

# SR 520: Toll Operations and Traffic Performance Summary Report - 2012



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## Executive Summary

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Tolling on the State Route 520 bridge began December 29, 2011 with two central goals: raise funding for the replacement bridge and reduce congestion on SR 520. Tolling is expected to raise \$1 billion overall toward the \$4.13 billion SR 520 Bridge Replacement and HOV Program, which builds 12.8 miles of safety and mobility improvements from Interstate 5 in Seattle to SR 202 in Redmond.

SR 520 tolling was one of several federally funded projects implemented to help reduce congestion and improve safety on SR 520 and Interstate 90 in the Puget Sound area. The projects were a cooperative effort between the Washington State Department of Transportation, the Puget Sound Regional Council, King County and the Federal Highway Administration. This collaboration, known as the Lake Washington Urban Partnership, aimed to improve traffic flow and safety across the lake by implementing variable tolling on SR 520 and Smarter Highways on SR 520 and I-90, enhancing transit service and supporting regional carpool and telework programs.

During the first year of tolling on the SR 520 bridge, both revenue and changes in SR 520 traffic volumes met projections. This report summarizes the traffic and toll operational impacts during the first year of operations by comparing the pre- and post-tolling traffic, examining average traffic volumes, travel times, and traffic routes. The report also summarizes the financial status and payment methods for the first year of tolling.

### Revenue: on track to meet funding needs

SR 520 traffic and revenue continue to meet projections and are on track to providing more than \$1 billion in funding to help pay for the construction of a new bridge. Approximately 20 million trips were taken during tolling hours (5 a.m. to 11 p.m.), generating approximately \$55 million in expected gross toll revenue.

### Traffic performance: changes in traffic volumes meet projections

An average of 68,000 weekday trips crossed the SR 520 bridge, down from 103,000 in 2011. This 34 percent decrease in traffic is lower than the 48 percent drop in SR 520 traffic volumes that was forecasted for the first year of tolling.

Peak-hour, peak-direction diversion rates on SR 522 and I-90 met, or were lower than projected. The majority of diversion is occurring during off-peak times when SR 522 and I-90 have extra capacity to absorb more traffic volumes. However, when looking at all three cross-lake corridors there is a 6 percent decrease in the overall number of trips.

Travel times for drivers using the SR 520 bridge remain faster than pre-tolling travel times, and travel times on eastbound I-90 and SR 522 have remained steady although SR 522 drivers are experiencing longer travel times in the afternoon. Westbound I-90 and SR 522 travel times have increased compared to pre-tolling travel times. WSDOT continues to monitor travel times on all three cross-lake corridors.

## **Transit and vanpools: strong ridership growth**

Transit passenger volumes, including connector and vanpools, across Lake Washington have increased 20 to 25 percent since 2010. As part of the Urban Partnership, King County Metro and Sound Transit added 140 daily bus trips across the SR 520 bridge, increasing weekday service to nearly 750 trips on 19 routes serving the corridor.

Between 2011 and 2012, total cross lake transit and vanpool riders have grown during the peak period. The number of vanpools crossing SR 520 increased by 40 percent over the same time period. Peak-period vehicle trips have decreased by 6 percent, while the number of people crossing the lake has decreased by only 2 percent.

## **Good To Go! accounts: exceeding expectations**

The percentage of drivers on SR 520 with *Good To Go!* accounts continues to exceed projections by more than 10 percent.

The *Good To Go!* program has more than 380,000 active accounts and nearly 700,000 active *Good To Go!* passes.

## **Majority of tolls being paid**

Approximately 95 percent of SR 520 tolls are paid. The small percentage of tolls that remain unpaid are pursued through the civil penalty process. The majority of civil penalty recipients did not respond by the due date to pay or request a hearing. These unpaid transactions are eligible for vehicle registration holds with the Department of Licensing and/or continued collection efforts.

## Traffic Performance

WSDOT has been closely monitoring traffic volumes, speeds and travel times across Lake Washington to understand how travel patterns have changed since tolling began on the SR 520 bridge. WSDOT expected a period of adjustment as people modified their travel schedules to take advantage of transit, teleworking and off-peak travel times. Some drivers were also expected to use other roadways to avoid paying a toll on SR 520. Modeling predicted that traffic on alternate routes would increase but not significantly. To determine how travel behavior may have changed due to tolling of SR 520, WSDOT compared traffic statistics and information for both pre- and post-tolling time periods.

### Traffic volumes: overall decrease in cross-lake traffic

As expected, travel patterns have changed. As the economy recovers, traffic increases. Regional traffic volumes have increased 1 to 2 percent between 2011 and 2012. Comparatively, the 2012 average cross-lake traffic vehicle volume decreased about six percent.

Although drivers continue to adjust to tolling on SR 520, traffic volumes on the SR 520 bridge are 66 percent of pre-tolling volumes, which is in line with original forecasts. Traffic variations were expected due to seasonal trends, the economy and the construction effects around the region. Figure 1 shows a comparison of average daily traffic volumes, both pre and post-tolling, on several cross-lake routes. Figure 2 shows the 2012 average daily directional volumes for routes impacted by the toll.

**Figure 1: Cross-lake average daily volume comparison**

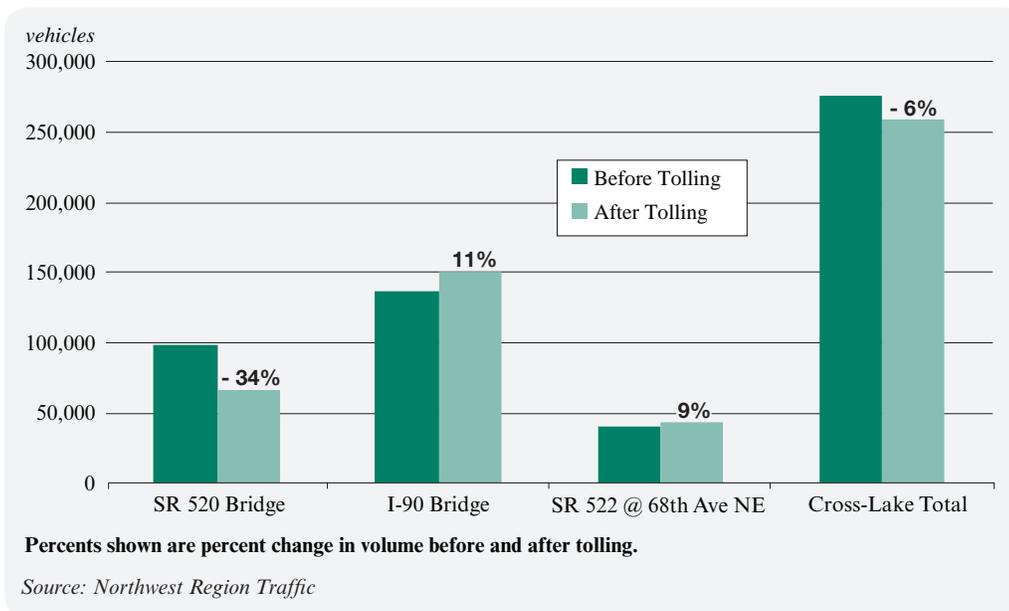
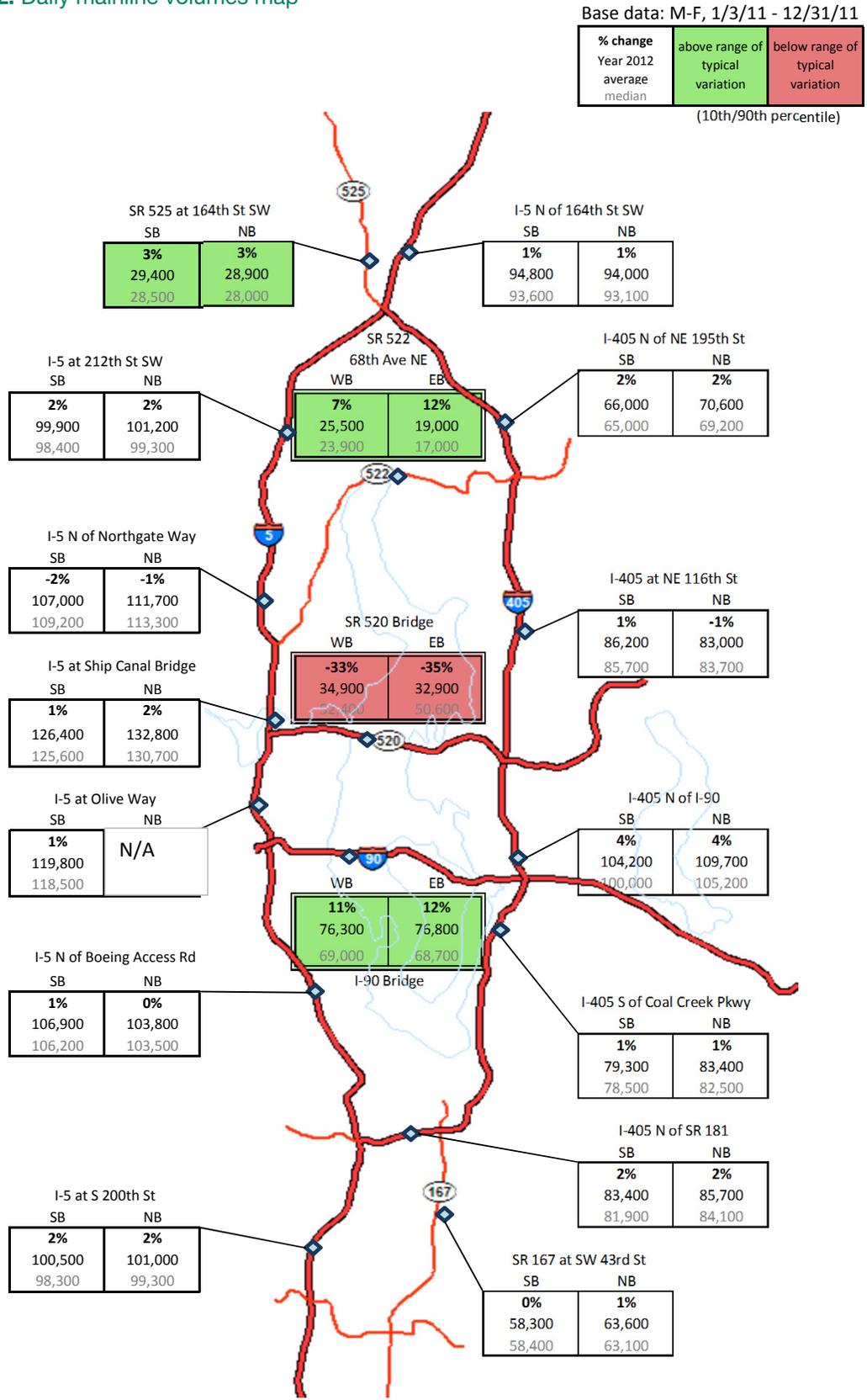


Figure 2: Daily mainline volumes map



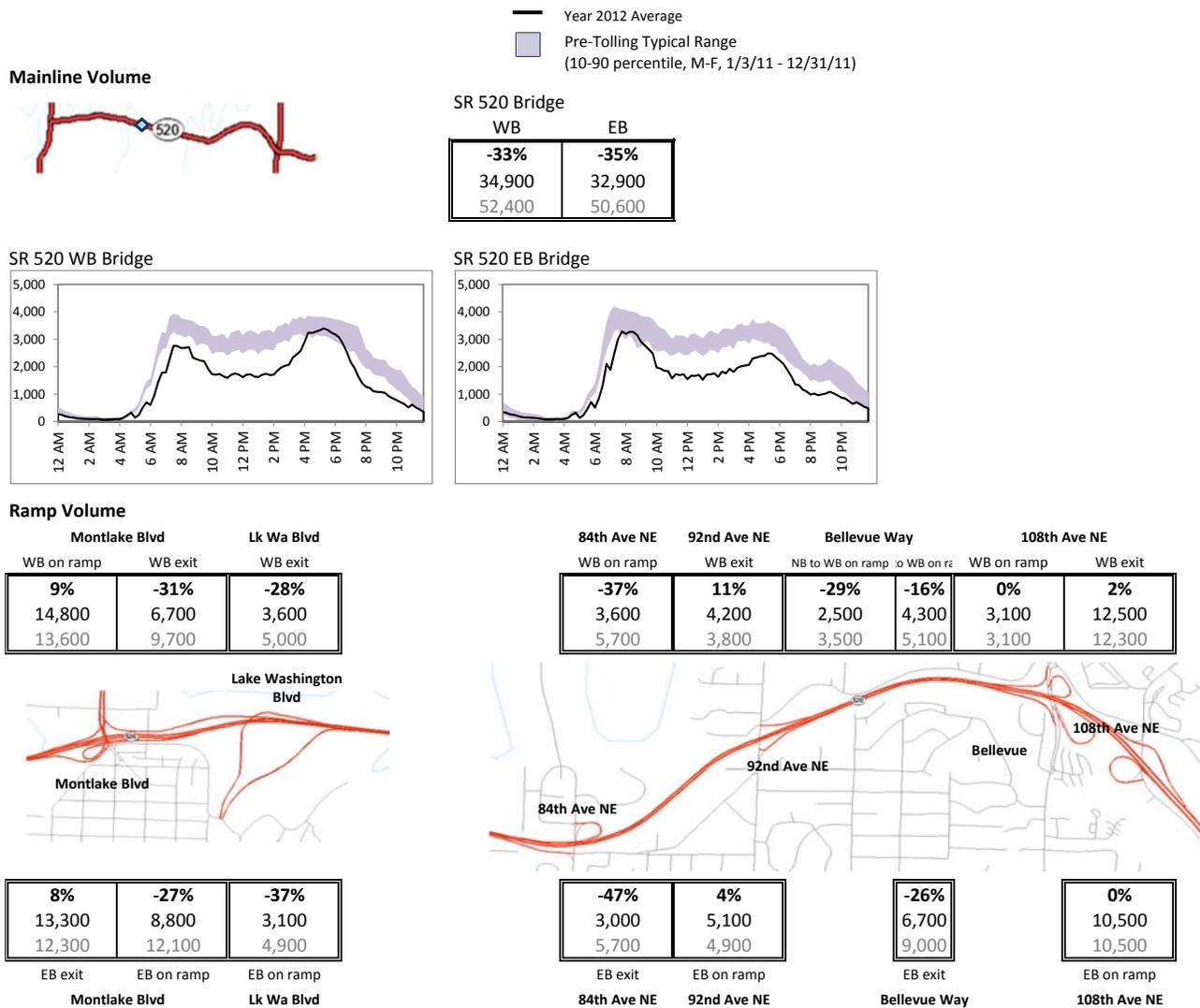
Source: Northwest Region Traffic

### SR 520 traffic

Greater traffic volume fluctuations were experienced during the first few months of tolling as people adjusted to tolling on the SR 520 bridge. After the first few months of lower volumes, traffic on SR 520 slowly increased and by the fall of 2012, traffic seems to have stabilized into the “new normal,” approximately 34 percent less than pre-tolling volumes.

The 2012 average travel times on SR 520 during peak periods are about four minutes faster than the pre-tolling baseline. However, during the westbound afternoon peak period, and the eastbound morning peak period, traffic reached 2011 levels, as shown in Figure 3.

**Figure 3: SR 520 detailed traffic volumes**



Source: Northwest Region Traffic

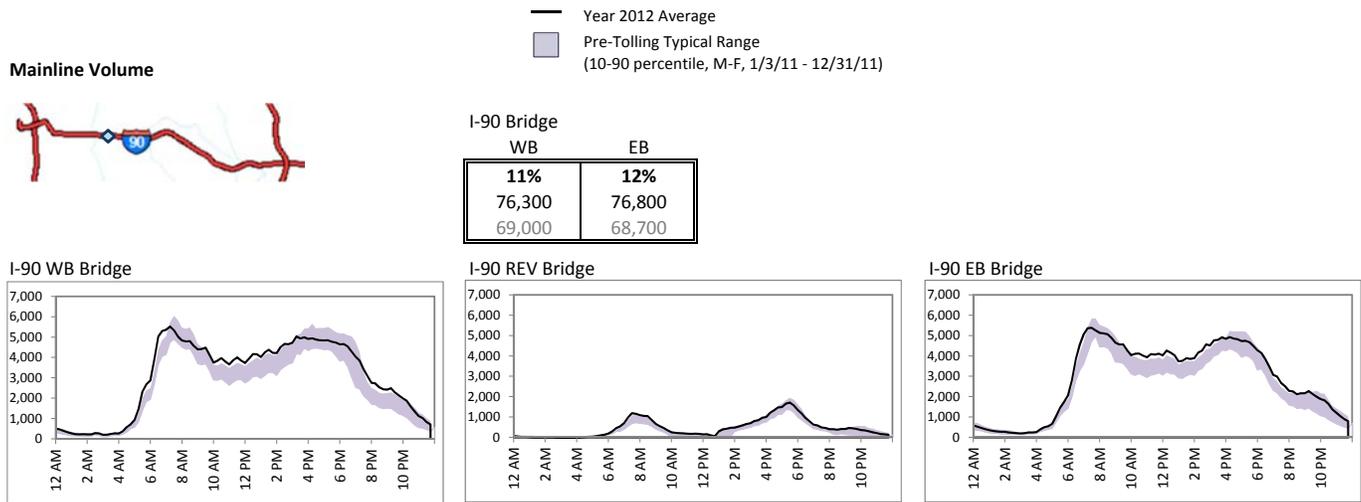
### I-90 and SR 522 Traffic

The average weekday traffic volume for 2012:

- I-90 bridge carried 153,000 vehicles, 11 percent higher than a typical weekday in 2011. This growth in vehicle volume tends to occur during the off-peak periods, when additional roadway capacity exists.
- SR 522 carried 44,500 vehicles, nine percent higher than a typical weekday in 2011. This growth in vehicle volume is spread fairly evenly throughout the day.

The average weekday traffic volume on the I-90 bridge in 2012 was 153,000 vehicles, 11 percent higher than a typical weekday in 2011. This higher percentage of traffic volume is a result of the diverted traffic from SR 520 to avoid paying a toll.

**Figure 4: I-90 detailed traffic volumes**

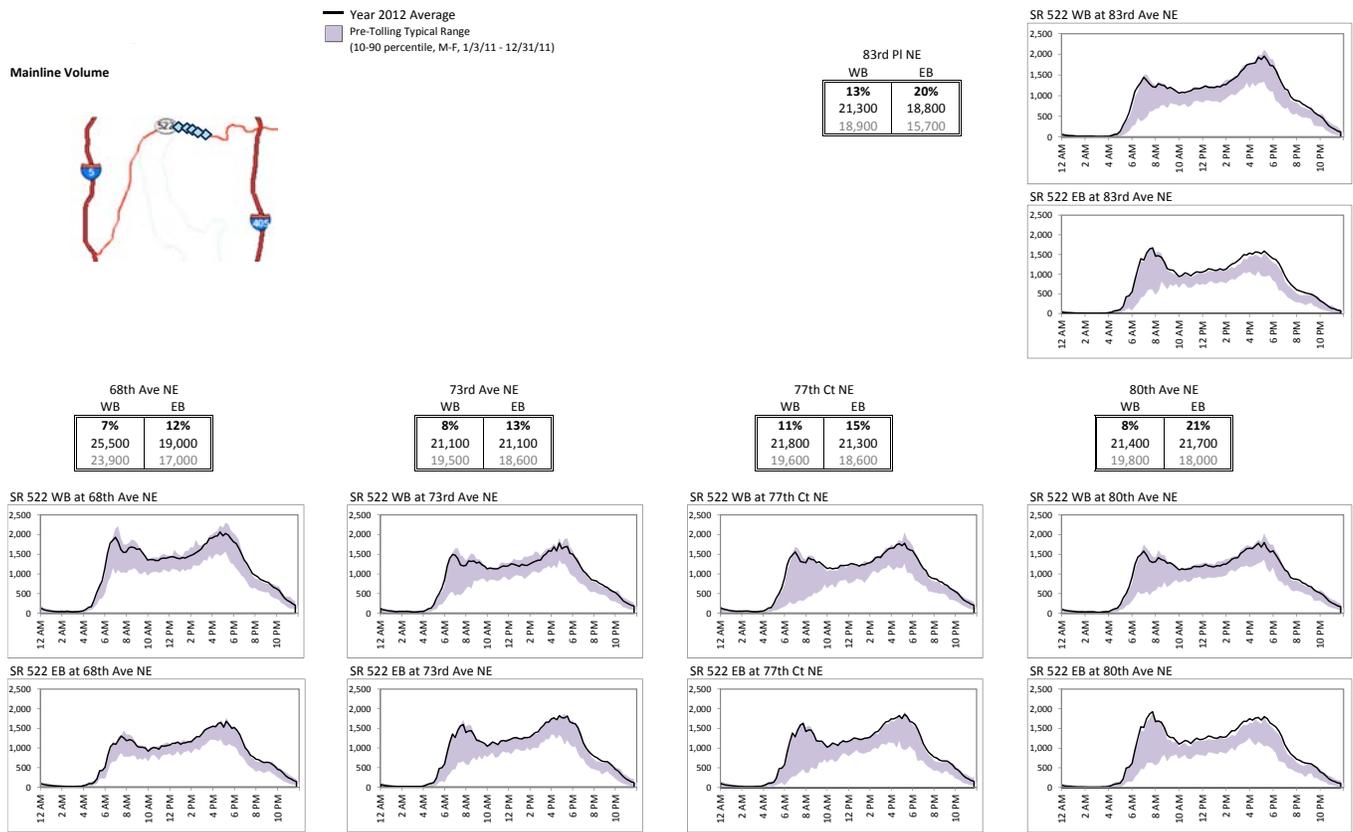


Source: Northwest Region Traffic

In 2012, the average weekday traffic volume on SR 522 at 68th Avenue NE in Kenmore was 44,500 vehicles, approximately nine percent higher than a typical weekday during 2011. The increase in eastbound traffic volume on SR 522 over pre-tolling volumes was higher than that of westbound traffic volume on SR 522 (12 percent vs. 7 percent increase over baseline respectively).

SR 522 experienced increases in traffic not only during the peak periods, but also throughout the day. This corridor also experienced the greatest variation in month-to-month traffic volumes compared with the other routes analyzed. The greater variation is likely due to greater influential effects on a main arterial. Adverse weather, traffic signal operations, traffic collisions, construction, and traffic patterns have a greater effect on these types of roads.

**Figure 5: SR 522 detailed traffic volumes**



Source: Northwest Region Traffic

## Travel times: SR 520 travel times have decreased

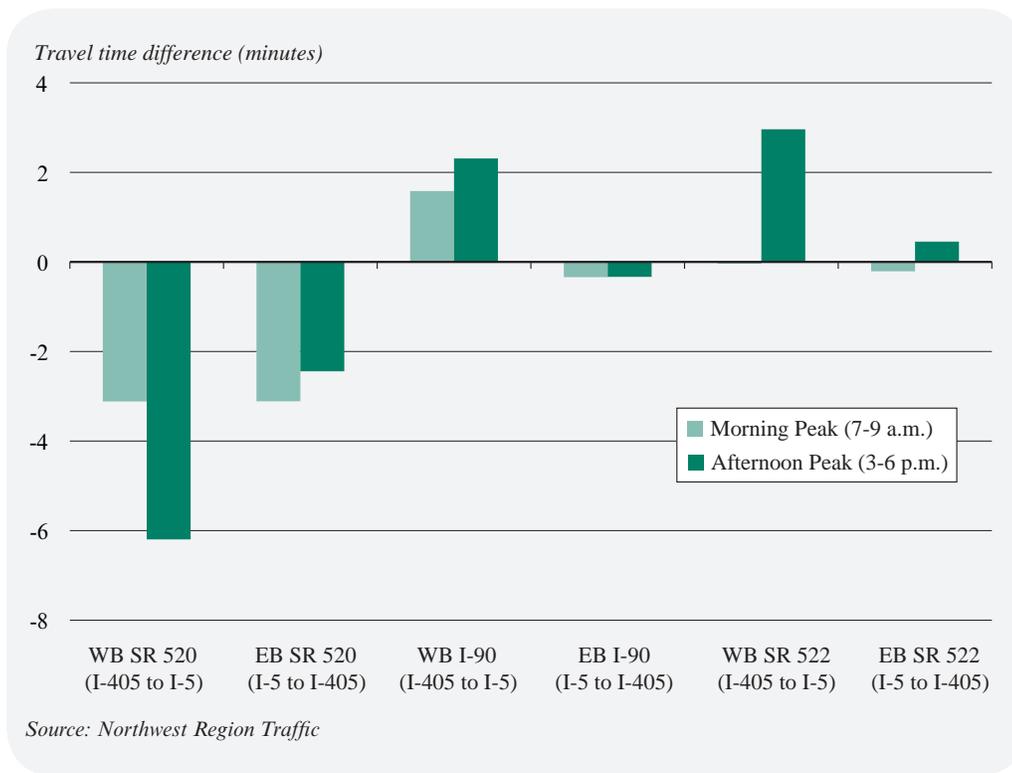
### Cross-lake travel times

In an effort to assess if tolling helped reach the goal of reducing congestion on the SR 520 bridge, average travel times for multiple routes were monitored both pre- and post-tolling. A look at three different routes (SR 520, I-90 and SR 522) across Lake Washington illustrates how travel patterns in the region have been affected.

The average travel times for both directions on SR 520 have remained faster than the pre-tolling condition at about four minutes. However, westbound traffic is significantly faster during the afternoon peak.

The average travel times on I-90 are slower on average compared with 2011, especially for the westbound traffic where travel times have been slower by about two minutes. Average travel times on SR 522 are also slower on average compared with 2011, particularly in the westbound direction during the afternoon peak.

**Figure 6: Cross-lake travel time change**



## Travel times vary by month

Figure 6 illustrates the differences in average travel times for the three cross-lake routes. The changes in travel times pre- and post-tolling varied significantly when evaluated over a month-to-month comparison. For better understanding of the traffic variability on each route, the travel routes were also evaluated for two different time periods post-tolling and were compared to 2011 travel times that were measured before tolling began. Results in Table 1 are average travel times for the applicable month.

**Table 1: Change in average peak-period travel times (minutes)**

PEAK	Date	SR 520 Redmond to Seattle		I-90 Issaquah to Seattle		SR 522 Woodinville to Seattle	
		WB	EB	WB	EB	WB	EB
Morning peak (7-9 a.m.)	Mar 2012	-1	-3	5	2	4	2
	Nov 2012	-2	-5	4	0	6	0
Afternoon peak (4-6 p.m.)	Mar 2012	-6	-2	4	6	12	5
	Nov 2012	-4	-1	2	0	3	4
<i>520 travel times are between Redmond Way/SR 202 in Redmond and University Street in Seattle</i> <i>I-90 travel times are between Front Street in Issaquah and University Street in Seattle</i> <i>SR 522 travel times are between Woodinville Drive in Woodinville and University Street in Seattle</i>							

Source: Northwest Region Traffic

## Travel patterns: drivers changing travel behavior

WSDOT anticipated a 48 percent drop in traffic volumes on SR 520 when tolling began. That projection was close to actual traffic at the start of tolling, but as expected, throughout the year, more drivers have returned to the corridor and SR 520 bridge traffic is now nearing 70 percent of pre-toll levels.

Modeling predicted that volumes on alternate routes, such as SR 522 and I-90, would increase to as some drivers chose alternate routes to avoid the toll. WSDOT has compared the forecasted diversion rates to the actual diversion rates seen during the first year of SR 520. Analyzing the peak-hour/peak-direction diversion rates on SR 522 and I-90 yielded the following:

- Morning and afternoon peak-hour/peak-direction diversion rates on I-90 were lower than forecasted by 395 vehicles.
- Westbound morning peak hour diversion rates on SR 522 were lower than forecasted by 50 vehicles.
- Eastbound afternoon peak hour diversion rates on SR 522 were higher than forecasted by 10 vehicles.

**Table 2:** Forecasted diversion vs. actual diversion related to SR 520 bridge tolling

Route	Westbound morning peak hour <sup>1</sup>				Eastbound Afternoon peak hour <sup>1</sup>			
		Forecasted <sup>2</sup>	Actual <sup>3</sup>	Actual vs. forecast		Forecasted <sup>2</sup>	Actual <sup>3</sup>	Actual vs. forecast
SR 522 <sup>5</sup>	Percent change	11.70%	9.90%	-1.80%	Percent change	6.40%	11.70%	+5.30%
	Peak hour volume change	200	150	-50	Peak hour volume change	150	160	+10
I-90 <sup>4</sup>	Percent change	8.30%	4.50%	-3.80%	Percent change	7.20%	6.50%	-0.70%
	Peak hour volume change	550	260	-290	Peak hour volume change	470	365	-105

<sup>1</sup> Morning peak hour is during the peak period of 7-9 a.m., and afternoon peak hour is during the peak period of 3-6 p.m.

<sup>2</sup> Forecasted numbers are from "SR 520 Program and Tolling Update" Presentation to the Washington State Transportation Commission - November 8, 2010 - Slide 49

<sup>3</sup> Actual numbers are from WSDOT Northwest Region Traffic. Actuals compare average weekday 2011 traffic volumes to average weekday 2012 traffic volumes

<sup>4</sup> I-90 volumes measured at the floating bridge and includes the express lanes

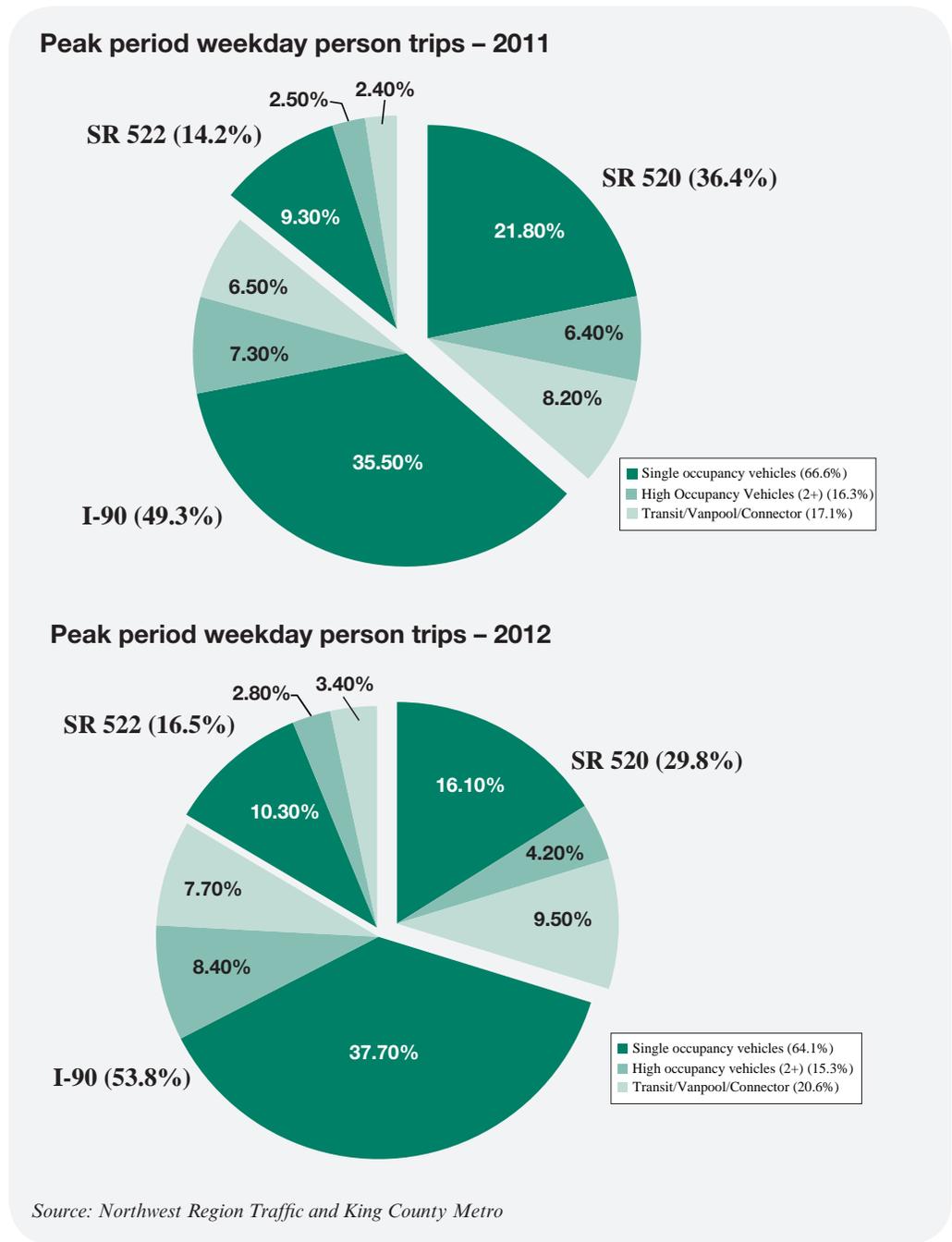
<sup>5</sup> SR 522 volumes measured at 68th Avenue NE in Kenmore

Source: Northwest Region Traffic

### Changes in single occupant, carpool and transit traffic

Average vehicle occupancy of cross-lake traffic both pre- and post-tolling was monitored to gauge how travel behavior has changed around the region. Since tolling began, travelers are shifting toward transit and vanpools and away from single occupant vehicles. While total cross-lake-peak-period traffic volumes have decreased by 6 percent, 98 percent of travelers who used the SR 520 bridge during the peak period before tolling have continued to travel during the peak period after tolling. These travelers have simply changed modes and/or routes.

**Figure 7: Peak period person trips across Lake Washington**



**98 percent of users who traveled in the peak period before tolling have continued to do so after tolling began. However, many of these users have switched travel modes since tolling began.**

## Changes in transit ridership

In anticipation of tolling SR 520, King County Metro Transit and Sound Transit added 140 daily bus trips across the SR 520 bridge, increasing weekday service to nearly 750 trips on 19 routes serving the corridor. Through September 2012 estimated weekday ridership was nearly 19,000 – up a total 25 percent since 2010, including a 9 percent increase since 2011. Region-wide, King County Metro and Sound Transit estimated weekday ridership saw a 5 percent increase since 2010. Additionally, 180 vanpools now cross the lake on the SR 520 corridor, an increase of over 50 vanpools, or 40 percent, since tolling started. Microsoft has also seen an increase in ridership on their private transit system, the Microsoft Connector.

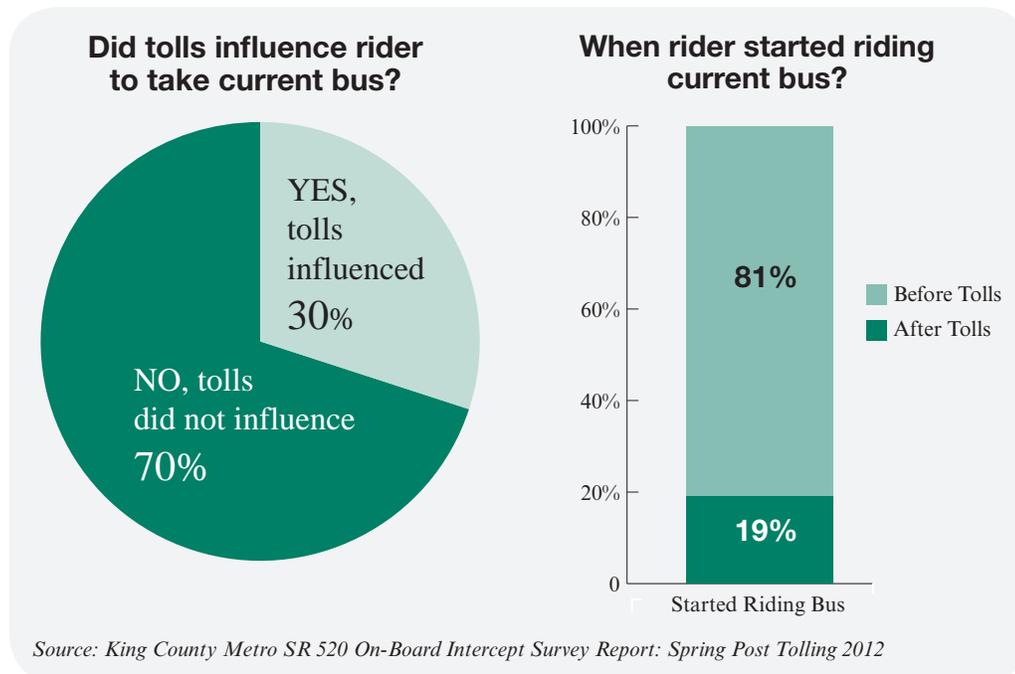
King County Metro also added a new peak-period route on SR 522 in anticipation of SR 520 tolling. Six trips were added in spring of 2011. An additional three trips were added later in 2011 through another partnership program.

Prior to tolling and after tolling began, King County Metro conducted onboard surveys with Metro and Sound Transit riders crossing the SR 520 bridge. One of the primary objectives of the survey was to monitor changes due to tolling implementation and service improvements.

The survey showed:

- Three out of 10 riders said the tolls influenced their decision to take the bus.
- One out five current bus riders started riding the bus after tolls began on SR 520.
- Riders are more likely to ride the bus to save money after tolling began (41 percent versus 36 percent).
- Riders are less likely to cite riding the bus to avoid traffic (21 percent versus 16 percent).

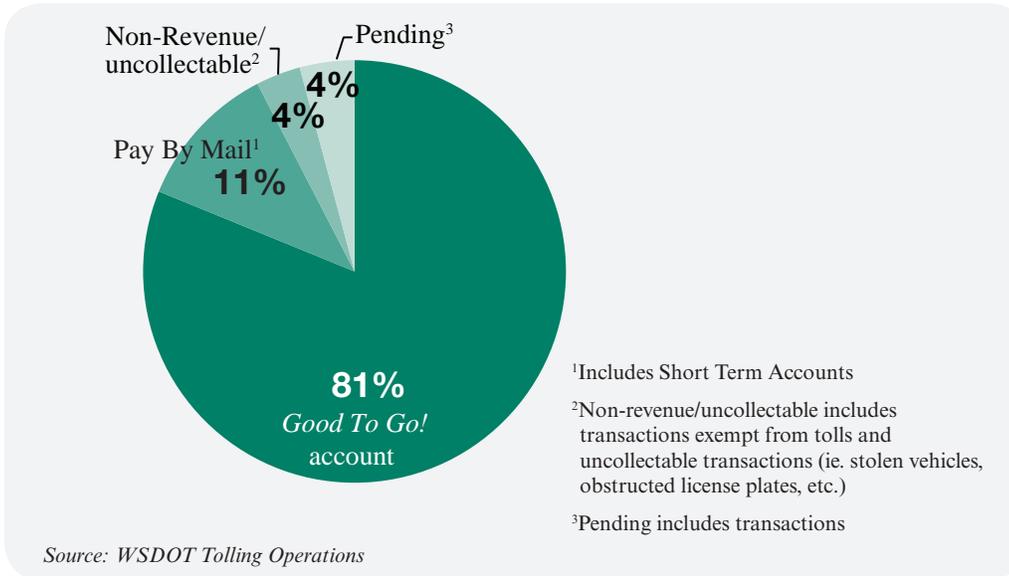
**Figure 8: King County Metro Onboard Survey Results**



## Toll operations: *Good To Go!* accounts

On average, approximately 81 percent of weekday commuters crossing the SR 520 bridge have a *Good To Go!* account, exceeding projections by approximately 10 percent. Figure 9 illustrates the payment methods used, on average, during the first year of tolling.

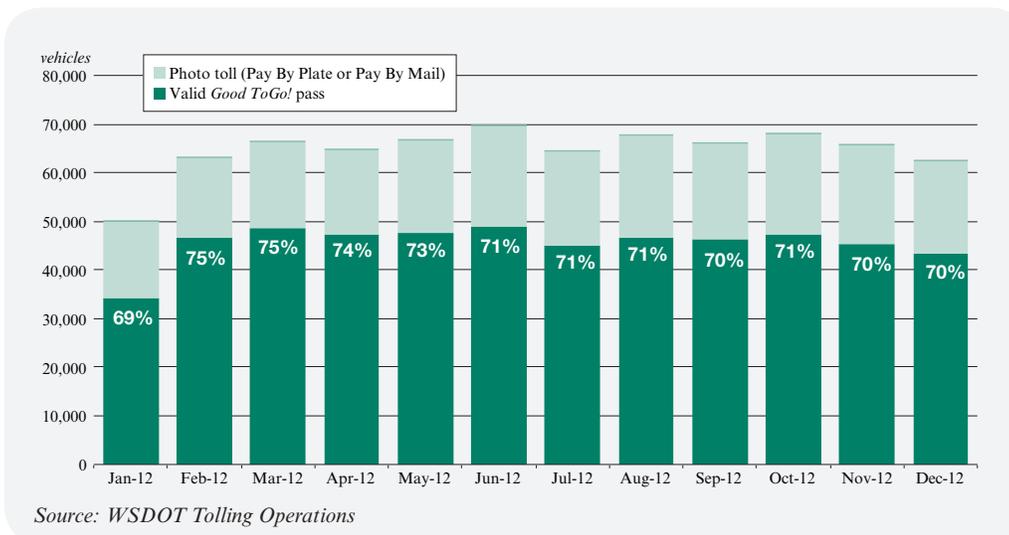
**Figure 9:** Transactions by payment method (March 2012 to February 2013)



The *Good To Go!* program has more than 380,000 active accounts and nearly 700,000 active *Good To Go!* passes.

Figure 10 illustrates the average weekday transactions, broken out by pass and photo transactions, on the SR 520 bridge in 2012. During the early months of tolling there was a steady increase in the number of weekday transactions but this has since leveled off and the roadway is now on a typical seasonal pattern. The number of transactions steadily increased throughout the year, with the majority of those transactions made by customers with *Good To Go!* passes.

**Figure 10:** SR 520: average weekday pass vs. photo transactions



## Majority of tolls being paid

While approximately 95 percent of tolls are paid, there are small percentage of toll that remain unpaid and are pursued through the civil penalty process. Toll bills become eligible for notice of civil penalty (NOCP) certification 80 days following their issuance.

It's still very early in the civil penalty adjudication process to draw substantive conclusions about the program. The first NOCPs were issued on April 9, 2012 and hearings with an administrative law judge began in May 2012. If a civil penalty remains unpaid or a hearing is not requested by the due date, the transactions are eligible for vehicle registration holds with the Department of Licensing and continued collection efforts by an outside collection agency. The first registration holds were placed in December 2012 and collections is expected to begin in 2013.

## Revenue: collections meets projections

SR 520 traffic and revenue continue to meet projections and are on the way to providing more than \$1 billion in funding to help pay for construction of a new bridge. Between Dec. 29, 2011 and Dec. 31, 2012, SR 520 tolls have generated approximately \$55 million in gross revenue.

Despite forecasts trending ahead in both traffic and revenue, rate increases are necessary to stay on track with inflation and stay on track with the finance plan to raise \$1 billion. The first milestone in the finance plan for the SR 520 Bridge was a 2.5 percent increase in toll rates that began July 1, 2012. The increase was the first of four planned 2.5 annual rate increases through 2015. However, no rate increase will occur without the Washington State Transportation Commission reviewing the latest traffic and revenue data to determine if a rate increase is needed each year and at what amount.

***Between Dec. 29, 2011 and Dec. 31, 2012 , SR 520 tolls have generated approximately \$55 million in gross revenue.***

## Conclusion

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Early indications suggest that placing a variable toll on all lanes of an existing bridge can both manage congestion and raise revenue. WSDOT is on track to accomplish its two central goals of SR 520 tolling: raise \$1 billion to replace the vulnerable SR 520 bridge and reduce congestion on SR 520. Drivers are adjusting their transportation decisions in response to the tolls, taking advantage of increased transit capacity, forming more vanpools and shifting both the time and routes they travel. Key findings from the first year of tolling on the SR 520 bridge:

- Revenue collected meets expectations and is on track to meet funding needs.
- Traffic patterns have shifted as forecasted.
- Transit and vanpool ridership across the SR 520 bridge has grown substantially.
- The percentage of customers using *Good To Go!* accounts exceeded forecasts by more than 10 percent.
- Approximately 95 percent of SR 520 tolls are paid.

Traffic and revenue are expected to continue to meet projections. Toll rates are scheduled to increase in July 1, 2013 as the second of four planned 2.5 percent annual rate increases through 2015.



**For more information**

**SR 520 Tolling**

[www.wsdot.wa.gov/tolling/520](http://www.wsdot.wa.gov/tolling/520)

**Tolling in Washington state**

[www.wsdot.wa.gov/tolling](http://www.wsdot.wa.gov/tolling)

***Good To Go!***

[www.wsdot.wa.gov/goodtogo](http://www.wsdot.wa.gov/goodtogo)

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