided two ways. First, by clearing incidents quickly, WSDOT reduces the time and fuel motorists waste in incident-related traffic delay and helps them get to their destinations on time. About $9.7 million of IR's estimated economic benefit for the quarter is from reduced traffic delay. Second, by proactively managing traffic at incident scenes, WSDOT prevents secondary collisions caused by distracted drivers. About $7.7 million of IR's economic benefit is from preventing an estimated 2,236 secondary collisions. This is equal to roughly 25 fewer secondary collisions per day. For every dollar spent on the IR program this quarter, WSDOT prevented $15.50 in incident-related costs. See the table on the next page for a summary of IR teams' performance for the quarter.

There were 492 — about 4.4 percent — more incidents during the second quarter of 2013 compared to the same quarter in 2012. At the same time, the average incident clearance time was half a minute slower. See the infographic at upper right. For annual trends in program performance, see the 2012 *Congestion Report*, p. 69.

$ WSDOT's Incident Response program mission 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 and 62 dedicated vehicles. Teams patrol 493 miles of state highway on major traffic corridors during peak commute hours.

Clearance times, incident response up statewide
Second quarter (April through June) 2012 and 2013



Data source: Washington Incident Tracking System (WITS).

Notes: Figures only account for incidents to which an Incident Response team responded. Figures reported for the current quarter (Q2 2013) are considered preliminary. For the first quarter of 2013, WSDOT responded to 9,396 incidents, clearing them in an average of 13 minutes. These figures have been confirmed and are now finalized.

Incident-induced delay costs drivers $38.7 million

Traffic delay that occurred at incident scenes while WSDOT crews were working to clear them cost motorists $38.7 million in wasted time and fuel during the second quarter of 2013. This is about $1.7 million more than in the same quarter of 2012. Without WSDOT's assistance this cost would have been $48.4 million ($9.7 million in prevented delay plus $38.7 million in actual delay). WSDOT estimates these costs at $244 per minute of incident duration for non-blocking incidents and $345 per minute of blocking incidents. Blocking incidents have a greater impact on congestion — and thus the costs of congestion —as they constrict highway capacity. The numbers used to calculate congestion costs are based on the Incident Response Phase 3 research from the Washington State Transportation Research Center at the University of Washington which can be found by scanning the QR code above or at http://www.wsdot.wa.gov/Research/Reports/700/761.1.htm.

Incident Response crews deployed to eight incidents lasting more than six hours in second quarter 2013

WSDOT crews were deployed to eight incidents lasting more than six hours, called "extraordinary incidents," during the second quarter of 2013. This is six more extraordinary incidents than in the same

More than half of incident responses are due to disabled vehicles

quarter of 2012. The eight incidents took an average of 460 minutes to clear (about seven hours and 40 minutes). If these incidents are excluded, WSDOT's average clearance time for over-90-minute incidents statewide would have been 20 minutes faster.

Together the eight incidents accounted for about 17 percent of delay caused by over-90-minute incidents. Of the eight incidents, four involved semitrucks, three involved fatal collisions, and one involved hazardous material cleanup. WSDOT crews provided traffic management at incident scenes in order to keep drivers moving and emergency responders safe. The Skagit River bridge collapse near Mount Vernon was not included in this list. See p. 13 in the annual bridge report for more details on the Skagit River bridge.

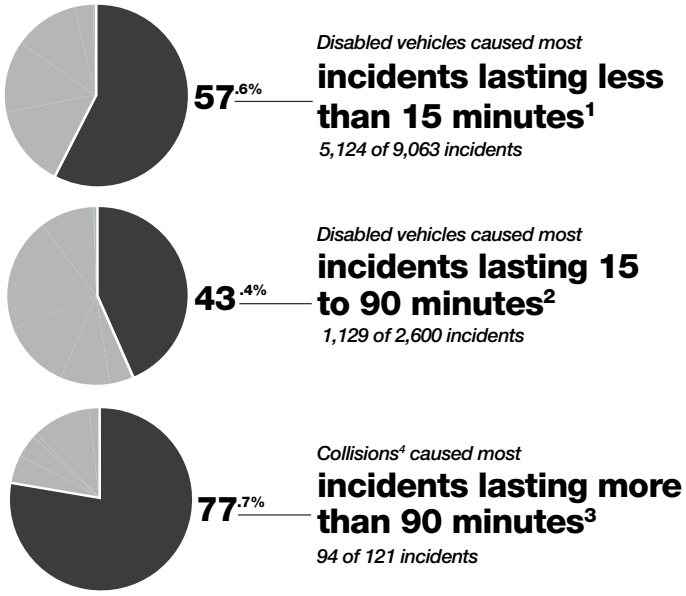
In previous quarters WSDOT used data from Washington State Patrol to report on extraordinary incidents. This data was not available for this quarter. Figures reported in this article are from WSDOT's Washington Incident Tracking System, which tracks only incidents to which a WSDOT team responded.

Quarterly focus: causes of incidents and delay on Washington state highways

Disabled vehicles were the most common type of incident that WSDOT responded to in the second quarter of 2013. WSDOT provides assistance to drivers with disabled vehicles such as helping with minor repairs, providing a gallon of fuel, or pushing a vehicle off of an active lane of travel. These actions ensure that drivers can get off the highway safely and reduce the disabled vehicle's impact on traffic flow. In total, disabled vehicles accounted for 57.6 percent of all incidents. However, WSDOT cleared these incidents in an average of 9.2 minutes, so they caused only 37.4 percent of incident-induced delay.

Disabled vehicles cause most traffic incidents that WSDOT teams respond to during second quarter

April through June 2013; Primary causes by incident duration category



Data source: Washington Incident Tracking System (WITS).
Notes: Figures above only account for incidents to which a WSDOT team responded. 1 The other 42.4% of incidents lasting less than15 minutes were caused by abandoned vehicles (14.4%), debris (12.8%), "other" (11.5%), collisions (3.6%), and police activity (less than 1%). 2 The other 56.6% of incidents lasting 15 to 90 minutes were caused by abandoned vehicles (4.1%), debris (8.9%), "other" (12.5%), collisions (30.6%), and police activity (less than 1%). 3 The other 23.3% of incidents lasting over 90 minutes were caused by disabled vehicles (10.7%), abandoned vehicles (less than 1%), debris (4.1%), "other" (4.1%), and police activity (1.7%) 4 Collisions include non-injury collisions, injury collisions and fatal collisions.

Collisions (including non-injury, injury and fatal collisions) were the primary cause of delay, accounting for 40 percent of incident-induced delay while making up only 10.4 percent of all incidents. Collisions are often complicated to clear and involve multiple first responder groups. IR crews remain at the scene of a collision managing traffic and clearing debris off the highway after police investigations are complete.

Contributors include Paula Connelley, Vince Fairhurst, Diane McGuerty, Sreenath Gangula and Bradley Bobbitt

WSDOT's Incident Response prevents $17.4 million in delay and secondary collisions

April 1 through June 30, 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]	Cost of incident-induced delay	Economic benefits from IR program[4]
Less than 15 minutes	9,063	15.1%	5.1	$11.6 million	$5.4 million
Between 15 and 90 minutes	2,600	39.7%	28.7	$20.2 million	$9.1 million
Over 90 minutes	121	76.9%	182.4	$6.9 million	$2.9 million
Total	**11,784**	**21.2%**	**12.1**	**$38.7 million**	**$17.4 million**

Data source: Washington Incident Tracking System (WITS).
Notes: 1 Crews were unable to locate 606 of the 11,784 incidents. These incidents are included in the total count but are not factored into other 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 and when the last responder has left the scene. 4 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.

Washington State Ferries Quarterly Update

50

Notable results

- *Ferries' ridership increased by 38,000; revenues were up $700,000 compared to the same quarter last year*
- *Ferries made 99.3% (40,562) of the 40,842 regularly scheduled sailings this quarter*

Ferries' on-time performance continues to exceed system goal

For the third straight year, Washington State Ferries (Ferries) has surpassed its on-time performance goal during the quarter of April through June 2013, with 95.3 percent of trips departing the dock on time.

While this is a 0.2 percent drop from the 95.5 percent recorded for the same quarter in fiscal year (FY) 2012, and the system saw some declines in on-time performance on the majority of its routes, Ferries still exceeded its annual performance goal of 95 percent of trips on time.

On average, 20 out of about 450 trips a day system-wide did not leave the terminal within 10 minutes of the scheduled departure time. The decrease in overall on-time performance can be attributed to several issues, including mechanical problems and tourism activities. Tourism increases the demand on the system annually during the spring and summer months. Compared to the same quarter in FY2012, the on-time performance on four of Ferries' nine routes improved. Ferries saw significant improvement in on-time performance on the San Juan Island Domestic ferry route, which marked an increase of 5.7 percent compared to the same quarter in FY2012.

The largest decrease in on-time performance was on the Fauntleroy – Vashon – Southworth route (also known as the triangle route), which dropped 3.3 percent from the same quarter in FY2012. The Motor/Vessel (M/V) *Klahowya*, an aging vessel on the triangle route, was unable to keep its sailing schedule due to difficulties with its drive motors. Due to the characteristics of this route, if one ferry is unable to be on time then the other two ferries that serve the route are also delayed and may run late.

Ferries sees small increase in missed trips, still exceeds reliability performance goal

Washington State Ferries had 111 more net missed trips during the fourth quarter of FY2013 than in the fourth quarter of FY2012, 280 compared to 169.

Ferries' on-time performance, trip reliability drop slightly for fourth quarter of FY2013 – remain above goal

Fourth quarter (April 1 through June 30), FY2012 and FY2013; Annual on-time goal = 95 percent; Annual reliability goal = 99 percent

	On-time performance				System-wide reliability			
Route	**FY2012**	**FY2013**	**Status**	**Trend**	**FY2012**	**FY2013**	**Status**	**Trend**
San Juan Domestic	85.6%	91.3%	+5.7%	↑	100.0%	99.3%	-0.7%	↓
Anacortes – Vancouver, B.C.	86.1%	89.5%	+3.4%	↑	100.0%	98.9%	-1.1%	↓
Edmonds – Kingston	99.4%	99.3%	-0.1%	↓	100.0%	99.9%	-0.1%	↓
Fauntleroy – Vashon – Southworth	95.3%	92.0%	-3.3%	↓	99.4%	99.0%	-0.4%	↓
Port Townsend – Coupeville	94.8%	92.4%	-2.4%	↓	98.1%	95.6%	-2.5%	↓
Mukilteo – Clinton	99.0%	99.5%	+0.5%	↑	99.9%	99.8%	-0.1%	↓
Point Defiance – Tahlequah	99.4%	99.0%	-0.4%	↓	98.7%	99.8%	+1.1%	↑
Seattle – Bainbridge Island	97.9%	95.6%	-2.3%	↓	100.0%	100.0%	0.0%	↔
Seattle – Bremerton	99.1%	99.2%	+0.1%	↑	99.7%	99.6%	-0.1%	↓
Total	**95.5%**	**95.3%**	**-0.2%**	↓	**99.6%**	**99.3%**	**-0.3%**	↓

Data source: WSDOT Ferries Division.

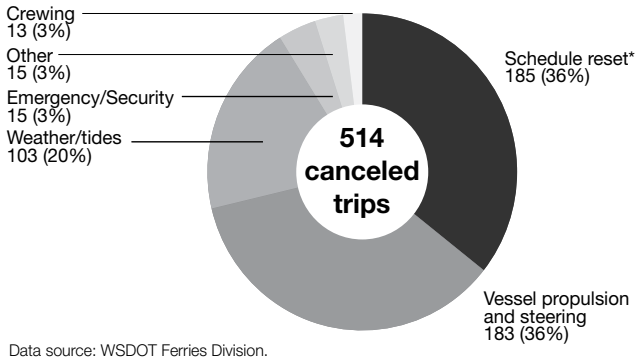
Note: A trip is considered delayed when a vessel does not leave the terminal within 10 minutes of the scheduled departure time.

Ferries division sees slight increases in ridership and revenues

Of the 40,842 regular service trips scheduled for the fourth quarter of FY2013, Ferries made 99.3 percent (40,562 trips), which exceeds the performance goal of 99 percent. That works out to roughly three missed trips each day, given the estimated 450 daily trips Ferries made throughout the greater Puget Sound area. System-wide, Ferries had 514 canceled trips and was able to replace 234 of them, resulting in the 280 net missed trips and 40,562 total trips for the quarter.

On the Port Townsend – Coupeville route, low tides resulted in 77 cancellations and poor weather resulted in 26 cancellations. With a 35-minute crossing time, a canceled trip may leave riders at the dock for an hour or more. Electrical issues with the M/V *Klahowya* during three days in April resulted in 79 cancellations on the Fauntleroy – Vashon – Southworth route, which are included in the schedule reset section on the chart below.

Vessel issues and schedule resets are top reasons for Ferries trip cancellations during the quarter
Fourth quarter (April 1 through June 30), FY2013



Data source: WSDOT Ferries Division.
Note: Percentages may not equal 100 due to rounding. A schedule reset typically occurs when a vessel (or vessels) can no longer stay on its sailing schedule due to weather, heavy volumes, or mechanical issues.

Ferries ridership increases slightly, system transports more than 2.58 million vehicles

Ferries transported more than 5.74 million riders during the fourth quarter of FY2013. This mirrored projections, and was an increase of 38,000 riders (0.7 percent) compared to the same fourth quarter of FY2012.

Ferries transported more than 2.58 million vehicles this quarter. One of the busier routes was Seattle – Bainbridge Island, which transported more than 500,000 vehicles. The ferry ride across Puget Sound takes 35 minutes versus a 92-mile, one-hour and 50-minute trip (during optimal traffic conditions) on Interstate 5 and State Routes 16, 3 and 305. This saved commuters on the Seattle – Bainbridge route 625,000 travel hours and 46 million miles last quarter.

The marine highway Ferries serves is a critical link for communities separated by water in the greater Puget Sound area. It also saves drivers time by providing direct, cross-water routes between communities, reducing the number of vehicles on already busy state highways.

Revenues come in 2.1 percent more than projections due to ridership, fare increases

Ferries' farebox revenues were $43 million for the fourth quarter of FY2013, which was 2.1 percent more than projected. In the same quarter last year, farebox revenues were $42.3 million. The $700,000 revenue increase over FY2012 is due in part to the increase in ridership and a 2.5 percent fare increase in May 2012.

Customers compliment staff, reservations

"My wife and I have been Whidbey residents for 26 years ... This last weekend we travelled to Port Angeles. Our experience, from making the reservations, to our transit over and back, was nothing less than outstanding. We were totally impressed by the professionalism and exemplary customer service of every WSF employee/crew member we had contact with those two days. The reservation system is a great program."

Rider complaints increase; 436 per 5.74 million customers served

Customer complaints increased from 6.2 to 8.0 complaints per 100,000 customers in the fourth quarter of FY2013 compared to same quarter in FY2012.

In total there were 436 complaints and 54 compliments during the fourth quarter of FY2013. This is out of more than 5.74 million riders. The largest increase in complaints involved bicycle issues, which stemmed from a change in access at Seattle's Colman Dock. On-time performance and loading/unloading also saw increases in complaints. The largest decreases in complaints were for ferry schedules and employee behavior.

Contributors include Theresa Greco, Matt Hanbey, Kynan Patterson and Joe Irwin

Rail: Amtrak Cascades Quarterly Update

50

Notable results

- *More than 80% of state-supported Amtrak Cascades trains reached their destination on time in the second quarter of 2013*
- *WSDOT has completed three of 21 federally-funded passenger rail projects; eight are under construction*

On-time performance reaches program goal of 80 percent

On-time performance for state-supported trains averaged 80.2 percent in the second quarter of 2013. Amtrak Cascades passengers reached their destinations on time (within 10 to 15 minutes of the scheduled arrival time) for an average of four out of every five trips. This is a 7.9 percent improvement compared to the same quarter in 2012, and the second time that Amtrak Cascades has met the 80 percent on-time performance goal since 2001.

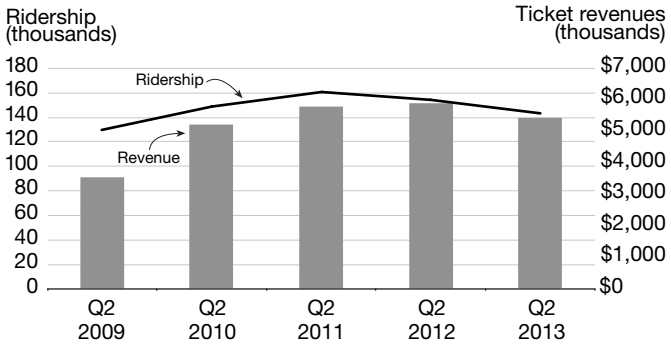
This improvement is due, in part, to train schedules that were adjusted to accommodate construction work on the tracks. The schedules for seven trains that operate between Seattle and Portland were increased by 10 minutes and one by five minutes, to account for lower speed limits in the work zones. Schedule adjustments are a temporary side effect of the state's nearly $800 million capital program to improve intercity passenger rail.

Ridership and revenue decline compared to second quarter of 2012

State-supported ridership was 143,680 compared to 154,015 for the same quarter in 2012, representing a decline of 6.7 percent. This translates to 10,335 fewer passengers riding Amtrak Cascades in the second quarter of 2013 compared to the same quarter of the prior year. Increases in scheduled travel time between major destinations due to railroad construction may have contributed to reduced ridership. There was a decrease in ticket revenues of 8.5 percent; ticket sales on state-supported trains totaled $5.4 million this quarter, compared to $5.9 million in the second quarter of 2012.

Ridership, ticket revenues for state-supported Amtrak Cascades trains decrease for quarter

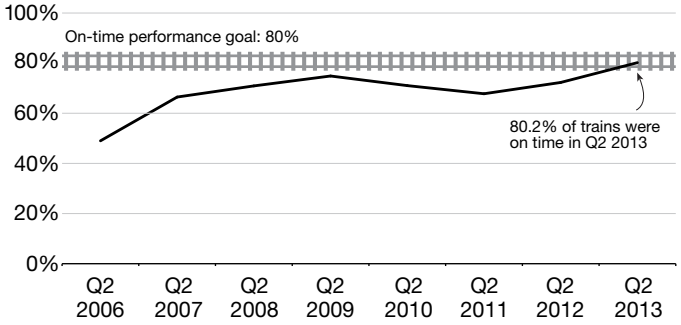
Second quarter (April 1 through June 30), 2009 through 2013



Data source: WSDOT Rail Division.
Note: For Washington-funded Amtrak trains only.

State-supported Amtrak Cascades reaches its on-time performance goal in second quarter

2009 through 2013; Percent of Amtrak trains on time by quarter



Data source: WSDOT Rail Divison.
Notes: For Washington-funded Amtrak trains only. On-time performance is calculated by dividing the number of trains that arrive at the endpoint on time by the number of trains in operation during a specific period. These calculations consider trains 10 to 15 minutes late as on time, depending on the route length.

Major railroad construction program continues

To accommodate WSDOT's nearly $800 million capital construction program to improve Amtrak Cascades service, significant construction activity has occurred on the railroad tracks between Nisqually and Vancouver, Wash. When the program is completed in 2017, passengers will benefit from the addition of two daily round trips between Seattle and Portland with a travel time reduction of 10 minutes, and an anticipated on-time performance of 88 percent for Portland to Seattle and Seattle to Vancouver, B.C.

Eight of WSDOT's 21 federally-funded passenger rail projects were under construction or complete as of

Three federally-funded rail projects complete as of June 2013

June 30, 2013. Work includes purchasing new locomotives and rail cars, adding rail tracks to handle the increased train traffic, and upgrading tracks, signals and stations. More than 96 percent of the funding for these projects comes from the 2009 American Recovery and Reinvestment Act.

WSDOT completes King Street Station restoration

WSDOT and the city of Seattle transformed the historic King Street Station, which first opened in 1906, to meet current and future needs of expanding passenger rail service. Located in downtown Seattle, King Street Station is the busiest train station in the Pacific Northwest, serving more than a half-million Amtrak passengers in 2012. The $47 million multi-phase restoration began in 2008; the final phase, a seismic retrofit, began in March 2012 and was completed in April 2013.

The $47 million multi-phase restoration of the historical King Street Station (above) was complete in April 2013.

The primary funding came from a $16.7 million high-speed rail grant from the Federal Rail Administration. Other funding partners include Amtrak, the Federal Transit Administration, the city of Seattle and several other local agencies.

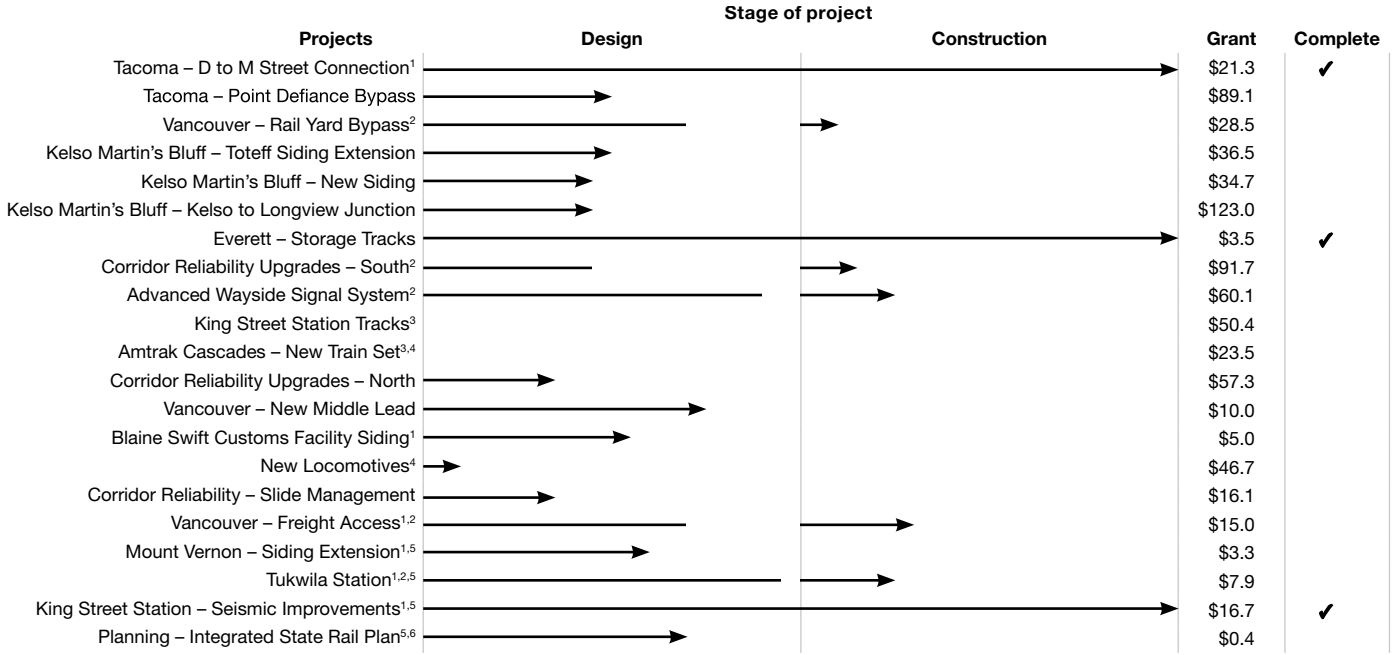
Construction to begin on corridor reliability project

BNSF is completing design and engineering work on a number of repair strategies (retaining walls, improved drainage systems and erosion control) for the $16.1 million Corridor Reliability – Slide Management project. This project is expected to reduce train disruptions due to mudslides and increase on-time performance for Amtrak Cascades trains travelling between Vancouver, Wash. and the U.S./Canadian border. Construction work is scheduled to begin at two locations near Everett in August 2013.

Contributors include Alex Countouriotis, Alice Fiman, Patrick Forza, Teresa Graham, Lisa Popoff, John Romero, Kerri Woehler and Alison Wallingford

WSDOT completes three federally-funded passenger rail projects; eight more underway

Project status as of June 30, 2013; Rail projects by stage of project; Grant amounts in millions of dollars



Data source: WSDOT Rail Division.

Notes: ✔ = project is operationally complete. 1 Six projects are partially funded from non-Federal Railroad Administration sources such as Sound Transit, state and local sources and the Federal Transit Administration. 2 Gaps show projects progressing through multiple phases with portions moving into construction while other portions are still in design. 3 Project is in pre-design phase. 4 The construction timeframe for these projects consists of manufacturing and delivering the new train components. 5 The first 17 projects in the table are funded by the American Recovery and Reinvestment Act. The last four projects are funded by other federal sources. 6 Project only consists of the design phase.

Programmatic Permitting Annual Report

50

Notable results

- *WSDOT saved an estimated 2,000 hours of staff time by using 13 programmatic permits to complete 597 activities*
- *WSDOT bridge and ferry terminal maintenance work benefitted the most from programmatic permits*

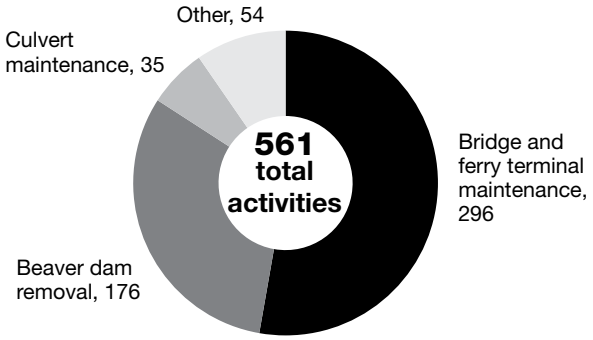
WSDOT saves resources by using programmatic permits

WSDOT estimates it saved more than 2,000 hours of staff time in 2012 by using programmatic permits. Time saved almost equals one full-time employee, who would typically work 2,080 hours in a given year. Saving time and staff resources equates to saving time for all agencies involved. WSDOT began using programmatic permits more than a decade ago.

Programmatic permits are one way WSDOT works with other state agency partners to expedite delivery of transportation projects, while assuring the agency maintains strong environmental standards.

Nine Fish and Wildlife programmatic permits streamline 561 WSDOT activities

Calendar year 2012

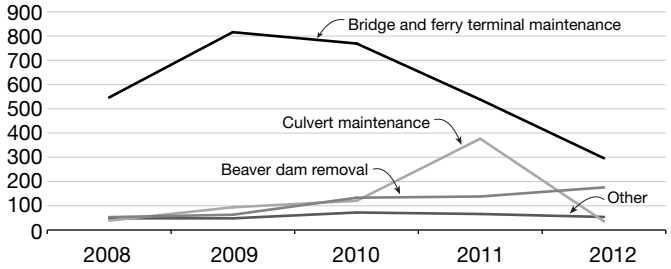


Data source: WSDOT Environmental Services Office.

Both the Washington State Department of Ecology (Ecology) and the Washington Department of Fish and Wildlife (Fish and Wildlife) have issued programmatic permits for specific routine maintenance activities that have a low risk of affecting sensitive resources, such as bridge washing (see cover photo and photo on next page). A programmatic permit covers the same type of work across the state and remains in effect for five years. Programmatic permits streamline the process and save time and money by eliminating the need to apply for a new permit each time similar work is to be performed. The permits outline the conditions or rules for in or over-water work, such as setting restrictions on when work can be done and specifying who needs to be notified before work begins.

Fish and Wildlife programmatic permits show WSDOT's five-year activity trend

Calendar years 2007 through 2012



Data source: WSDOT Environmental Services Office.

Note: Culvert maintenance activities increased in 2010-2011 due to WSDOT's culvert inspection program. It also reflects additional water bodies in Eastern Washington that have been determined to be seasonal or ephemeral streams by WSDOT and WDFW. The number of bridge and ferry terminal maintenance activities is decreasing as WSDOT works with WDFW to determine which bridge maintenance activities warrant coverage under the programmatic Hydraulic Permit Approval.

Nine hydraulic programmatic permits cover 561 activities

Fish and Wildlife has issued nine hydraulic programmatic permits to WSDOT. These permits contain specific conditions for performing work that falls within the categories of bridge and ferry terminal maintenance, beaver dam removal and culvert maintenance.

The majority of activities under the Fish and Wildlife programmatic permits are for bridge and ferry terminal maintenance (296, or 53 percent) followed by the removal of beaver dams (176, or 31 percent). A beaver dam permit allows only for the removal or modification of dams less than one year old that are located within WSDOT's right of way. Beaver dam removal is typically done to prevent backwater from flooding the roadway or eroding parts of the infrastructure. Scan the QR code above to see *Gray Notebook* 46, p. 35, for a table showing past WSDOT permit usage details.

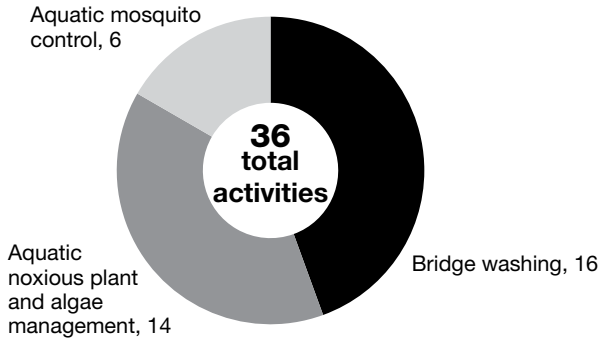
Ecology issues four programmatic permits to WSDOT in 2012

Crews wash a bridge over the Sol Duc River on the Olympic Peninsula. Programmatic permits with Fish and Wildlife allow WSDOT to complete bridge washing without filing for separate permits for each bridge.

In 2012, WSDOT used the Bridge and Ferry Terminal Washing Discharge Elimination System (NPDES) permit for 16 activities. Of the four water quality programmatic permits issued to WSDOT by Ecology, this is the only one negotiated between the agencies because it is specifically used by WSDOT. The other three programmatic permits (aquatic mosquito control, aquatic plant and algae management, and noxious aquatic plant control) were developed by Ecology for use by state and local agencies and the private sector, provided specific permit conditions are met. The decline in the use of the aquatic mosquito control permit from 2009 to 2011 is due to the reduction in West Nile Virus.

Four Ecology programmatic permits streamline 36 WSDOT activities

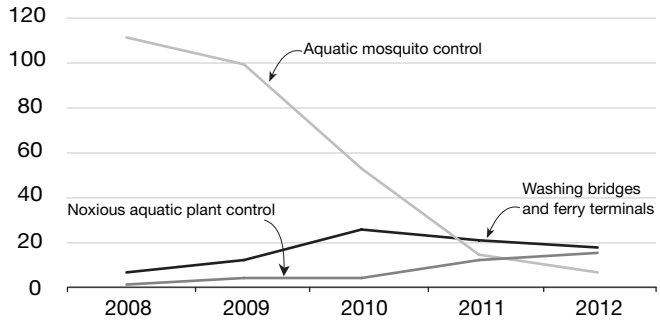
Calendar year 2012



Data source: WSDOT Environmental Services Office.

Ecology programmatic permits show WSDOT's five-year activity trend

Calendar years 2007 through 2012



Data source: WSDOT Environmental Services Office.

Modifications made in 2013 to the Bridge and Ferry Terminal Washing NPDES permit allows bridge washing on a yearly basis without first scraping and vacuuming, referred to as dry cleaning. This saves time and money, and can extend the life of the bridge by washing more frequently (see annual bridge report pp. 4-14). Bridge washing is done only with clean water; no detergents or other cleaning agents are used.

On average it takes about 200 hours to dry clean and then wash (flush) a bridge. It takes about 60 hours to wash a bridge when no dry cleaning is required. However, a bridge must have been washed the previous year for WSDOT to be allowed to wash without dry cleaning first.

The use of these permits is highly dependent on the needs in any particular year and the amount of dedicated funding to complete the work needed.

The graph above shows the permit use in the past five years. Not included in the chart is trend data for the aquatic plant and algae management, which has not been needed since 2008.

Contributors include Ken Schlatter and Joanne Wearley

Stewardship at a glance

Capital Project Delivery Programs Quarterly Update 28

- *Of the 344 Nickel and Transportation Partnership Account (TPA) projects completed to date, 88% were on time and 92% were on budget. The goal for projects is 90%*
- *Revenues generated through the 2003 Nickel and 2005 TPA gas tax continue to come in below original revenue projections, leaving WSDOT with $1.24 billion less in funding*

Construction Contracts Annual Report 41

- *Of the 131 construction contracts awarded in fiscal year 2013, 95 or 72.5% had bids below the engineer's estimate*
- *WSDOT completed 120 contracts in fiscal year 2013 for about $66.6 million or 10.3% less than the engineer's estimate*

WSDOT Lean Quarterly Update 43

- *WSDOT initiated more than a dozen Lean projects in the past year*
- *The first completed Lean project at WSDOT reduced the average price of road signs by 25% per square foot, and more than tripled the amount of signs manufactured each month*

Workforce Level and Training Quarterly Update 45

- *WSDOT's workforce declined to 6,573 permanent full-time employees in June 2013, 10% less than the peak of 7,280 in June 2010*
- *Completion rates improved or held steady for all but one of seven mandatory training courses for WSDOT employees*

Stewardship state policy goal

To continuously improve the quality, effectiveness, and efficiency of the transportation system.

50 Capital Project Delivery Programs Quarterly Update

Notable results

- ***WSDOT has completed 344 of 421 Nickel and TPA projects amounting to more than $5.6 billion***
- ***The state's Nickel and TPA gas tax revenues are about $1.24 billion short of WSDOT's original projections***

No new Nickel and TPA projects completed in second quarter of 2013

There were no 2003 Nickel and 2005 Transportation Partnership Account (TPA) projects completed during the second quarter of 2013 (April 1 through June 30). Since July 2003, 344 of 421 total Nickel and TPA projects have been completed, with 88 percent of these being on time and 92 percent on budget. The goal is 90 percent for projects being delivered on time and on budget. The goal was set to ensure taxpayers they will receive a high return on Nickel- and TPA-supported transportation investments.

The total value projects completed to date is approximately $5.6 billion. The remaining $10.7 billion in Nickel and TPA funds will support or continue to support 77 outstanding projects, including mega-projects like the SR 520 Bridge Replacement and HOV Program. While there were no new advertisements this quarter, WSDOT plans to advertise six new projects by December 31, 2013.

WSDOT completes 344 Nickel and TPA projects

July 1, 2003 through June 30, 2013; Dollars in thousands

Project status	Number of projects	Value in thousands
Projects completed in earlier biennia that are *not* included in the current transportation budget	81	$371,970
Projects completed that *are* included in the current transportation budget	263	$5,235,742
Completed projects subtotal:	**344**	**$5,607,712**
Projects included in the current transportation budget that are not yet complete	77	$10,735,466
Total:	**421**	**$16,343,178**

Data source: WSDOT Capital Program Development and Management.

Nickel and TPA revenues continue to come in well short of original projections

Gas tax revenues generated through the 2003 Nickel and 2005 TPA continue to come in below original revenue projections, leaving WSDOT with $1.24 billion less in funding for transportation projects statewide than originally anticipated. If this trend continues, the end result will be that a number of projects that have been deferred from one biennium to the next will likely be delayed even longer.

The June 2013 revenue forecast for the Nickel account is unchanged from last quarter, with about $1.73 billion for the 10-year period. This is 10.1 percent ($190 million) less than the original 2003 Nickel projection of $1.92 billion, which was originally developed as a 10-year plan for 2003-2013. The 2007 Legislature, responding to transportation funding issues that arose due to dramatic increases in material and oil prices, moved some Nickel projects beyond 2013.

As of June 2013, the 16-year revenue projections for the TPA are 21.3 percent below the 2005 cumulative baseline total. There is more than a $1.05 billion difference from the $4.94 billion in anticipated gas tax revenues set in 2005 and the $3.89 billion forecast through June 2013.

This difference is due primarily to gasoline consumption continuing to be lower than the 2005 estimate, which could be the result of people driving less and using alternate transportation modes. The state's gas tax is fixed per gallon and does not change with the price of gasoline. As a result, reduced consumption results in reduced revenues.

Contributors include Mike Ellis, Heather Jones, Claudia Lindahl, Firas Makhlouf, Pat Morin, Theresa Scott, Dean Walker and Joe Irwin

Goal is 90%

344 projects complete | **88** % on time | **92** % on budget | **81** % on time *and* on budget | No change | Trend since Q2 2012

Data source: WSDOT Capital Program Development and Management.

Notes: Projects complete are cumulative since 2003. A project is "on time" if it is operationally complete within the quarter planned in the last approved budget, and "on budget" if the final budget is within 5 percent of the last approved budget. Trend indicates the cumulative change in "on time *and* on budget" from the second quarter of 2012 (April 1 through June 30).

WSDOT completes more than $5.6 billion in Nickel and TPA projects

Highway construction performance summary shows more than $5.6 billion in projects completed
As of June 30, 2013; Dollars in thousands

Combined Nickel and TPA programs	**Number of projects**	**Value of program**
Projects completed in earlier biennia that *are not* included in the current transportation budget	81	$371,970
Projects completed that *are* included in the current transportation budget	263	$5,235,742
Subtotal of completed projects	*344*	$5,607,712
Projects included in the current transportation budget but not yet complete	77	$10,735,466
Total number of projects[1] in improvement and preservation budget	**421**	**$16,343,178**

Schedule and budget summary Nickel & TPA combined: Results of completed projects in the current Legislative Transportation Budget and prior budgets.	**Completed in 2011-2013 biennium budget**	**Total in current legislative budget**	**Cumulative program[2]**
Number of projects completed	40	263	344
Percent completed early or on time	78%	86%	88%
Percent completed under or on budget	90%	92%	92%
Percent completed on time and on budget	75%	81%	81%
Baseline cost at completion	$1,481,920	$5,235,742	$5,607,712
Current cost at completion	$1,456,070	$5,157,581	$5,531,445
Percent of total program over or under budget	1.7% under	1.5% under	1.4% under

Advertisement record: Results of projects entering into the construction phase or under construction are detailed on pp. 32-33.	**Combined Nickel & TPA**
Total current number of projects in construction phase as of June 30, 2013	28
Percent advertised early or on time	82%
Total number of projects advertised for construction in 2011-2013 biennium to date (July 1, 2011 through June 30, 2013)	19
Percent advertised early or on time	84%

Projects to be advertised: Results of projects now being advertised for construction or planned to be advertised, detailed on p. 31.	**Combined Nickel & TPA**
Total projects being advertised for construction bids July 1 through December 31, 2013	6
Percent on-target for advertisement on schedule or early	33%

Budget status for the 2011-2013 biennium: *Dollars in thousands*	**WSDOT biennial budget**
Budget amount for 2011-2013 biennium	$3,772,395
Actual expenditures to date 2011-2013 biennium (July 1, 2011 through June 30, 2013)	$2,786,181
Total 2003 Transportation Funding Package (Nickel) expenditure	*$291,846*
Total 2005 Transportation Partnership Account (TPA) expenditure	*$1,045,198*
Total Pre-existing Funds (PEF) expenditures[3]	*$1,449,137*

Data source: WSDOT Capital Program Development and Management.
Notes: 1 The project total has been updated to show "unbundled" projects which may have been previously reported in programmatic construction program groupings (such as Roadside Safety Improvements or Bridges Seismic Retrofit). See *Gray Notebook* 38, p. 55, for more details. 2 Cumulative projects completed from 2003 to June 30, 2013. 3 For full details of the Pre-existing Funds program, see pp. 36-38.

WSDOT begins reporting change orders online

Even though WSDOT engineers prepare detailed plans for contractors who build roads and bridges, WSDOT sometimes must make changes to these plans and specifications in order to complete the project. When this occurs, WSDOT issues a change order. A change order is a formal modification of the contract that contains 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://www.wsdot.wa.gov/Business/Construction/ConstructionChangeOrders.htm.

WSDOT completes 18 rail and 20 ferries projects with Nickel and TPA funds

Nickel and Transportation Partnership Account (TPA) funding continues to support construction projects for rail and Washington State Ferries. Nickel and TPA have combined to provide some $372.5 million in support for rail and ferries projects. Since 2003, WSDOT has completed 11 rail and 11 ferries projects using the Nickel funding package. The Nickel package has provided more than $122.2 million to support these projects. WSDOT has also completed seven rail and nine ferries projects using 2005 TPA funds, which have provided more than $250.3 million toward these projects.

WSDOT finishes 18 rail construction projects *As of June 30, 2013; Dollars in thousands*	**Nickel (2003)**	**TPA (2005)**	**Combined Nickel & TPA**
Schedule, scope, and budget summary: Completed projects			
Cumulative to date (July 1, 2003 through June 30, 2013)	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%
Percent completed on time and on budget[1]	100%	100%	100%
Baseline cost at completion	$62,380	$40,965	$103,345
Current cost at completion	$62,380	$40,965	$103,345
Percent of total program on or under budget[1]	100%	100%	100%
Advertisement record: Projects under construction or entering construction phase			
2011-2013 biennium to date (July 1, 2011 through June 30, 2013)			
Total advertised	2	2	4
Percent advertised early or on time	100%	100%	100%
Total award amounts to date	$130,878	$27,081	$157,959

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.

WSDOT finishes 20 ferries construction projects *As of June 30, 2013; Dollars in thousands*	**Nickel (2003)**	**TPA (2005)**	**Combined Nickel & TPA**
Schedule, scope, and budget summary: Completed projects[2]			
Cumulative to date (July 1, 2003 through June 30, 2013)	11	9	20
Percent completed early or on time[3]	100%	100%	100%
Percent completed within scope[3]	100%	100%	100%
Percent completed under or on budget[3]	100%	100%	100%
Percent completed on time and on budget[3]	100%	100%	100%
Baseline cost at completion	$59,851	$209,343	$269,194
Current cost at completion	$59,851	$209,343	$269,194
Percent of total program on or under budget[3]	100%	100%	100%
Advertisement record: Projects under construction or entering construction phase			
Current quarter (April 1 through June 30, 2013)	1	1	2
Percent advertised early or on time[3]	100%	100%	100%
Total award amounts to date	$109,400	$115,345	$224,745

Data source: WSDOT Capital Program Development and Management.
Notes: 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). 2 Ferries completed projects record includes the three 64-car vessels, the Motor/Vessel (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. 3 The Legislature funds ferry projects at a grouped-project or BIN level for terminals and vessels; however, the delivery of construction projects requires that each of these BIN groups be broken into sub-projects with specific scopes, budgets, and schedules. The list of sub-projects is updated as the project progresses into the design phase and the budget and schedule are better defined. This process enables WSDOT to deliver the projects within the updated budget amounts and milestones (on time and on budget).

WSDOT finishes biennium with 30 gas tax projects on time and on budget

Biennial summary: Completed gas tax projects continue a decade of progress

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

Cumulative to date	Fund type	On-time advertised	On-time completed	Within scope	Baseline estimated cost	Current estimated cost	On budget completed	Completed on time and on budget
Current quarter reporting on capital project delivery								
2011-2013 biennium summary This information is updated quarterly throughout the biennium.	5 Nickel 35 TPA	30 on time 10 late	31 on time 9 late	40	$1,481,920[1]	$1,456,070[1]	36 on budget 4 over budget	30 on time and on budget
Earlier reporting on capital project delivery								
2009-2011 biennium summary See *Gray Notebook* 42, p. 53, for project listing.	16 Nickel 74 TPA	73 on time 17 late	80 on time 10 late	90	$1,641,605	$1,596,970	85 on budget 5 over budget	76 on time and on budget
Notes: In earlier editions of the *Gray Notebook*, 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.								
2007-2009 biennium summary See *Gray Notebook* 34, p. 45, for project listing.	42 Nickel 69 TPA	91 on time 20 late	96 on time 15 late	111	$1,685,749	$1,685,219	102 on budget 9 over budget	90 on time and on budget
2005-2007 biennium summary See *Gray Notebook* 26, p. 3, for project listing.	52 Nickel 24 TPA	71 on time 5 late	68 on time 8 late	76	$673,858	$668,778	67 on budget 9 over budget	59 on time and on budget
2003-2005 biennium summary See *Gray Notebook* 19, p. 5, for project listing.	27 Nickel	25 on time 2 late	27 on time 0 late	27	$124,580	$124,409	25 on budget 2 over budget	25 on time and on budget

Data source: WSDOT Capital Program Development and Management.
Notes: 1 Numbers have been corrected from *Gray Notebook* 49. Prior *Gray Notebooks* may be accessed scanning the QR code at right or 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 1 through December 31, 2013

Nickel and Transportation Partnership Account (TPA) projects planned to be advertised; Costs estimated at completion; Dollars in thousands

Project description (county)	Fund type	Original planned ad date	Current planned ad date	On schedule	Baseline estimated cost at completion	Current estimated cost at completion
SR 3/Belfair Area - Widening and Safety Improvements (Mason)	TPA	Jul-12	Nov-13	Late[1]	$18,154	$18,153
SR 6/Rock Creek Bridge East - Replace Bridge (Lewis)	TPA	Apr-13	Dec-13	Late[1]	$8,770	$10,168
SR 6/Rock Creek Bridge West - Replace Bridge (Lewis)	TPA	Apr-13	Dec-13	Late[1]	$6,953	$7,288
SR 9/84th Street Northeast (Gethchell Road) Improve Intersection (Snohomish)	TPA	Jan-14	Oct-13	√	$16,712	$14,615
SR 162/Puyallup River Bridge - Replace Bridge (Pierce)	TPA	Dec-12	Dec-13	Late[2]	$15,008	$15,564
SR 302/Key Peninsula Highway to Purdy Vicinity - Safety and Congestion (Pierce)	TPA	Oct-13	Oct-13	√	$6,527	$6,538

Data source: WSDOT Capital Program Development and Management.
Notes: 1 These projects are currently included on WSDOT's Watch List on pp. 39-40 and at http://www.wsdot.wa.gov/Projects/Reports/.
2 This project was removed from the Watch List after the schedule risk was realized (See *Gray Notebook* 47, p. 67).

WSDOT tracks advertisement records for Nickel and TPA projects

Twenty-eight WSDOT projects in construction phase as of June 30, 2013

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

Project description Cumulative to date (County)	Fund type	On-time advertised	Ad date	Contractor	Operationally complete date	Award amount
Concrete Rehabilitation Program (Statewide)	Nickel					
Although this budget line item is active, no projects were planned for construction in the 2011-2013 biennium.						
U.S. 2/Chiwaukum Creek - Replace Bridge (Chelan)	TPA	Late	Apr-11	Selland Construction	Sep-13	$4,190
Advertisement was delayed to allow time for processing a shoreline permit. Project was combined with the U.S. 2/Wenatchee River Bridge project (below) for efficiency.						
U.S. 2/Wenatchee River Bridge - Replace Bridge (Chelan)	TPA	Late	Apr-11	Selland Construction	Sep-13	$3,912
I-5/Northeast 134th Street Interchange (I-5/I-205) - Rebuild Interchange (Clark)	Nickel	√	May-11	Moore Excavation	Dec-14	$17,791
SR 99/Spokane Street Bridge - Replace Bridge Approach (King)	TPA	√	Oct-12	MidMountain Contractors	Oct-14	$9,213
SR 28/Junction U.S. 2 and U.S. 97 to 9th Street Stage 1 - New Alignment (Douglas)	TPA	√	Sep-09	Selland Construction	Oct-13	$4,565
This is a multi-contract project with several significant stages. Project operationally complete date delayed from October 2012 due to a contract delay caused by right of way acquisition and an error made in the original bid.						
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-08	Frank Coluccio Construction	Nov-09	$17,040
• SR 99/South Holgate Street to South King Street - Viaduct Replacement	TPA	√	Oct-09 May-10	Signal Electric Skanska USA Civil West	Sep-13 Sep-13	$4,902 $114,569
This subproject has several contract components; the contract awarded to Skanska USA in May 2010 began removal of the southern portion of the viaduct.						
• SR 99/Battery Street Tunnel - Safety Improvements	TPA	√	Nov-09	Signal Electric	Nov-10	$2,409
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-10	Seattle Tunnel Partners	Dec-15	$1,089,700
U.S. 395/North Spokane Corridor (NSC) - Design and Right of Way - New Alignment (Spokane)	Nickel/ TPA					
• U.S. 395/NSC - Francis Avenue Improvements	Nickel	√	Apr-12	Graham Construction	Nov-13	$14,046
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-10	Tri-State Construction	Dec-11	$19,731
• I-5/Mellen Street to Blakeslee Junction - Add Lanes, Interchange Improvements	TPA	√	Mar-12	Cascade Bridge	Oct-13	$21,596
• I-5/Mellen Street Interchange - Interchange Improvements	TPA	√	*Combined with project above for construction efficiencies.*			
I-5/Chehalis River - Flood Control (Lewis)	Nickel	√	Mar-12	Cascade Bridge	Oct-13	$21,596
U.S. 97/North of Goldendale - Wildlife Habitat Connectivity (Klickitat)	TPA	√	Apr-12	Rotschy	Oct-14	$2,113
SR 502/I-5 to Battle Ground - Add Lanes (Clark)	TPA	√	Apr-12	Tapani Underground	Oct-15	$5,194
SR 285/West end of George Sellar Bridge - Intersection Improvements (Chelan)	TPA	√	Apr-12	Selland Construction	Nov-13	$9,787
SR 105/North River Bridge - Replace Bridge (Pacific)	TPA	√	Jun-12	Scarsella Bros.	Sep-14	$23,009
SR 105/Smith Creek Bridge - Replace Bridge (Pacific)	TPA	√	Combined with the SR 105/North River Bridge project (above) for efficiency.			
U.S. 101/Middle Nemah River Bridge - Replace Bridge (Pacific)	TPA	√	Jun-12	SB Structures	Aug-14	$3,253
SR 112/Colville Creek - Fish Barrier Removal (Clallam)	TPA	√	Feb-13	Thompson Brothers Excavating	Nov-13	$996
SR 9/Pilchuck Creek - Replace Bridge (Snohomish)	TPA	Late	Jul-12	Granite Construction	Jul-14	$8,900
Advertisement date was delayed due to a delay in the hydraulic report, which then delayed the shoreline permit.						

WSDOT tracks advertisement records for Nickel and TPA projects, *continued*

Twenty-eight WSDOT projects in construction phase as of June 30, 2013

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

Project description Cumulative to date (County)	Fund type	On-time advertised	Ad date	Contractor	Operationally complete date	Award amount
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-09	KLB Construction	Oct-09	$3,298
• I-90/Snoqualmie Pass East Phase 1B Hyak to Snowshed Vicinity - Add Lanes and Bridges	TPA	√	Nov-09	Max J. Kuney Company	Oct-13	$76,699
• I-90/Snowshed to Keechelus Dam Phase 1C - Replace Snowshed and Add Lanes	TPA	Late	Apr-11	Guy F. Atkinson Construction	Oct-17	$177,144
Advertisement was delayed to address fire and safety issues with the original snowshed design resulting in long-term savings.						
SR 520/Bridge Replacement and HOV (King)	TPA					
• SR 520 Pontoon Construction (Grays Harbor, Pierce)	TPA	√	Aug-09	Kiewit-General, A Joint Venture	Jul-14	$367,330
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-10	Kiewit-General, A Joint Venture	Dec-14	$586,561
• SR 520/Medina to SR 202 Vicinity - Eastside Transit and HOV	TPA	√	May-10	Eastside Corridor Constructors	Mar-14	$306,278
SR 6/Willapa River Bridge - Bridge Replacement (Pacific)	TPA	√	Mar-13	Rotschy	Nov-14	$7,070
I-5/Tacoma HOV Improvements (Pierce)	Nickel/ TPA					
• I-5/Port of Tacoma Road to King County Line - Add HOV Lanes	Nickel	Late	Jun-09	Tri-State Construction	May-11	$31,015
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-08	Guy F. Atkinson Construction	Jun-11	$119,925
• I-5/SR 16/Eastbound Nalley Valley - HOV	Nickel/ TPA	√	Jun-11	Mowat Construction Company	Mar-14	$74,688
SR 161/24th Street East to Jovita - Add Lanes (Pierce)	Nickel	Late	Feb-11	Tri-State Construction	Sept-13	$11,928
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.						
I-405/Kirkland Vicinity, Stage 2 - Widening (Snohomish, King)	Nickel/ TPA					
• I-405/SR 520 to SR 522 - Widening Stage 2	Nickel	Early	Nov-10	Gary Merlino Construction	Dec-15	10,694
• I-405/Northeast 195th Street to SR 527 - Northbound Widening	TPA	Early	May-09	Kiewit Pacific	Jun-10	$19,263
SR 9/212th Street Southeast to 176th Street Southeast, Stage 3 - Add Lanes (Snohomish)	Nickel	Late	Apr-11	Northwest Construction	Aug-13	$24,297
Advertisement was delayed because the ditches on the project required an individual permit under the jurisdiction of the U.S. Army Corps of Engineers.						
SR 522/Snohomish River Bridge to U.S. 2 - Add Lanes (Snohomish)	Nickel	√	Apr-10	Scarsella Bros.	Nov-14	$88,653
SR 11/Padden Creek - Fish Barrier Removal (Whatcom)	TPA	√	Feb-13	Ram Construction	Oct-13	$1,761
U.S. 101/Bone River Bridge - Replace Bridge (Pacific) Advertisement was delayed due to delay in right of way acquisition.	TPA	Late	Apr-12	Cascade Bridge	Nov-13	$5,715

Data source: WSDOT Capital Program Development and Management.

WSDOT completes 101 Nickel-funded highway projects since 2003

The performance summaries below and those on the following page 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 funding packages were created. As a result, the original funding package (LEAP) lists data below and on the next page that differs from the current legislative budgets on pp 29-30.

The 2003 and 2005 tables feature all budget items including pre-construction and environmental studies that were in the original funding packages. They do not contain the local programs projects, which WSDOT does not lead, but rather collaborates on with cities, counties and tribes.

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

WSDOT project delivery update: Original 2003 Transportation Funding Package (Nickel)
As of June 30, 2013

	Total program		Highways		Ferries		Rail	
	Number of projects	Percent of total	Number of projects	Percent of program	Number of projects	Percent of program	Number of projects	Percent of program
Project number and phase	**156**		**127**		**5**		**24**	
Completed projects	117	75%	101	80%	2	40%	14	58%
Total projects underway	29	19%	26	20%	2	40%	1	4%
In pre-construction phase	*16*		*15*		*1*		*0*	
In construction phase	*13*		*11*		*1*		*1*	
Projects scheduled to start	1	1%	0	0%	0	0%	1	4%
Projects deferred or deleted from program	9	6%	0	0%	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	*0*		*0*		*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.

WSDOT project budget update: Original 2003 Transportation Funding Package (Nickel)
As of June 30, 2013; Dollars in thousands

	Total program		Highways		Ferries		Rail	
	Budget	Percent of total	Budget	Percent of program	Budget	Percent of program	Budget	Percent of program
Total original legislative planned budget	**$3,887,483**		**$3,380,124**		**$297,851**		**$209,508**	
Original plan, 2003 through 2009-2011 biennium	$3,278,038	84%	$2,813,701	83%	$293,919	99%	$170,418	81%
Actual expenditures, 2003 through 2009-2011 biennium	$3,262,619	84%	$3,002,188	89%	$132,448	44%	$127,983	61%
Original plan through 2011-2013 biennium	$3,887,483	100%	$3,380,124	100%	$297,851	100%	$209,508	100%
Current plan through 2011-2013 biennium	$3,720,970	96%	$3,305,900	98%	$285,587	96%	$129,483	62%
Actual expenditures, 2003 through June 30, 2013	$3,695,874	95%	$3,294,038	97%	$272,705	92%	$129,131	62%

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

WSDOT delivers 170 TPA-funded highways projects since 2005

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

As of June 30, 2013

	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	177	71%	170	74%	0		7	47%
Total projects underway	53	21%	48	21%	1	25%	4	27%
In pre-construction phase	*24*		*23*		*0*		*1*	
In construction phase	*29*		*25*		*1*		*3*	
Projects starting in the future	7	3%	3	1%	1	25%	3	20%
Projects deferred or deleted from program	11	4%	8	3%	2	50%	1	7%
Number of legislatively-approved scope changes	*23*		*23*		*0*		*0*	
Pre-construction starts within six months	*0*		*0*		*0*		*0*	
Construction starts within six months	*5*		*5*		*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 TPA's passage in 2005, the Legislature has approved changes to the ferry construction program so that the current budget does not match the original budget. Among the changes, TPA funding was provided to the 64-car ferries.

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

As of June 30, 2013; Dollars in thousands

	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	**$6,982,128**		**$6,678,468**		**$185,410**		**$118,250**	
Original plan, 2005 through 2009-2011 biennium	$4,042,962	58%	$3,886,331	58%	$81,701	44%	$74,930	63%
Actual expenditures, 2005 through 2009-2011 biennium	$2,703,850	39%	$2,572,833	39%	$64,128	35%	$66,889	57%
Original plan through 2011-2013 biennium	$5,585,341	80%	$5,386,836	81%	$87,655	47%	$110,850	94%
Current plan through 2011-2013 biennium	$3,816,518	55%	$3,671,154	55%	$73,068	39%	$72,297	61%
Actual expenditures, 2003 through June 30, 2013	$3,756,604	54%	$3,618,032	54%	$69,696	38%	$68,876	58%

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

Definitions

Completed projects Projects operationally complete, open to traffic.

Projects underway Funded projects that have begun pre-construction or construction activities.

Projects in pre-construction phase Projects that have been funded and have started active work, such as environmental studies, design work, right of way purchase, preliminary engineering, and other activities that occur before ground-breaking.

Projects in construction All activities from ground-breaking to completion.

Projects starting in the future Projects that are funded but not yet in a construction or pre-construction phase.

Projects deferred or deleted Projects that are deferred beyond the 16-year program window or deleted from the program with legislative approval.

Note

The column headed "Percent of program" shows the percentage of each category represented by the raw number. For example, the ferries columns show that of the five projects listed in the Nickel package, two have been completed, representing 40 percent of the total ferries program; two ferries projects are under way, representing 40 percent of the total program; and one ferries project has been deferred or deleted, representing the remaining 20 percent of the total program.

WSDOT advertises 36 Pre-existing Funds projects for the quarter

WSDOT advertised 36 of 56 scheduled Pre-existing Funds (PEF) projects during the second quarter of 2013 (April 1 through June 30). Of those advertised, 13 were on time, eight were late and 15 were emergent and addressed unexpected needs like slope stabilization in Alder Canyon on State Route 7 following landslides, and emergency repairs to the Interstate 5 Skagit River Bridge after it was damaged in May 2013, see p. 13 for more details.

The current cost to complete the 36 PEF projects advertised this quarter was $125 million. This is approximately $20.1 million more than the original value of $104.9 million, which was estimated at the beginning of the 2011-2013 biennium. The 19 percent difference in cost is largely due to the addition of the 15 emergent projects.

Unlike Nickel and Transportation Partnership Account (TPA) projects, which come from a fixed list of projects set by the Legislature and are funded with line item budgets, PEF projects are primarily funded at the program level through federal, state and local sources. This gives WSDOT flexibility with projects, such as pavement preservation, bridge rehabilitation and fish passage improvements.

More than 44 percent of Pre-existing Funds project advertisements were on time in the 2011-2013 biennium

Project status	Quarter[1]	Cumulative[2]
Projects advanced	0	20
Projects advertised on time	13	134
Projects advertised late	8	72
Emergent projects advertised	15	76
Total projects advertised	**36**	**302**
Projects delayed (delayed within the biennium)	0	96
Projects deferred (delayed out of the biennium)	18	68
Projects deleted	3	17

Data source: WSDOT Capital Program Development and Management.
Note: Five projects from this quarter that advertised early are not included above because they were already counted in previous quarters. 1 Quarter refers to April 1 through June 30, 2013.
2 Cumulative refers to July 1, 2011 through June 30, 2013.

WSDOT wraps up George Sellar Bridge project

WSDOT completed the State Route 28/East End of George Sellar Bridge — Construct Bypass in Douglas County in May 2013, one month ahead of schedule. It is the last of six individually tracked Pre-existing Funds projects WSDOT reported on quarterly. The five other projects were completed in previous quarters (see *Gray Notebook* 45, p. 72, for their advertisement, budget and schedule performance).

WSDOT finished the George Sellar Bridge project for $28.7 million, approximately $19.3 million more than the original legislative budget set in 2004. The increase, which was approved in April 2013, was due to right of way issues, higher costs for materials and the addition of a pedestrian tunnel.

WSDOT advertises 135 Pre-existing Funds projects on time, 72 late during the 2011-2013 biennium

Of the 302 total projects advertised this biennium (July 1, 2011 to June 30, 2013), 20 were advanced, 134 were on schedule, 72 were late, and 76 were considered emergent, 96 projects were delayed within the biennium, 66 were delayed out of the biennium to a future date, and 17 have been deleted.

WSDOT reports on all aspects of its preservation and improvement programs that are supported by Pre-existing Funds. WSDOT also tracks the number of planned versus actual advertisements for the biennium (see p. 38).

Definitions of PEF terms

The name Pre-existing Funds came about to help differentiate the funding source from more recently introduced funding methods like the 2003 Nickel and 2005 Transportation Partnership Account (TPA). Nickel and TPA funds have different timelines, reporting, sources and legislation.

Advertisement date
The date that WSDOT schedules to publicly advertise a project for bids from contractors. When a project is advertised, it has a completed set of plans and specifications, along with a construction cost estimate.

Advanced
A project from a future quarter which is advertised in the current quarter.

Early
A project with an advertisement date originally scheduled for the current quarter but has its advertisement occur in an earlier quarter.

On time
A project that is advertised within the quarter and planned in the biennial budget.

Late
A project that is advertised in the current quarter but missed the original advertisement date.

Emergent
A new project that addresses unexpected needs, such as emergency landslide repair, and is advertised in the current quarter.

Projects not advertised on schedule fall into three categories:

Delayed
A project that has not yet been advertised and has had the advertisement date moved out of the quarter being reported to another quarter within the biennium.

Deferred
A project not yet advertised, which has had the advertisement date moved out of the quarter being reported to a future biennium.

Deleted
A project that, upon review or due to changing priorities, is no longer required or has been addressed by another project.

Fifteen Pre-existing Funds projects handling emergent needs

WSDOT advertises 14 Pre-existing Funds projects on time this quarter
April 1 through June 30, 2013

Early (5)	
I-90/West Lake Sammamish Parkway - Intersection Modification	I-5/Lewis County Detour for Freight Mobility - Intelligent Transportation System Projects
I-5/I-705 and Railroad Bridge Southbound - Seismic Retrofit	U.S. 395/Columbia River at Kettle Falls - Bridge Deck
SR 7/Muck Creek Tributary to Nisqually River - Fish Barrier Removal	
On time (13)	
I-5/West of Carpenter Road - Stormwater Retrofit	SR 14/East of Cape Horn Bridge - Culvert Rehabilitation
SR 162/Ball Creek - Culvert Replacement	SR 14/Ice House Lake - Culvert Rehabilitation
SR 167/Puyallup River Bridge - Bridge Replacement	Management of Environmental Mitigation Sites - Southwest Region
I-5/North Fork Lewis River Bridge Southbound - Painting	I-90/Oakes Avenue Interchange - Replace Lighting System
I-5/North Fork Lewis River Bridge Northbound - Painting	I-90/Indian John Hill Eastbound and Westbound Safety Rest Areas - Replace Lighting Systems
U.S. 12/East of Slide Bridge - Culvert Rehabilitation	SR 231/Rosenoff Road Drainage - Culvert Replacement
U.S. 12/East of Silverbrook Road - Culvert Rehabilitation	
Late (8)	
SR 9/Getchell Road Bridge - Seismic Project delayed for additional preliminary engineering.	U.S. 101/Purdy Canyon Vicinity Slide - Stabilize Slope Project delayed after analysis determined additional excavation was required.
SR 522/Echo Lake Road Vicinity to Snohomish River Bridge Project delayed due to changes in funding and prioritization.	SR 106/Twanoh Falls - Chronic Environmental Deficiency - Restoration Project delayed for completion of condemnation in right of way.
SR 3/Junction U.S. 101 to East of Front Street - Paving Advertisement delayed to add Americans with Disabilities Act safety elements to the scope.	SR 108/East of Little Creek Casino to U.S. 101 - Paving Project delayed to tie in with similar project for efficiencies.
U.S. 101/South of Skookum Creek Bridge to East of Evergreen Parkway - Paving Advertisement delayed for workforce balancing.	I-90/Thorp Road Interchange - Replace Lighting System Project delayed for reprioritization due to funding.
Emergent (15)	
I-5/Gee Creek Southbound Safety Rest Area - Major Renovation	I-5/SR 510 to SR 512 - Congestion Management
I-5/Squalicum Creek Channel - Fish Passage	SR 7/Alder Canyon Slide - Emergency Slope Stabilization
I-5/Southbound South 320th Street Vicinity - Noise Wall Replacement	SR 510/Southeast of Reservation Road - Intersection Improvement
Northbound I-5/Stanwood Weigh Station - Dawson Road Vicinity - Rehabilitation	I-5/Chamber Way Bridge - Special Repair
I-5/Skagit River Bridge - Emergency Repair	I-5/Southbound Ridgefield to East Fork Lewis River Bridge - Paving
SR 530/North Brooks Creek Road to Squire Creek Vicinity - Stormwater Retrofit	I-5/Northbound Northeast 179th Street to North Fork Lewis River Bridge Vicinity - Paving
North Central Region Sign Update	I-90/Liberty Lake Roundabout
SR 28/Rock Island Drainage	
Deferred (17)	
I-5/SR 18 to South 288th Street - Seismic Retrofit Project deferred due to bridge workforce availability	SR 14/Vicinity of Tunnel No. 3 - Rock Scaling Project deferred to combine with another for efficiencies.
U.S. 101/West of Benson Road to East of Doyle Road - Safety Improvements Project deferred to allow a tiered application of safety solutions, rather than the full project scope.	U.S. 97/Maryhill Climbing Lane - Rock Scaling Project deferred to combine with another for efficiencies.
SR 163/North 46th Street to North 54th Street - Concrete Pavement Rehabilitation Project deferred to allow funding of higher priority projects.	US 101/0.5 Miles North of Raymond - Culvert Rehabilitation Project deferred for time to allow time for right of way certification.
SR 307/Dogfish Creek - Fish Barrier Removal Project deferred for right of way scheduling.	SR 105/Heather Road - Culvert Rehabilitation Project deferred for time to allow a right of way certification.
SR 507/Lacamas Creek Tributary to Muck Creek - Fish Barrier Removal Project deferred to allow more time for right of way.	SR 142/Glenwood Road Vicinity - Replace Failing Box Culvert Project deferred for additional design efforts.
SR 432/Washington Way Signal Replacement Project deferred for intersection development changing design assumptions.	SR 3/Chico Creek Construct Weir Project deferred for additional planning for weir maintenance.

Preservation and improvement funds below projections for biennium

Deferred, *continued*

U.S. 2/Espanola Road to Fairchild Airforce Base - Paving
Project deferred to tie in with a city of Spokane project for efficiencies.

U.S. 2/Fairchild Airforce Base to Junction I-90 - Paving
Project deferred to tie in with a city of Spokane project for efficiencies.

SR 270/Junction U.S. 195 to Bishop Boulevard - Paving
Project deferred for changes in funding and prioritization.

SR 206/Elliot Road Drainage - Headwall Retrofit
Project deferred for scope change as county-owned drain pipe involved is failing.

SR 272/Colfax Hill Drainage - Channel Retrofit
Project deferred for right of way acquisitions.

SR 272/East of Colfax - Culvert Replacement
Project deferred for right of way acquisitions.

Deleted (3)

SR 3/Lake Flora Road to South of Imperial Way - Safety Improvements
Project deleted as work was completed by WSDOT maintenance crews.

SR 3/Chico Creek - Construct Weir
Project deleted as work will be combined and completed under a separate project by the Suquamish Tribe.

SR 8/Union Road/Fairground Road - Install Acceleration Lane
Project deleted as work was completed by WSDOT maintenance crews.

Data source: WSDOT Capital Program Development and Management.

WSDOT advertises 302 of 328 planned Pre-existing Funds projects for the 2011-2013 biennium

WSDOT advertised 302 of 328 Pre-existing Funds (PEF) projects planned in the 2011-2013 biennium. The 302 projects were initially valued at $794.4 million but have a current cost to complete of $600.4 million.

This decrease is the result of $145 million of savings found during development of the projects. These savings were reprioritized to support other PEF projects. Those deleted or deferred out of the biennium were only partially offset in value by emergent needs projects.

The current cost to complete PEF advertisements for the biennium dropped $59 million from $659.4 million last quarter to $600.4 million this quarter. The decrease was due to projects being deferred and deleted, and project budgets coming in lower than originally planned. Due to savings on mega-projects, the actual cash flow for the PEF improvement program was $1.59 billion, about $334 million (17 percent) less than the planned cash flow of $1.93 billion for the quarter ending June 30, 2013.

Project savings and the delay of several bridge projects, put the actual cash flow for the PEF preservation program for the quarter at $492 million, about $155 million (about 24 percent) less than the planned amount of $647 million. Savings from both the improvement and preservation programs were reprioritized for other PEF projects.

Contributors include Mike Ellis, Dean Walker and Joe Irwin

Actual cost to complete outpaces original value of WSDOT's planned advertisements for quarter

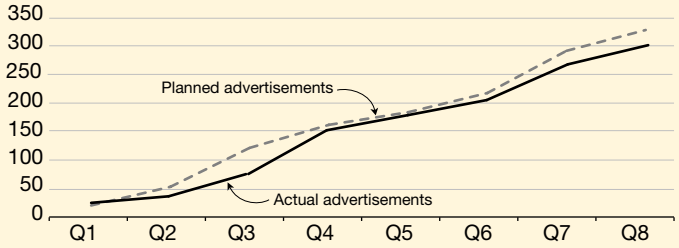
2011-2013 biennium (July 1, 2011 to June 30, 2013); Dollars in millions

	Number of projects	Original value	Current cost to complete
Total PEF advertisements planned 2011-2013	328	$795	$601
Planned advertisements through June 30, 2013	328	$795	$601
Actual advertisements through June 30, 2013	303	$626	$573

Data source: WSDOT Capital Program Development and Management.

WSDOT's actual advertised projects are just shy of planned levels for the 2011-2013 biennium

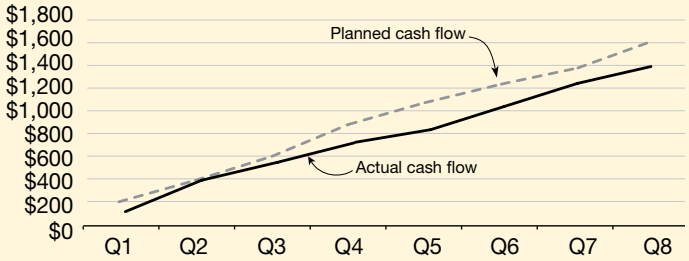
2011-2013 biennium; Quarter ending June 30, 2013; Planned vs. actual advertisements



Data source: WSDOT Capital Program Development and Management.

WSDOT's improvement program cash flow less than planned amount for the biennium

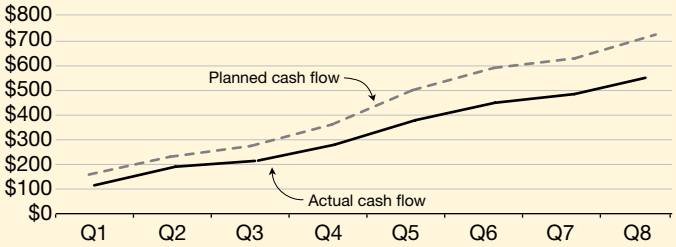
2011-2013 biennium; Quarter ending June 30, 2013; Planned vs. actual; Dollars in millions



Data source: WSDOT Capital Program Development and Management.
Note: Original Planned Cash Flow values have been updated based on the 2011 Legislative Final Budget.

WSDOT's preservation program cash flow continue to fall well short of planned level for the biennium

2011-2013 biennium; Quarter ending June 30, 2013; Planned vs. actual; Dollars in millions



Data source: WSDOT Capital Program Development and Management.
Note: Original Planned Cash Flow values have been updated based on the 2011 Legislative Final Budget.

Watch List keeps a close eye on projects with potential issues

WSDOT added nine projects to its Watch List from April through June 2013. During the same period, seven projects were updated and nine were removed.

WSDOT maintains the Watch List to deliver on the agency's commitment to "No Surprises" reporting. WSDOT continuously monitors its projects' performance to ensure any issues affecting schedule or budget are spotlighted by the agency and 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 project schedules and budgets.

The Watch List helps WSDOT track these projects, providing status reports while explaining the reasons they are affecting delivery, and what WSDOT is doing to address them. Projects are removed from the Watch List when these issues are resolved, and updated if new issues arise or old issues persist.

The list at the bottom of the page provides common issues that might land a project on the Watch List. The next page provides brief overviews of how these issues are affecting specific projects throughout the state.

Comprehensive Watch List moves online

WSDOT's Capital Program Development and Management office provides monthly updates on Watch List projects online in the Delivery Progress Reports. The reports provide a more comprehensive look at the Watch List as well as information on advertised and operationally complete Nickel and Transportation Partnership Account projects, which can be found at http://www.wsdot.wa.gov/Projects/Reports/.

Potential Watch List issues

Coordination

Local concerns: Concerns raised by local communities may require additional, unanticipated, design, right of way, or utilities work which, if not resolved, might result in additional costs or delays later in construction.
Federal requirements: Funding and project development issues with Federal Highways Administration (FHWA), Federal Transit Administration (FTA), USDOT; workload prioritization and coordination for reviews by U.S. Fish & Wildlife Service, National Oceanic and Atmospheric Administration (NOAA) Fisheries, U.S. Forest Service or others may result in delays.
Inter-agency issues: Project may require more collaboration with local jurisdictions, or may require interlocal agreements, such as Memoranda of Understanding (MOUs) or Memoranda of Agreement (MOAs).
Tribal concerns: Consultation with tribes as required by Centennial Accord and specific treaties with each tribal government. Where treaty rights are affected, there may be financial settlements unanticipated in the original project budget.

Environmental

Planning & analysis: Completing essential studies required to comply with the National and State Environmental Policy acts (NEPA/SEPA), the Endangered Species Act (ESA), or other programs may take longer and cost more than anticipated.
Technical issues: The time needed to resolve matters involving archeological discoveries, hazardous materials, stormwater, noise, and hydrology may cause delay.
Mitigation: Negotiating for and designing sites to compensate for impacts to wetlands, floodplains, fish habitat and migration, and so on, may involve many other factors from design through construction.
Permitting: New information about a project site, changes in design, or new regulatory requirements may delay permitting. If existing permits must be reworked, it can cause delay or additional expense.

Design

Geological: Studies may reveal unsuitable soil conditions for construction on the proposed route.
Alternatives: Design alternatives may require unanticipated revision as the result of environmental analyses and/or public input.
Design disputes: Communities or other entities may challenge design concepts, requiring additional design time.
Design element changes: Project parameters may change, requiring changes to designs in progress or under construction.

Utilities

Agreements with other jurisdictions: Agreements may take longer to obtain than anticipated.
Utility relocations: Moving power, water, gas, or other utility lines may be more complex than originally expected.

Right of Way

Design changes: Project revisions may require additional land.
Land acquisition: Negotiations with landowners regarding purchase of property may take longer than anticipated.
Land appreciation: Property value increases that exceed projections.
Land use designation changes: Land previously zoned as farmland may have been converted to industrial or commercial use, raising the purchase price.

Construction

Contractor issues: Disputes with contractors or disagreements over contract parameters may delay construction at any point in the job.
Cost increase of materials: Unit costs may increase beyond the set budget due to fluctuations in the marketplace or a failure to estimate costs properly at the design phase.
Materials procurement: Unexpected demand or lack of availability of raw materials required for construction.
Site problems: Discovery of contaminated (hazardous) soils, unsuitable geological conditions, or similar unforeseen issues after construction has begun.
Timing problems: Delays at design or right of way may result in work schedules conflicting with events such as fish spawning season.
Weather: Weather unsuitable for construction work can temporarily halt the project.

Litigation

At any point, a problem may escalate if one or more of the parties decides to file a lawsuit.

WSDOT adds nine projects to the Watch List during the quarter

WSDOT's Watch List projects with schedule or budget concerns
Quarter ending June 30, 2013

Project	Date added	Date updated or removed	Watch List issue
I-5/Skagit River Bridge - Emergency Repair (Skagit)	May-13	Jun-13 Updated	Emergency construction repair on a bridge damaged by a semitruck has temporarily reduced speeds on Interstate 5.
SR 6/Rock Creek Bridge East - Replace Bridge (Lewis) (Related project: SR 6/Rock Creek Bridge West - Replace Bridge)	Apr-13	Jun-13 Updated	Environmental permitting issues put the schedule at risk. WSDOT had delayed the schedule to obtain approvals from the Multi Agency Permit (MAP) Team.
SR 532/Davis Slough Bridge Replacement - Widening for Flood Prevention (Island, Snohomish)	Apr-13	Apr-13 Updated	Design work for environmental permitting delayed the schedule. Difficulty in classifying the type of wetland delayed the schedule to complete and submit the permits on time.
I-5/Portland Avenue to Port of Tacoma Road - Northbound HOV (Pierce)	Feb-13	May-13 Updated	Design coordination with tribal concerns puts the schedule at risk. Ongoing negotiations with the Puyallup Tribe of Indians on project impacts delayed the schedule and the bid opening was canceled.
SR 3/Belfair Area - Widening and Safety Improvements (Mason)	Feb-13	May-13 Updated	Design element changes put the schedule at risk. Revisions to the project limits delayed the schedule to review and approve the right of way acquisition plans.
SR 520 Pontoon Construction Project (Grays Harbor)	Jun-12	Jun-13 Updated	Construction materials problems may delay the schedule. Repair work on four pontoons may delay the schedule on this project and a related project to allow time for the repairs.
SR 520/Medina to SR 202 Vicinity - Eastside Transit and HOV (King)	Sep-11	Apr-13 Updated	Construction site problems may put the schedule or budget at risk. Geotechnical issues regarding soil stability may delay the schedule or increase costs.
I-5/Mellen Street to Blakeslee Junction - Add Lanes, Interchange Improvements (Lewis)	Jun-13	Jun-13 Removed	Construction timing problems put the schedule at risk. A WSDOT review found that complex traffic revisions and bridge demolitions would delay the schedule.
I-5/Spokane Street Interchange Vicinity - Special Bridge Repair (King)	Jun-13	Jun-13 Removed	Construction timing problems have put the schedule at risk. Staging the project to manage I-5 traffic revisions has delayed the schedule to gain construction efficiencies.
SR 9/212th Street Southeast to 176th Street Southeast, Stage 3 - Add Lanes (Snohomish)	Jun-13	Jun-13 Removed	Weather unsuitable for construction in 2012 put the schedule at risk. Weather and slow progress delayed the schedule to complete the paving and drainage work.
SR 202/Little Bear Creek - Fish Barrier Removal (King)	Jun-13	Jun-13 Removed	Design element changes and design disputes put the schedule at risk. Design revisions delayed the schedule from meeting a summer work window and obtaining agreement with WDFW on structure size.
SR 520/I-5 to Medina - Evergreen Point Floating Bridge and Landings (King)	Jun-13	Jun-13 Removed	Construction timing problems puts the schedule at risk. Design flaws on the related SR 520 Pontoon Construction Project may delay the schedule to allow time for the design-builder on this project to make the repairs on the pontoons.
SR 529/Southbound Snohomish River Bridge – Special Bridge Repair (Snohomish)	Jun-13	Jun-13 Removed	Construction materials procurement problems may delay the schedule. Late submissions of materials and work procedures may delay the schedule as it awaits approvals.
I-5/Portland Avenue to Port of Tacoma Road - Southbound HOV (Pierce)	Feb-13	Jun-13 Removed	Design coordination due to concerns from the Puyallup Tribe of Indians on a related project puts the schedule at risk.
SR 161/24th Street East to Jovita - Add Lanes (Pierce)	Jun-12	Jun-13 Removed	Construction and underground utility relocations and timing problems put the schedule at risk. This risk was realized as slow progress delayed the schedule and increased costs. The Legislature approved this budget increase in the 2013 Transportation Budget.
U.S. 2/Wenatchee River Bridges - Bridge Replacement (Chelan) (Related project: U.S. 2/Chiwaukum Creek - Replace Bridge)	Jun-11	Jun-13 Removed	Construction site problems put the schedule at risk. Encountering unexpected boulders that were difficult to remove has delayed the schedule and increased costs due to the additional work.

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

Notable results

- *WSDOT awarded the average construction contract for 7.4% less than the engineer's estimate*
- *Final costs for the 120 completed WSDOT contracts were $66.6 million less than estimated*

WSDOT awards 95 of 131 contracts below cost estimates

Of 131 WSDOT-awarded contracts from July 2012 through June 2013, 95 had bids that were less than the engineer's estimates. Nearly three quarters (72.5 percent) of these 131 awarded contracts met WSDOT's goal of award amounts not exceeding the engineer's estimates. These contracts were awarded for $37.2 million (or 10.7 percent) below WSDOT's estimates. The average contract was awarded for 7.4 percent less than estimated.

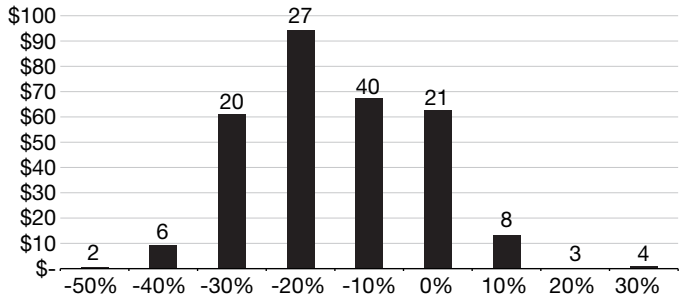
The awards totaled $310 million in construction contracts, a 48 percent decrease from the previous year. The decline in contracts reflects the reduction in the agency's planned workload, due to fewer Nickel and TPA contracts remaining.

WSDOT contracts $37.2 million less than estimated
FY2012 and FY2013; Dollars in millions

	FY2012	FY2013
Number of contracts awarded	125	131
Total engineer's estimate amount	$673.7	$347.2
Total award amount	$594.8	$310.0
Amount total is below estimate	-$78.9	-$37.2
Percent total is below estimate	-11.7%	-10.7%
Number of contracts awarded below estimate	78	95
Percent of contracts awarded below estimate	62.4%	72.5%

Data source: WSDOT Construction Office.

Ninety-five bids are less than WSDOT's estimate
FY2013; Dollars in millions; Total awarded contract amounts by percent above or below engineer's estimate



Data source: WSDOT Construction Office.

How WSDOT tracks cost estimation accuracy

Engineer's estimate

WSDOT engineers calculate contract cost estimates during the design phase. This estimate is based on current and forecasted material prices and takes into account the rate of inflation and recent bids on similar contracts. The engineer's estimate is WSDOT's forecasted cost for the work to be done by the contractor at the time it is advertised. WSDOT compares this estimate to bids received to ensure they are reasonable. For more information on how WSDOT engineers estimate construction costs, scan the QR code above to see *Gray Notebook* 48, p. 65.

Award amount

For each contract awarded, WSDOT tracks the difference between the original cost estimate made by the engineers and the amount of the contractor bid. WSDOT's goal is to have the lowest bid received on each contract be no greater than the engineer's estimate. The award amount is equal to the lowest responsive bid. WSDOT compares the engineer's estimate to the award amount as an indicator of the agency's estimating accuracy as well as market conditions.

Final contract cost

For every completed contract, WSDOT tracks the final cost – the amount paid to the contractor at the end of construction – compared to the engineer's estimate and the award amount. WSDOT's goal is for the final cost to be no more than 10 percent above the award amount, a typical benchmark in the construction industry today.

Although WSDOT prepares detailed plans by which to estimate costs, changes can occur in the field. Final contract costs are affected by unforeseen conditions that cannot be accounted for in advance, such as adding new items to the contract or changing the quantities of materials used. These changes increase the cost of completing a construction contract as planned.

WSDOT's accuracy of estimating final contract costs improves

WSDOT completes 120 contracts; 81 at less than estimated cost

WSDOT completed 120 construction contracts valued at $577.9 million in fiscal year (FY) 2013, July 2012 through June 2013. Final costs were 2.3 percent above the total awarded amount, and $66.6 million or 10.3 percent less than WSDOT's estimate. When contract costs come in lower than WSDOT's original estimate, the funds may be re-allocated according to a prioritized list of projects.

While the final cost was $12.8 million more than the bids, WSDOT saw an improvement from FY2012 when final costs were 14.1 percent greater than bids, adding $82.8 million to the cost to complete 160 construction contracts. On average, a contract was completed at a cost 1.8 percent greater than the contractor's bid in FY2013. See p. 29 for more information on change orders, which modify the cost of completing a project as originally planned.

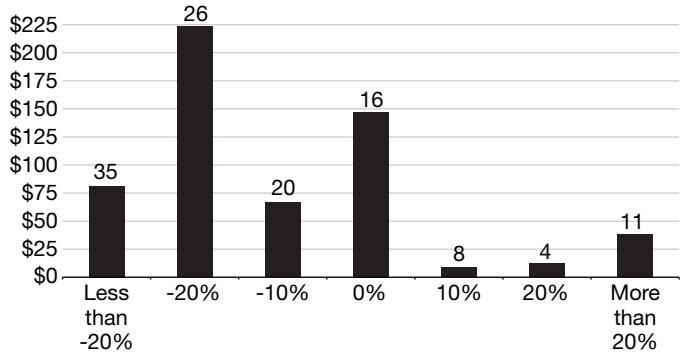
Final costs for the state route (SR) 542 – East Church Mountain Road Realignment contract totaled $2.6 million, almost $500,000 greater than the contractor's bid. This was mainly due additional costs to deal with large boulders. In addition, this contract required far more erosion control than originally anticipated in order to perform the work without impacting this environmentally sensitive area.

Final contract costs less than WSDOT estimates by $66.6 million, or 10.3 percent
FY2012 and FY2013; Dollars in millions

	FY2012	FY2013
Number of contracts completed	160	120
Total engineer's estimate	$643.4	$644.5
Total award amount	$587.9	$565.2
Total final contract cost	$670.7	$577.9
Percent final cost exceeded engineer's estimate	4.2%	-10.3%
Percent final cost exceeded award amount	14.1%	2.2%

Data source: WSDOT Construction Office.

Final cost of WSDOT contracts less than estimated
Fiscal year 2013; Dollars in millions; Total final cost by percent above or below engineer's estimate and award amount



Data source: WSDOT Construction Office.

The I-405 – I-5 to SR 169 Stage 1 Widening project, which added both a northbound and southbound lane to this highway segment, was one of the two design-build projects completed by WSDOT in FY2013.

Two design-build contracts completed

In FY2013, WSDOT awarded three design-build contracts valued at $21.3 million, which included the Interstate 5 (I-5) Skagit River Bridge Permanent Replacement. The three design-build contracts were awarded at $300,000 or 1.5 percent more than estimated. WSDOT also completed two design-build contracts (I-5 Active Traffic Management Systems and I-405 – I-5 to SR 169 Stage 1 Widening) valued at $133.9 million. They were completed for $7.9 million (6.3 percent) more than the original bids.

For a design-build contract, WSDOT works with a single contractor who provides both design and construction services. WSDOT and the design-builder agree on a fixed contract price based on the scope of work. This method has the potential of providing better cost certainty, speedier contract delivery, innovative design and construction approaches, a single point of responsibility for key tasks, and the opportunity for performance-based selection of contractors.

The I-405 – I-5 to SR 169 Stage 1 Widening contract added an additional lane on I-405 Renton. The final contractor payment cost was $95.8 million, $4.3 million greater than the original bid amount due to differing site conditions related to hazardous material clean up, technology and electrical changes, utility coordination and revisions, and several design changes. Even though the final payment to the contractor was $4.3 million above the original bid amount, the overall contract was completed below the budgeted amount.

Contributors include Jenna Fettig and Alison Wallingford

Notable results

- ***WSDOT has initiated more than a dozen Lean projects in the past year to improve processes and create efficiencies***
- ***The sign fabrication project reduced sign prices 25% per square foot, while doubling the number of signs manufactured***

Governor's Office supports Lean

Governor Jay Inslee has championed Lean, integrating it into his *Results Washington* approach to statewide performance management, "Lean provides proven principles that are helping Washington state government create a culture that encourages respect, creativity, and innovative problem solving, continuously improves and eliminates waste from government processes, aligns efforts across state agencies and delivers results that matter to Washingtonians."

Collision record data entry process improvement reduces backlog by 68 percent

Gray Notebook 44 reported that collision records were piling up in WSDOT's Statewide Travel and Collision Data Office (STCDO), creating a significant backlog. Redundancies and inefficient top-down decision making were not focusing on what was best for the customers. By December 2011, the backlog had grown to seven months (measuring the time between when the collision record was received and when it was processed and available to customers). The team projected that the backlog would grow to nine months by June 2012, and it very nearly did.

STCDO's Collision Branch kicked off their Lean project in June 2012. The branch's staff of 22, plus two Information Technology (IT) support workers, spent four days visually mapping the collision data flow processes. Staff that had been suffering under the increasing workload stepped forward and offered their ideas. These were prioritized and some changes started to occur; however, the door that had been opened to staff in June seemed to be slowly closing.

Executive management brought in new leadership. Almost immediately, the culture started to change. What the staff affectionately calls Lean Boot Camp happens every week. The staff members that had the improvement ideas in June are now a part of planning and implementing the ideas. They are given an opportunity to learn skills that involve critical thinking, problem solving and work planning. Most of all, they were given a voice to positively influence and improve their work environment and processes.

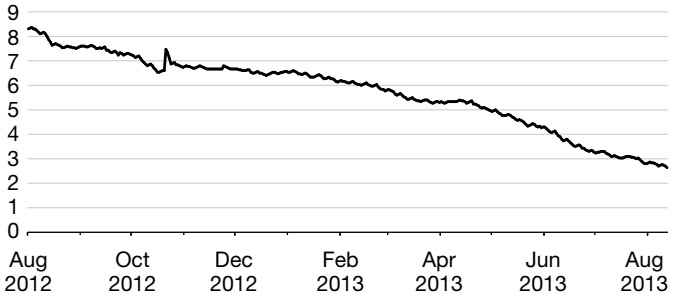
The backlog of collision records improved 68 percent in one year (August 2012 through August 2013), and it is continuing to decrease. This progress was achieved with two fewer staff members.

Lean works. There are Lean tools and methods that are highly effective and basic principles to guide teams, including:

- Understand what customers value, and focus key processes and services to continuously increase customer value
- Optimize the flow of products and services through the entire process
- For solutions, listen to the people who do the work

WSDOT's collision record backlog declines 68 percent

August 2012 through August 2013; Backlog in number of months between when the collision record arrives and when it is processed and available to customers



Data source: Statewide Travel and Collision Data Office (STCDO).
Note: The Lean project was launched in June 2012, when the backlog was nearly nine months.

Traffic data workflow processes improve

The Travel Data and Analysis branch of STCDO also undertook Lean projects to address technology issues and improve workflow processes. For example, recoding traffic software to work with the Windows 7 operating system (OS) eliminated most technology issues and brought them in line with the agency's OS standard; changing processes so equipment issues are identified sooner minimized loss of traffic data; and distributing traffic data in electronic formats such as Excel satisfied their customers. The team continues to search for more ways to streamline their processes and offer high-quality data to their customers.

WSDOT reports progress on six Lean projects as of June 30, 2013

WSDOT has initiated more than a dozen Lean projects in the past year (scan the QR code to see *Gray Notebook* 49, pp. 76-78) to improve inefficiencies and processes that do not meet customers' needs. WSDOT has been learning about the Lean process and what it has to offer to address identified issues and improve the way the agency does business. This quarter's progress and benefits of six projects are presented here. Other Lean projects are also underway.

Project, program, and description	Results achieved this quarter
COMPLETED: Streamline sign fabrication process *Maintenance Operations (Central Sign Shop)* Streamline sign ordering, fabrication, and shipping processes to reduce the number of price adjustments necessary to maintain cost recovery and decrease overall lead time.	■ Average price per square foot reduced 25% ■ Manufacturing of signs increased: Total square footage per month by 46%; total number of signs per month by 219% ■ Rush and emergency orders reduced from 20% of all orders to 5%, including Skagit River Bridge emergency signs
Reduce collision data backlog *Strategic Planning (Statewide Travel and Collision Data Office)* Supply customers with complete, accurate and timely collision data by streamlining collision data processing and reducing the data backlog.	■ The time until a fully analyzed collision record is available to customers dropped from 5.2 months in April 2013, to 3.3 months in June 2013. It was further reduced to 2.6 months at the time of publication. ■ Finished workflow process modification in June, reducing the number of times staff handles a collision report from three to one
Reduce WSDOT's fish passage project design timeline *Development Division (Environmental Services Office)* Increase collaboration efficiencies between WSDOT and the Washington Department of Fish and Wildlife during fish passage barrier correction project scoping, design and construct.	■ Completed Future State Value Stream Mapping workshop with WSDOT and WDFW staff (June), and developed implementation plan to be launched in July 2013 ■ Revised fish passage project design process and consolidated process steps, resulting in a shorter design time frame
Standardize traffic count data collection process *Strategic Planning (Statewide Travel and Collision Data Office)* Automate process for collecting traffic counts in the field with a focus on improved data reliability, reduced data loss, and saving time.	■ Standardized equipment list carried in van eliminated trips to pick up supplies and increased productivity by about 5% ■ Disseminated standardized site information, reducing crew paperwork errors and increasing yield by about 5% ■ Improved coordination between field data crews and maintenance/construction crews reduced work area conflicts and the need to reschedule by about 5%
Standardize Ferries digital schedule updating *Washington State Ferries Division* Streamline process for publishing and maintaining the sailing schedule to eliminate published schedule errors.	■ Received signature approval on project charter, authorizing launch of project and its objectives
NEW: Improve information and process flow for traffic data collection *Strategic Planning (Statewide Travel and Collision Data Office)* Reduce time between retrieving and validating data from permanent traffic data collection sites; Identify equipment issues sooner, reducing loss of traffic data.	■ Lean and value stream mapping training, May 2013; captured 41 potential Kaizen[1] Bursts at team meetings, to be prioritized ■ Automation of Oregon Transportation Data input process reduced office processing time by about 40% monthly

Data source: WSDOT Strategic Planning and Development divisions, Washington State Ferries, and Maintenance Operations.
Note: 1 Scan the QR code to see *Gray Notebook* 48, p. 66, for a description of Kaizen.

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Workforce Level and Training Quarterly Update

50

Notable results

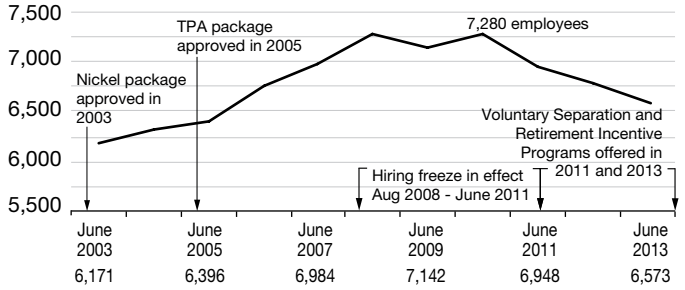
- ***WSDOT's workforce declined to 6,573 permanent full-time employees, 10% less than the peak of 7,280 in June 2010***
- ***Employee completion rates improved or held steady for all but one of seven mandatory training courses at WSDOT***

WSDOT workforce level declines; nears legislatively mandated goal

WSDOT had 6,573 permanent full-time employees as of June 30, 2013. This is 47 fewer than the quarter ending March 31, 2013, and 3 percent (206) fewer than the 6,779 workers employed one year ago. WSDOT's current staffing level is 10.3 percent below the peak of 7,280 employed in June 2010.

WSDOT's highway construction program workforce level was 2,258 full-time equivalent employees (FTEs) at the end of June 2013. This is up from 2,176 in March 2013, but below the legislatively-mandated target of 2,400 FTEs by the end of the 2011-2013 biennium in June. This increase is due to seasonal fluctuations; winter represents the annual low point for the FTE level, and the summer construction season is the annual high. An "FTE" may represent more than one part-time employee.

Number of permanent employees at WSDOT declines
June 2003 through June 2013; Full-time employees



Data source: Department of Personnel Data Warehouse, Human Resource Management System, WSDOT and the Ferry System payroll.

WSDOT's training budget for the 2011-2013 biennium was $900,000, or $125 per employee. For the 2013-2015 biennium, the budget is $500,000, or $74 per employee. While most organizations spend 3 to 5 percent of their total payroll on training, WSDOT is spending between 0.08 and 0.015 percent.

Data source: WSDOT Human Resources Division, Talent Development Office.

The Legislature directed, and WSDOT is on track to further reduce the size of its highway construction workforce to a level of 2,000 FTEs by June 30, 2015.

WSDOT employee training course completions improve
March through June 2013; Goal = 90 percent completion

Course	Q1 2013	Q2 2013	Status	Met goal	Trend[1]
System Security Awareness	86%	96%	+10%	YES	↑
Valuing Diversity	92%	94%	+2%	YES	↑
Violence in the Workplace	90%	93%	+3%	YES	↑
Disability Awareness	92%	93%	+1%	YES	↔
Ethical Standards	71%	82%	+11%	NO	↑
Sexual Harassment and Discrimination	88%	74%	-14%	NO	↓
Information Security	39%	55%	+16%	NO	↔
Average of all seven courses	**80%**	**84%**	**+4%**		↑

Data source: WSDOT Human Resources Office, Staff Development.
Note: 1 Comparing the second quarters of 2013 and 2012 (not shown).

Training courses show improved compliance

The employee training completion rate improved or held steady for all but one of seven mandatory policy courses in the second quarter (March 1 through June 30) of 2013. Each course has a goal of 90 percent completion; the completion of these courses is enforced by supervisors. Four courses met or exceeded the goal; three courses were below goal, and of those, one dropped 14 percent. One class was still significantly below the goal but improved by 16 percent in the quarter.

These courses are offered both through instructor-led training and online. The cost savings between on-line and instructor-led training is significant; eLearning costs about a quarter of what instructor-led training costs. Between March and June 2013, almost 3,500 WSDOT employees logged onto the Learning Management System to find, register, complete, and track/manage training.

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Strategic goal: Stewardship — Workforce Level and Training

50 *Gray Notebook* Edition Index

Calendar year	Edition number / Date (Washington state fiscal year and quarter)			
2001	1 / Mar 31, 2001 (Q3 FY2001)	2 / Jun 30, 2001 (Q4 FY2001)	3 / Sep 30, 2001 (Q1 FY2002)	4 / Dec 31, 2001 (Q2 FY2002)
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)

Subject index and acronym list are online

The *Gray Notebook* subject index (QR code above right) is available online at http://www.wsdot.wa.gov/Accountability/GrayNotebook/SubjectIndex. All editions of the *Gray Notebook* are available online at http://www.wsdot.wa.gov/Accountability/GrayNotebook/gnb_archives. The *Gray Notebook* acronym list (QR code right) is also available online at http://www.wsdot.wa.gov/Reference/Acronym.htm.

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