Eight-Month Performance Summary of

SR 167 High Occupancy Toll (HOT) Lanes Pilot Project

May 3, 2008 – December 31, 2008

Washington State Department of Transportation
Urban Corridors Office
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Performance information

The state's first-ever high occupancy toll (HOT) lanes opened to drivers on State Route 167 Saturday, May 3, 2008. This four-year pilot project located in south King County, provides a new option for solo drivers on SR 167 and evaluates how HOT lanes and variable tolling can improve traffic flow and ease congestion. By converting the pre-existing high occupancy vehicle (HOV) lanes into HOT lanes, SR 167 now allows solo drivers to pay a variable, electronically collected toll using a *Good To Go!* transponder to drive in the HOT lane when there is available space.

A single HOT lane runs in each direction of SR 167 for approximately nine miles between Renton and Auburn. The highway's two general purpose (GP) lanes in each direction remain toll-free and open to all vehicles.

Carpools of two or more people, vanpools, buses and motorcycles use HOT lanes toll free, just as they did in the former HOV lanes, and they do not need a transponder. HOT lanes operate daily 5 a.m. to 7 p.m.

Toll rates automatically increase and decrease with the level of congestion to ensure that traffic in the HOT lane always flows smoothly. The system is designed to ensure that bus and carpool commuters enjoy the same fast and reliable trip they depended on in SR 167's HOV lanes before the lanes were converted to HOT lanes.

This summary includes data from the first eight months of HOT lanes operations, May 3 through Dec. 31, 2008. Some data sets were incomplete at the time of publication; they are noted within this report.

To learn more, please visit the project Web site:
www.wsdot.wa.gov/Projects/SR167/HOTLanes

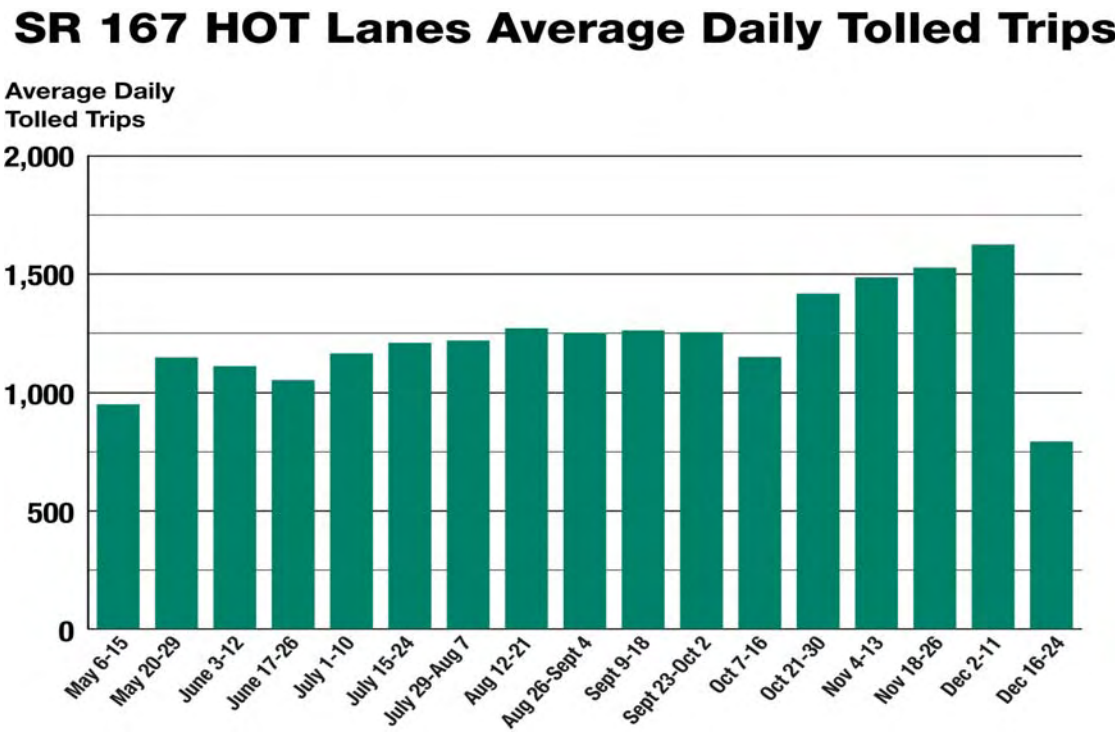
Performance summary

- More than 20,000 *Good To Go!* users have paid to use the SR 167 HOT lane.
- The HOT lane does not appear to have any adverse impact on safety.
- The average number of peak-hour toll transactions continues to increase.
- Travel times for carpools and transit have been maintained.
- There is room in the HOT lane for additional carpool vehicles, transit or toll-paying solo drivers.
- Transit ridership is up nearly 25 percent from the same time period last year.

Performance averages by month

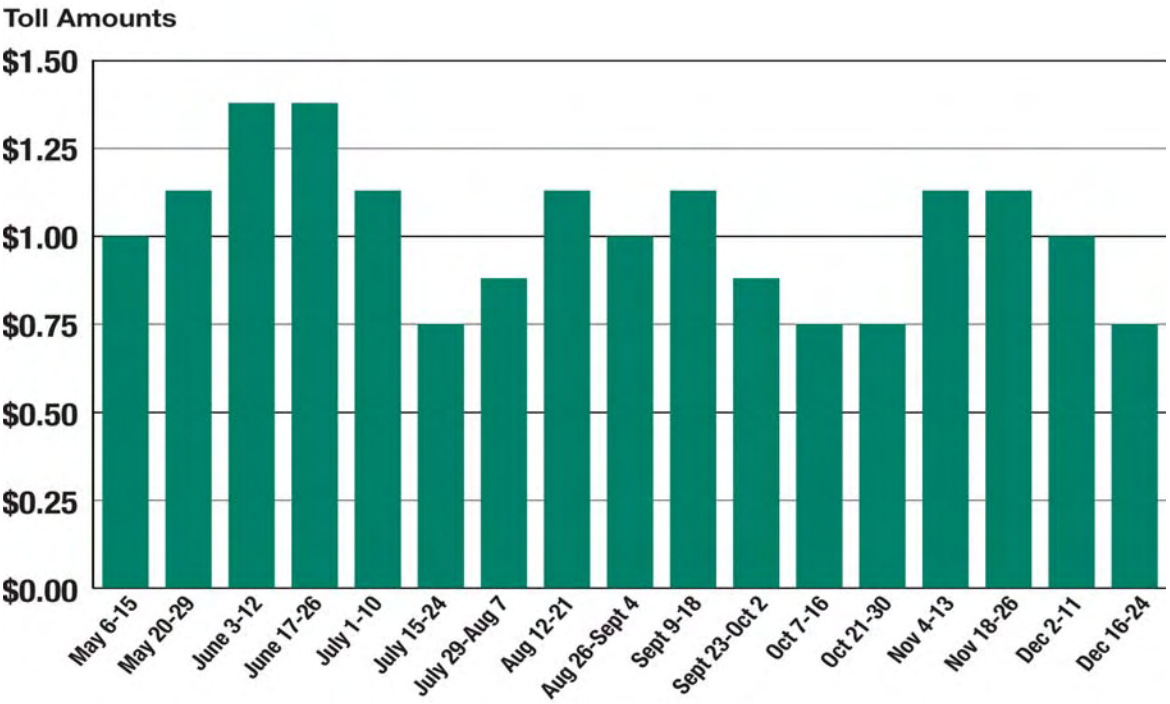
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average toll paid	$1.00	$1.25	$1.00	$1.00	$1.00	$0.75	$1.00	$0.75
Highest toll paid	$5.75	$9.00	$9.00	$8.50	$4.25	$3.50	$6.00	$4.00
Average number of daily toll trips	1,050	1,080	1,210	1,250	1,250	1,270	1,510	1,160
Highest number of daily toll trips	1,220	1,260	1,390	1,460	1,390	1,555	1,740	1,914
Average peak-hour northbound toll trips (7-8 a.m.)	140	140	160	180	180	190	200	160
Average peak-hour southbound toll trips (7-8 a.m.)	100	100	120	110	100	120	140	100
Highest number of peak-hour toll trips	170	210	180	240	230	240	260	260

Data: Northwest Region Traffic Office, Tuesday – Thursday, May-December 2008



Data: Northwest Region Traffic Office, Tuesday – Thursday, May-December 2008
Note: Lower tolled volumes witnessed during the second half of December were likely caused by multiple winter storms.

Average daily toll paid by week



Data: Northwest Region Traffic Office, Tuesday – Thursday, May-December 2008
Note: Lower toll rates witnessed during the second half of December were likely caused by diminished traffic volumes that resulted from multiple winter storms.

Performance details

Traffic volumes

Traffic volumes on SR 167 declined roughly 3 percent in 2008 compared to the same month in 2007, although October and November witnessed a near recovery (see chart below). This reduction in the number of trips is consistent with both regional and national trends. Probable causes included, but are not limited to, the following: the recent economic downturn, price of fuel and an attractive alternative mode (Sound Transit's South Sounder train). Average daily trips (ADT) were measured just south of S. 277th Street. The precipitous drop in December traffic volumes (and tolled trips) is likely due to reduced travel associated with multiple year end storms.

The table below provides weekday (Tuesday through Thursday) daily and peak-hour volumes by direction for the first eight months of tolling operations. In the northbound direction, during the peak-hour, the average number of toll trips has increased over 40 percent from May through November. The number of tolled trips in the southbound direction, during the peak-hour, has increased 20 percent from May through November. December data was not included in these calculations and considered an anomaly.

Changes in Average Daily Trips on SR 167 in 2007 and 2008

	May	June	July	August	September	October	November	December
2007	122,000	122,000	124,000	126,000	121,000	116,000	114,400	115,960
2008	118,000	119,000	121,000	120,000	118,000	115,000	114,300	99,190
Percent change	-3.4%	-2.5%	-2.5%	-5.0%	-2.5%	-0.9%	-0.1%	-14.5%

Totals are rounded. Data: Northwest Region Traffic Office, Tuesday – Thursday, May-December 2008, Data Station located at S. 277th Street.

Average Daily Trips on SR 167, 2008 - by month, lane and peak-hour

Northbound peak hour, 7-8 am	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Toll trips	140	140	160	180	180	190	200	160
HOV trips	790	810	800	750	770	750	790	570
HOT lane Total	930	950	960	930	950	940	990	730
GP lanes Total	3,060	3,070	3,230	3,200	3,300	3,300	3,100	2,500

Northbound daily								
Toll trips	580	590	680	690	690	720	830	650
HOV trips	5,870	6,200	6,650	6,440	5,830	5,420	5,540	4,790
After-hours trips	1,950	2,110	2,170	2,170	1,980	1,560	1,830	1,460
HOT lane Total	8,400	8,900	9,500	9,300	8,500	7,700	8,200	6,900
GP lanes Total	53,000	53,300	53,800	53,000	53,000	51,600	51,100	44,000

Southbound peak hour, 4-5 am								
Toll trips	100	100	120	110	120	100	140	100
HOV trips	810	870	860	830	780	730	740	780
HOT lane Total	910	970	980	940	900	830	880	880
GP lanes Total	3,100	2,920	2,780	2,900	2,900	3,200	2,800	2,800

Southbound daily								
Toll trips	470	490	570	540	560	550	680	510
HOV trips	5,890	5,620	6,160	5,960	5,520	4,770	5,080	4,960
After-hours trips	2,450	2,700	2,800	2,700	2,320	2,180	2,240	1,830
HOT lane Total	8,810	8,810	9,530	9,200	8,400	7,500	8,000	7,300
GP lanes Total	48,800	48,300	48,150	48,000	48,000	47,800	47,000	41,000

Totals are rounded. Data: Northwest Region Traffic Office, Tuesday – Thursday, Data Station located at S. 277th Street

The data indicate that HOT lanes are operating below their theoretical maximum capacity of 1,600 vehicles per hour, per lane during the peak hour. This fact nearly ensures that the service for HOV's is not degraded.

Travel times

Travel times were measured for the HOT and GP lanes northbound from SR 18 to S. 34th Street and southbound from S. 34th Street to 43rd Street NW. The HOT lane is approximately 11 miles northbound and eight miles southbound.

Both GP and HOV/HOT peak-hour travel times decreased between 2007 and 2008, although traffic volumes also decreased. (Data represents May through October; November and December data was unavailable at the time of publication)

HOT lane travel times

- HOT lane traffic consistently flowed freely during all hours.
- The northbound free-flow peak-hour travel time in the HOT lane is 10.9 minutes. The 95th percentile travel time was 11.1 minutes. The small difference between the two travel times indicates that speeds were successfully maintained, even during some of the most congested days.
- The southbound free-flow peak-hour travel time in the HOT lane is 7.9 minutes. The 95th percentile travel time was 9.3 minutes. The difference between the times indicates a greater variability in the southbound direction than in the northbound. This is likely a result of the bottleneck created at the southbound terminus.

GP lane travel times

- The average weekday northbound peak-hour travel time was 20 minutes with 29.4 minutes at the 95th percentile.
- The average weekday southbound peak-hour travel time was 13 minutes. The 95th percentile travel time was 24.9 minutes.

HOT lane savings

- The weekday northbound HOT lane provided drivers with an average time savings of 9.1 minutes during the peak-hour. That savings varied greatly, extending to nearly 20 minutes on several occasions.
- The weekday southbound HOT lane provided drivers with an average time savings of 5.1 minutes during the peak-hour. Like the northbound lane, the savings were variable, reaching 15 minutes on several occasions.

Maintaining free-flow speed

The HOT lane system is maintaining free-flow speeds at or above 45 mph at least 90 percent of the time during peak hours.

- The northbound section has met this goal 99.9 percent of the time during the peak-hours (5 - 10 a.m.).
- The southbound section has met this goal 99.0 percent of the time during the peak-hours (2 - 7 p.m.).
- The system has met this goal 99.4 percent of the time during the peak-hours.

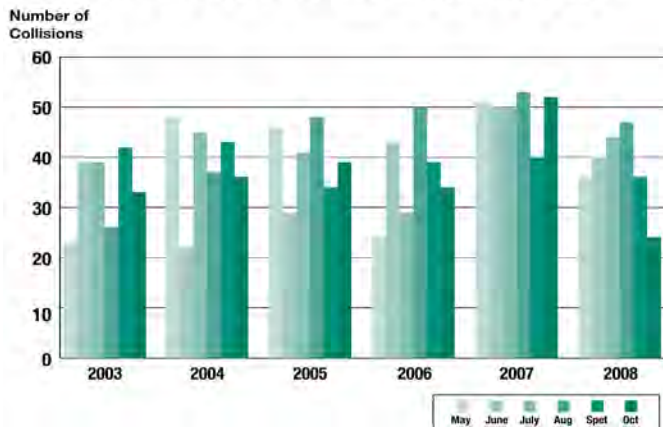
Preliminary collision data

It remains too early to definitively evaluate the impact of the HOT lanes on safety within the corridor. WSDOT safety engineers do not recommend evaluating safety performance with less than two years of data as multiple factors can affect the safety record. Such factors include, but are not limited to, reduced traffic volumes, roadway surface conditions, changes in visibility and a new law requiring the use of hands-free cellular devices.

The graph at right contains the number of collisions within the project limits by month per year. It illustrates the variability of collisions from month to month and year to year.

From May through October 2008 the average number of collisions per month within the project area was 38. This represents a reduction from the same months in 2007 and is similar to the average over the last four years. WSDOT remains confident that HOT lanes are not adversely impacting safety and will continue to monitor the situation carefully.

Collisions on SR 167, 2003 through 2008



Data: NW Region Traffic, Collisions between MP 11.84 and MP 26.4 May – October, 2003-2008, November and December data was unavailable at the time of publication.

Washington State Department of Transportation

Corridor performance

One anticipated benefit of the HOT lanes was an increase in the overall efficiency of the SR 167 corridor. At eight months in operation, there is not yet enough cumulative data to make definitive conclusions about the overall corridor performance. However, noteworthy results exist.

- During the morning peak-hour for the first six months of operation, northbound toll customers accounted for nearly 4 percent of the SR 167 traffic. Toll customers accounted for 3 percent of the afternoon peak-hour commuters.
- Transit and carpool vehicles continue to operate at free-flow speeds more than 90 percent of the time, a performance requirement of the project.
- Wilbur Smith and Associates currently is evaluating two aspects of the HOT lanes: (1) how well the pricing algorithm has performed and (2) why the forecasted volumes are higher than the current volumes. The key preliminary finding thus far is that the assumptions made in 2007 about conditions in 2008, that were used to generate the forecasts and to calibrate the algorithm, failed to predict the summer increase of gasoline prices and the economic downturn. The modeling work found that average daily traffic would continue to increase at a rate closer to the historical trends. The present economic conditions appear to have slowed the anticipated ramp-up period. It is expected that the ramp-up time will extend through 2009.

‘The best $1.25 I have ever spent’

Meet Brandi Dorsett. She and her husband live in Puyallup, and, as she puts it, they split the commute. Brandi works in Bellevue - her husband in Olympia.

The Dorsetts were among the first to buy *Good To Go!* transponders for HOT lanes. She explains that they liked the idea of having the option to use HOT lanes when they’re short on time.

As a services coordinator, Brandi says arriving late to work is not an option. She typically drives in the HOT lanes two or three times a week to escape traffic congestion in the regular lanes. “On numerous occasions,” she says, “there have been mornings when I only had to pay 75 cents or $1.25, and I bypassed all kinds of traffic. I often say, ‘That is the best $1.25 I have ever spent.’”

Use of the lanes

Toll-paying customer usage increased both northbound and southbound. (Data represents May through October; November and December data was unavailable at the time of publication)

Use patterns

Of transponder accounts that only use SR 167:

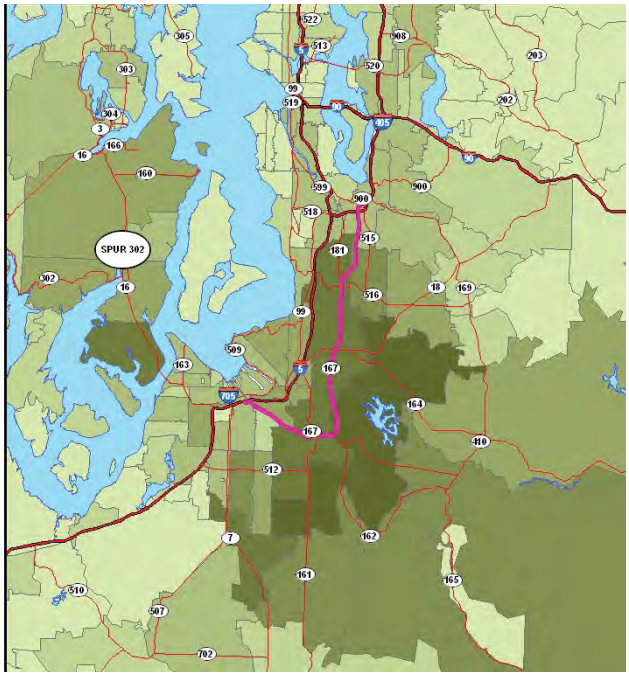
- 62 percent used the HOT lanes more than 10 times
- 14 percent used the HOT lanes one time.

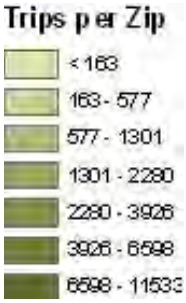
Infrequent use by a broad population suggests that many drivers are benefiting from the choice of a reliable and congestion-free commute. As mentioned above, traffic volumes on SR 167 are less than last year, which improved the relative condition in the general purpose lanes.

A properly mounted *Good To Go!* transponder

HOT lanes at rush hour on SR 167

Customers by location





Data: SR 167 HOT Lanes Customer Database, TransCore, May – October 2008

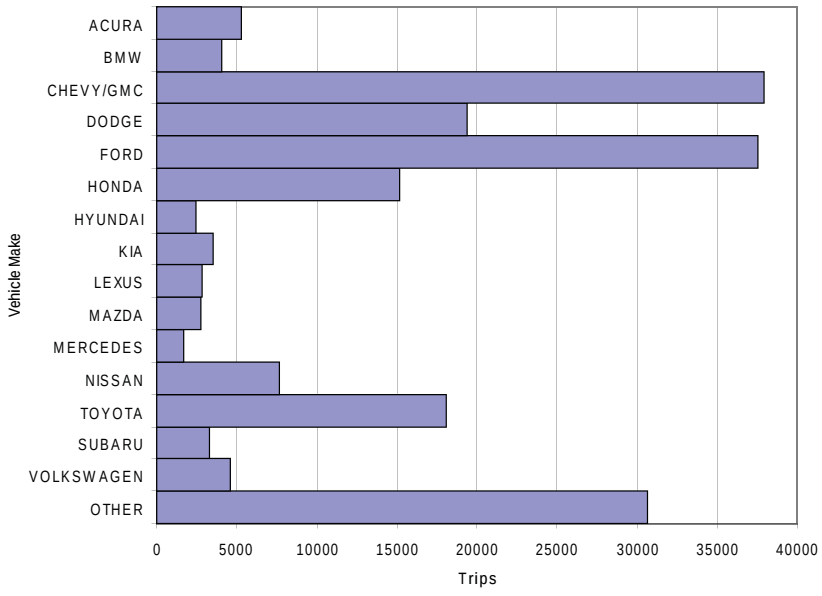
The map above contains the number of trips taken on SR 167 by toll-paying drivers from each zip code. The majority of the tolled trips are generated either along the corridor or to the south/southeast of the corridor.

"It is exciting that our highway technology has advanced far enough that we can finally apply the laws of supply and demand." – SR 167 commuter

Makes of customer cars

A common criticism of HOT lanes is that they favor wealthy drivers, who can more easily afford to pay a toll. Throughout the country, in fact, HOT lanes occasionally are called "Lexus lanes." Studies from other HOT lanes facilities show support from customers representing all income groups. While the make of car doesn't always represent a driver's income, the chart to the right makes an interesting case.

In the first six months of operation, Chevrolet was the most common make of vehicle that paying customers drove in the HOT lane. Ford was second, followed by Dodge/Chrysler, Toyota and Honda. Drivers of Lexus and other luxury vehicles paid to drive in the HOT lanes on only a handful of occasions.



Data: SR 167 HOT Lanes Customer Database, TransCore

Customer service - *Good to Go!*™

The *Good to Go!* program is providing all customer services related to transponder accounts. New *Good to Go!* accounts during the first six months have opened at a rate of about 1,750 per month, although this rate is decreasing due to an increasingly saturated market.

The number of monthly customer inquires relating to HOT lanes has decreased by more than 90 percent. There were nearly 1,200 calls in May and 109 calls in October.

The following table contains information regarding both SR 167 and the new Tacoma Narrows Bridge, as the accounts, shields and transponders are interoperable between the two facilities.

Customer service center – account activity

	Total	Monthly Average
New accounts opened	12,578	1,572
Transponders purchased	30,349	3,794
Transponder shields purchased	15,920	1,990
HOT lane related calls	2,203	275

Data*: Good To Go!* Customer Service Center, May-October 2008

Revenue

The average monthly revenue for the first six months of HOT lane operations was $25,600. The revenue in May was $20,600; June was $30,100; July was $24,500; August was $28,100; September was $25,000; $25,600 in October; $27,800 in November; and $22,000 in December.

The dynamic pricing algorithm was adjusted to decrease the sensitivity of the system, resulting in traffic volume changes. During the morning commute, for example, the northbound price remains lower longer and returns to the lowest trip price ($0.50) more quickly than during the first three months. This adjustment has served to increase the total number of tolled trips, while suppressing the toll rate. The revenue has remained steady.

The goal is to increase the efficiency of the roadway, not to generate revenue. As people grow more comfortable with tolling operations and the economy recovers, engineers expect revenue to gradually increase, especially as winter driving conditions increase congestion.

HERO program

The HERO program was included as an element of the HOT lanes project to provide drivers an opportunity to report improper use of the HOT lanes, just as the HERO program is used for HOV lanes.

The monthly average of SR 167 related reports to the HERO program from May through October 2008 was 58 calls per month. The same time period in 2007 witnessed an average of 321 calls per month. Possible reasons for this 80 percent improvement (reduction in calls) include: a legal option for drivers to use the HOT lane, increased law enforcement, the new law requiring hands-free cellular phone devices, the worsening economy and the decreased traffic volumes.

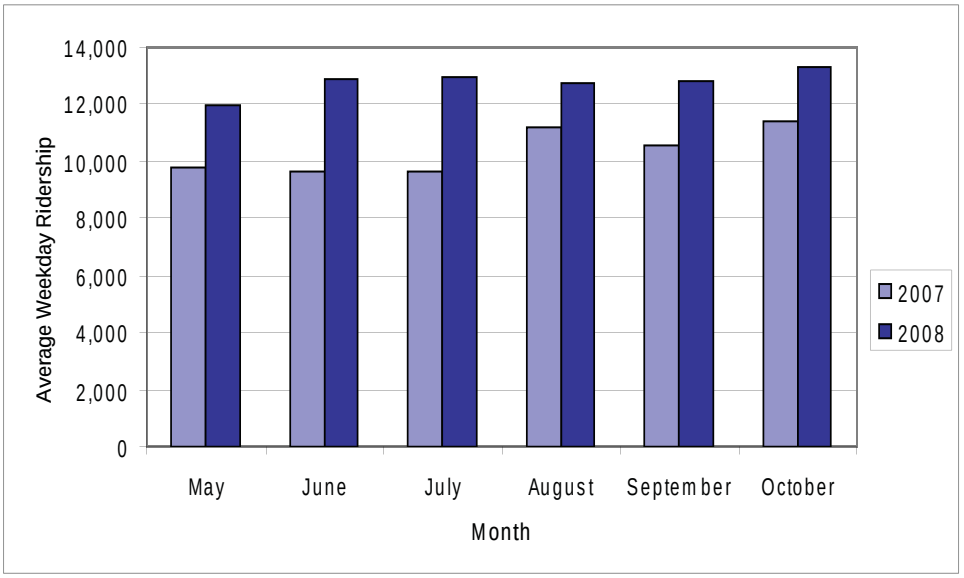
"I believe this [HOT lanes] gives our community another option with little change and/or cost."
– SR 167 commuter

Transit performance

Sound Transit records indicate that travel times for buses within the corridor, during peak and non-peak periods, have not changed significantly when comparing the same months in 2007 and 2008. Ridership on Sound Transit's bus service (routes 564 and 565) and on its heavy rail service (the South Sounder) have increased nearly 25 percent, from 10,370 weekday riders in 2007 to 12,770 weekday riders in 2008 (see chart below).

While other factors likely contributed to the increase in ridership, the only service change precipitated by the HOT lanes was the slight modification of two routes (564 and 565). Transit officials fine-tuned the route alignments so that buses enter SR 167 at SR 516 instead of 84th Avenue. This adjustment allows the buses to take better advantage of the HOT lanes' ingress and egress locations.

Transit Ridership in SR 167 Corridor



Data: Sound Transit Bus Routes 564 and 565, and South Sounder.
November and December data was unavailable at the time of publication.

Enforcement

As part of the SR 167 HOT Lanes Pilot Project, the Washington State Patrol (WSP) is providing additional enforcement on SR 167. This emphasis is paid for with HOT lanes operations funding.

Since opening day, WSP has maintained a visible presence in the project corridor. This effort has resulted in nearly 1,750 traffic stops, yielding 416 citations for HOV / HOT violations and 209 citations for crossing the double white line that separates the HOT lanes from the GP lanes (May through October data). WSP is pleased with the compliance rate, which is estimated at 95 to 97 percent.

WSP is pleased with enforcement results

Incident response

An important component of the HOT lanes operations is additional incident response team (IRT) vehicles along SR 167 to help address and clear traffic-blocking vehicles. The number of responses has since increased, while the response time has decreased.

During the first eight months of operation, IRT responded to an average of 218 incidents per month along SR 167. The average IRT response time has decreased from 10.3 minutes before implementation of HOT lanes to 10 minutes after implementation.

Citizen correspondence

The HOT lanes project team witnessed a steady decline in public comments since opening. Overwhelmingly, customers contacting the *Good To Go!* customer service center in Gig Harbor have expressed their dislike of the transponder disabling devices, known as transponder shields. Citizens expressed frustration that they have to pay for them. Some said they distrust their effectiveness, and others complained about the shield's aesthetics. Although no immediate remedies have been found, WSDOT is addressing problems by exploring new transponder technologies for possible future use.

Additional complaints have focused on the restricted access to the HOT lanes due to the double white lines. There has been some confusion about when to exit the HOT lane in order to exit the freeway in the desired location. WSDOT has added signs throughout the corridor to help drivers better navigate the roadway.

In contrast to the operational complaints, WSDOT also received a number of positive comments. The project team conducted an on-line survey of all drivers with a *Good To Go!* Account that had been used on the SR 167 HOT lanes. The survey, sent on Aug. 1, 2008, revealed that more than half of respondents were satisfied with the HOT lanes. More than two-thirds of respondents indicated they will use the lanes again.

Additionally, WSDOT conducted two focus groups on Jan. 9, 2009. The following quotes capture the general sentiments of the groups:

- "When I have to be someplace, I have to be someplace. That's why I choose the HOT lane."
- "I would give up all my lattes to use the HOT lanes."
- "Please extend the HOT lanes onto I-405 and beyond."
- "The HOT lanes really reduce my stress level. They make me feel safer."
- "I didn't know that is how they work."

Access information sign added by WSDOT in response to citizen requests.

Partly in response to the confusion regarding how the system works, WSDOT is planning to post five informational signs within the corridor. The signs convey the basic concept and provide a toll-free number for further information. WSDOT also plans a wide-spread educational campaign to inform drivers how HOT lanes work and to encourage them to sign up for *Good To Go!*.

WSDOT continues to monitor customer feedback closely.

Construction

The civil construction component of HOT lanes reached the substantial-completion milestone on May 31, 2008. The construction office is moving forward with the project closeout process.

Project cost

Project funding was provided for a total of $17.8 million. The final estimated cost of completion for HOT lanes is $18.7 million. The increase in cost was the result of construction-related traffic control expenditures that were higher than expected.

Supplemental Information

Below are travel time, usage and toll rate charts for Tuesday through Thursday during the first eight months of operation.