

# Travel Time Trends Semi-Annual Report

## Travel Time Trends on Major Central Puget Sound Freeways

### Travel Trends Timeline: 2008-2009

#### July-December 2008:

- ◆ Economic conditions deteriorate in the central Puget Sound.
- ◆ Travel times improved between 1 and 7 minutes on 15 of 18 key commutes, with 3 unchanged compared to the second half of 2007.
- ◆ Peak period volumes declined; discretionary travel continued to drop.

#### January-June 2009:

- ◆ Compared to the same time period in 2008, travel times continued to improve on 13 of 18 surveyed commutes.
- ◆ Changes to peak period and daily volumes mixed—some up and some down.

#### July-December 2009:

- ◆ Compared to the same time period in 2008, travel times improved on eight of the surveyed commutes.
- ◆ Tukwila to Bellevue morning commute improved by 13 minutes in part due to the completion of a new auxiliary lane on I-405.
- ◆ Changes to peak period volumes show increases on 12 of 18 commute routes since the 2008 economic downturn.
- ◆ Daily volumes increased on all 18 routes during the second half of 2009 as compared to the same time period in 2008.

This analysis is performed twice a year to provide up-to-date information on the nature of travel trends in the central Puget Sound during a time of changing regional economic conditions. In addition, the ongoing delivery of congestion relief projects under WSDOT's *Moving Washington* program to fight congestion has made a difference. Specifically, this analysis focuses on a sample of 18 key commute routes across the central Puget Sound region. These results supplement the annual Congestion Report, which takes a more comprehensive look at congestion trends in the central Puget Sound and around the state; the next annual Congestion Report will be published as part of the September 30, 2010, *Gray Notebook*.

This travel trends analysis compares traffic conditions in the second six months of 2009 to the same time periods in 2007 and 2008. These time periods represent distinctly different economic conditions and trends in the Seattle area. The second half of 2007 had the lowest area unemployment since the late 1990s, and relatively stable gas prices. The second six months of 2008 saw gas prices hit record highs in July and then decline as a result of the severe economic recession that hit Washington hard during the second half of the year. As economic conditions worsened, the unemployment rate in the Seattle-Bellevue-Everett urban area rose from just above 4% in July 2008 to about 9% in July 2009, with rates fluctuating between 8.4% and 9.0% during the second half of 2009. Other background conditions may have also changed as a result of construction or other factors during this time period.

### Highlights of travel time trends during July-December 2009 include:

**2009 vs. 2007: When comparing the second half of 2009 to the same time period in 2007 (when the economy was relatively strong), travel times improved on 14 of the 18 surveyed commute routes, with improvements ranging from one minute to 15 minutes.**

**2009 vs. 2008: Comparing July-December 2009 to the same time period in 2008 shows more mixed results, with some routes faster and about half unchanged or slower. This may indicate that the economy's downturn has slowed but has not yet returned to the relatively strong conditions of 2007.**

**WSDOT congestion relief projects are making a difference. The largest improvements in travel times were seen on I-405—Tukwila to Bellevue AM commute (13 minutes) and Bellevue to Tukwila PM commute (5 minutes)—which benefitted from the completion of a series of congestion relief projects in 2009.**

◆ **Changes in travel times were mixed on the surveyed commutes when comparing the second half of 2009 to the same time period in 2008, with most seeing relatively small changes.**

- ◆ Eight of the surveyed routes (50% of the routes with data available to make the comparison) showed faster peak period travel times ranging from one minute to 13 minutes.

- ◆ Three commutes showed no change in travel times, while five commutes saw travel times increase from between one minute and 3 minutes. The two commute routes traveling on westbound I-90 did not have comparable travel time data available for 2008 due to construction.

◆ **Peak period volume changes on the 18 commute routes were also mixed during the second half of 2009 as compared to the second half of 2008.**

- ◆ Four of the routes showed drops of between 1.5% and 5.8%, with two other commutes showing no change. The twelve other surveyed routes saw volumes increase from between 0.4% and 32.5%.

- ◆ The 32.5% increase was on the I-405 Tukwila to Bellevue morning commute which can be accounted for by increased efficiency due to the completion of the new auxiliary lane mentioned above.

### Travel time changes mixed during the second half of 2009 as compared to the same time period in 2008, with eight commutes having faster travel times

A review of the distribution of travel time changes during the second halves of 2007, 2008, and 2009 suggests that the general pattern of reduced travel times that was seen in the second six months of 2008 vs. 2007 was leveling off in 2009. The 2009 vs. 2008 year-over-year changes

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## July-December 2009: Travel times improved on eight of the surveyed commute routes

### Comparing changes in average travel times and volumes during peak periods: July-December 2007-2008-2009<sup>1</sup>

		Average travel time in minutes					Peak volume change		Daily volume change	
		2007	2008	2009	2009 vs. 2007	2009 vs. 2008	2009 vs. 2007	2009 vs. 2008	2009 vs. 2007	2009 vs. 2008
<b>Peak direction – Morning commutes</b>										
I-5	Federal Way-Seattle	42	35	31	-11	-4	+7.5%	+4.7%	+1.6%	+4.6%
I-5	Everett-Seattle	41	36	35	-6	-1	+4.8%	+2.7%	-0.8%	+2.6%
I-405	Everett-Bellevue	42	37	36	-6	-1	-1.8%	0%	-2.4%	+2.6%
I-405	Tukwila – Bellevue	35	33	20	-15	-13	+31.7%	+32.5%	+6.0%	+9.5%
SR 167	Auburn – Renton <sup>2</sup>	17	14	14	-3	0	+15.6%	+8.8%	+6.0%	+4.8%
I-90	Bellevue – Seattle <sup>3</sup>	14	—*	12	-2	—*	-4.1%	-1.5%	-4.4%	+0.2%
SR 520	Bellevue – Seattle	14	13	14	0	+1	-2.3%	0%	-1.7%	+1.4%
I-90	Seattle – Bellevue <sup>3</sup>	14	14	12	-2	-2	-11.3%	-5.8%	-5.2%	+0.5%
SR 520	Seattle – Bellevue	16	15	15	-1	0	-5.7%	-2.3%	-2.1%	+2.0%
<b>Peak direction – Evening commutes</b>										
I-5	Seattle- Federal Way	31	29	28	-3	-1	+3.7%	+3.1%	+0.9%	+4.9%
I-5	Seattle - Everett	38	34	37	-1	+3	-4.0%	-3.5%	-2.5%	+1.9%
I-405	Bellevue - Everett	41	35	36	-5	+1	+7.8%	+3.5%	+0.7%	+2.8%
I-405	Bellevue - Tukwila	31	31	26	-5	-5	+3.1%	+5.0%	+0.4%	+4.6%
SR 167	Renton - Auburn <sup>2</sup>	16	14	13	-3	-1	+4.2%	+1.8%	-2.5%	+4.4%
I-90	Bellevue - Seattle <sup>3</sup>	22	—*	17	-5	—*	-3.0%	+0.4%	-4.4%	+0.2%
SR 520	Bellevue - Seattle	23	21	23	0	+2	-0.7%	+1.2%	-1.7%	+1.4%
I-90	Seattle - Bellevue <sup>3</sup>	13	13	13	0	0	-0.7%	+1.9%	-5.2%	+0.5%
SR 520	Seattle - Bellevue	16	16	17	+1	+1	+0.7%	+2.5%	-2.1%	+2.0%

Source: Washington State Transportation Center (TRAC).

<sup>1</sup> Travel time and volume data for weekdays only; peak periods are 6-9 AM and 3-7 PM.

<sup>2</sup> General purpose lane volumes only, HOV lane volumes not included.

<sup>3</sup> I-90 comparisons for 2009 vs. 2008 are based on August-December data, July 2009 data not available due to construction on the Homer Hadley Bridge.

\* 2008 data not available for WB I-90 due to construction.

showed a mixture of results, though in most cases the changes were small. The results showed that ten trips had small travel time changes of no more than one minute up or down in the second half of 2009 versus the same period in 2008; three additional trips showed larger year-over-year changes, but when compared to the first half of 2009 the amount of the change was no more than a minute up or down. Three other trips had a change in travel time in 2009 vs. 2008 of two minutes or more. Overall, eight routes saw travel times improve by between 1 and 13 minutes, three were relatively unchanged, and five showed worsening in travel times between 1 and 3 minutes. The travel time trends during the second half of 2009 were similar to those seen in the first six months of the year, when a year-over-year review showed that 14 of the 18 trips showed small or no changes in travel time. The second half results are somewhat more varied than that, but still tend toward small changes for the most part.

### Tukwila to Bellevue AM commute improves by 13 minutes

The most notable exception was the trip from Tukwila to Bellevue via I-405 (AM), which showed a year-over-year average travel time savings of about 13 minutes during the AM peak period. As noted in the previous six-month report, data suggest that a significant contributing factor was the completion of a supplementary lane near the I-90 interchange that opened in January 2009. This project is discussed in greater detail on p. 23.

Another noticeable drop in average peak period travel time was seen on the Bellevue to Tukwila trip via I-405 (PM), which showed about a 5-minute drop in travel time in the second half of 2009. This continues the pattern toward shorter travel times on this route that was observed in the first half of 2009. Travel time improvements coincides with the completion of several I-405 corridor improvement projects, including two that resulted in an additional GP lane on strategic segments of the trip, including

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## Peak Period and Daily Volumes/Driving Forces

the first few miles of the trip between downtown Bellevue and the I-90 interchange, and the segment between SR 167 and the I-5 interchange in Tukwila. Several I-405 projects were just completed in the latter part of the year, so this trip will be monitored during the coming year to evaluate the longer-term impacts of these capacity improvement efforts.

Of the five trips that showed increases in travel times, the largest change was on the Seattle to Everett (PM) route, which showed a year-over-year travel time change of more than +2 minutes. On that trip, there appeared to be a larger number of days with higher-than-average travel times (versus a small number of extreme outlier days); year-over-year travel time changes were 3 to 4 minutes higher at the 80th, 90th, and 95th percentile levels. Nevertheless, even with this increase, the 2009 average peak period travel time is still lower than the route's average PM peak period travel time in 2007.

### Comparing 2009 to 2007: Travel times faster on 14 of the 18 surveyed commute routes

Looking over a two-year period for all the trips (second half of 2009 vs. second half of 2007), nearly every analyzed trip continues to show a net drop in average peak period travel time; 14 of the 18 trips showed an estimated travel time reduction of one or more minutes, while three trips showed no net change; only one trip showed a higher travel time over that period of time.

### Peak period volumes increase on 12 of the 18 commute routes, 2009 vs. 2008

A year ago, in a comparison of average peak period volumes in the second half of 2008 vs. 2007, 12 of 18 locations showed a reduction in vehicle volumes; in a comparison of volumes six months ago for the first half of 2009 vs. 2008, the pattern began to moderate, with half of the locations showing a volume drop and the other half showing volume growth. The vehicle volume pattern observed at spot locations in the second half of 2009 vs. 2008 suggests a continuation of this gradual pattern over the past year, with 12 of the 18 locations showing higher year-over-year volumes in the peak period. Please note that the degree of volume percentage growth in the second half of 2009 is somewhat tempered by the fact that the comparison is relative to the second half of 2008, a time period that saw nearly universal drops in volume as economic conditions changed.

The most significant change in volume was observed at a location on I-405 between Tukwila and Bellevue (northbound AM), which continued to show high volume growth during the peak period. The first half of 2009 showed a nearly 29% year-over-year growth in AM peak period volume at that location, and the second half of 2009 continued that pattern

with over 32% growth. (The data suggest that these changes are connected to the opening of a supplementary lane in early 2009, as noted in the travel time discussion). A spot location on the Auburn to Renton northbound AM route on SR 167 saw over 8% growth in GP volume, although when all lanes (GP and HOT lane) are counted together, the growth is slightly less than 6%. Average peak period year-over-year volume changes at other locations varied from -5.8% to +5.0%.

### Daily volumes show increases in the later half of 2009

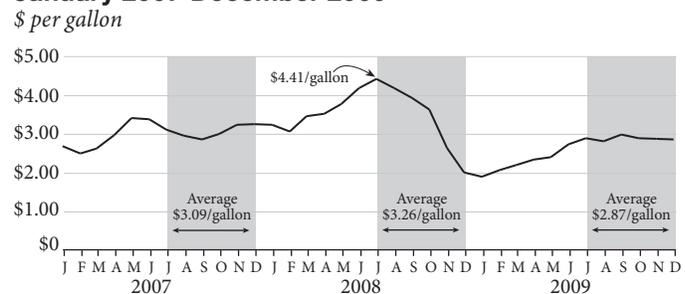
The daily vehicle volume patterns observed at the spot locations during the second half of 2009 show a general pattern of volume increase year-over-year with all 18 locations showing at least slight volume growth. This is a somewhat stronger pattern than that observed during the first half of the year. As with the peak period volumes, the daily volume comparison is relative to the second half of 2008, a time period when volumes were dropping at most locations. This should be considered when evaluating the significance of the year-over-year daily volume change.

Just as with the first half of 2009, the second half of the year saw the most significant daily volume growth occurring at a spot location on the northbound Tukwila to Bellevue route via I-405 (AM), which was influenced by the capacity expansion project near the I-90 interchange. Volumes there grew by 9.5%. Volume changes at other locations ranged from +0.2% to +4.9%.

### Driving forces of travel trends during the second half of 2009

**Gas prices:** The second half of 2008 showed markedly higher gas prices in Washington State than either the preceding or following year. The second half of 2008 began with the culmination of a multi-year upward trend in gas prices, reaching a statewide peak of \$4.41 per gallon in July 2008. This was quickly followed by a significant drop in prices to a nearly four-year low near \$2.00 per gallon by the end of the 2008. In the first part of 2009, prices resumed a gradual upward pattern, and in the

### Average gas prices in Washington State January 2007-December 2009



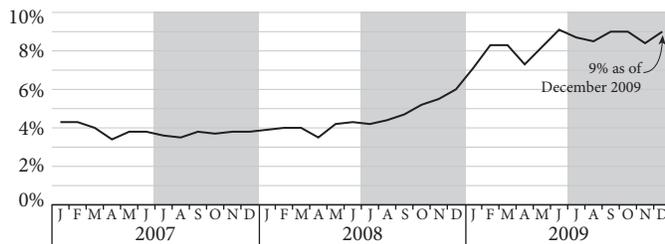
Data Source: Energy Information Administration.

## Driving Forces of Travel Time Trends/I-405 Widening Project

second half of 2009, average gas prices have fluctuated between \$2.75 and \$3.00 per gallon. It is likely that the high gas prices in 2008 depressed some travel, especially daily volumes, which have been rebounding in 2008. However, the stronger effect on peak period volumes is coming from employment trends.

**Employment:** The second half of 2007 had the lowest area unemployment since the late 1990s, ranging between 3-4%. Beginning in the middle of 2008 the average unemployment rate in the Seattle-Everett-Bellevue area began a sharp rise that continued throughout the second half of that year, reaching 7.1% by January 2009. This trend continued in the first half of 2009, with the rate reaching 9.1% by mid-2009. The second half of 2009 saw a leveling off of that pattern, with rates fluctuating between 8.4% and 9.0% during that time. This sharp rise in the unemployment rate in 2008 and 2009 has depressed peak period volumes.

### Seattle-Bellevue-Everett area unemployment rate January 2007-December 2009



Data Source: U.S. Bureau of Labor Statistics.

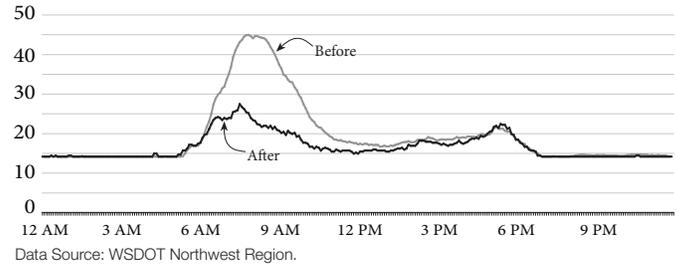
### Case study: I-405 South Bellevue widening project improves travel times substantially during the morning peak period

The I-405 South Bellevue Widening Project, also known as the 112th Avenue SE to SE 8th Street Project, helps relieve congestion at one of the worst I-405 bottlenecks, the drive in and out of Bellevue. Construction began in July 2007 to add a northbound lane from 112th Ave SE to I-90 and add a lane in both directions from I-90 to SE 8th St. This project also includes widening the existing bridge over Coal Creek Pkwy in the northbound direction, widening the bridge over SE 8th in the southbound direction and removing the Wilburton Tunnel. The southern section was opened in January 2009 and the northern section was completed in September 2009.

The new northbound auxiliary lane from 112th Ave SE to I-90 was opened to traffic on January 16, 2009. The graph to the upper right shows the average travel time on weekdays (Tuesday-Thursday) from Tukwila to Bellevue before and after the phase was completed.

The peak morning commute in 2008 was roughly 45 minutes from 7:30 AM-8:30 AM. After the new lane was opened to

### I-405 auxiliary lane project: before and after Tukwila to Bellevue average commute times Time in minutes, Tuesday-Thursday



Data Source: WSDOT Northwest Region.

traffic, that peak morning commute was reduced to less than 30 minutes. These numbers do not correspond directly with the data in the table on page 21 because this case study looks at a more limited time period in 2009 and uses travel times for Tuesday-Thursday, while the travel time trends analysis looks at Monday-Friday.

The new lane changed the number of lanes between 112th Ave SE and Coal Creek Parkway from three to four and from Coal Creek Parkway to I-90 from four to five lanes. The increase in the number of lanes resulted in an increase of capacity.

Before the new lane was opened, hourly volume during the morning peak reached just over 5,000 vehicles. When congestion built up, vehicle speeds slowed resulting in lower throughput for the rest of the morning. The new lane alleviated congestion at the bottleneck resulting in an increase in throughput of about 1600 vehicles during the peak period.

Along this 1.95 mile corridor there is an average collision rate of 53 collisions per year, with 25% of them occurring on weekdays between 6:00 AM and 10:00 AM. The additional lane decreases congestion which should help to decrease the number of collisions in the future.

### Moving Washington: WSDOT's balanced program to fight congestion

Effective transportation is critical to maintaining our economy, environment, and quality of life. Moving Washington is the WSDOT's vision of investments and priorities for the next 10 years. It includes a balanced strategy that integrates new capacity, efficiencies, and commute options to address congestion and improve the performance of our state's transportation system.

