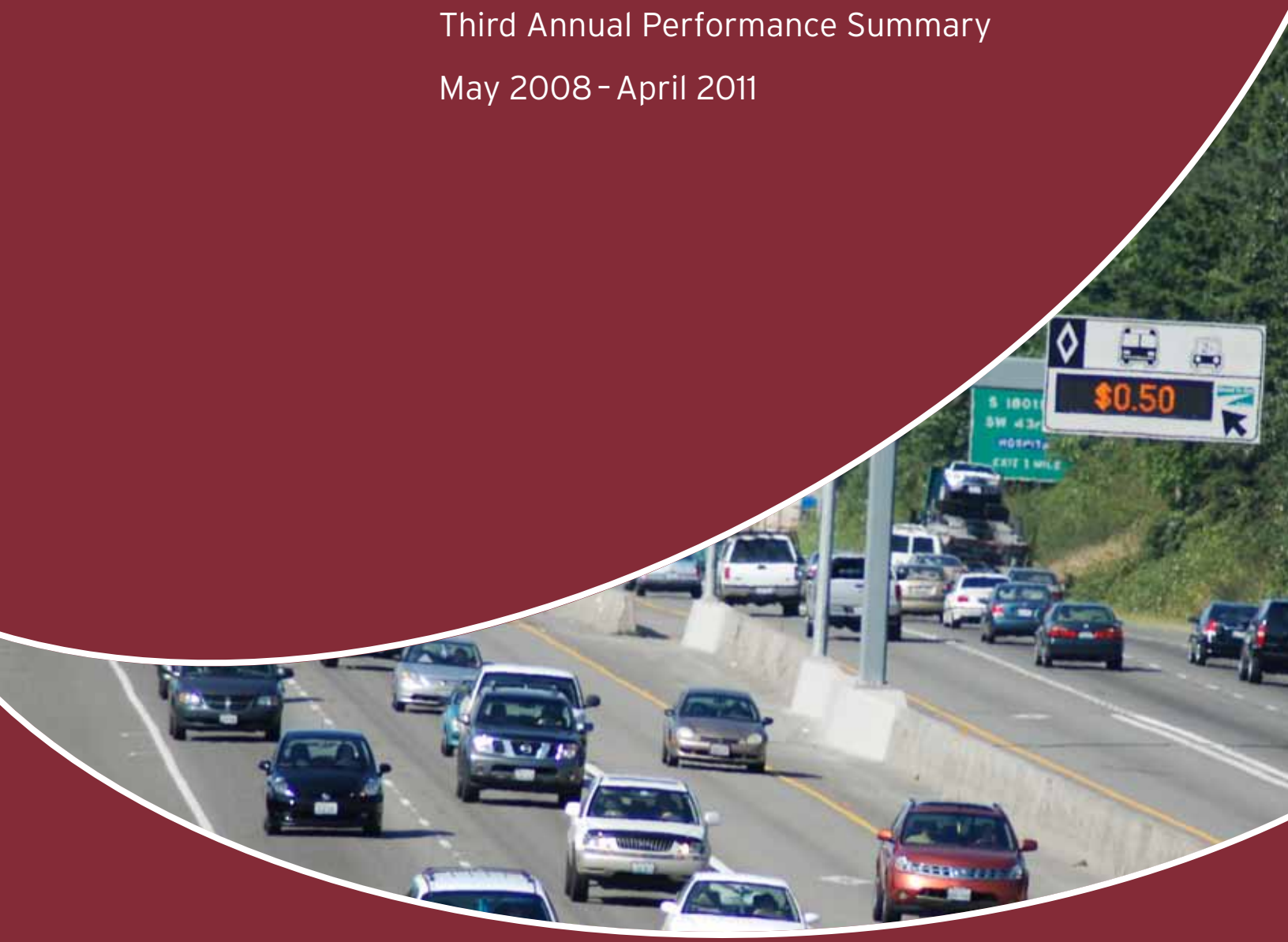
SR 167
HOT Lanes Pilot Project

Third Annual Performance Summary

May 2008 – April 2011



Washington State
Department of Transportation

Drivers are relying more on HOT lanes

The SR 167 HOT lanes are providing a faster, more reliable commute for Sue Dahl of south Seattle, who started using the HOT lanes as soon as they became available in 2008. As a clinical nurse, Dahl commutes daily to different facilities between Seattle's Seward Park neighborhood and Covington.

"I used to commute from Seward Park to Tacoma frequently and there was hardly ever a time I didn't use the HOT lanes on SR 167 because traffic was so slow," said Dahl. "Using the HOT lanes has tremendously improved my commute and saves me about 45 minutes." Dahl uses the HOT lanes to keep her on time as she drives to different facilities around South King County.

"I was thrilled when the HOT lanes came around." said Dahl. "I think of it as a business tool. I would be enormously disappointed if the HOT lanes were to be discontinued because HOT lanes are a large asset for me."

Now that the HOT lanes are in their third operating year, drivers like Dahl have come to depend on them. Outreach about the benefits of using *Good To Go!* has increased awareness of the SR 167 HOT lanes and now a broader group of drivers are saving time and money by using them. Giving drivers the opportunity to choose whether or not to use the HOT lanes allows for flexibility and more consistent commute times.

This report provides elected officials, transportation professionals and the public with a detailed analysis of the first three years of operations and performance.

Executive Summary

The antenna for electronic tolling on SR 167 HOT lanes

The State Route 167 high occupancy toll (HOT) lanes reached a significant milestone in its third year of operations. Toll revenue began exceeding operational costs in April 2011. More drivers than ever are choosing to use the SR 167 HOT lanes for a reliable trip. The project's primary objective remains unchanged: congestion management. HOT lanes continue to help reduce congestion and maintain free-flow traffic conditions for all lanes in this corridor. Generating revenue is an added benefit.

People who opt to use the HOT lanes save time and minimize the stress associated with their daily commute. When drivers choose to use HOT lanes, it also frees up space and improves speeds in the general purpose lanes. The end result is better flowing traffic that benefits everyone traveling on SR 167.

It is also known that SR 167 HOT lane customers are the strongest supporters because they experience the benefits firsthand. In fact, a majority of customers polled stated they'd choose to use SR 167 HOT lanes again in the future. Nearly 60 percent of HOT lane business customers consider the HOT lanes to be helpful for their business.

"Even as highway budgets are forced to do more with less, the number of vehicles on our roads continues to climb. We need to work smarter with what we already have."

– USDOT Secretary Ray LaHood

Revenue & Expenditures: revenue exceeds operating costs

- Toll revenue exceeded operating costs.
- HOT lane revenue increased 35 percent in fiscal year 2011, generating $750,000; compared to $560,000 that was generated in fiscal year 2010.
- Toll collection costs have decreased.

Traffic Performance: a reliable trip for everyone

- Approximately 90,000 unique *Good To Go!* passes have been used to pay for the SR 167 HOT lanes since they opened.
- The average number of tolled trips continues to increase:
  - 3,300 tolled trips per weekday* in April 2011, which is a nearly 50 percent increase over April 2010 and a 87 percent increase over April 2009.
- Travel times in the general purpose lanes are more reliable than before the HOT lanes opened.
- The average toll paid has stayed between $0.75 and $1 per trip.
- Since opening the HOT lanes, peak-period traffic is moving more efficiently:
  - On average, daily general purpose lane volumes have decreased 4 to 5 percent, while speeds have increased 8 percent.
  - On average, daily HOT lane volumes have increased 15 percent, while speeds have remained around the posted 60 mph speed limit.

Safety: fewer collisions

- Preliminary data indicates that the average number of collisions is down 4 percent when compared to the five year average prior to HOT lanes opening in 2008.

Customer Service: happy with the system

- Over 70 percent of surveyed HOT lanes customers stated they are likely to use the lanes in the future.
- Complaints have remained infrequent.

Enforcement: drivers comply with HOT lane rules

- Washington State Patrol continues to estimate the compliance rate at 95-97 percent.

**Monday and Friday excluded due to inconsistent traffic volumes.*

The Pilot Project

On the third anniversary of Washington State's first-ever HOT lanes, more drivers are choosing to pay a toll to use the SR 167 HOT lanes saving valuable time and reducing the stress that comes with congestion. This pilot project, between Renton and Auburn, provides solo drivers a reliable commute option, while continuing to offer free-flowing travel for transit and carpools.

In 2008, WSDOT converted existing SR 167 High-Occupancy Vehicle (HOV) lanes to HOT lanes to make better use of the available space in the HOV lanes. Today, solo drivers with a *Good To Go!* pass have the option to pay a variable, electronic toll for a faster trip in the HOT lane when space is available.

Carpools of two or more people, vanpools, buses and motorcycles use the HOT lane toll-free, just as they did in the HOV lanes, and they do not need a pass. If the HOT lanes become too full, they switch to HOV only.

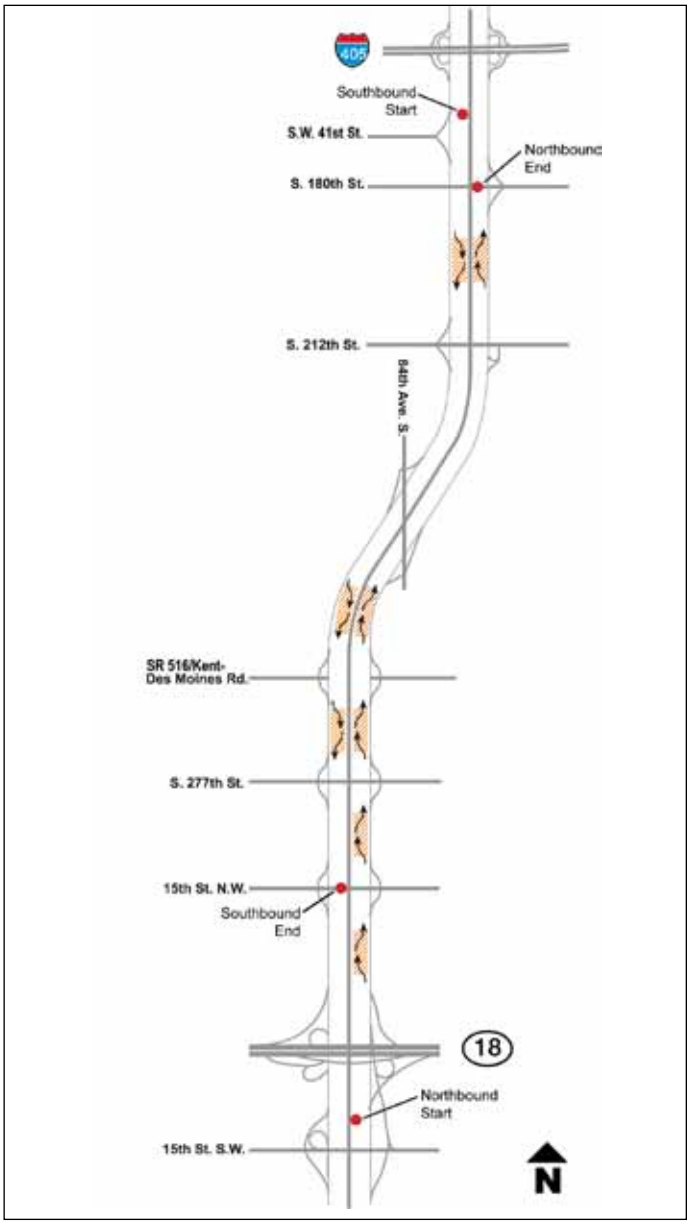
The HOT lanes run northbound and southbound on approximately 10 miles of SR 167. The highway's two general purpose lanes in each direction remain toll-free and open to all traffic. The HOT lanes are separated from the general purpose lanes by a solid double white line, which is illegal to cross. Access in and out of the HOT lanes is restricted to access zones identified by a dashed white line (there are six northbound and four southbound access zones).

Reducing congestion through variable tolling

Variable tolling is a tolling structure where the toll price changes over time according to certain performance criteria. The SR 167 HOT lane pilot project uses a type of variable tolling where the toll rate adjusts dynamically based on real-time traffic data. The data, collected by sensors embedded in the roadway, measure vehicle speed and traffic volume data. When traffic is heavy, the toll price increases, and when it's light, the price decreases – the law of supply and demand.

On SR 167, the variable toll ensures that traffic in the HOT lane always flows smoothly. The system calculates a new toll rate (via an algorithm) from 50 cents to $9 every five minutes. This helps the HOT lanes make the most efficient use of carpool lane space, while ensuring that buses and carpools still have a free-flowing, reliable trip.

Figure 1: On May 3, 2008, the SR 167 HOT Lane Pilot Project opened north- and southbound HOT lanes between Renton and Auburn. Carpools, buses, motorcycles, and toll paying solo drivers can access the lanes via zones (marked in orange) for a faster, more reliable trip.



HOT lanes across America

WSDOT continues to share information among other projects across the nation that have implemented HOT or express toll lanes, which use tolls to manage demand and reduce congestion. The map shown in Figure 2 shows the location and status of toll lane projects. There are currently 11 HOT or express toll systems in place in the United States, most of which are expanding due to their initial success. Across the nation, another 34 HOT or express toll lane projects are either being implemented or feasibility studies are being conducted for them.

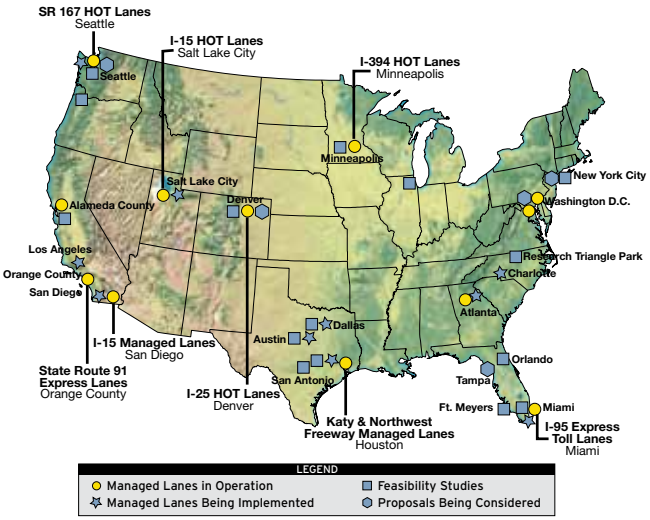
Why SR 167?

The SR 167 corridor runs north and south connecting communities between Renton and Tacoma. It provides the Puget Sound Region with an alternative north-south route to I-5. Unlike most HOV lanes in the region, which operate at or above capacity during peak-periods, the HOV lanes on SR 167 had available space during peak-period commute times. WSDOT engineers saw HOT lanes as a tool to increase vehicle throughput without reducing the level of service enjoyed by carpools and transit.

Over the next 30 years, the population in the Puget Sound Region is expected to increase by about 1.7 million and the number of jobs by about 1.2 million over 2000 levels. Our general purpose lanes, and most of our HOV lanes, are already congested during peak-periods, and those peak-periods are becoming longer all the time. HOT lanes are a way to operate our highways more efficiently and manage traffic demand with more commute choices. These strategies are part of Moving Washington, WSDOT's statewide program to keep people and goods moving through the next decade and beyond.

Figure 2: HOT lanes across the United States

Source: Project Websites September 2011



HOT lanes growing in popularity

Alameda County: A 14-mile stretch of HOT lanes opened on I-680 outside of San Jose , CA in September 2010. In 2013 another 11 miles of I-580 HOV lanes will be converted to HOT lanes.

Atlanta: Georgia DOT opened the I-85 Express Lanes in October 2011 when it converted 16 miles of existing HOV lanes to HOT lanes. They expect to open an additional 12 miles of HOT lanes on I-75 in 2015.

Denver: In June 2006, CDOT converted 7 miles of I-25 HOV lanes to HOT lanes featuring electronic tolls with the EXpressToll transponders.

Houston: In April 2009, Harris County Toll Road Authority completed converting 10 miles of I-10 to HOT lanes with time of day variable tolling.

Miami: In December 2008, HOT lanes began operating on a 7-mile stretch of northbound I-95. The facility features variable, electronic tolling with the SunPass transponder. Electronic toll collection on a new southbound HOT lane began in January 2010.

Minneapolis: Minnesota has two Express Lanes facilities currently in operation. I-394 was completed in 2005 and I-35W was completed in late 2009. An extension to the I-35W Express Lanes is scheduled to be completed in 2012.

Orange County: The 10-mile HOT facility on SR 91 opened in December 1995. In 2002, voters approved a tax increase to help to extend the facility 10 more miles into Riverside County.

Salt Lake City: Utah DOT converted its 38-mile HOT facility on I-15 from a $50 per month subscription service to electronic, variable tolling in fall 2010, and is planning to extend the lanes another 22 miles.

San Diego: San Diego has two reversible express lanes that currently cover 16 miles. HOT lanes have operated on I-15 since 1996. By 2012 the facility will stretch to 20 miles.

Revenue & Expenditures

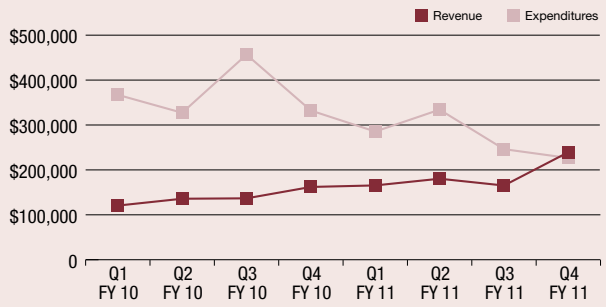
Since HOT lanes began in 2008 revenue has increased 88 percent. In the fourth quarter of FY 2011 toll revenue surpassed operational costs.

Revenue: exceeds operating costs

The SR 167 HOT lanes were designed to help reduce traffic congestion and maintain free-flow traffic conditions in the HOT lanes. Revenue generation is an added benefit. Nonetheless, revenue has gradually increased (see Figure 3) as drivers have grown more comfortable with tolling operations, the economy recovers and *Good To Go!* pass ownership within the region becomes more common. Today, toll revenue covers operating costs.

The items included in revenue are toll collections, pass and pass shield sales, and operating fund interest.

Figure 3: Revenue exceeds operating costs



	Total Revenue	Total Expenditures
Q1 FY 10	$120,535	$367,148
Q2 FY 10	$135,799	$327,181
Q3 FY 10	$136,693	$456,683
Q4 FY 10	$162,031	$332,161
Q1 FY 11	$165,444	$285,416
Q2 FY 11	$180,357	$334,148
Q3 FY 11	$165,225	$246,187
Q4 FY 11	$239,420	$226,595

Source: WSDOT Quarterly Financial Statements and WSDOT DataMart

Expenditures: operating costs drop

WSDOT is continuing to take measures to lower HOT lanes operating costs. For example, the agency opened a statewide customer service center to support all current and future state tolling facilities. This action centralized all customer service activities and lowered the operating costs by $30,000 per month.

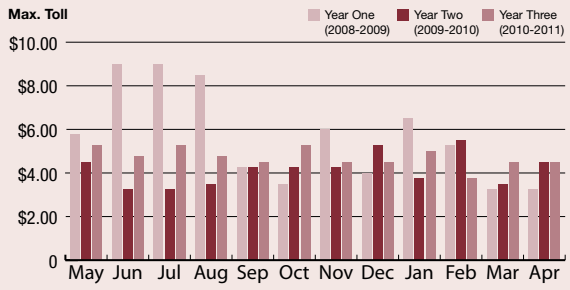
All items relating to the operation of the HOT lanes are accounted for in the expenditures, including: customer service center and back office processing, tolling vendor operation, cost of passes, HOT lane specific enforcement by WSP, technology research and consultant services, credit card and bank fees, maintenance, Incident Response Team services, Traffic Management Center operation, salaries and benefits, supplies, communications, as well as office space with related equipment and utilities, and printing.

Toll rates: remain steady

The toll rate can range from $0.50 to $9.00. The average toll rate remained between $0.75 and $1.00 in each of the three years.

In June and July 2008, tolls reached the maximum rate of $9.00. Since then WSDOT engineers adjusted the dynamic-pricing algorithm and the toll rate has not exceeded $5.50. The higher toll rates during the first few months were the intentional result of a sensitive pricing algorithm that was set to ensure carpools and buses had premium service while traffic adjusted to the new HOT lane system. (see Figure 4)

Figure 4: Maximum toll rate floats around $4.75



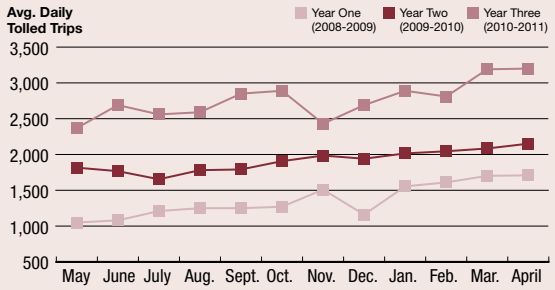
Source: NW Region Traffic and Customer Service Center

Traffic Performance

More people choosing to pay a toll to use the HOT lanes

The average number of daily (Tuesday through Thursday*) tolled trips continues to increase from month to month (see Figure 5). During the northbound peak-hour (7-8 a.m.), the average number of tolled trips increased from 140 in May 2008 to 270 in April 2009 to 350 in April 2010 to 433 in April 2011, a three times increase over 36 months. The number of tolled trips in the southbound direction has seen a two and a half times increase during the afternoon peak-hour (4-5 p.m.) since May 2008.

Figure 5: SR 167 HOT lanes average daily tolled trips tripled in three years



*Source: NW Region Traffic, Tuesday – Thursday**

Figure 6: Performance measures help WSDOT learn more from the pilot project

		May - Jul	Aug - Oct	Nov - Jan	Feb - Apr
Average Toll Paid	**Year One**	$1.00	$1.00	$1.00	$0.75
	Year Two	$0.75	$1.00	$1.00	$1.00
	Year Three	$1.00	$1.00	$0.75	$1.00
Highest toll paid	**Year One**	$9.00	$8.50	$6.50	$5.25
	Year Two	$4.50	$4.25	$5.25	$5.50
	Year Three	$5.25	$5.25	$5.00	$4.50
Average number of daily tolled trips	**Year One**	1,110	1,260	1,410	1,670
	Year Two	1,750	1,830	1,980	2,090
	Year Three	2,540	2,780	2,670	3,070
Highest number of daily tolled trips	**Year One**	1,390	1,560	1,910	1,880
	Year Two	2,060	2,150	2,230	2,390
	Year Three	3,160	3,290	3,340	3,480
Average peak-hour northbound tolled trips	**Year One**	150	180	200	260
	Year Two	250	290	320	350
	Year Three	360	370	340	420
Average peak-hour southbound tolled trips	**Year One**	110	120	130	160
	Year Two	160	170	190	200
	Year Three	210	210	200	250
Maximum peak-hour tolled trips	**Year One**	210	240	260	310
	Year Two	310	350	390	420
	Year Three	430	440	430	530

*Source: NW Region Traffic and Good To Go! Customer Service Center, Tuesday-Thursday**

* *Monday and Friday excluded due to inconsistent traffic volumes.*

Volume

Daily volumes remain strong

During the third year of operations, the average daily traffic volumes on SR 167 have continued to be similar to that of pre-opening volumes in 2007. As Figure 7 demonstrates, the daily volumes in the first year of operations decreased slightly, likely in response to the spike in gas prices and the faltering economy. The volumes then recovered during the second year in spite of the ongoing recession.

Peak-hour volumes: HOT lanes carrying more traffic than ever

Overall, the average peak-hour, peak-direction traffic volumes decreased by 1 percent in 2010 compared to 2007 levels, which is consistent with volumes on roadways across the region. However, the HOT lane's popularity continues to increase and the volume in those lanes has grown by 15 percent. With HOT lanes carrying more and more traffic, general purpose lane volumes decreased by 5 percent.

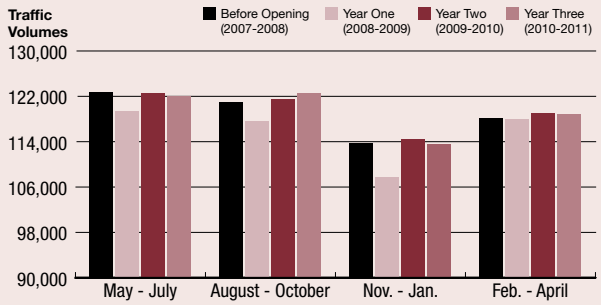
HOT lane volumes have increased by 15 percent since 2007, making more room in the general purpose lanes.

Speeds

The HOT lanes exceed the legislative requirement of maintaining average traffic speeds of 45 mph or more during peak-hours at least 90 percent of the time. In fact, the HOT lanes exceed this requirement over 99 percent of the time.

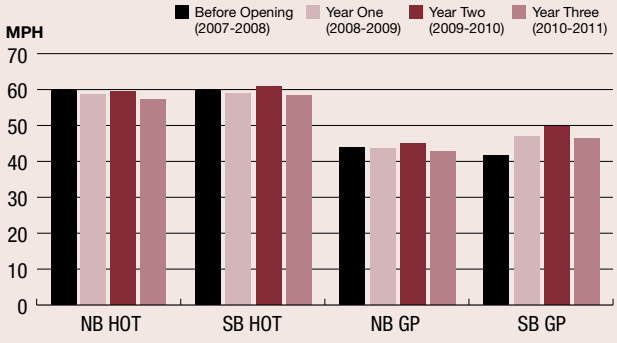
Southbound peak-hour general purpose lanes improved average speeds 10 percent between 2007 and 2011, rising from 42 mph to 46 mph. Northbound average speeds decreased one mph between 2007 and 2011. Speeds in both directions of the HOT lanes decreased slightly to just below the posted speed limit of 60 mph. See Figure 8 for peak-hour speeds.

Figure 7: Average daily traffic volumes held steady in the third year



*Source: NW Region Traffic, Tuesday – Thursday**

Figure 8: Average Peak-Hour HOT lanes speeds stay high



*Source: NW Region Traffic, Tuesday – Thursday**

** Monday and Friday excluded due to inconsistent traffic volumes.*

HOT lane time savings

The **northbound HOT lane** provided weekday (Tuesday through Thursday) drivers with an **average time savings of nine minutes** in the peak-hour (7-8 a.m.) for an average toll of $1.75.

The **southbound HOT lane** provided weekday (Tuesday through Thursday) drivers with an **average savings of six minutes** during the peak-hour (4-5 p.m.) for an average toll of $1.25.

HOT lane travel times

Successfully delivering a more reliable trip

Throughout the first, second and third year, HOT lane traffic flowed freely during all hours of the day. The northbound peak-hour (7-8 a.m.) HOT lane travel time has remained consistent at an average of 11 minutes since 2008 and the 95th percentile travel time was 12 minutes. The two nearly equivalent travel time measurements indicate that the HOT lanes are successfully delivering reliable travel times and maintaining traffic speeds, even on some of the most congested days.

The results are similar during the southbound peak-hour (4-5 p.m.). Both the HOT lane travel time and the 95th percentile travel time were eight minutes. Again, the similar travel time measurements confirm that the HOT lanes successfully delivered reliable travel times and maintained traffic speeds, despite the bottleneck caused by the highway going from three lanes to two lanes at the end of the southbound HOT lane.

General purpose lane travel times

The average travel time was 20 minutes for northbound drivers in the general purpose lanes during the peak morning hour (7-8 a.m.). The 95th percentile travel time was 25 minutes. The average travel time has held fairly steady, for the last three years. In the first and second years, the average travel time was 19 minutes. The 95th percentile travel times were 24 and 26 minutes in the second and first years respectively.

The average travel time was 14 minutes for southbound drivers in the general purpose lanes during the peak afternoon hour (4-5 p.m.). The 95th percentile travel time was 22 minutes. This is a slight increase from the second year, where the average travel time was 11 minutes, and the 95th percentile travel time was 15 minutes. In the first year, the travel time averaged 12 minutes, and the 95th percentile travel time was 12 minutes.

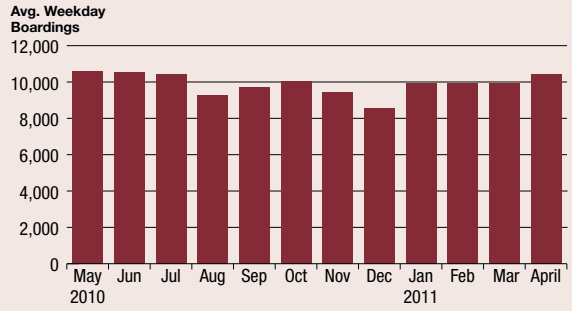
What is the 95th percentile travel time?

The 95th percentile travel time is a statistical reliability measure that takes into account the variability of the travel time data. It means that 95 percent of the time, the travel time will be at or below the given number.

Transit performance

It is difficult to determine the specific effect of the HOT lanes on transit ridership. The changing economic climate, fluctuating gas prices, and changes made to the service and operation routes within the corridor also affect ridership. However, just like carpools and paying HOT lane customers, transit buses enjoy the benefits of a reliable trip in HOT lanes. Figure 9 includes ridership on south line Sounder commuter rail and bus routes that use SR 167.

Figure 9: Average Weekday Transit Ridership



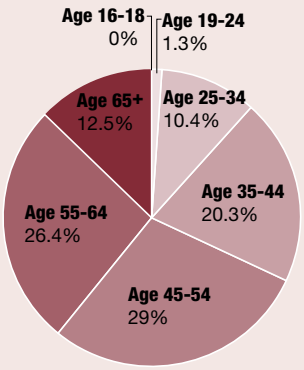
Source: Sound Transit

HOT Lane Drivers

Who is driving in the HOT lanes?

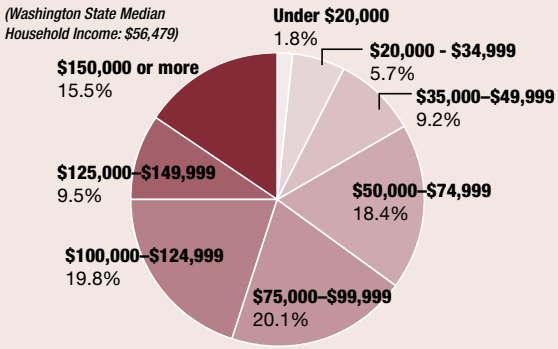
Since 2008, WSDOT has conducted an annual survey of *Good To Go!* account holders with a valid email address who had driven the SR 167 HOT lanes at least once. This helps WSDOT better understand the profile of our paying HOT lanes customers. The 2011 overall results are consistent with previous surveys. As shown in Figures 10 and 11, nearly 30 percent of HOT lane drivers are between the ages of 45 and 54 years old and 20 percent have a household income of $75,000-$100,000.

Figure 10: Age of HOT Lane Drivers
Most HOT lane drivers are between 35 and 64 years old



Source: 2011 SR 167 Online User Survey (3,716 respondents)

Figure 11: Household Income of HOT Lane Drivers



Source: 2011 SR 167 Online User Survey (3,383 respondents)

Customer satisfaction

HOT lanes customers want HOT lanes in more locations

Many customers state that their primary reason for choosing HOT lanes is to avoid congestion. Common responses from a recent online survey of SR 167 HOT lane customers include:

- *"HOT lanes give me more reliable travel times making me more efficient with my work time."*
- *"Gas is used up quicker in traffic. Being able to move effectively in a non-traffic lane saves time which in turns saves me money – especially in today's gas prices"*
- *"I have an extra choice and can plan my time and day better"*
- *"HOT lanes are great! They should be extended south into Pierce County ASAP on SR 167!"*

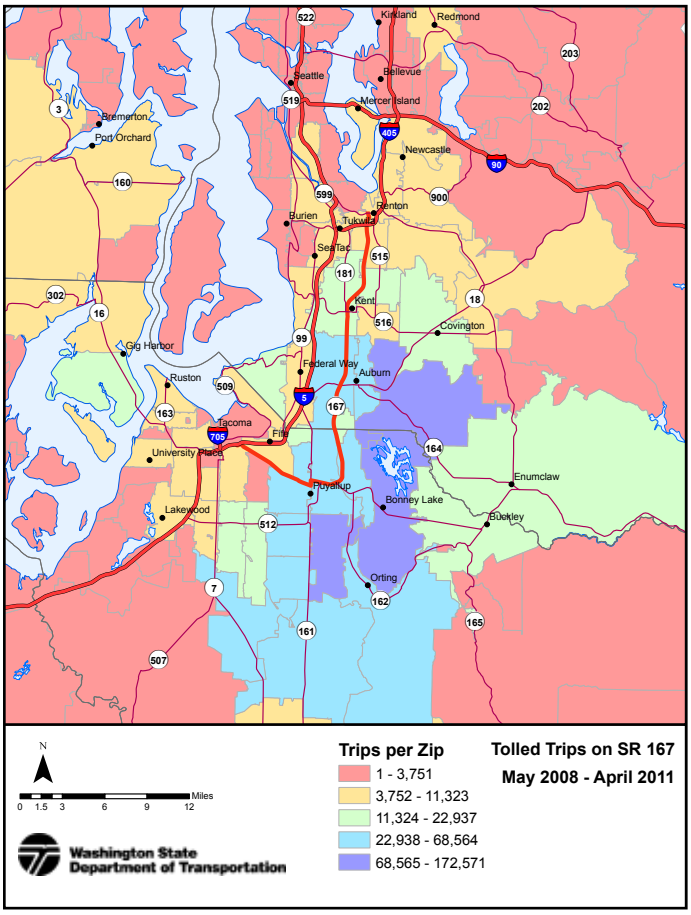
Drivers who use the HOT lanes strongly support them. The 2011 SR 167 HOT Lanes Customer Survey revealed the following highlights:

- A strong majority (over 70 percent) of all respondents stated they would likely use the HOT lanes again
- A strong majority (62 percent) of all respondents who use the HOT lanes at least once a month wanted to see HOT lanes opened on other freeways in our region
- Most people (approximately 88 percent) said that they use the HOT lanes to avoid congestion in the general purpose lanes or make a faster trip when they really need it

Where are they from?

The majority of tolled HOT lane trips are billed to homes in the southern, southeastern and eastern portions of the SR 167 corridor, corresponding to the purple, blue and green sections of Figure 12.

Figure 12: Tolled Trips by Zip Code



Source: Customer Service Center Database, May 2011

HOT Lane access

Restricted access has been the most common issue raised by the public since the HOT lanes opened in May 2008. WSDOT has tried to address this by lengthening the entrance and exit area, and adding signs advising drivers when to leave the HOT lanes to reach a particular exit.

Survey respondents were given an opportunity to voice any of their concerns with a write-in comment section. One recurring theme was to focus enforcement on preventing drivers from illegally crossing the double whites that separate HOT lanes from general purpose lanes. Similarly, the 2010 Transportation Budget directed WSDOT to further examine access issues. To fulfill this requirement, WSDOT commissioned the University of Washington to conduct a HOT lane study focusing on access areas and double white line crossing violations. The study found that this illegal activity was more prevalent during rush hour and in locations where congestion is more frequent. As a result, WSDOT worked with WSP to shift its HOT lane patrols to the hours when congestion is at its highest.

UW Access Study

In May 2011, the University of Washington published "Examination of SR 167 HOT Lane Violation Patterns," by Jonathon Corey and Mark Hallenbeck. It examines where and why drivers are illegally crossing the double-white lines. The report concluded that violations occur at a negligible rate in moderate to light traffic. However, as traffic congestion rises the violation rate increases from nearly zero to approximately eight violations per hour. This increase is attributed to multiple factors including; approaching backups, on-ramps, getting in the HOT lane before the double-white lines end, and leaving the HOT lane before the next access point. It also identified the section of northbound SR 167 between the S 180th St. on-ramp and I-405 interchange, as the highest violation area, comprised almost exclusively of vehicles entering the lane. The study noticed that drivers were using their signals while making these violations, suggesting that they were more focused on safety than legality.

There were very few observed instances of toll jumping, where a driver temporarily leaves the HOT lane to avoid being detected by the overhead antenna. This suggests that drivers are willing to pay the toll as long as there is an obvious benefit gained by using the HOT lanes. WSDOT is considering these results, as well as the responses from the online survey, as it looks for ways to improve the HOT lanes.

Enforcement

The Washington State Patrol provides additional enforcement on SR 167. HOT lanes compliance is estimated to be 95–97 percent.

Washington State Patrol

The Washington State Patrol provides additional enforcement to ensure drivers are complying with the rules of SR 167 HOT lanes. Specific WSP shifts are dedicated to HOT lane enforcement, and emphasis patrols are paid for with HOT lane operations funding. Since opening day, WSP has maintained a visible presence in the project area.

HOT lane violations

In coordination with WSDOT, WSP has reduced the number of shifts assigned to HOT lane enforcement on SR 167, while more efficiently focusing on peak-hours when violation rates increase. This reduction in enforcement was done to lower operating costs.

	Year 1 2008-2009	Year 2 2009-2010	Year 3 2010-2011
Traffic Stops	2,740	2,010	2,030
HOV/HOT violation citations	730	660	650
Crossing double white line citations	320	290	240

HERO Program

A concerned driver can call in a potential violator through the HERO program if they see a solo driver using the SR 167 HOT lanes without a *Good To Go!* pass. WSDOT then mails the registered owner of the vehicle educational materials about how to use the HOT lanes. The number of potential violations reported to the HERO program has remained steady since the HOT lanes opened.

	Year 1 2008-2009	Year 2 2009-2010	Year 3 2010-2011
Average calls per month	50	40	60

The HERO program was included as an element of the HOT lanes project to provide drivers an opportunity to report vehicles that they saw improperly use the lanes.

Safety and Response

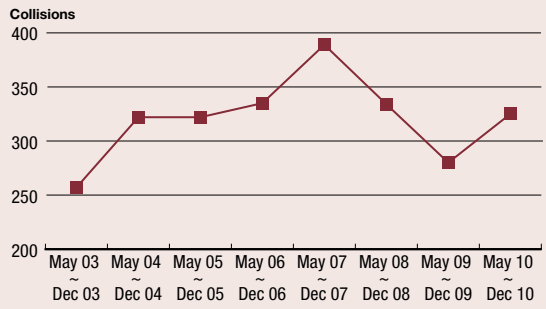
Safety

HOT lanes remain a safe option

The third year of HOT lanes operation data indicates that the average number of collisions is down 4 percent when compared to the five-year average prior to HOT lanes opening in 2008. The collision data timeframe begins in May and ends in December because HOT lanes began in May 2008, and December 2010 is the most recent collision data available (see Figure 13).

Multiple factors can affect the safety record, including the double white lines preventing erratic lane changes in and out of the HOT lanes, changing traffic volumes, increasing WSP enforcement, roadway surface conditions, changes in visibility and a new law requiring the use of hands-free cellular devices. WSDOT remains confident that HOT lanes are not adversely impacting driver safety and engineers will continue to closely monitor safety data.

Figure 13: Collisions on SR 167
HOT lanes are not adversely impacting safety



Data Source: NW Region Traffic

Incident response

An important component of HOT lanes operations is the addition of incident response team (IRT) vehicles along SR 167 to assist drivers (e.g. change flat tires, supply emergency gas, etc.) and clear blocking vehicles.

	February to April			
	2008	**2009**	**2010**	**2011**
Monthly incidents responded to	130	195	180	180
Average response time (in minutes)	10.3	9.3	9.9	8.9

By funding more IRT vehicles along the corridor, the HOT lanes project enabled IRT to respond to incidents more quickly. This reduced the congestion and delay caused by incidents and helps keep all lanes moving.

The incident response team provides additional assistance on SR 167.

Operations and Maintenance

Traffic Management Center

At WSDOT's Northwest Region Traffic Management Center in Shoreline, team members pay close attention to SR 167 traffic using remote control cameras and data collected from traffic sensors. They monitor the variable toll rate and HOT lane traffic data using software that creates a dashboard displaying all the HOT lane variables, including traffic volumes, lane speed and toll rates. Operators monitor the HOT lane around the clock to ensure that the displayed toll rates accurately reflect the traffic conditions along SR 167. In the event of an accident, construction or excessive traffic in the HOT lanes, operators can manually override the HOT lanes rate sign to display messages such as "CLOSED," "HOV ONLY" or "OPEN TO ALL." Also, if anything goes awry, the designated engineer works with the tolling vendor, WSDOT maintenance and Toll Division personnel to troubleshoot the problem and find a solution.

Inside the traffic management center, WSDOT engineers monitor the HOT lanes, variable toll rates and traffic data to ensure smooth operations.

Maintenance

WSDOT partners with a toll vendor to assist WSDOT in monitoring, maintaining and ensuring optimal performance of the HOT lanes system. The partnership has enabled WSDOT to ensure delivery of a reliable system while at the same time building the internal knowledge of WSDOT engineers and technicians. Aided by software, both partners watch the system for errors and alert messages. When errors are detected, the toll vendor and WSDOT engineers collaborate to diagnose and usually solve the problem remotely. If the issue cannot be addressed remotely, WSDOT field technicians are dispatched to replace the failed equipment.

While minor errors or alerts occur weekly, the fully redundant system does not falter. If the data collected at the tolling location fails to upload to the central system, it is collected and stored at each location. When the connection to the central system is restored the data is then uploaded and processed.

WSDOT HOT lanes technician Allen Mushatt checks the electronic equipment cabinet.

Public Outreach and Communications

Listening: business customer feedback

In order to gain a better understanding of how businesses along the SR 167 corridor are using the HOT lanes, WSDOT conducted an online survey. Its highlights include:

- Nearly 60 percent considered the HOT lanes helpful for their business
- Time savings was the most common response why the HOT lanes were helpful
- Over 50 percent were interested in connecting the SR 167 HOT lanes to the future I-405 express toll lanes

WSDOT continues to take feedback from drivers and make adjustments to the HOT lanes program.

Examples include:

- Providing more options for passes that benefit HOT lane drivers, such as switchable or movable passes
- Reducing customer costs by providing less expensive passes
- Installing new readers to accommodate both old and new passes

Example of gas pump topper

Education: increasing awareness

WSDOT conducted a public education campaign from May to September 2010 to help drivers understand how to use the HOT lanes, increase usage and raise awareness about the HOT lanes' purpose and benefits.

After the SR 167 HOT Lanes Pilot Project Annual Performance Summary was published, the project website received more than three times the average number of daily visits. This demonstrates that there is a high interest in the progress of the HOT lanes pilot project and that targeted media outreach resulted in reaching people along the SR 167 corridor. As *Good To Go!* outreach has ramped up in preparation for SR 520 tolling this December, pass sales have increased along with SR 167 HOT lanes usage.

Methods of outreach included:

- Boeing Safety Fair (major employer along the SR 167 corridor - approximately 300 people contacted)
- Puyallup Fair (significant event with 1.1-1.2 million people in attendance)
- Gas pump toppers placed at 20 gas stations along the SR 167 corridor provided information on how to use HOT lanes
- Direct media contact that resulted in print and TV coverage, including a drive-along with KOMO TV
- Better incorporation of HOT lanes into our overall *Good To Go!* campaign to educate drivers on all toll facilities and providing information on which passes work best for HOT lanes customers

Citizen correspondence

In the third year of the HOT lanes operations, feedback from the public was minimal. Most inquiries came from drivers who were interested in tolling on the SR 520 bridge and unfamiliar with the statewide tolling process. However, drivers continue to have questions about access in and out of the HOT lanes, including extending the entrance and exit points. An average of four inquires are received a month.

Customer Service Center

WSDOT is currently working towards implementing tolling on the SR 520 bridge in December 2011. A critical part of this program is to increase awareness of the statewide electronic tolling system, *Good To Go!*. The statewide system operates all tolling accounts for tolled facilities statewide:

- Tacoma Narrows Bridge
- SR 167 HOT lanes
- SR 520 bridge

By unifying the entire system, WSDOT is able to save money because the cost of the statewide toll customer service center is split between facilities. With SR 520 bridge tolling beginning in 2011, two new customer service centers were opened in Seattle and Bellevue, bringing the total of available centers to three.

The improved WSDOT website facilitates the distribution of information.

New technology

As a result of listening to customer feedback and advances in tolling technology, SR 167 HOT lanes became the first existing toll facility in the United States to convert to a new tolling communication protocol: ISO 18000 6C. The new protocol is faster, non-proprietary, more accurate, more secure, less costly and offers more pass options for customers.

One of the greatest challenges was ensuring that the existing legacy passes would continue to operate seamlessly. Relentless testing and consistent verification have proven the system to be exceeding operational performance requirements.

Legacy sticker pass

Washington was the first state in the country to read both ISO 18000 6C and another tolling communication protocol on the same facility.

WSDOT is now leading an international effort to standardize the information contained on the pass. By standardizing the information in the future, *Good To Go!* customers, will be able to use their passes at other toll locations across North America. In the future, other states and agencies passes will be accepted for use on WSDOT toll facilities.

From top: switchable pass, moveable pass, sticker pass.
Not shown: license plate and motorcycle passes

Conclusion

The SR 167 HOT lanes are successfully accomplishing what they were designed to do: making the highway more efficient by maximizing vehicle throughput. The HOT lanes effectively manage the flow of additional traffic in the carpool lane when the space is available. This system preserves free-flowing traffic conditions for carpools and transit at virtually all times, and benefits traffic flow through the entire corridor.

More people are using the SR 167 HOT lanes each year and the drivers who use the HOT lanes strongly support them. Commercial users value the HOT lanes and see a benefit to their business.

HOT lanes are redefining tolling by demonstrating that tolling is not only a means for funding infrastructure but also a congestion management tool. The variable toll ensures that traffic in the HOT lanes flow smoothly – offering a quicker and more reliable trip than the general purpose lanes. The HOT lanes are also now covering operating costs while successfully delivering reliable travel times and maintaining traffic speeds, even on some of the most congested days.

HOT lanes in use

All-electronic tolling technology can now do what additional lane space alone cannot – get people safely to where they need to go when they cannot afford to be late.

What's next

The purpose of this four-year pilot project is to learn how HOT lanes and other forms of variable tolling could be used in Washington to make our highways more efficient at moving people and reducing congestion. In March 2011, the state legislature extend the authority for the pilot project for an additional year, until June 30, 2013, as part of the Engrossed Substitute House Bill 1175.

If WSDOT receives additional authority to continue using HOT lanes on SR 167, the southbound HOT lane will be extended south to 8th St. E. If authority is not granted, an HOV lane will be built instead and the existing HOT lane will be converted back to a HOV lane after the current authority expires. The project to add a new lane is scheduled to be advertised for construction in 2012 and completed in December 2014.

The HOT lanes pilot project on SR 167 is just one tolling application. In addition to expanding the HOT lanes on SR 167, WSDOT is considering connecting the HOT lanes to the Interstate 405 express toll lanes to create a 50 mile system from Lynnwood to Puyallup.

A visualization of the proposed future direct connection between the I-405 express toll lanes and the SR 167 HOT lanes.

For more information

SR 167 HOT lanes Web site:
www.wsdot.wa.gov/Tolling/SR167HotLanes/

Tolling Web site:
www.wsdot.wa.gov/tolling/

***Good To Go!* Web site and to open an account:**
www.wsdot.wa.gov/GoodToGo/

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