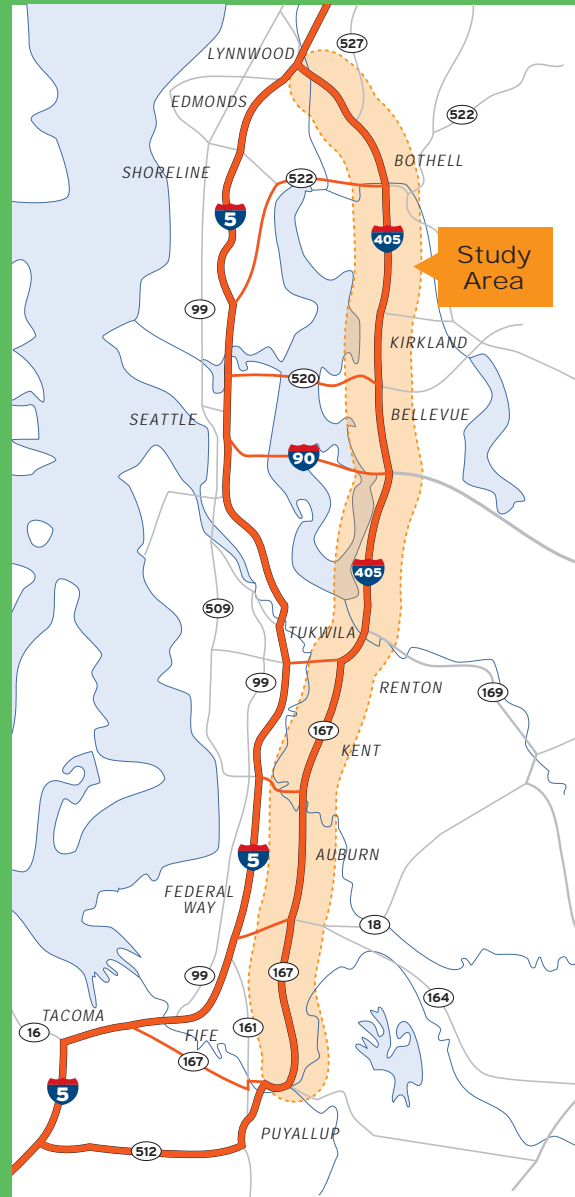




Eastside Corridor Tolling Study



Prepared for the 2010 Washington State Legislature



Table of Contents

Executive Summary	1
1. Eastside Corridor Program Background	5
2. Legislative Direction.....	8
3. Why we are studying express toll lanes	9
4. National perspective on express toll lanes projects	12
5. Study advisory committees and principles	15
6. Express toll lane study options	18
7. Traffic and revenue study findings	24
8. What we're hearing from the public.....	28
9. Financing express toll lanes	33
10. Proposed express toll lanes implementation strategy	38
11. Policy considerations for express toll lane implementation.....	41
12. Next steps.....	44
Appendices	45

Executive Summary

In May 2009, the Washington State Legislature directed the Washington State Department of Transportation (WSDOT) to conduct a traffic and revenue study including potential funding for future improvements and high occupancy toll (HOT) or express toll lanes on I-405. The Legislature directed WSDOT to undertake the following activities as part of the study:

- Develop a plan to operate up to two express toll lanes in each direction on I-405
- Confer with the mayors and city councils for jurisdictions impacted by express toll lanes
- Engage the public to solicit their viewpoints and identify concerns

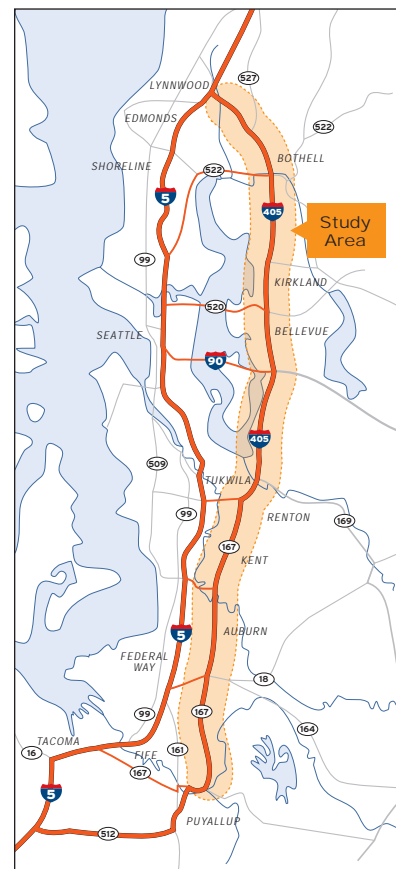
Overall findings

The study's findings were developed through:

- Extensive public involvement and outreach
- Close coordination with our advisory committees, which included Eastside Corridor mayors and other elected officials and local agency officials and staff
- Traffic and revenue modeling of five different study options

Backed by study results and public support, our advisory committees **support moving forward with implementation of Eastside Corridor express toll lanes, beginning with currently funded projects.** This approach allows WSDOT to gain traffic and revenue experience to lower the perceived risks and costs of financing future express toll lane projects.

Eastside Corridor



The 50+ mile Eastside Corridor connects I-405, SR 167, and SR 512, and is one of two north-south corridors in the Puget Sound region. It is expected to serve 1.5 million daily trips by 2030. But today, traffic is so heavy that even the HOV lanes are congested, offering motorists little value during peak-hour travel times.

Eastside Corridor express toll lanes have merit

- Traffic and revenue analyses indicated **more people and vehicles can be moved through the corridor** with express toll lanes, compared to adding general purpose lanes.
- Express toll lanes **provide additional revenue**, which could help fund additional improvements in the corridor.
- **Implementation of express toll lanes on I-405 between SR 520 and I-5 with current funding** would provide traffic and revenue information to assist in the financing of a more extensive Eastside Corridor express toll system.

Public outreach by the numbers:

- WSDOT mailed 220,000 postcards to Eastside Corridor households to advertise the online survey and open houses
 - Thousands of people learned about the study and input opportunities through WSDOT's e-mail listserve
 - Almost 150 people attended one of five open houses held along the 50-mile Eastside Corridor
 - Hundreds of people spoke to Eastside Corridor staff at 10 different summer fairs
 - Over 1,300 people submitted written comments or sent emails to the Eastside Corridor study
 - More than 2,500 people took our Web-based survey
 - 1,000 people participated in a random-sample telephone survey
 - WSDOT conducted four different focus groups of Eastside Corridor users
 - WSDOT briefed over 30 different Eastside Corridor civic, business, and community groups
-

Express toll lanes are successful nationally and locally

Eight express toll lane or HOT lane systems are working across the nation, and another 30 are in the early phases of study or implementation.

- Study results prove that express toll lanes manage congestion and improve travel, efficiently moving many more people through the system
- Survey data shows that public approval ratings increase over time as people use the toll lanes and understand their benefits.

Eastside Corridor advisory committees support express toll lanes

WSDOT established the Executive Advisory Group (EAG), comprised of eastside elected officials, and the Interagency Working Group (IWG), comprised of technical and policy staff reporting to EAG members. The committees met throughout the study, advised WSDOT on its work, and developed a set of implementation principles that are focused on optimizing performance and managing congestion. The **committees support** implementing express toll lanes on the Eastside Corridor.

Public outreach findings

- The more information people are given to understand the benefits of Eastside Corridor express toll lanes, the more they support them.
- The most common reason people support Eastside Corridor express toll lanes is congestion relief.
- Overwhelmingly, people support re-investing toll revenue in the Eastside Corridor.
- People who do not support Eastside Corridor express toll lanes either need additional information to understand the benefits, or would dislike tolling under any circumstance.

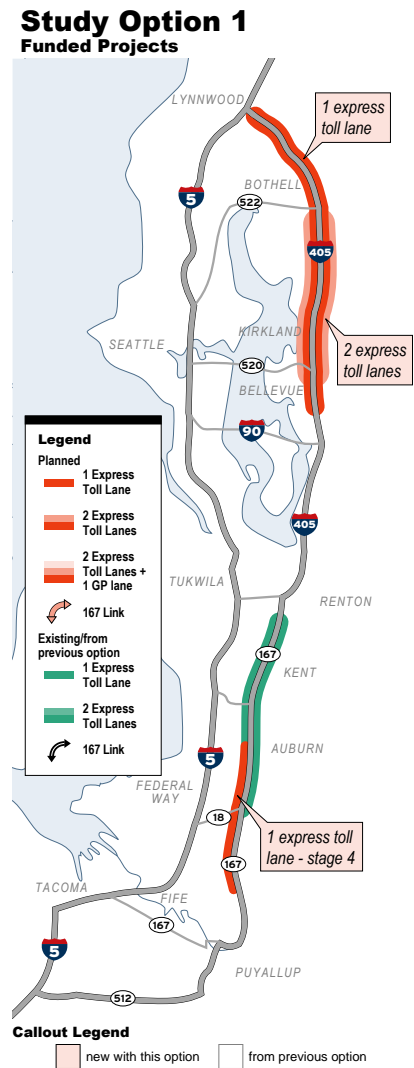
- The most common concerns were equity and fairness, preference for general purpose lanes, effects on transit and the environment, safety, and skepticism about express toll lane benefits.
- People were concerned with changing the high occupancy vehicle (HOV) requirement from two or more (2+) to three or more (3+) people.

Express toll lane study options

With input from the IWG and EAG, WSDOT developed five study options that include incremental improvements to ultimately complete a two-lane I-405 express toll lane system connected to a one-lane SR 167 HOT lane system. Study option 1 includes funded projects, and the remaining study options contain unfunded improvements that incrementally build a complete and continuous Eastside Corridor express toll lane system. A more detailed description of each study option is included in Section 6 of this report.

Traffic and revenue study findings

- Traffic performance (the number of vehicles and people moving at free-flowing speeds of 45 mph to 60 mph in all lanes) improves with each subsequent study option as the system becomes more robust.
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- Express toll lanes allow for more efficient use of all lanes (better traffic performance), when compared with just adding general purpose lanes.
- The traffic and revenue study used the HOV 3+ designation for toll-free use of express toll lanes.
- An HOV 2+ toll-free designation significantly increases tolls due to less space available for those who wish to pay a toll to use the express toll lanes. Setting a maximum toll cap, and/or using a HOV 2+ toll-free designation, will reduce toll revenue collections in the future.

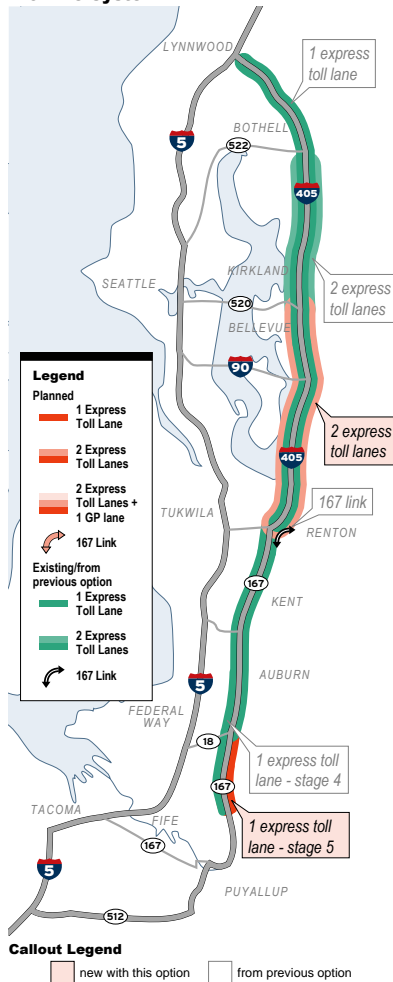


The Eastside Corridor Tolling Study reviews five study options. Study option 1, above, includes currently funded projects. The five study options build upon each other to form a 50 miles express toll lane system under study option 5.

Express toll lanes financing findings

- Tolls can provide significant contributions towards the cost of project construction.
- Without local operating experience, bonding against express toll lane revenue is considered a risky investment as it is a relatively new concept in traffic and tolling operations. Forecasting toll revenue is also complicated by its sensitivity to traffic volumes.
- Assuming tolling begins with the completion of the funded projects on I-405 in the north end of the Eastside Corridor; net toll revenue will provide significant funding for completion of the south end of I-405.

Study Option 4 40-Mile System



The Executive Advisory Group supports moving forward with study option 4 to construct a 40+ mile express toll lane system from the King/Pierce County line to Lynnwood. Moving forward with the funded projects in the north allows WSDOT to gain traffic and revenue experience with express toll lanes.

Implementation strategy

- *The EAG supports implementation of study option 4*, which constructs a 40+ mile express toll lane system from the King/Pierce County line on SR 167 to Lynnwood at the I-405/I-5 interchange. This option includes a two-lane express toll lane system on I-405 between the I-405 SR 167 and SR 522 interchanges.
- *The EAG recommends beginning now with the funded projects in the north end of the Eastside Corridor to allow WSDOT to gain traffic and revenue experience* with express toll lanes, thereby lowering perceived risks and the cost of financing future express toll lane projects.
- Designation of the Eastside Corridor as an eligible toll facility in 2010 supports an earlier start on projects on the south end of the corridor for study option 4.

Next steps

In order to move forward with this strategy, *the following actions* are needed:

- Legislative authorization to implement tolls on I-405
- Federal approval for WSDOT to operate I-405 as a tolled facility
- Legislative authorization to allocate currently unallocated Eastside Corridor construction savings to fill the \$67 million funding gap for Eastside Corridor express toll lane funded projects
- Legislative designation of SR 167 as a permanent eligible toll facility extended south to Puyallup
- Legislative request that WSDOT prepare a more detailed traffic and revenue study and finance plan for Eastside Corridor express toll lane projects

1. Eastside Corridor program background

I-405 is the second most heavily traveled corridor in the state. When combined with State Routes 167 and 512, the **Eastside Corridor** in Snohomish, King, and Pierce counties forms the only north-south alternative to I-5 for travel between Lakewood and Lynnwood. Currently, the Eastside Corridor serves an estimated 1.1 million trips per day, which is projected to increase to approximately 1.5 million trips per day in 2030. Cities and businesses located along the Eastside Corridor depend on it for access to major commercial, manufacturing, and warehouse facilities. The Eastside Corridor also serves major retail destinations in Auburn, Tukwila, Renton, Bellevue, and Lynnwood; and provides important freight connections to vital cross-state corridors.

Today, I-405 is so congested that in some segments of the corridor, commuters are stuck in heavy traffic that lasts up to 10 hours each day. Even the I-405 HOV lanes have lost their effectiveness during peak travel times due to increased demand for space in the HOV lane, offering carpoolers little benefit. With regional growth projected to increase by 1 million people and 700,000 jobs within the next 20 years, the Eastside Corridor faces increasingly more congested traffic conditions.



Parts of the Eastside Corridor experience up to 10 hours of congestion a day. The I-405 commute from Renton to Bellevue (above) is Washington's most congested freeway section, according to WSDOT's 2009 Annual Congestion Report.

Eastside Corridor

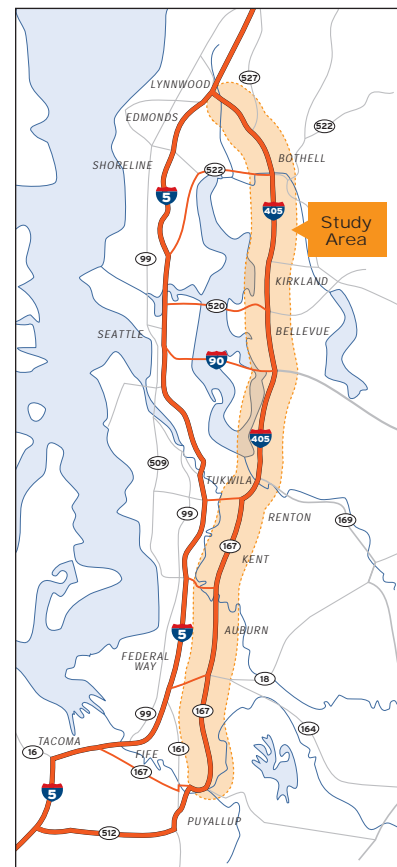
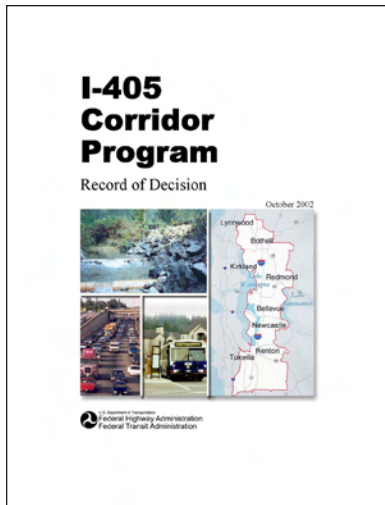


Figure 1: The Eastside Corridor forms a 50+ mile north-south alternative to I-5 for travel between Lakewood and Lynnwood. Today, the Eastside Corridor serves about 1.1 million trips per day, which is projected to increase to 1.5 million in 2030.



WSDOT's three-year environmental impact statement (EIS) development process received approval with a Record of Decision in October 2002 and now serves as the I-405 corridor master plan.

Plans in place to tackle Eastside Corridor growth and congestion

Over the years, WSDOT has looked at a range of transportation options to address the projected increase in population and employment along this corridor. In 2002, WSDOT collaborated with I-405 project partners, including local and federal agencies, 13 cities, and two counties to develop an inclusive and balanced corridor master plan for transportation solutions along the 30-mile corridor. The vision for I-405 included adding two lanes in each direction, improving transit facilities and HOV lanes, adding a bus rapid transit (BRT) system, enhancing the environment, and potentially implementing a two-lane managed lane system. WSDOT is already implementing I-405 master plan projects, with the state investing \$1.5 billion in gas tax funds to address key congestion chokepoints in Bothell, Kirkland, Bellevue, and Renton.

Starting in 2005, the Legislature has provided WSDOT specific directives to continue studying managed lanes on I-405. Figure 2 below shows the history of those legislative directives and managed lanes studies that have occurred since the I-405 master plan was developed in 2002.

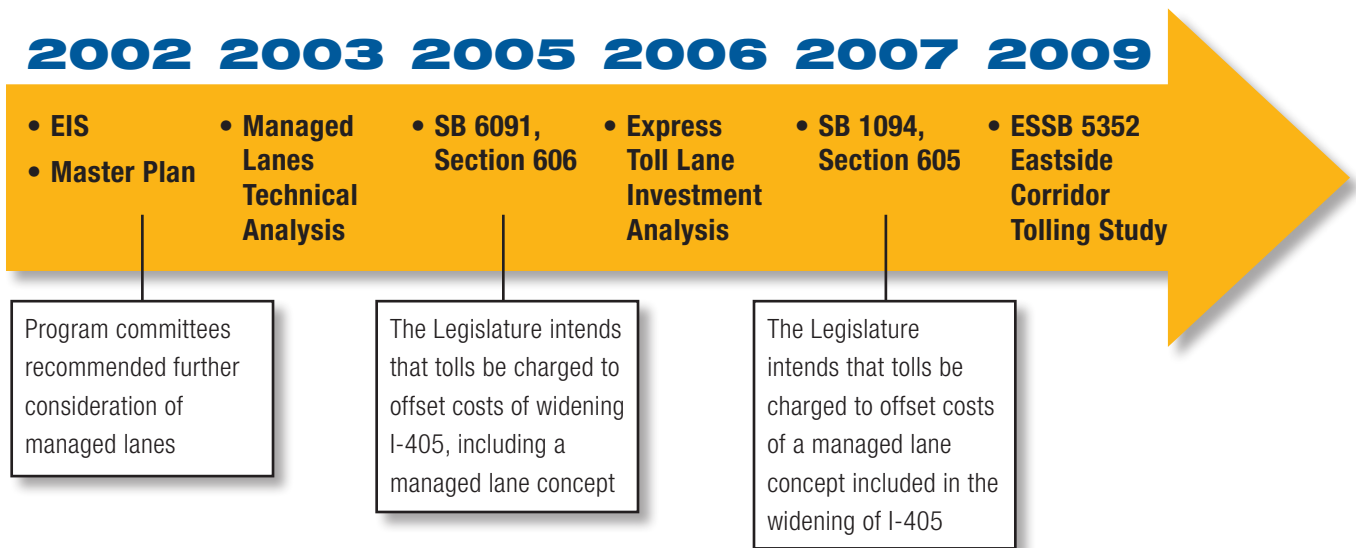


Figure 2: The 2002 I-405 EIS and Corridor Master Plan called for further review of up to two managed lanes. This timeline highlights the development of managed lanes studies from 2002 to the present tolling study.

A more detailed summary of these earlier managed lanes studies and complete copies of the studies are included in Appendix 7.

In 2005, the Legislature authorized Washington’s first managed lanes – the SR 167 High Occupancy Toll Lanes Pilot Project. These lanes opened to traffic in May, 2008. In 2009, WSDOT adopted the SR 167 Valley Corridor Plan, which was developed in partnership with local jurisdictions adjacent to and dependent on SR 167. This plan includes improvement projects for SR 167 to address needs over the next 20 to 30 years. Both the I-405 and SR 167 plans acknowledge the importance of improving the connections between I-405 and SR 167 to form a seamless corridor.



The future direct connection between I-405 and SR 167 is critical to a continuous 50+ mile Eastside Corridor.

The state prioritizes Eastside Corridor congestion relief

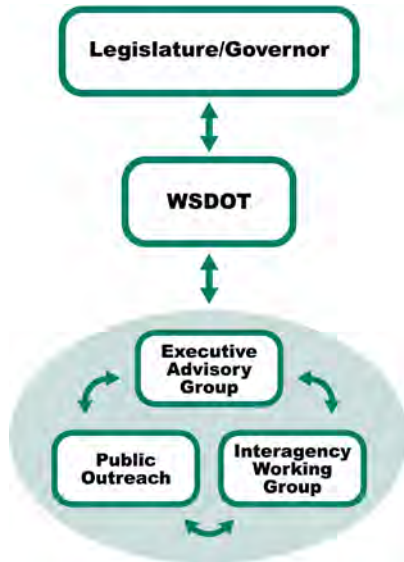
WSDOT has taken steps to address traffic congestion through *Moving Washington*, the state’s 10-year plan for transportation investments and priorities. The plan integrates new capacity, efficiencies, and commute options to address traffic congestion and improve performance of the state’s transportation systems. *Moving Washington* builds on the I-405 and SR 167 corridor plans and proposes connecting I-405 express toll lanes to the SR 167 HOT lanes to create a seamless Eastside Corridor that would:

- *Strategically add new north-south capacity*
- *Manage demand* by supporting carpools, vanpools, transit, and future BRT
- *Operate lanes efficiently* and guarantee reliable speeds in the express toll lanes and improve travel speed in the general purpose lanes benefiting all users
- *Provide funding* by significantly contributing to funding for future improvements in the corridor through toll revenues



Figure 3: *Moving Washington – a strategy for the Eastside Corridor.* The Eastside Corridor is key to the state’s Moving Washington 10-year transportation plan, which integrates new capacity efficiencies and commute options to address congestion. The plan endorses an express toll lane system that offers a reliable trip and sustainable benefits. Today, WSDOT is strategically adding capacity and HOV lanes to help ease congestion and prepare for a bus rapid transit system. On SR 167, WSDOT is conducting a HOT lane pilot project to manage demand and operate lanes more efficiently.

2. Legislative direction



In May 2009, through ESSB 5352, the Legislature directed WSDOT to prepare a traffic and revenue study for I-405 in King and Snohomish Counties that includes funding for improvements and high occupancy toll lanes as defined in RCW 47.56.402, for traffic management. The Legislature directed WSDOT to undertake the following activities as part of the study:

- Develop a plan to operate up to two HOT lanes in each direction on I-405
- Confer with the mayors and city councils in jurisdictions that would be impacted by the implementation of HOT lanes
- Conduct public work sessions and open houses to provide information to citizens and solicit citizen views
- Provide a report to the Governor and Legislature by January 2010

WSDOT developed the Eastside Corridor Tolling Study to address the Legislature's request. This report summarizes our approach and findings, and presents recommendations for a phased implementation of express toll lanes on the Eastside Corridor.

To confer with the Eastside Corridor mayors and other elected officials, WSDOT formed the Executive Advisory Group. The following individuals or their representatives participated in the process, and their staff was engaged through the Interagency Working Group.

City of Algona Mayor David Hill

City of Auburn Mayor Pete Lewis

Auburn Public Works Director Dennis Dowdy

City of Bellevue Mayor Grant Degginger

City of Bothell Mayor Mark Lamb

Dan Mathis, Federal Highways Administration Division Administrator

Rick Krochalis, Federal Transit Authority Region 10 Administrator

City of Kent Mayor Suzette Cooke

Harold Taniguchi, King County Department of Transportation

King County Councilmember Reagan Dunn, Dist. 9

City of Kirkland Mayor James Lauinger

Newcastle Councilman Sonny Putter

City of Pacific Mayor Richard Hildreth

Pierce County Councilman Roger Bush, Chair, Dist. 3

Puget Sound Regional Council Board President Sue Singer

City of Puyallup Mayor Don Malloy

Renton City Councilman Randy Corman

Snohomish County Councilman Mike Cooper

Sound Transit Board Member Mary-Alyce Burleigh

City of Sumner Mayor Dave Enslow

City of Tukwila Mayor Jim Haggerton

Washington State Representative Dan Roach, District 31

Washington State Representative Larry Springer, District 45

Washington State Senator Rodney Tom, District 48

Washington State Representative Marcie Maxwell, District 41

Washington State Transportation Commissioner Dick Ford

3. Why we are studying express toll lanes

The Eastside Corridor currently experiences heavy traffic and congestion in some parts of the corridor for most of the day. Morning commuters traveling from Tukwila to Bellevue experience some of the worst congestion in the state, according to WSDOT’s annual congestion reports. During peak-hour travel times, when demand for travel is at its highest, travel lane performance is at its lowest.

Due to this high demand, some sections of I-405’s HOV 2+ lanes no longer meet WSDOT’s stated performance standards for maintaining free-flowing speeds at least 90% of the time during the morning and afternoon peak commutes. This performance breakdown causes less efficient and reliable trips for carpools, vanpools, and transit. The black and red segments shown in Figure 4 are currently not meeting WSDOT’s HOV performance standards, with the black segments indicating the areas of greatest HOV breakdown.

HOV performance on the Eastside Corridor will continue to deteriorate as regional population, employment, and traffic grows. *Moving Washington* includes the use of express toll lanes and HOT lanes as one way to reduce traffic congestion. It also recognizes that successful conversion of an over-utilized HOV lane to a HOT or express toll lane would require an increase in the HOV occupancy requirements to work effectively.

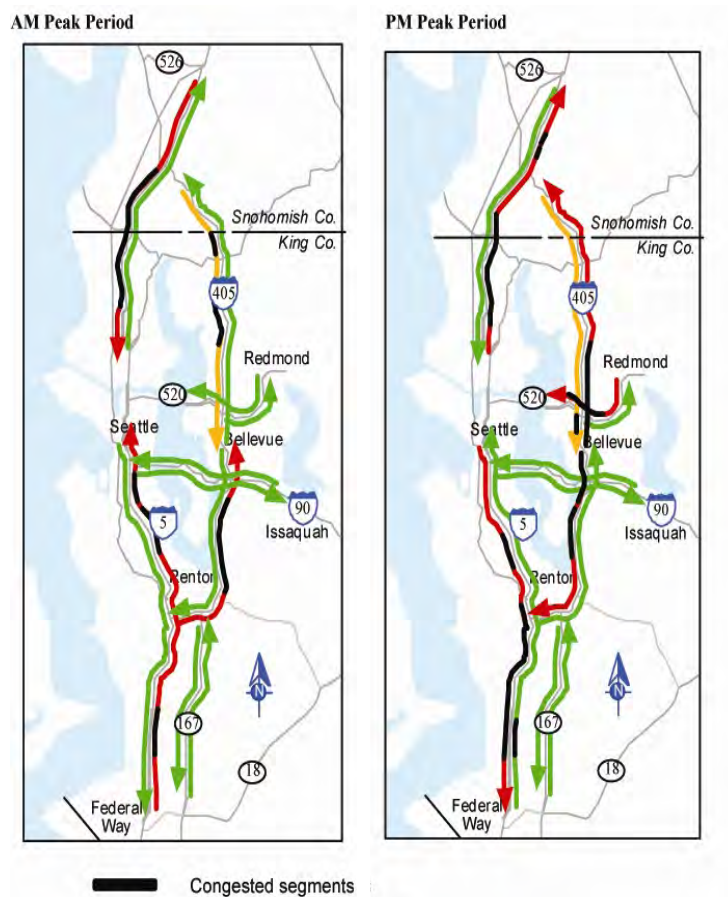


Figure 4: Black and red segments on these 2005 maps fail WSDOT’s HOV performance standard of 45 mph or greater at least 90% of the time during peak travel hours.

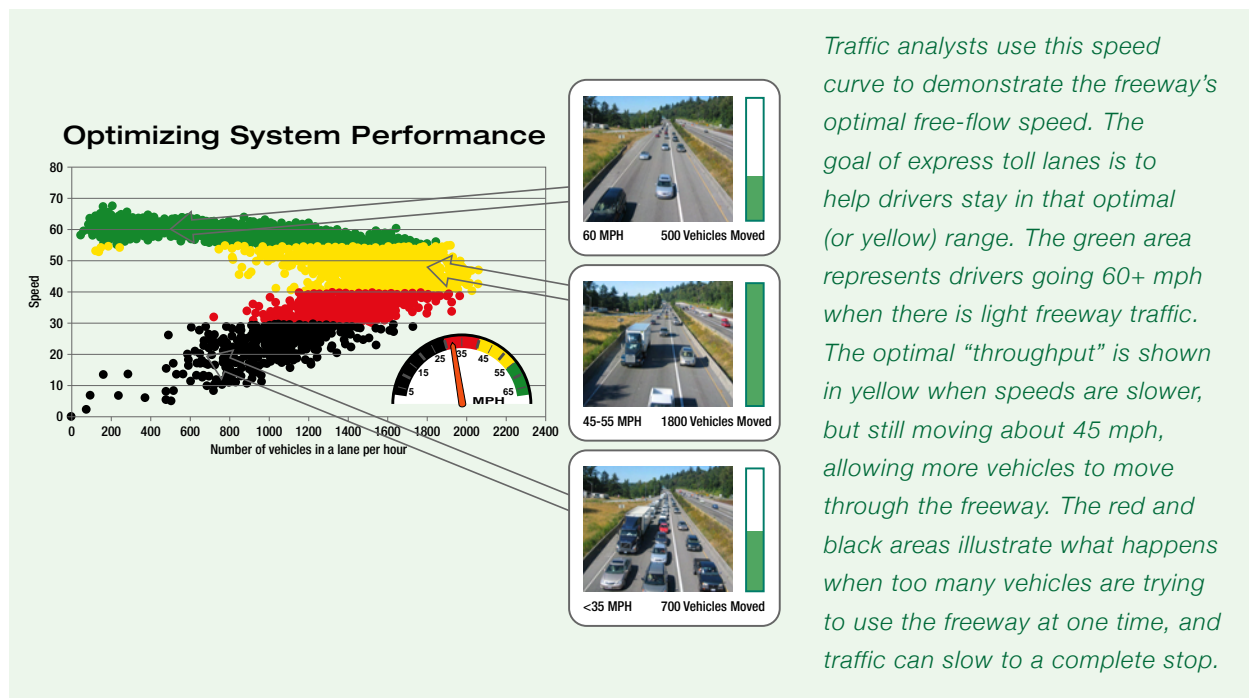
Express toll lanes provide a choice

Eastside Corridor express toll lanes would operate as an expressway within a freeway, providing drivers a reliable choice when they cannot afford to be late. The express toll lanes would be separated from the general purpose lanes with a two- to four-foot buffer and restrict access to designated locations to ensure free-flowing traffic. WSDOT would use dynamic tolls to manage the number of vehicles in the express toll lanes. Drivers would pay tolls with the same *Good to Go!* electronic tolling technology WSDOT currently uses on the Tacoma Narrows Bridge and the SR 167 HOT lanes.

Moving Washington proposes converting HOV lanes to toll lanes as one method to operate freeways more efficiently. Two-lane express toll lane systems can operate even more efficiently by providing additional lane capacity and managing demand. In addition, based on modeled I-405 traffic performance across all lanes, WSDOT found that express toll lanes improve overall traffic performance.

How do express toll lanes work?

Express toll lanes provide up to two toll-free lanes for carpools, vanpools and buses, and give non-HOV vehicles the option to pay a toll to use the lanes for a faster, more reliable trip when they need it most. The toll rates adjust electronically according to traffic levels (like supply and demand) to ensure that the express toll lanes are free flowing even when the regular lanes are congested. Non-HOV vehicles pay the electronic toll with a *Good To Go!* transponder. There are no toll booths.



By using dynamic pricing to manage the traffic entering the lanes, express toll lanes are able to operate in the top half of the curve, avoiding slowdowns. If express toll lane volumes are low, lower toll rates are used to help fill the lane to the optimal level. When demand increases, toll rates increase to avoid exceeding the optimal level. The goal is to keep express toll lanes traffic in the 45-60 mph optimal range.

Dynamic tolls help manage demand

Dynamic tolls manage demand for travel in the express toll lanes and keep them free-flowing. To put it simply, dynamic tolls are based on supply and demand for space in the express toll lanes. When space is available, tolls are low for non-HOV vehicles to use the express toll lane; when space decreases, the tolls increase reducing the number of non-HOV vehicles entering the lane. With dynamic tolls, real-time traffic speed and volume in the express toll lanes are used to determine the toll amount and manage the number of vehicles in the lanes. Vehicles entering the express toll lanes pay the toll rate at the time they enter the lane and will not be charged more if the toll rate increases while they are driving in the lane. Not everyone will use the express toll lanes all the time, but most everyone will choose to use them some of the time. Additional information on how express toll lanes and dynamic tolls work is included in Appendix 1.



SR 167 HOT Lanes Pilot Project

What we have learned from the SR 167 HOT Lanes Pilot Project

The SR 167 HOT Lanes Pilot Project provided WSDOT with valuable experience in the operation and effectiveness of toll lanes. WSDOT opened the SR 167 HOT lanes in May, 2008 by converting a portion of the existing HOV lanes, one in each direction, to HOT lanes. Transit, motorcycles, and 2+ HOVs use the HOT lanes toll-free. Single occupant vehicles (SOV) can electronically pay a dynamically-set toll to drive in the HOT lanes.

Already, the SR 167 HOT Lanes Pilot Project is demonstrating how dynamic tolls improve traffic flow in both the tolled and general purpose lanes. After one year of operation, the HOT lanes on SR 167 have made the highway's previously underused HOV lane more efficient, while maintaining free-flowing traffic speeds in the HOT lane and improving flow and travel time in the general purpose lanes. While revenue collections have not been as high as initially projected, average monthly revenue is increasing and is expected to continue to increase as more drivers become comfortable with tolling operations, transponder ownership increases, and traffic demand in the region grows.

Results from the first year of operation of the SR 167 HOT Lane Pilot Project

- HOT lane traffic speed was faster than 45 mph during peak hours 99.2% of the time.
 - Average time savings during weekday peak-hour travel was:
 - 8 minutes in the northbound HOT lane, and
 - 4 minutes in the southbound HOT lane.
 - Average traffic speeds in the general purpose lanes increased by 10%.
 - Average daily traffic volumes in the HOT lanes continue to increase.
-

4. National perspective on express toll lanes projects

WSDOT continues to gather information from other projects across the nation that have implemented HOT or express toll lanes, which use tolls to manage demand and reduce traffic congestion. The map shown in Figure 5 below shows the location and status of toll lane projects. There are currently eight HOT or express toll systems in place, most of which are on their second phase of implementation due to the success of their initial phases. Across the nation, another 30 express toll lane or HOT lane projects are either being implemented or feasibility studies are being conducted for them.

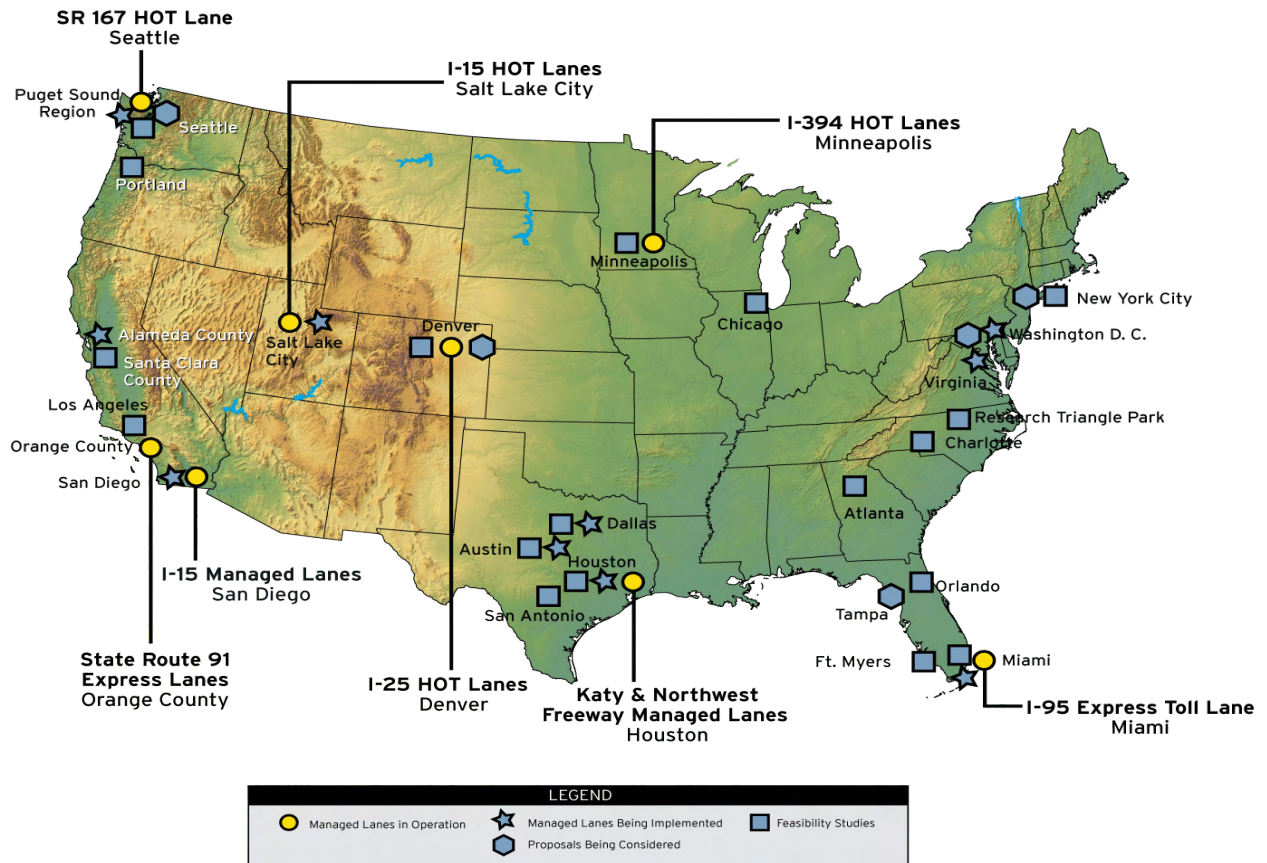


Figure 5: US express toll lane and HOT lane locations and status.

Toll lanes improve traffic performance

Performance results from active tolling projects prove that tolling works well to manage traffic congestion and improves lane speeds in both the tolled and general purpose lanes. For example, average lane speeds on I-95 in Florida have improved dramatically since opening a two-lane express toll system in December, 2008. Adding freeway capacity and switching to an HOV 3+ toll-free designation improved speeds from 18 mph to 57 mph in the one HOV lane that was converted to a two-lane express toll lane. Speeds in the general purpose lane improved from 19 mph to 40 mph. In addition, I-95 has more users paying lower tolls than projected, and is exceeding revenue projections. After six months of operation, the I-95 express toll lanes have produced \$3.6 million in gross revenue. The results of the I-95 express toll lane project are worth noting because they are similar to the system under consideration for the Eastside Corridor. The I-95 express toll lanes are being implemented in a phased approach, add capacity to an existing HOV system, and are operating a two-lane express toll lane system with a HOV 3+ requirement along with multiple adjacent general purpose lanes. The next phase of the I-95 express toll lanes are opening in January 2010.



In Florida, average lane speeds on I-95 have improved dramatically since opening a two-lane express toll system in December, 2008.



Support for I-15 express toll lanes in San Diego increased after the lanes opened.

Public approval increases after project implementation

WSDOT found that generally, public approval ratings for HOT and express toll lane projects improve over time as the public begins to use the tolled lanes and understands how they personally benefit from them. For example, phone surveys conducted for the I-15 express toll lane project in San Diego found that approval of the express toll lane system increased dramatically after implementation. These results are similar for the SR 167 HOT lanes where only 37% thought that

Public support for tolled lanes increases after implementation

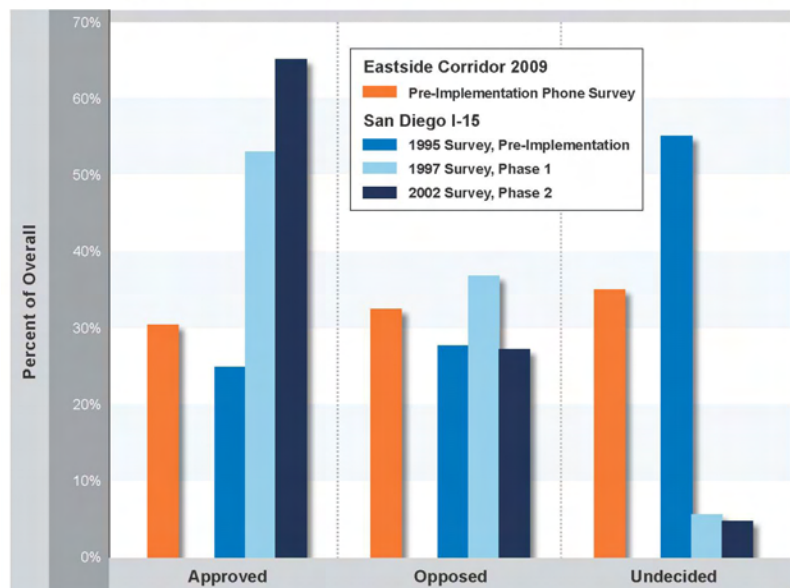


Figure 6: D. Ungemah, M. Swisher, and D. Tighe. Discussing High Occupancy Toll Lanes with the Denver, Colorado, Public, Transportation Research Record 1932. Transportation Research Board, Washington, DC. 2005.

allowing single drivers the option to choose to pay to use the HOV lane was a good idea before the HOT lanes were implemented, compared to 61% after implementation.

Additionally, a 2003 phone survey conducted for the I-15 project in San Diego found that both toll lane users and non-users believe that the single, most effective way to reduce congestion is by extending the existing express toll lanes on I-15.

Financing express toll lane projects presents challenges

Financing express toll lane projects is complicated by the challenges of predicting toll revenues in an optional and dynamic toll project. Nationally, only two express toll lane projects have obtained project financing with bonds backed by express toll lane revenues--SR 91 in Orange County, California, and the I-495 Capital Beltway in northern Virginia.

- California's SR 91 express toll lanes opened in 1995. They use tolls that vary throughout the day on a set schedule, rather than dynamic tolls that adjust based on toll lane traffic speed and density. At opening, HOV vehicles were tolled, but today HOV 3+ vehicles are toll-free, during all but the busiest time periods. SR 91's original financing was based on its scheduled variable tolls (which made revenue forecasting easier), lack of toll exemptions at its opening, and sizeable private investment.
- Virginia's I-495 Capital Beltway HOT lanes are currently under construction. The financing used to construct this project was put in place in 2008. The 80-year concession public-private partnership, which funds this \$2 billion project, is comprised of State of Virginia grants (21%), toll-backed debt including a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan (59%), and private equity plus interest earnings (20%). I-495 HOT lanes will use revenue earned from dynamically-set tolls to pay back loans and bonds backed by its private partners. The I-495 HOT lanes will use a HOV 3+ toll-free designation.



I-495 Capital Beltway in Virginia.

5. Study advisory committees and principles

To conduct the Eastside Corridor tolling study, WSDOT used a committee process similar to the successful I-405 master plan committee process used in 2002. The purpose of the committees was to share information with and seek input from local elected officials and agency staff. WSDOT established the Executive Advisory Group (EAG) which is comprised of legislators, mayors, city and county council members; and representatives from the Washington State Transportation Commission, the Puget Sound Regional Council (PSRC), and local transit agencies. To solicit technical input, WSDOT established the Interagency Working Group (IWG) comprised of technical and policy staff from corridor cities, and staff from federal, state, and local agencies.

Craig Stone, WSDOT Toll Division Director, chaired both committees. Each committee met once in four different Eastside Corridor communities (Kirkland, Bellevue, Renton, and Kent). Each meeting of the EAG was open to the public and the media, and provided time for public comment. The IWG meetings were scheduled to precede the EAG meetings so that staff members could brief EAG members from their jurisdictions or agency prior to their upcoming meeting. WSDOT also conducted two work sessions with a sub-group of the IWG, comprised of transit agency representatives, to specifically address transit issues related to the implementation of express toll lanes on the Eastside Corridor. These meetings provided an opportunity for discussions between WSDOT and transit agency staff on operations and the role of transit within an express toll lane system. A summary of these two meetings, and principles provided by the transit sub-group, are included in Appendix 6(d).



Meeting three of the Eastside Corridor Executive Advisory Group at Bellevue City Hall.

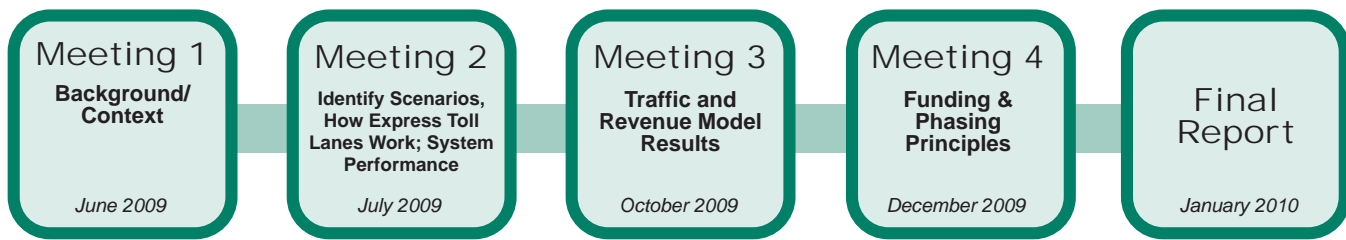


Figure 7: Meeting schedule and topics for the EAG and IWG

Eastside Corridor express toll lane implementation principles

- *Performance – Optimize freeway performance*
 - *Funding – Leverage toll revenue to maximize corridor improvements*
 - *Implementation – Develop a 10-year strategy for a 40+-mile system (study option 4)*
 - *Public Outreach – Improve understanding before implementation*
-

WSDOT planned the EAG and IWG meetings to correspond with each major stage of the study. Figure 7 shows the topic of each meeting. Meetings were structured to provide information and seek input from the two groups on the Eastside Corridor express toll lanes study. After each set of meetings, WSDOT incorporated the input and guidance received into further analysis of its data for the study. WSDOT also received valuable information on how the express toll lane concept would likely be received by group members and their constituents.

The IWG and EAG provided input on many critical components of the tolling study, including helping to determine our five study options, which are further discussed in Section 6 of this report. They also provided input on our financial analysis, which is described in Section 9. The proposed implementation strategy described in Section 10 is a direct result of the input WSDOT received from the IWG and EAG. To summarize their work, the IWG and EAG developed implementation principles discussed below.

Express toll lane implementation principles

The final result of the IWG and EAG meetings was to update the 2002 I-405 managed lanes principles, developed as part of the I-405 master plan, to include current priorities of Eastside Corridor mayors and other elected officials. WSDOT will use the principles to guide future implementation of express toll lanes to achieve the overall vision of *managing congestion by optimizing new capacity and freeway lane performance*. The Eastside Corridor express toll lane implementation principles are:

Performance – Optimize freeway performance

1. Move more people
2. Manage the corridor to improve speed and reliability to free-flow conditions (45 mph to 60 mph)
 - May require a phased approach to changing minimum HOV (2+, 3+) occupancy
3. Prioritize and accommodate transit performance and HOV users
4. Maximize throughput to reduce diversion to arterials or neighborhood streets
5. Improve mobility for freight and drivers in all lanes

Funding – Leverage toll revenue to maximize corridor improvements

6. Retain tolling revenue in the Eastside Corridor
7. Secure financing with fair terms, similar to other corridors
8. Exempt transit and carpools from tolls
9. Continue to monitor national and regional trends to better understand how to fund toll projects
10. Prioritize funding within the corridor to leverage toll revenue with other funding

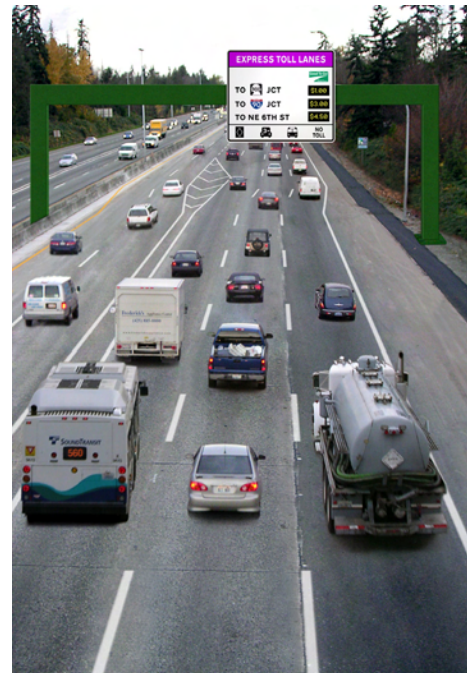
Implementation – Develop a 10-year strategy for a 40+-mile system (study option 4)

11. Express toll lanes should be built in incremental steps and begin with funded projects
12. Express toll lanes should fit within long-range regional planning and the regional tolling system
13. Sensitivity to construction phasing on a regional level

Public Outreach – Improve understanding before implementation

14. Grow awareness, experience, and support by engaging the public, local agencies, and elected officials
15. Continue public education around tolling operations and improve access to Good to Go! accounts.

Complete EAG and IWG rosters, meeting summaries, and meeting materials are included in Appendices 6(a) and 6(b). Additional letters of support from local jurisdictions who participated in these advisory committees are included in Appendix 6(e).

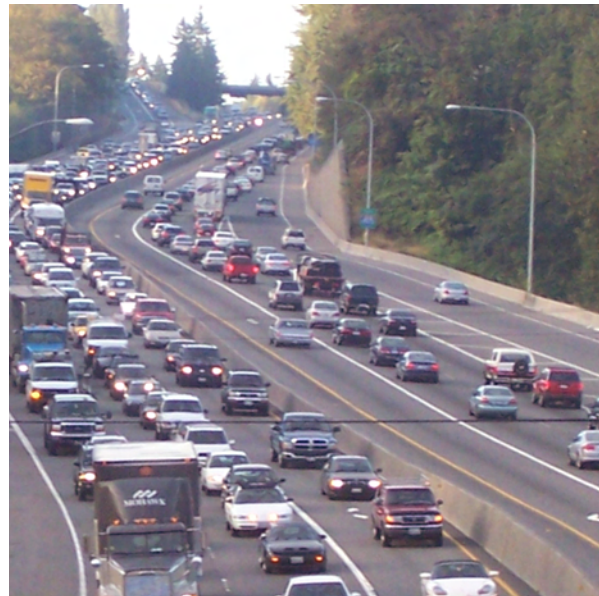


Future vision for a two-lane Eastside Corridor express toll lane system.

6. Express toll lane study options

WSDOT worked with the IWG and the EAG to develop five different study options to analyze how express toll lanes could be implemented on the Eastside Corridor. All five study options are compatible with the I-405 master plan and are stepping stones towards its completion. The five study options start with building funded projects, and add improvements successively to create a seamless Eastside Corridor express toll lane system. Each study option includes incremental improvements from the previous one to ultimately complete a two-lane I-405 express toll lane system connected to a one-lane SR 167 HOT lane system. The five options were discussed with the IWG and the EAG, and presented to the public at open houses in November.

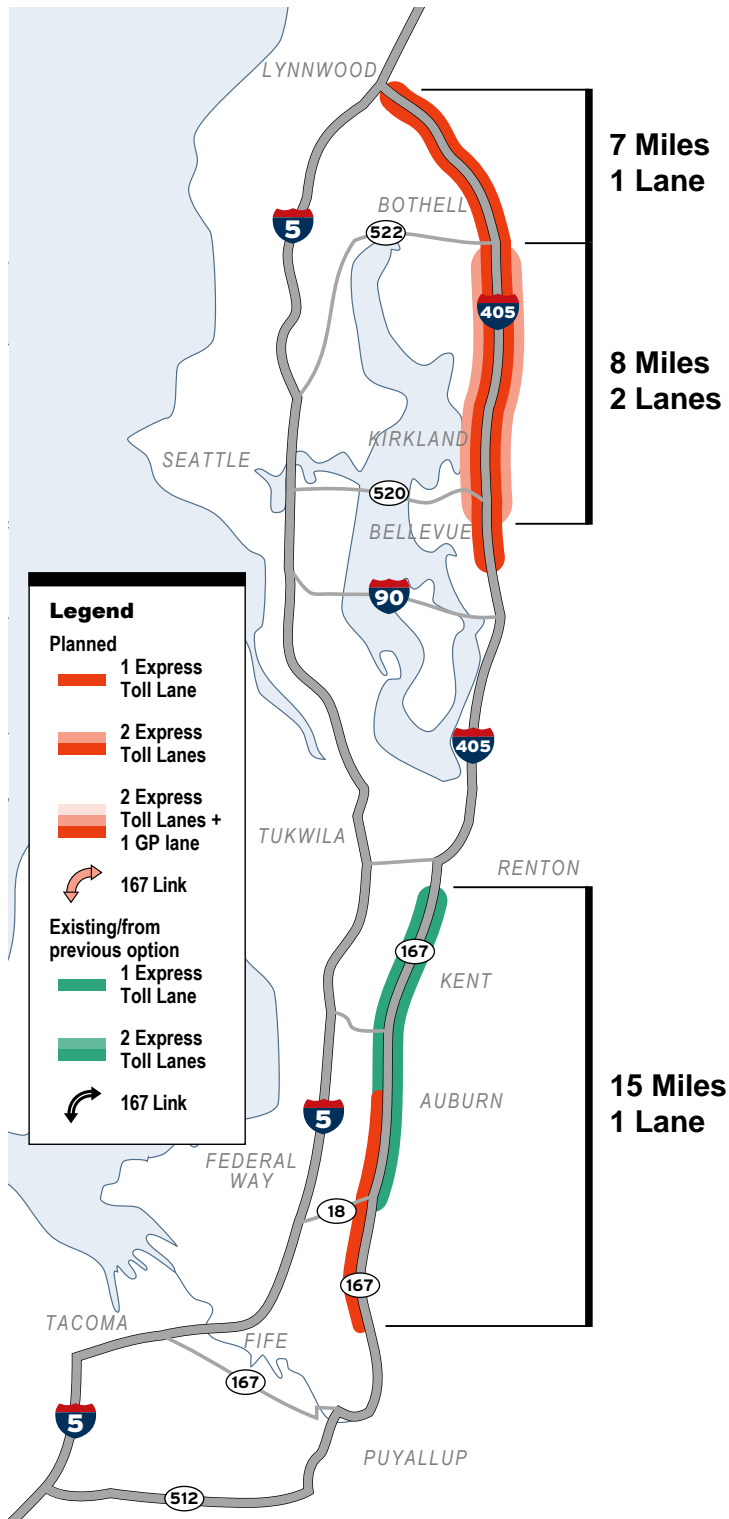
All study option analyses assume that HOV occupancy of three or more (HOV 3+) is required to use the express toll lanes toll-free. The following section provides specific information for each study option including project descriptions, capital costs, and available funding. Information addressing the implications of setting toll caps or maintaining a two or more (HOV 2+) toll-free designation is discussed in Section 11 of this report.



Current traffic volumes on I-405 cause congested HOV and general purpose lanes.

Project capital costs

Project capital costs for each study option are those “most likely” costs (70% likelihood) determined during the cost-estimating validation process (CEVP) completed in June 2009. To facilitate comparison, all projects assume substantial completion no later than January 2015. Where we have available project funding, we have listed the amount shown in WSDOT’s Capital Program Management System. Additional information on funding and financing needs is included in Section 9 of this report.



Study Option 1 Funded Projects

Study option 1 includes currently funded projects and creates a two-lane express toll lane system on I-405 between SR 520 and SR 522, and converts the existing HOV lane to an express toll lane between SR 522 and I-5 in Lynnwood. It also extends the southbound HOT lane on SR 167 to the King/Pierce County line.

Study Option 1 - Project Costs and Funding

Costs

I-405 Project Elements

- SR 520 to I-5 Widening
\$388 million

SR 167 Project Elements

- Stage 4 SB HOT Lane Extension
\$ 82 million

Total Cost \$470 million

Funding

I-405 Funding \$ 321 million

SR 167 Funding \$ 82 million

Total Funding \$ 403 million

Funding Gap \$ 67 Million

Study Option 2 Separate Systems

Study option 2 creates a 25-mile system on I-405 between Renton and Lynnwood by converting the existing HOV lane between Renton and Bellevue into a single express toll lane, creating a two-lane system between SR 520 and SR 522, and creating a one lane system between SR 522 and I-5. On SR 167, the southbound HOT lane is extended to the King/Pierce County line.

Study Option 2 - Project Costs and Funding

Costs

I-405 Project Elements

- SR 520 to I-5 Widening
\$388 million
- SR 167 to SR 520 Conversion
\$ 70 million

SR 167 Project Elements

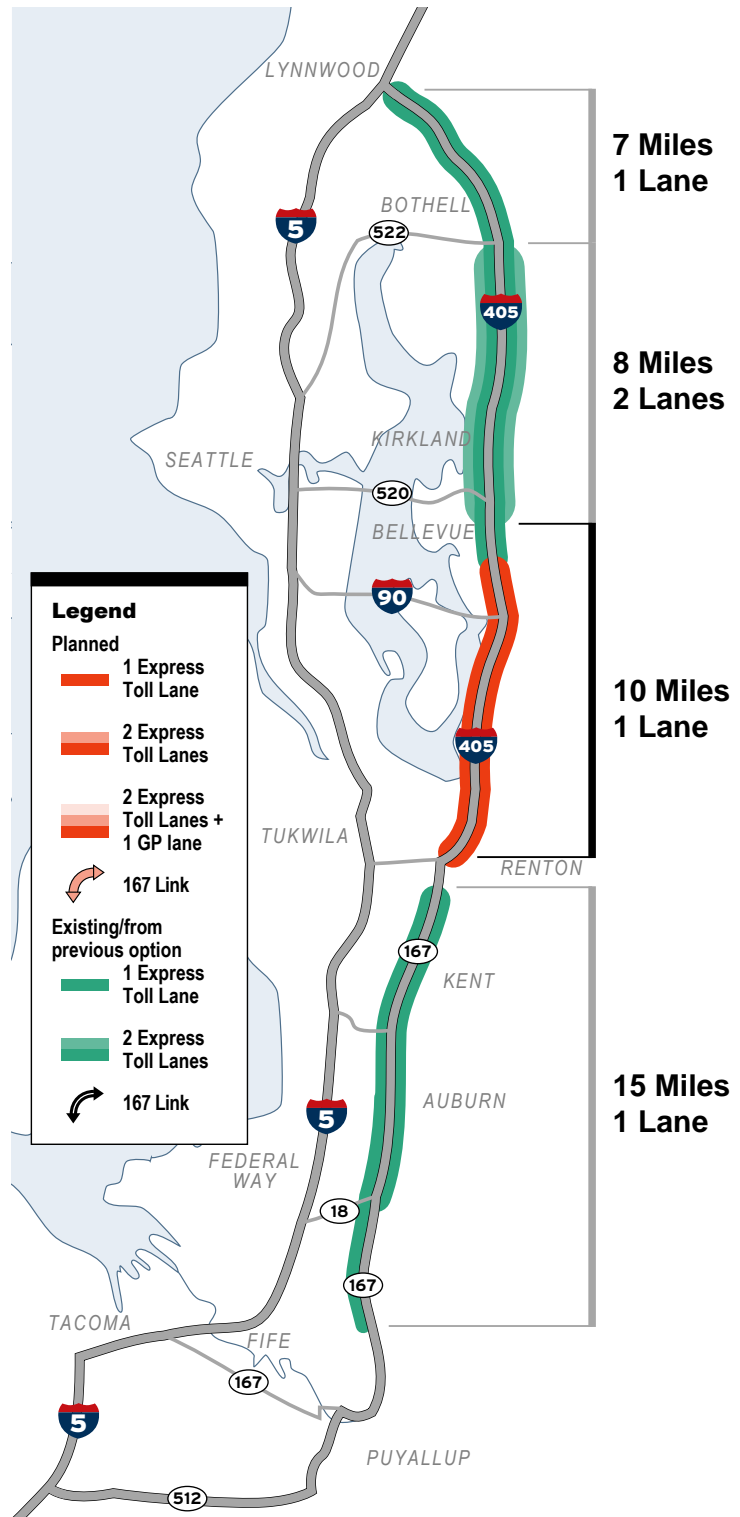
- Stage 4 SB HOT Lane Extension
\$ 82 million

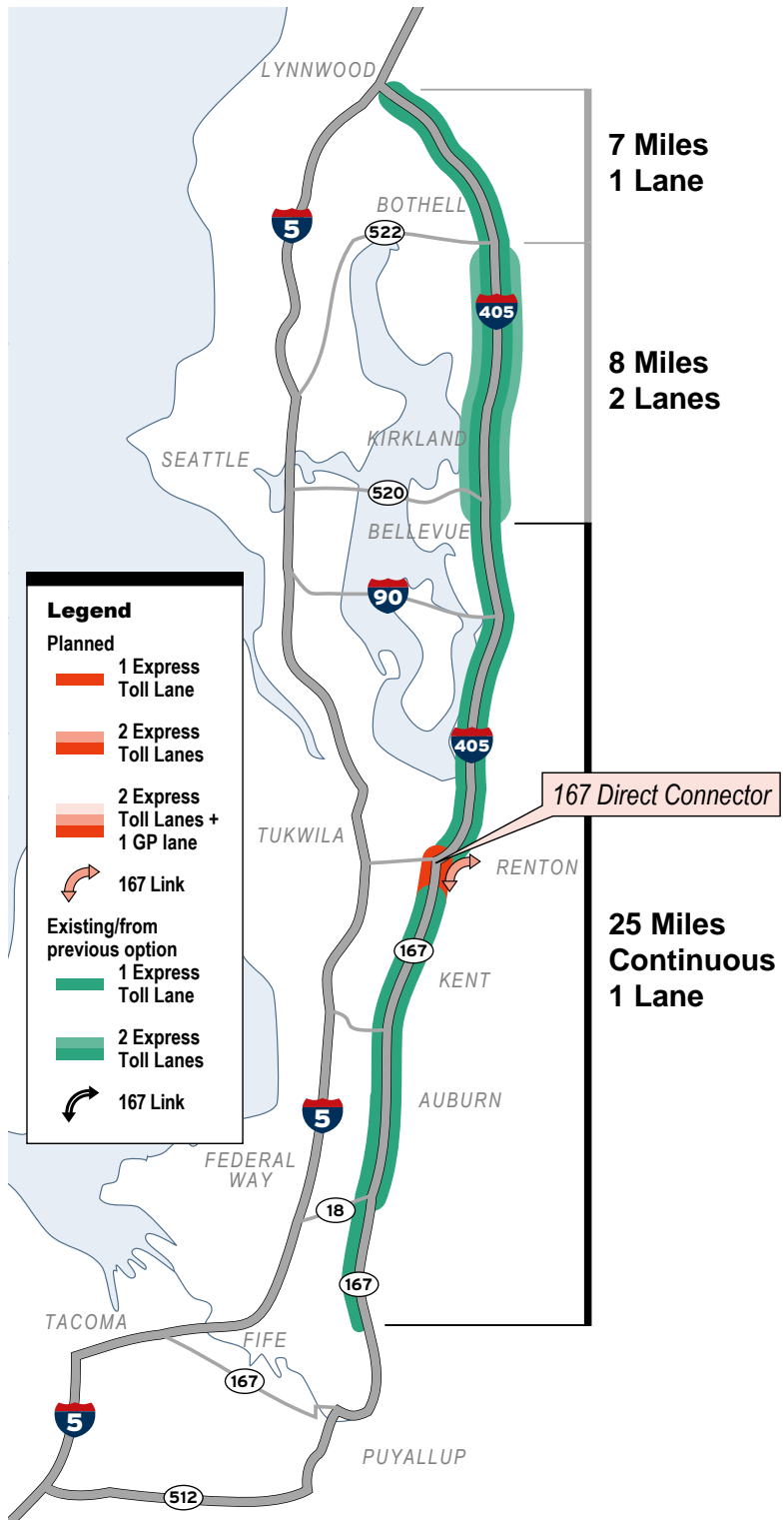
Total Cost **\$540 million**

Funding

I-405 Funding \$ 321 million
SR 167 Funding \$ 82 million
Total Funding **\$ 403 million**

Funding Gap **\$ 137 Million**





Study Option 3 Connected System

Study option 3 creates a continuous Eastside Corridor express toll lane system from the Pierce/King County line on SR 167 to the I-405/I-5 interchange in Lynnwood. New direct connector ramps between SR 167 and I-405 allows the two toll lane systems to work together effectively and efficiently. The I-405 express toll lane system is a single express toll lane between the SR 167/I-405 interchange and SR 520, a two-lane system between SR 520 and SR 522, and a single express toll lane between SR 522 and I-5. On SR 167, the southbound HOT lanes are extended to the King/Pierce County line.

Study Option 3 - Project Costs and Funding

- Costs**
- I-405 Project Elements*
- SR 520 to I-5 Widening \$ 388 million
 - SR 167 Direct Connection \$ 490 million
 - SR 167 to SR 520 Conversion \$ 70 million

- SR 167 Project Elements*
- Stage 4 SB HOT Lane Extension \$ 82 million

Total Cost \$1,030 million

Funding

I-405 Funding \$ 321 million
SR 167 Funding \$ 82 million
Total Funding \$ 403 million

Funding Gap \$ 627 Million

Study Option 4 40+-Mile System

Study option 4 creates a two-lane express toll system on I-405 between SR 167 in Renton and SR 522 in Bothell, with a single express toll lane between SR 522 and I-5. On SR 167, the HOT lane system in both directions is extended to the King/Pierce County line. With the direct connection ramp between the two systems, this option results in a robust, 40+-mile express toll lane system.

Study Option 4 - Project Costs and Funding

Costs

I-405 Project Elements

- SR 520 to I-5 Widening
\$ 388 million
- SR 167 Direct Connection
\$ 490 million
- SR 169 to SR 520 Widening
\$ 960 million

SR 167 Project Elements

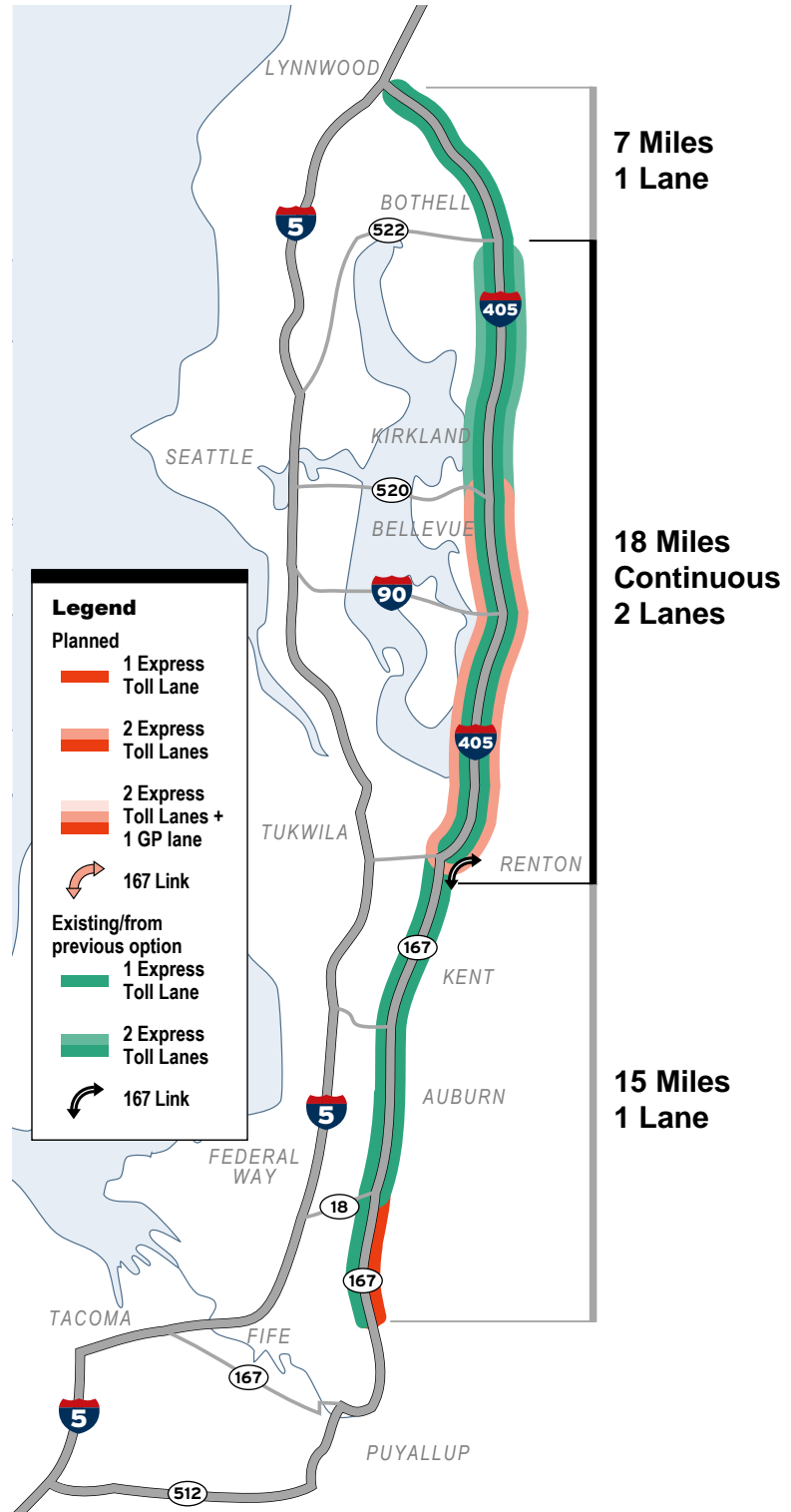
- Stage 4 SB HOT Lane Extension
\$ 82 million
- Stage 5 NB HOT Lane Extension
\$ 30 million

Total Cost \$1,950 million

Funding

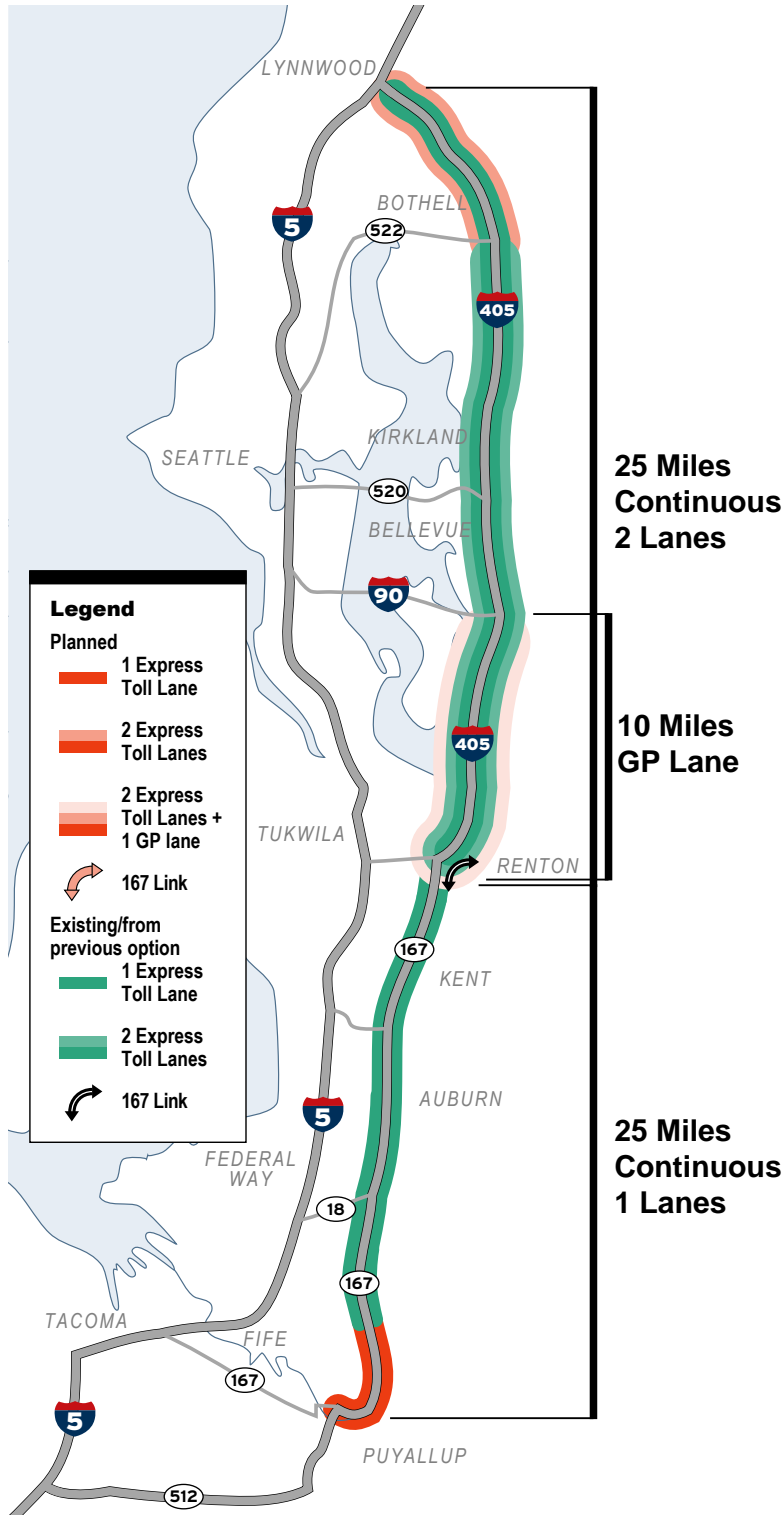
I-405 Funding \$ 321 million
 SR 167 Funding \$ 82 million
Total Funding \$ 403 million

Funding Gap \$ 1,547 Million



Study Option 5 50-Mile System

Study option 5 constructs a complete two-lane express toll lane system on I-405 between the SR 167/I-405 interchange and I-5 in Lynnwood. On SR 167, it extends the HOT lanes to Puyallup, completing the Eastside Corridor express toll lane system from Puyallup to Lynnwood. This option includes the direct connection ramps between SR 167 and I-405, and a new general purpose lane between Renton and Bellevue.



Study Option 5 - Project Costs and Funding

Costs

I-405 Project Elements

- SR 520 to I-5 Widening \$ 388 million
- SR 522 to I-5 Widening \$ 678 million
- SR 167 Direct Connection \$ 490 million
- SR 167 to I-90 Implementation Plan \$ 2,085 million

SR 167 Project Elements

- Stage 4 NB HOT Lane Extension \$ 82 million
- Stage 5 SB HOT Lane Extension \$ 30 million
- Stage 6 SB/NB HOT Lane Extension \$ 350 million

Total Cost \$4,103 million

Funding

I-405 Funding \$ 321 million
 SR 167 Funding \$ 82 million
Total Funding \$ 403 million

Funding Gap \$ 3,700 Million

7. Traffic and revenue study findings

WSDOT retained Wilbur Smith Associates to assist with the planning-level traffic and revenue forecasting and analysis. Wilbur Smith Associates developed models to determine the demand for available tolled and general purpose lane space for each study option. The traffic forecasting was based on:

1. Existing traffic volumes
2. PSRC's Transportation 2040 Traffic Demand Model (which projects very high traffic demand in the corridor)
3. People's willingness to pay for a faster trip based on results from the I-405 Managed Lanes Stated Preference Survey conducted in 2006.

Our traffic study was also based on the following assumptions:

- HOV 3 + vehicles use the express toll lanes toll free. Note: The effect of HOV 2+ toll-free was also studied; those results are included in Section 11 of this report.
- The minimum toll when the facility opens is \$1 (year of expenditure dollars).
- Minimum tolls will increase with inflation over the life of the facility.
- There are no maximum tolls. The toll is not capped and the lanes are not closed to non-HOV vehicles at an arbitrary point. Note: The effect of a toll cap was also studied; those results are included in Section 11 of this report.
- Heavy trucks and trailers are not toll-eligible vehicles.
- The facility will operate from 5 a.m. to 8 p.m. We anticipate current HOV lane hours being extended due to worsening traffic congestion in the future.
- The user will see rates rounded to the nearest nickel.

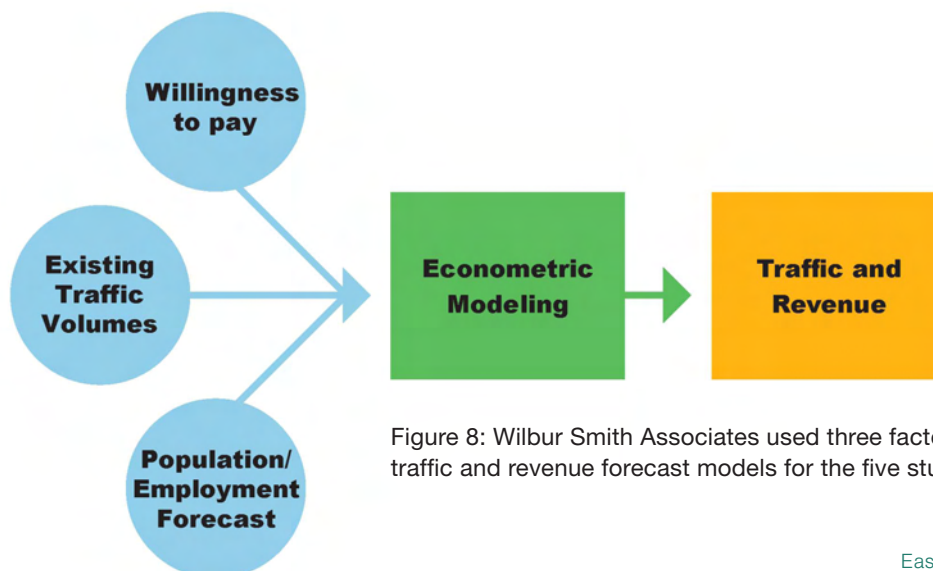


Figure 8: Wilbur Smith Associates used three factors to build the traffic and revenue forecast models for the five study options.

Travel performance improvements

For each study option, we used the traffic models to measure travel performance. The models estimated the number of vehicles and people traveling at free-flow speeds (45 mph to 60 mph) across all lanes--both express toll lanes and general purpose lanes. For comparison purposes, we also measured travel performance by operating the study options with a HOV/general purpose lane system. Figure 9 below shows this comparison and notes the percentage traffic performance is improved when completed projects are tolled rather than not tolled. Figure 9 also shows that based on traffic demand conditions in 2020:

- Traffic performance improves with each study option as the express toll lane system grows in length and functionality
- Building tolled improvements is more successful in improving traffic performance for each study option compared to building non-tolled improvements

Vehicles and people moving at freeflow speeds 2020 AM Peak 2-Hours, Peak Directions, All Lanes

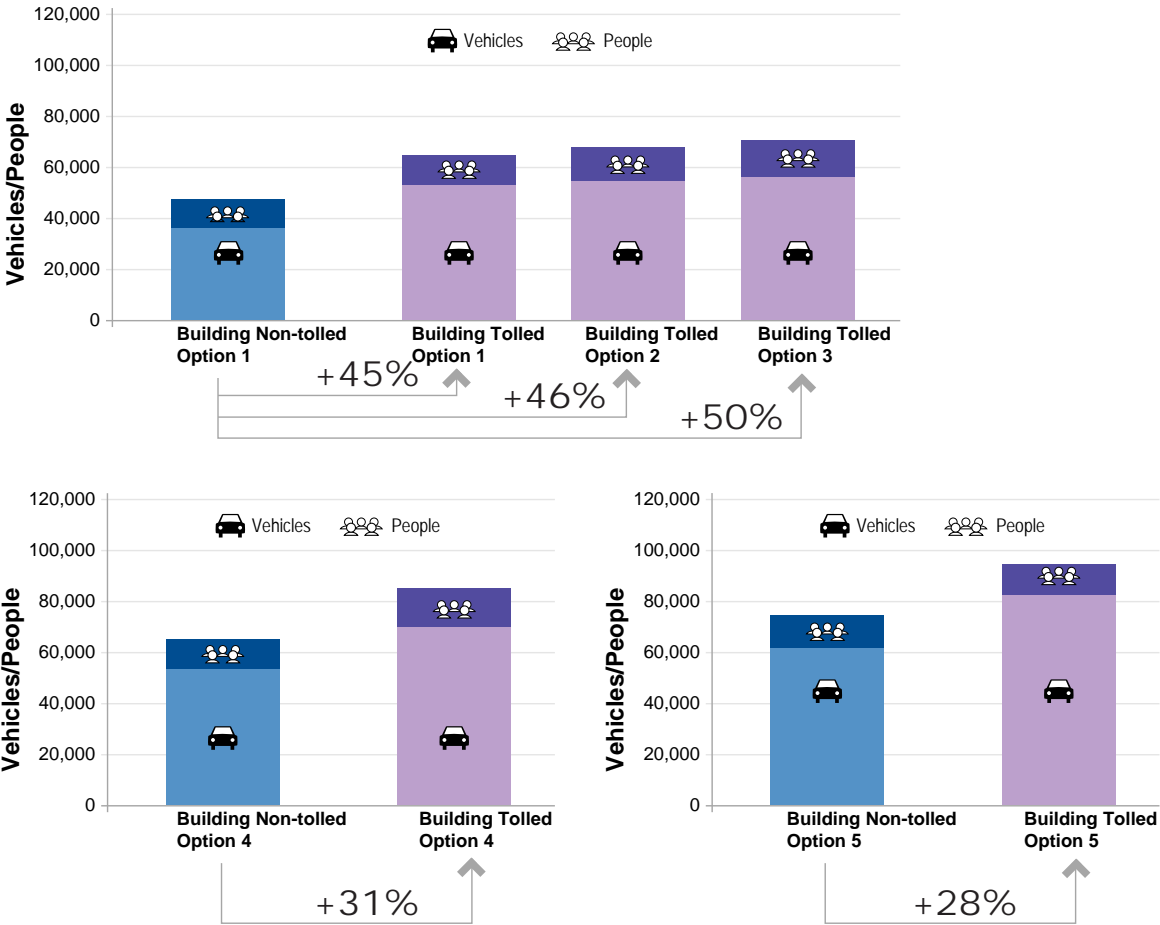


Figure 9: These bar charts compare the number of people and vehicles moving at free-flow speeds for each study option with express toll lanes and non-tolled lanes. Performance improves with each successive study option with the greatest improvement coming from tolled improvements.

Average tolls by study option

Tolls for express toll lanes are not a set amount, but dynamically adjust to balance demand for use of the express toll lanes with the available space in the lanes to maintain free-flowing speeds. It is important to remember that not everyone will use the express toll lanes all the time. Most people will choose to use them only when they need a reliable trip to get where they are going on time. To understand what the toll amounts might be for each of the five study options, we used our traffic demand models to analyze demand during a typical commute day. For each study option, we estimated the number of tolled trips and the tolls paid for each tolled trip. Based on this information, we calculated an average toll and an average toll per mile for a typical commute day for each study option. The tolls shown in Figure 10 assume HOV 3+ is toll-free and year 2020 conditions. Tolls are shown in 2008 dollars.

Study Options	Average Toll	Average Toll Per Mile
1	\$3.90	\$.51
2	\$3.90	\$.47
3	\$4.30	\$.48
4	\$7.90	\$.74
5	\$4.10	\$.40

Figure 10: Average tolls for a typical commute day by study option, year 2020 conditions (2008 dollars).

Figure 10, shows that average tolls for all study options, except study option 4, are fairly consistent in 2008 dollars. The higher average toll for study option 4 is due to greater demand for a longer, more robust system, and a longer average trip length as drivers choose to pay a toll for the benefit of a longer, quicker trip in the express toll lanes. Tolls for study option 5 are less than study option 4 because study option 5 builds a general purpose lane between Renton and Bellevue, and adds a second express toll lane from SR 522 to I-5. These improvements increase freeway capacity, which will lessen demand for available express toll lane space in 2020. Beyond the year 2020, demand for the express toll lanes would continue to increase as demand for travel on the entire Eastside Corridor continues to grow.

Average Tolls in 2013 for Study Option 1

To provide a more realistic and meaningful example of what the public might expect to pay to use the express toll lanes, we estimated average tolls for a typical commute day for study option 1 in the year 2013. Study option 1 includes currently funded projects on the north end of I-405 between SR 520 and I-5 in Lynnwood. We are using 2013 as this is the year a north-end express toll lane system could reasonably be completed and open to traffic. On a typical commute day in the year 2013, \$2.30 is the estimated average toll in 2008 dollars. The estimated average toll per mile in 2013 is 23 cents in 2008 dollars. These average tolls are less than those shown for the year 2020 in Figure 10, because demand for the corridor is less in 2013 than it will be in 2020. As traffic congestion grows, demand for use of the express toll lanes will increase, resulting in higher average tolls.

Another way to understand potential toll amounts is to look at a sample commute. Figure 11 shows two sample commutes for study option 1. Both are for the morning commute from the north end of I-405 into Bellevue on a typical commute day. Study option 1 includes two express toll lanes between Bellevue and Bothell and one express toll lane between Bothell and Lynnwood. Unlike the average toll amounts provided in Figure 10, the tolls presented for these two sample commutes are estimated average tolls during peak commute times. Average peak time tolls are higher than daily average tolls because of increased demand for use of the express toll lanes during peak commute times.

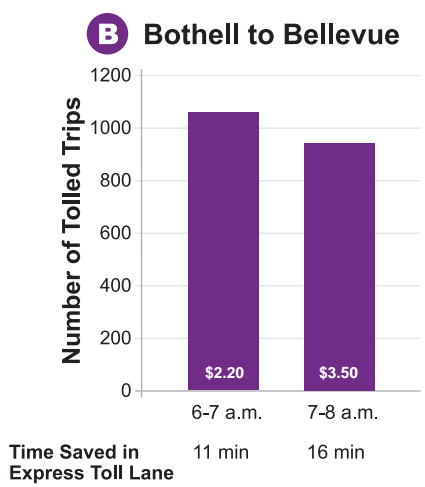
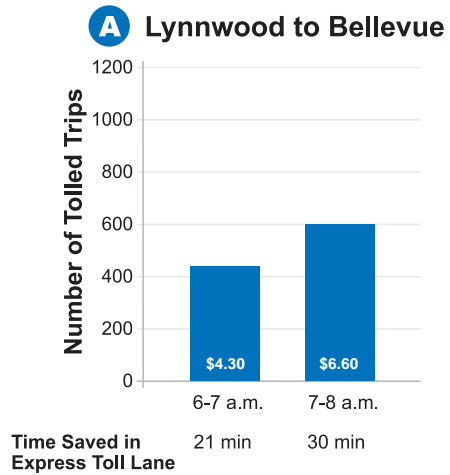
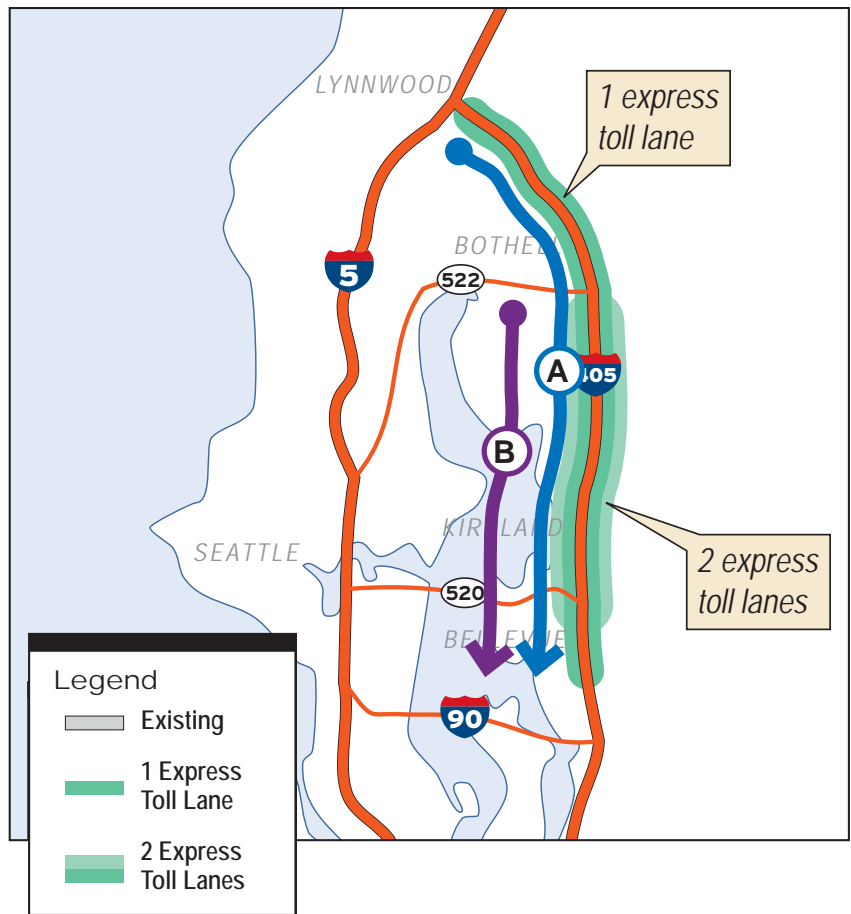


Figure 11: Average toll rates for sample commutes in the north end of I-405 in 2013.

Figure 11 shows a typical commute from Lynnwood to Bellevue in 2013. This commute is estimated to cost an average of \$4.30 between the hours of 6 a.m. and 7 a.m. The average toll increases to \$6.60 between 7 a.m. and 8 a.m., as demand for express toll lanes increases. Also shown is the time saved when drivers choose to pay to use the express toll lanes. Between 6 a.m. and 7 a.m., drivers save 21 minutes on their commute from Lynnwood to Bellevue, and 30 minutes if traveling between 7 a.m. and 8 a.m.

Figure 11 also shows that commuting from Bothell to Bellevue in 2013 is estimated to cost an average of \$2.20 between the hours of 6 a.m. and 7 a.m. This average toll increases to \$3.50 between 7 a.m. and 8 a.m., as demand for express toll lanes increases. Also shown is the time saved when drivers choose to pay to use the express toll lanes. Between 6 a.m. and 7 a.m., drivers save 11 minutes on their commute from Lynnwood to Bellevue, and 16 minutes if traveling between 7 a.m. and 8 a.m. Toll amounts are less for this commute due to a shorter distance traveled in the express toll lanes and more space available in the two-lane express toll system. This additional space allows a greater volume of drivers to choose to use the express toll lanes for this commute trip, versus the longer Bothell to Bellevue commute.

A summary of the traffic and revenue study is included in Appendix 2(a). A detailed report on the work performed by Wilbur Smith Associates is included in Appendix 2(b) - 2009 Wilbur Smith Associates – I-405/ SR 167 Express Toll Lanes: Planning Level Traffic and Revenue Study. Additional traffic and revenue analysis will be needed in the future to supplement this planning-level study.

8. What we're hearing from the public

Public outreach – by the numbers

- WSDOT mailed 220,000 postcards to Eastside Corridor households to advertise the online survey and open houses
 - Thousands of people learned about the study and input opportunities through WSDOT's e-mail listserve
 - Hundreds of people spoke to Eastside Corridor staff at 10 different summer fairs
 - Over 1,300 people submitted written comments or sent emails to the Eastside Corridor study
 - More than 2,500 people took our Web-based survey
 - 1,000 people participated in a random-sample telephone survey
 - WSDOT conducted four different focus groups of Eastside Corridor users
 - WSDOT briefed over 30 different Eastside Corridor civic, business, and community groups
-

WSDOT offered the public a variety of opportunities to learn about the tolling study, as well as give input. Between June and December, 2009, thousands of people participated in the Eastside Corridor express toll lane discussion. WSDOT held open houses and community briefings at locations throughout the corridor and participated in information booths at regional summer festivals. To gain further public input, we also encouraged people to e-mail comments or fill out an online comment form. We also conducted four focus groups, an online survey, and a statistically-valid phone survey.

Our public involvement goals were to:

- Educate the public about express toll lanes
- Solicit input and gauge public support for the idea of adding up to two express toll lanes on I-405
- Learn more about why some individuals do not support express toll lanes

How we gathered public input

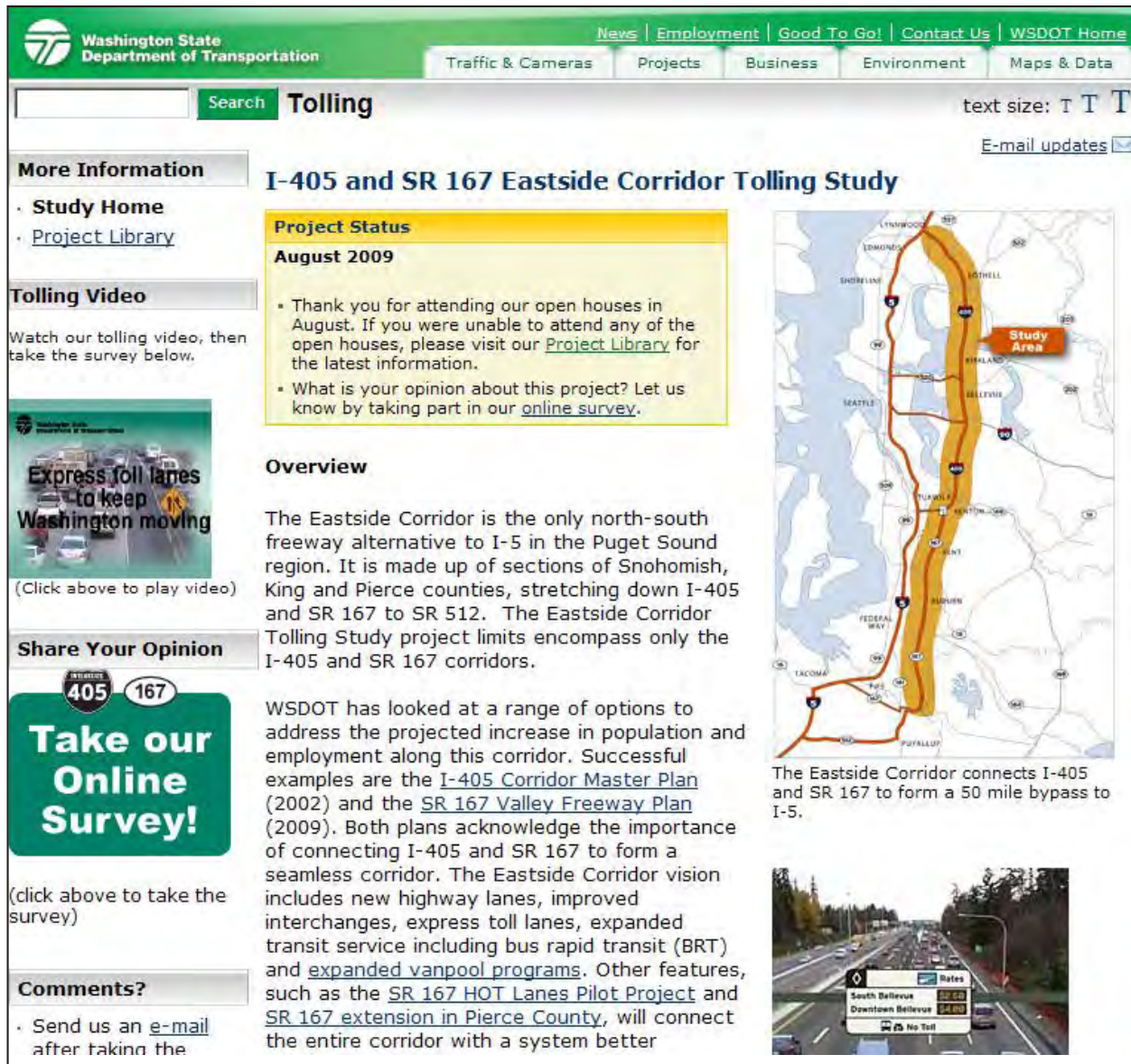
The following section illustrates how WSDOT interacted with the public and stakeholders, and describes the tools used to gain their valuable input for the Eastside Corridor Tolling Study. Materials and summaries from all public involvement strategies are included in Appendix 5.



WSDOT staff speak with citizens at Kent Open House about the Eastside Corridor Tolling Study.

Web site

WSDOT developed a branded project Web site (www.wsdot.wa.gov/Tolling/EastsideCorridor/), which was linked from the WSDOT Toll Division home page and the existing I-405 Corridor page. This site served as the information hub for the study. The Web site encouraged people to fill out the online survey, submit thoughts through the online comment form, or e-mail comments directly to the project office. All study materials, including open house information and summaries from all committee meetings, were located in the project library. Many people visited the Web site. It received 14,675 unique visitors between June 9 and December 4, 2009.



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- Study Home
- Project Library

Tolling Video

Watch our tolling video, then take the survey below.

Express toll lanes to keep Washington moving

(Click above to play video)

Share Your Opinion

Take our Online Survey!

(click above to take the survey)

Comments?

- Send us an e-mail after taking the

I-405 and SR 167 Eastside Corridor Tolling Study

Project Status

August 2009

- Thank you for attending our open houses in August. If you were unable to attend any of the open houses, please visit our [Project Library](#) for the latest information.
- What is your opinion about this project? Let us know by taking part in our [online survey](#).

Overview

The Eastside Corridor is the only north-south freeway alternative to I-5 in the Puget Sound region. It is made up of sections of Snohomish, King and Pierce counties, stretching down I-405 and SR 167 to SR 512. The Eastside Corridor Tolling Study project limits encompass only the I-405 and SR 167 corridors.

WSDOT has looked at a range of options to address the projected increase in population and employment along this corridor. Successful examples are the [I-405 Corridor Master Plan](#) (2002) and the [SR 167 Valley Freeway Plan](#) (2009). Both plans acknowledge the importance of connecting I-405 and SR 167 to form a seamless corridor. The Eastside Corridor vision includes new highway lanes, improved interchanges, express toll lanes, expanded transit service including bus rapid transit (BRT) and [expanded vanpool programs](#). Other features, such as the [SR 167 HOT Lanes Pilot Project](#) and [SR 167 extension in Pierce County](#), will connect the entire corridor with a system better

The Eastside Corridor connects I-405 and SR 167 to form a 50 mile bypass to I-5.

South Bellevue \$0.00
Downtown Bellevue \$4.00
No Toll

Figure 12: Express toll lanes study Web site.

Phone Survey Market Segments

Base: All respondents who participated in the phone survey

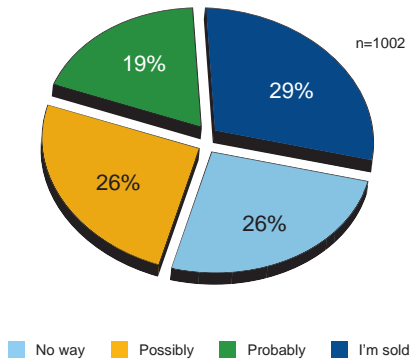


Figure 13: Almost 30% of the people contacted through a statistically-valid phone survey immediately supported using tolls to manage Eastside Corridor traffic, and about the same number were opposed. Those in the possibly and probably categories offer an opportunity for further education.

Online Survey Market Segments

Base: All respondents who participated in the online survey

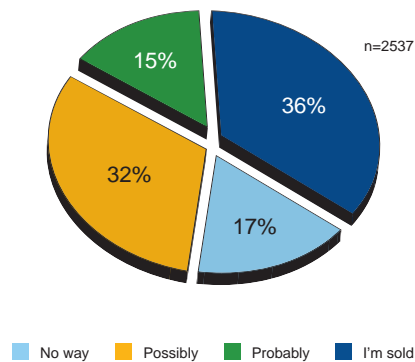


Figure 14: The online survey included more respondents with larger groups of supporters and non-supporters. These results, though not statistically valid, are similar to the phone survey.

Telephone survey

WSDOT conducted a random sample statistically-valid telephone survey of 1,000 people in September, 2009. We polled I-405 users (600 respondents) and SR 167 users (400 respondents) to validate the most commonly-heard comments and compare findings between the online survey and the statistically-valid phone survey. When asked to rate their support for express toll lanes on I-405, 29% expressed strong support, while another 19% stated that they would probably support Eastside Corridor express toll lanes. Twenty-six percent stated that they were opposed to Eastside Corridor express toll lanes. From our national research, we know that acceptance of express toll lanes increases once they are implemented. The detailed telephone survey report is included in Appendix 5(c).

Online survey

WSDOT publicized the online survey through print and Web banner ads in select media outlets, mailings to residents along the Eastside Corridor, and through several e-mail distribution lists. We received tremendous response as more than 2,500 individuals completed the online survey (online one month from August 4 through September 4, 2009). Because online survey respondents "self-select" by choosing to go online and take the survey, the results are insightful, but not considered statistically-valid, such as a random sample phone survey.

Thirty-six percent of our online respondents indicated strong support for Eastside Corridor express toll lanes, with 15% more stating they would probably support Eastside Corridor express toll lanes. Seventeen percent stated that they were opposed to Eastside Corridor express toll lanes. In general, we found that respondents who reported experiencing congestion on I-405 and SR 167 tended to be more supportive of express toll lanes on I-405. Also, respondents who have used the existing SR 167 HOT lanes were the most supportive group for the implementation of express toll lanes on I-405. The detailed online survey report can be found in Appendix 5(b).

Focus groups

WSDOT conducted four focus groups--two with I-405 users who occasionally use SR 167 (conducted in Bellevue), and two with SR 167 users who occasionally use I-405 (conducted in Puyallup). One SR 167-user focus group included current SR 167 HOT lane users, while the other SR 167 group did not. We found that those who had used toll lanes, such as the SR 167 HOT lanes, strongly supported adding express toll lanes to I-405. Other participants who had not used toll lanes were more skeptical. Participants who had used toll lanes before said they would pay up to \$5.00 a segment on I-405 to travel faster, whereas those more skeptical participants said they would only pay \$.50 to \$2.00 to travel faster. The focus group report is included in Appendix 5(d).

Public meetings

WSDOT hosted five public open houses along the Eastside Corridor. The first three, August 18-20, 2009 in Auburn, Bellevue, and Renton, focused on introducing the study and identifying public concerns. At the second set of open houses (Kent and Kirkland on November 3rd and 5th) the public learned about the traffic and revenue findings. In total, nearly 150 people attended the open houses. Open house materials and meeting summaries are included in Appendix 5(e).

Summer festivals

WSDOT hosted information booths at ten different summer festivals to talk with people along the Eastside Corridor. WSDOT's booth included interactive elements, design visualizations, informational handouts, and comment forms. Team members engaged the public in conversations regarding express toll lanes and dynamic tolling, answered questions, and encouraged people to document their thoughts on comment forms. From hundreds of conversations, 282 people filled out a comment form at the summer festivals. A summary of our summer outreach activities is included in Appendix 5(f).

Extensive Public Outreach

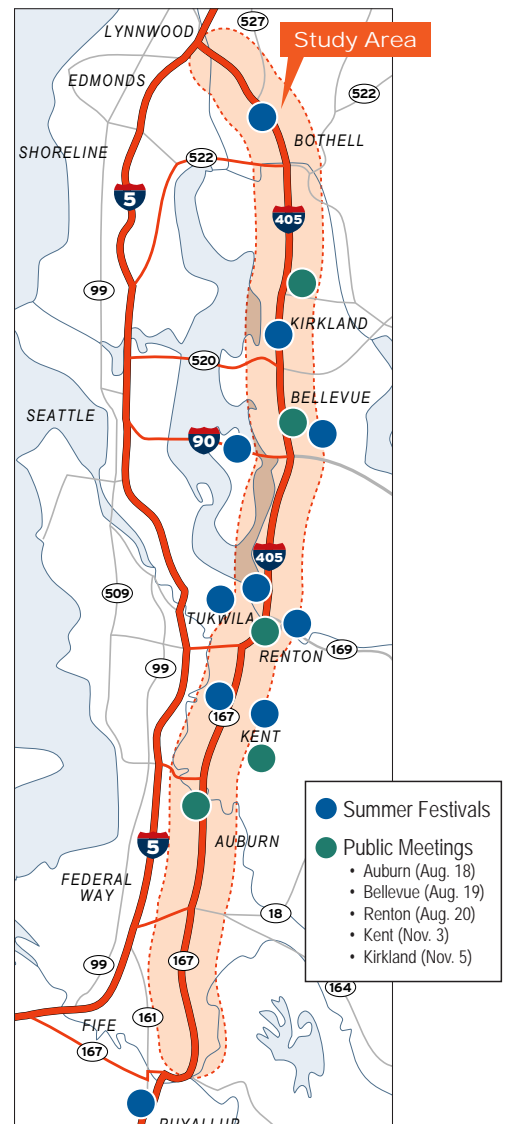


Figure 15: WSDOT hosted open houses and was present at summer festivals up and down the Eastside Corridor.

Public comments

Overall, WSDOT received more than 1,400 comments--submitted either by e-mail or through written or e-mailed comment forms. A comment analysis report is included in Appendix 5(g).

Business and civic outreach

Eastside Corridor project team members provided outreach briefings to over 30 eastside civic, business, and community groups. A list of these briefings is included in Appendix 5(h).



WSDOT staff speak to citizens about the Eastside Corridor tolling study at an Open House in Kirkland.

Overall public involvement findings

WSDOT held numerous public meetings, briefings, and outreach activities, and conducted focus groups, an online survey, and a statistically-valid telephone survey. The most commonly heard themes from all those sources are summarized below.

- People who understand the benefits of Eastside Corridor express toll lanes support them.
 - Those who had positive experiences using express toll lanes or understood express toll lane benefits tended to support Eastside Corridor express toll lanes.
 - Those who had not used the SR 167 HOT lanes or who were unfamiliar with how express toll lanes function tended to be more skeptical about Eastside Corridor express toll lanes.
- The most common reason people support Eastside Corridor express toll lanes is congestion relief.
 - Those indicating support for Eastside Corridor express toll lanes on a comment form cited congestion relief as the primary reason.
 - More than half of the online survey respondents said they would pay to use express toll lanes if they would receive a faster, more reliable trip.
- Overwhelmingly, people support re-investing toll revenue in the Eastside Corridor.
- People who do not support Eastside Corridor express toll lanes tend to:
 - Need additional information to understand the benefits, or
 - Dislike tolling under most or all circumstances.
- The most common concerns with Eastside Corridor express toll lanes were equity and fairness, preference for general purpose lanes, effects on transit and the environment, safety, and skepticism about express toll lane benefits.
- People were concerned with changing the HOV requirement from 2+ to 3+ people.

9. Financing express toll lanes

Implementing express toll lanes will likely require a combination of financial strategies including using existing gas tax funding, new gas tax revenues, toll revenues, and borrowing (bonding) against future toll revenues. Dynamic tolls on express toll lanes are an effective tool to improve traffic performance, and this study indicates they also provide revenues in excess of operating and maintenance costs. Additional revenue sources are becoming more important to fund highway improvements as traditional revenue sources, primarily the gas tax, continue to decline. While toll revenues may be used to pay for a portion of the construction of future projects, toll revenue can also be used to obtain financing to construct the project generating that revenue.

Determining gross revenue

The model which estimates gross revenues for each study option is based on traffic congestion and people's willingness to pay to avoid that congestion. Unlike typical toll bridges or toll roads where everyone must pay, drivers may choose whether or not to pay a toll on any given day to use the express toll lanes. This choice creates variations in people's willingness to pay depending on traffic conditions and their personal situation from day to day. As a result, forecasting gross revenue is very challenging. Wilbur Smith and Associates estimated toll collections for each study option for three horizon years from which an annual gross revenue stream was extrapolated for a 30-year financing period. For each study option, gross revenues were forecasted based on the assumptions listed in Section 7 of this report.

Gross revenue forecasting assumptions

- *HOV 3 + vehicles use the express toll lanes toll free*
 - *The minimum toll when the facility opens is \$1*
 - *Minimum tolls will increase with inflation over the life of the facility*
 - *There are no maximum tolls - the toll is not capped and the lanes are not closed to non-HOV vehicles at any point*
 - *Heavy trucks and trailers are not toll-eligible vehicles*
 - *The facility will operate from 5 a.m. to 8 p.m.*
 - *The user will see rates rounded to the nearest nickel*
-

Determining net revenue

Net revenues are determined by deducting operating and maintenance costs from gross revenues. These costs include everything needed to maintain and operate the toll system and the facility over the life of the facility. This report assumes toll revenues will be used to maintain the express toll lanes, but not the adjacent general purpose lanes. These costs were estimated using several sources, including existing WSDOT roadway maintenance costs, projections created for the SR 520 project, and operating assumptions from the existing SR 167 HOT Lanes Pilot Project. Detailed information on operating and maintenance assumptions and costs is included in Appendix 3. Figure 16 shows all the various operating and maintenance costs paid for through toll revenues, and how we will arrive at net revenue available for debt service. Net revenue is the basis for determining available funding for future projects.

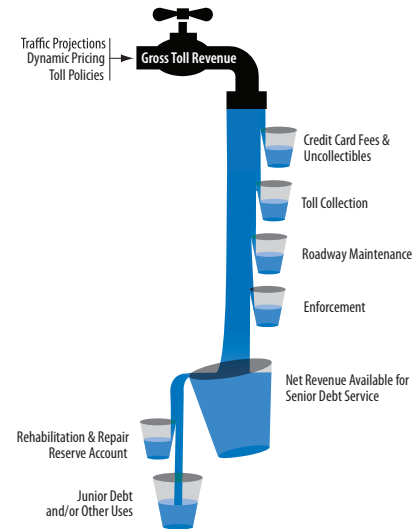


Figure 16: Gross toll revenues are reduced by operating and maintenance costs to determine the net revenue available for debt service.

Factors affecting the bonding capacity of net toll revenues

Nationally, only two other express toll lane projects have obtained project financing with bonds backed by express toll lane revenues--SR 91 in Orange County, California, and the Capital Beltway in northern Virginia. With so few examples of express toll lane facilities where tolls contribute to the project's financing, credit rating agencies and bond investors view the revenue projections for such facilities with a higher degree of risk. This risk is due to the inherent uncertainty in forecasting revenue for a facility that uses dynamic tolls where driver decisions change as driving conditions change. Driver ability to choose between paying a toll to use the express toll lanes, or driving in the adjacent toll-free general purpose lanes, makes forecasting toll-lane traffic, dynamic tolls, and the resulting revenue significantly more challenging than for traditional toll roads where all users pay a toll. These factors increase the risk and magnitude by which actual revenues may vary from their projections. This risk is reflected in the financial markets by higher interest rates and more restrictive bond covenants. Given these uncertainties, our consultant, Parsons Brinckerhoff (PB), used conservative financial assumptions for the financial analysis involving bonding.

In addition to the risk inherent in gross revenue projections, an additional risk is the state's limited ability to make toll policy adjustments if revenue falls short of projections and funds are insufficient to make debt service payments on toll bonds used to finance construction. Unlike a toll bridge or road, there are few viable options available to increase revenues when tolls are determined by demand and traffic conditions to optimize traffic performance. The options that do exist are less effective because of the availability of a toll-free option adjacent to the express toll lanes. The potential options to increase revenue include:

- Extending the hours of operation
- Eliminating toll exemptions
- Raising the minimum toll
- Adjusting the formula used to calculate the dynamic tolls to maximize revenue rather than traffic performance

Bond types and bonding assumptions

The key assumptions for the conceptual financial capacity analysis draw upon those that have been used in planning work for other WSDOT projects by the Washington State Office of the State Treasurer (OST). The analysis base case assumed non-recourse, or “stand-alone” toll revenue bonds, for which only toll revenues are pledged to their repayment. Non-recourse debt places the traffic and revenue risk with the bondholders, which results in higher interest rates because bondholders have no recourse for repayment if toll revenues are insufficient. Non-recourse bonds are issued at the beginning of the construction period with bond proceeds placed into a construction fund used to pay for project construction over time.

PB used a maximum bond maturity of 30 years for non-recourse debt to match the statutory limit for state-backed debt. The higher degree of uncertainty in express toll lane traffic and revenues, combined with the lack of another revenue source and an assumed lack of cost-effective bond insurance, was projected to result in a low or minimum investment grade credit rating for the bonds, and consequently, relatively high interest rates. Specifically, an average rate of 9% for current interest bonds (CIBs) and 10% for capital appreciation bonds (CABs) were used. These assumptions also reflect the possibility that future interest rates could be higher than current experience, since the bonds would not be issued until at least fiscal year 2012. PB also used a debt service coverage ratio of two times (2x) the annual debt service, which requires the projected annual net toll revenues available for financing to exceed the annual debt repayment obligations by a factor of two. This provides a cushion for risk and uncertainty in future conditions.

PB conducted an additional financing analysis using “triple-pledge” state-backed bonds for study options 3, 4, and 5 in response to recommendations from the EAG. With state-backed bonds, the state bears most of the traffic and revenue risk by backing the tolls pledged to debt repayment with the motor vehicle tax fund and the full faith and credit of the state, in the event that toll revenues are insufficient to make debt service payments. In order to minimize the chance of this ever happening, the debt service coverage assumption was left at two times (2x). This analysis indicates how taking advantage of the state’s excellent credit rating could lower interest costs and allow bonds to be issued as the funds are needed, rather than just at the beginning of project construction, thereby increasing the funding available for project construction. The interest rate assumptions for “triple-pledge” state-backed debt are 6% for CIBs, and 6.5% for CABs, which mirror the longer term assumptions used for future bond issues on other WSDOT toll projects.

Bonding capacity by study option

Based on our assumptions and looking at a variety of scenarios, Parsons Brinckerhoff developed potential funding ranges for each study option as shown in Figures 17 and 18. For each study option, Figure 17 shows a funding range based on estimated net toll revenues assuming HOV 3+ occupancy for toll-free use of the express toll lanes. The high end of the maximum range is based on traffic modeling, which applies toll-free system traffic volumes from the PSRC Transportation 2040 Traffic Demand Model as inputs. The low end of the maximum range reflects a more conservative view of future traffic demand for the Eastside Corridor appropriate for a planning-level study to assure potential funding is not overstated. The ranges do not represent a range of different financing outcomes. The blue bars show the results when non-recourse bonds are used, and the purple bars show the additional funding contributions toll revenues can provide when state-backed bonds are used. Also shown is the amount of unfunded capital needs for each study option compared to the funding range provided by bonding based on net toll revenues. The results of our planning-level analysis, assuming HOV 3+, show how express toll lane revenues for each study option could provide substantial funding contributions for construction of express toll lanes on the Eastside Corridor.

Eastside Corridor Toll Funding Contribution by Study Option

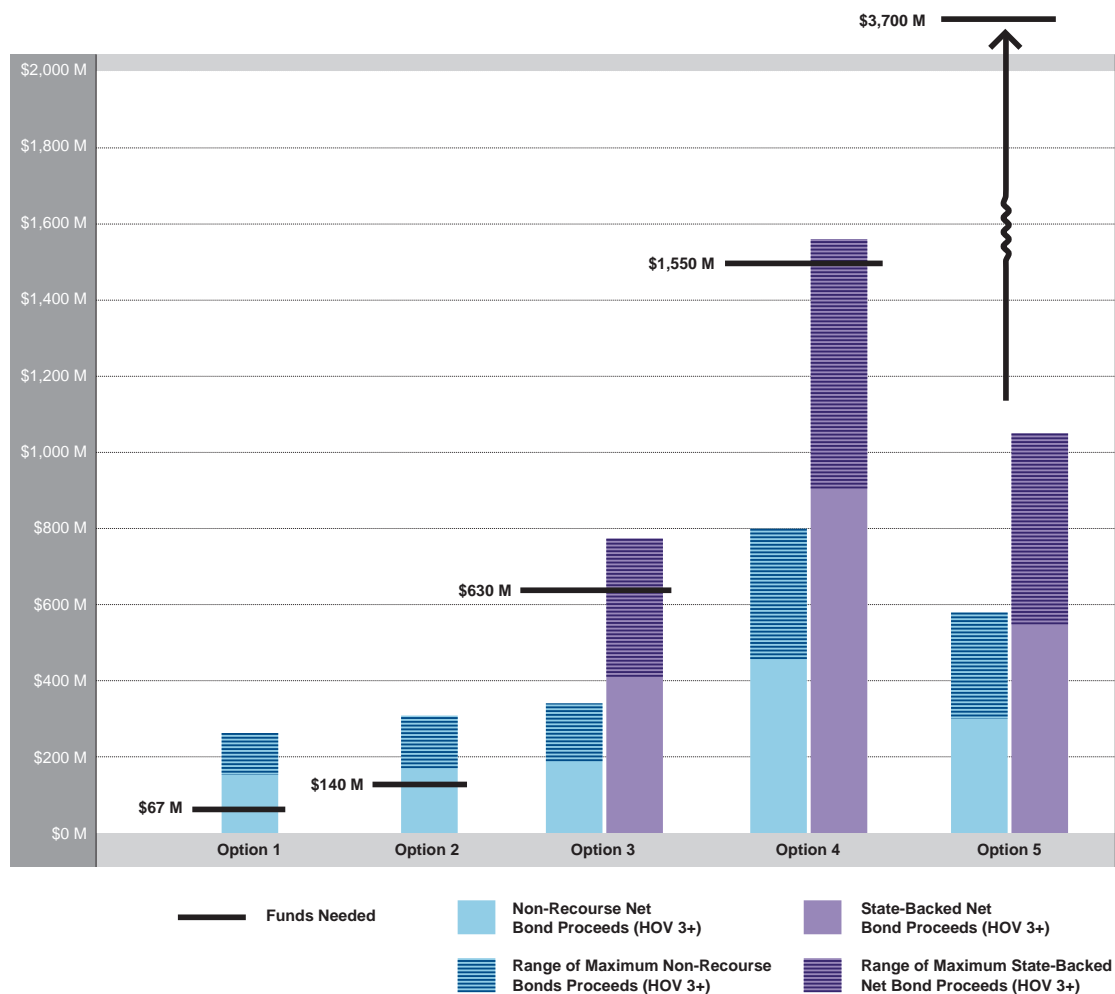


Figure 17: Funds needed to construct each study option are compared to the amounts of net bond proceeds that could potentially be raised through non-recourse bonds or state-backed bonds. Non-recourse bonds use only toll revenues for repayment. State-backed bonds use toll revenues for repayment, but are also backed with gas tax revenues and the full faith and credit of the state.

Figure 17 is a graphical representation of the financial analysis shown in Figure 18. In addition to HOV 3+ results, Figure 18 also indicates the effects of a HOV 2+ toll-free designation and imposition of a toll cap on potential net bond proceeds. These two sensitivity analysis are further discussed in Section 11. Based on the information illustrated in Figures 17 and 18, WSDOT determined that:

- If the net revenue stream provided by study options 1 or 2 is bonded, it could provide funding beyond its funding needs for future project construction
- Express toll lane revenues have the potential to provide adequate financing for construction of study options 3 or 4 if our traffic and revenue projections prove true and state-backed bonds are available
- Express toll lane revenues do not provide adequate financing for construction of study option 5

A detailed summary of our financial analysis is included in Appendix 4.

Funding and Bonding Results

Funding	Study Option 1*	Study Option 2	Study Option 3	Study Option 4	Study Option 5
Capital cost	\$470 M	\$540 M	\$1,030 M	\$1,950 M	\$4,103 M
Available funding	\$403 M	\$403 M	\$403 M	\$403 M	\$403 M
Funds Needed	(\$67 M)*	(\$140 M)	(\$630 M)	(\$1,550 M)	(\$ 3,700 M)

* Funding possible from savings within the corridor.

Bonding	Study Option 1	Study Option 2	Study Option 3	Study Option 4	Study Option 5
Range of net bond proceeds	\$150-265 M	\$175-310 M	\$190-340 M	\$460-795 M	\$300-580 M
Percent of funding gap filled	100%+	100%+	30-55%	30-50%	20-35%
Remaining funding gap	\$0	\$0	(\$290-440 M)	(\$755-1,090 M)	(\$3,120-3,400 M)

Bonding	Study Option 1	Study Option 2	Study Option 3	Study Option 4	Study Option 5
Range of net bond proceeds	**	**	\$415-745 M	\$910-1,565 M	\$545-1,055 M
Percent of funding gap filled	**	**	65-100%+	60-100%+	35-70%
Remaining funding gap	**	**	\$0 - (\$215 M)	\$0 - (\$640 M)	(\$2,645-3,155 M)

Bonding	Study Option 1	Study Option 2	Study Option 3	Study Option 4	Study Option 5
Range of net bond proceeds	\$65-130 M	**	**	\$310-545 M	**
Percent of funding gap filled	97-100%+	**	**	20-35%	**
Remaining funding gap	\$0	**	**	(\$1,005-1,240 M)	**

Bonding	Study Option 1	Study Option 2	Study Option 3	Study Option 4	Study Option 5
Range of net bond proceeds	**	**	**	\$580-1,035 M	**
Percent of funding gap filled	**	**	**	35-65%	**
Remaining funding gap	**	**	**	(\$515-970 M)	**

Bonding	Study Option 1	Study Option 2	Study Option 3	Study Option 4	Study Option 5
Range of net bond proceeds	\$125-220 M	**	**	**	**
Percent of funding gap filled	100%+	**	**	**	**
Remaining funding gap	\$0	**	**	**	**

** Sensitivity not performed for this option

Figure 18: Funding and bonding results for a variety of scenarios for all five Eastside Corridor express toll lane study options.

10. Proposed express toll lanes implementation strategy

Option 4 – Completed

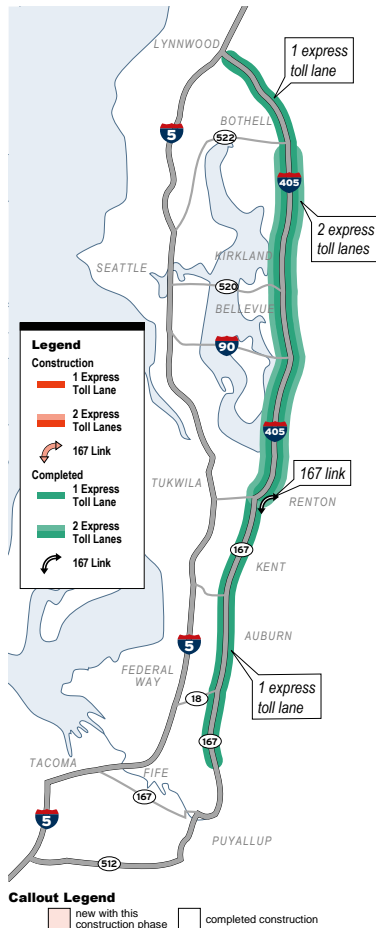


Figure 19: The Executive Advisory Group supports moving forward with study option 4 to construct a 40+ mile express toll lane system from the King/Pierce County line to Lynnwood. Moving forward with the funded projects in the north allows WSDOT to gain traffic and revenue experience with express toll lanes.

Feedback from the EAG and meetings conducted with Eastside Corridor elected officials *indicates support for moving forward with implementing express toll lanes on the Eastside Corridor*. This support stems from an understanding of how current and projected future traffic congestion will affect Eastside Corridor livability and economic viability. As expressed in the implementation principles presented in Section 5 of this report, the EAG’s vision for the Eastside Corridor express toll lanes is to optimize traffic performance and manage traffic congestion.

Based on their review of study findings and public input, the EAG expressed support for a robust express toll lane system as demonstrated in study option 4, which creates a continuous Eastside Corridor express toll lane system from the Pierce/King County line on SR 167 to the I-405/I-5 interchange in Lynnwood. Study option 4 includes two I-405 express toll lanes between the SR 167/I-405 interchange and SR 522, the direct connector ramps between SR 167 and I-405, and a single HOT lane system on SR 167 to the Pierce/King County line. The direct connector ramps allow the two toll lane systems to work together effectively and efficiently. Projected toll revenues for study option 4 could support a significant contribution to fund project construction.

The EAG expressed support for beginning Eastside Corridor express toll lane implementation with funded projects included in study option 1 as the first phase. This will allow WSDOT to continue to build upon the experience gained from the 167 HOT Lanes Pilot Project, gain new experience, and develop actual traffic and revenue results for I-405 express toll lanes. This experience will also improve the agency’s ability to obtain financing for future Eastside Corridor express toll lane projects. Beginning with this first phase between SR 520 and I-5 establishes an I-405 express toll lane system and expands the existing SR 167 HOT lane system. Implementation of phase 1 allows WSDOT to gain valuable experience and lower perceived risks and costs for financing future express toll lane projects in the corridor. Establishing credibility with financial markets is important because future projects will need bond financing from toll revenues as a funding source to fully implement study option 4.

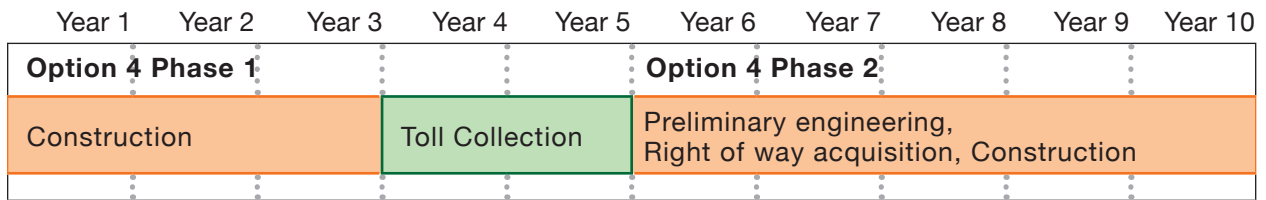


Figure 20: Eastside Corridor express toll lanes 10-year implementation strategy.

To achieve these objectives, WSDOT recommends a 10-year implementation strategy for the Eastside Corridor express toll lanes. The strategy begins by constructing funded projects. This provides time to gain experience with operation of an express toll lane system on I-405 and obtain favorable bond conditions to fund construction of the remaining projects in study option 4. Figure 20 provides a timeline for this 10-year phased implementation strategy.

Costs and schedules for funded projects

The first phase in an Eastside Corridor express toll lane implementation strategy is to construct the \$470 million funded projects, which will:

- Create a two-lane express toll system on I-405 between SR 520 and SR 522
- Convert the I-405 HOV lane between SR 522 and I-5 in Lynnwood to an express toll lane, creating a 15-mile express toll lane system
- Extend the southbound SR 167 HOT lane 6 miles to the King/Pierce County line

I-405 projects – I-405/SR 520 to I-5 Widening

WSDOT has funding in place to complete the phase 1 projects on I-405 except for \$67 million to cover the costs associated with implementing express toll lanes as part of this project. This funding gap could be covered with savings from other Eastside Corridor projects. To move the I-405/SR 520 to I-5 Widening Project forward with express toll lanes as a component would require legislative authorization, including reallocating corridor savings from other projects. Full legislative authorization in 2010 would assure the earliest completion schedule.

SR 167 projects – SR 167/8th St E Vic. in Pacific to S 277th St Vic. in Auburn - Stage 4

WSDOT has the funding in place to complete this project. To proceed as a HOT lane project will require legislative authorization, and 2012 authorization of the SR 167 HOT lanes as a permanent tolling facility. If desired, WSDOT can advance the project delivery schedule.

Option 4 – Phase 1

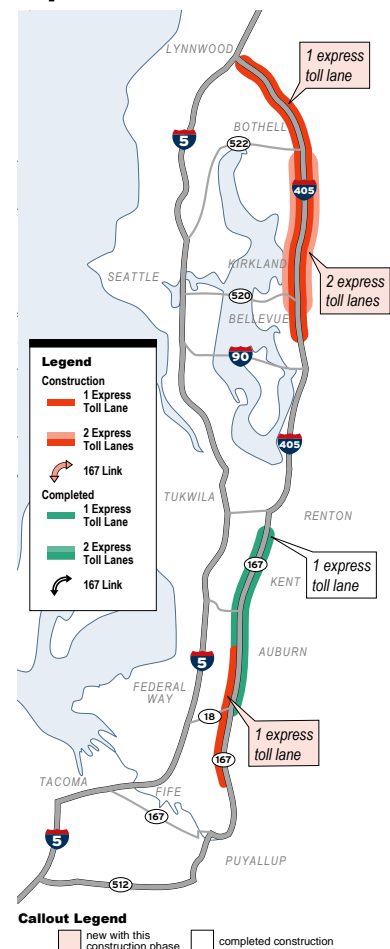


Figure 21: Phase one of study option 4 implementation includes funded projects.

Costs and schedules to complete study option 4

The second phase to an Eastside Corridor express toll lane implementation strategy is completing study option 4 projects to create a 40+-mile express toll lane system from SR 167 at the King/Pierce County line to the I-405/I-5 interchange in Lynnwood. These projects include:

- The direct connector between the I-405 express toll lanes and the SR 167 HOT lanes
- Adding a new lane between Renton and Bellevue which extends the two lane express toll lane system
- Converting the existing I-405 HOV lane to create a 20-mile, two-lane express toll lane system, tying into the two-lane system constructed in phase 1
- A 4-mile extension to the northbound SR 167 HOT lanes

These projects are currently unfunded; however, the valuable experience WSDOT will gain from operating study phase 1 will help establish credibility with the financial markets and lower the perceived risks and costs to financing the remaining option 4 projects. The costs presented are based on anticipated construction costs in 2015.

Option 4 – Phase 2

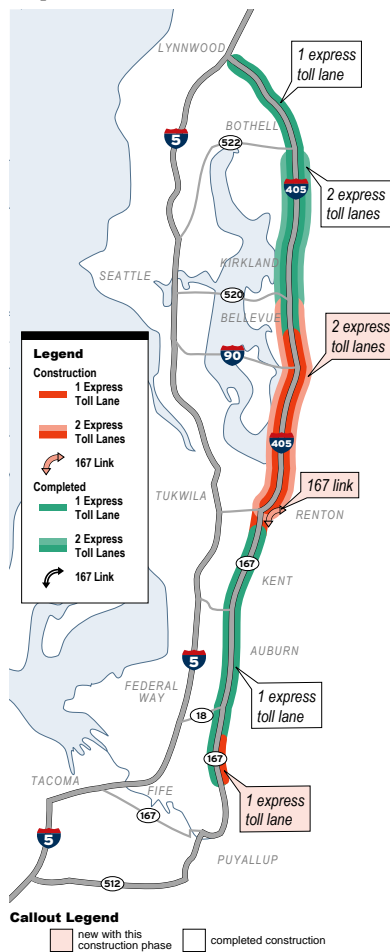


Figure 22: Phase two of study option 4 implementation includes multiple projects to complete a continuous 40+ mile express toll lane system.

I-405 projects – I-405/SR 167 Interchange HOV Direct Connection I-405/SR 167 in Renton to SR 520 in Bellevue

A 2015 construction start of phase 2 of the Eastside Corridor express toll lane system would allow for two years of traffic and revenue experience from operation of phase 1 express toll lanes on I-405 to help secure bonds to fund these currently unfunded projects.

SR 167 projects – SR 167/8th ST E Vic. in Pacific to 15th St. SW in Auburn - Stage 5

While this project is currently scheduled to start construction in 2015, early funding could allow WSDOT to match the south terminus of the southbound HOT lane by combining the SR 167 Stage 4 and Stage 5 projects into one construction project to maximize the value of early tolling contributions to future phases.

Building funded projects in phase 1 first allows WSDOT to create an operational express toll lane system on the north end of I-405 and extend the SR167 HOT lanes. Funding is already available for all but a small portion of these projects, a gap which could be covered with savings from other Eastside Corridor projects.

11. Policy considerations for express toll lane implementation

During the course of the traffic and revenue study, IWG and EAG members raised questions about setting maximum tolls and maintaining the HOV 2+ toll-free designation. WSDOT conducted additional analyses to understand how these two different factors could influence study option 1 traffic performance and toll amounts. WSDOT also analyzed the effects these factors would have on toll revenue and the amount of financing that toll revenue streams could support. Under both scenarios, net toll revenues are reduced.

HOV 2+ toll-free implications

To work well, express toll lanes must have space available to provide non-HOV drivers the choice to pay a toll to use the express toll lanes. Currently, I-405 HOV 2+ lanes do not meet WSDOT performance standards in many segments during peak-hour travel times because of high demand. Therefore, the HOV lanes do not always have space available for non-HOV vehicles to pay a toll to drive in the express toll lanes. To address current poor HOV 2+ performance, WSDOT can change the carpool designation to HOV 3+ or add a lane. The Eastside Corridor Express Toll Lane Study reviewed study option 1 traffic performance and revenue collections under both HOV 2+ and HOV 3+ toll-free operations.

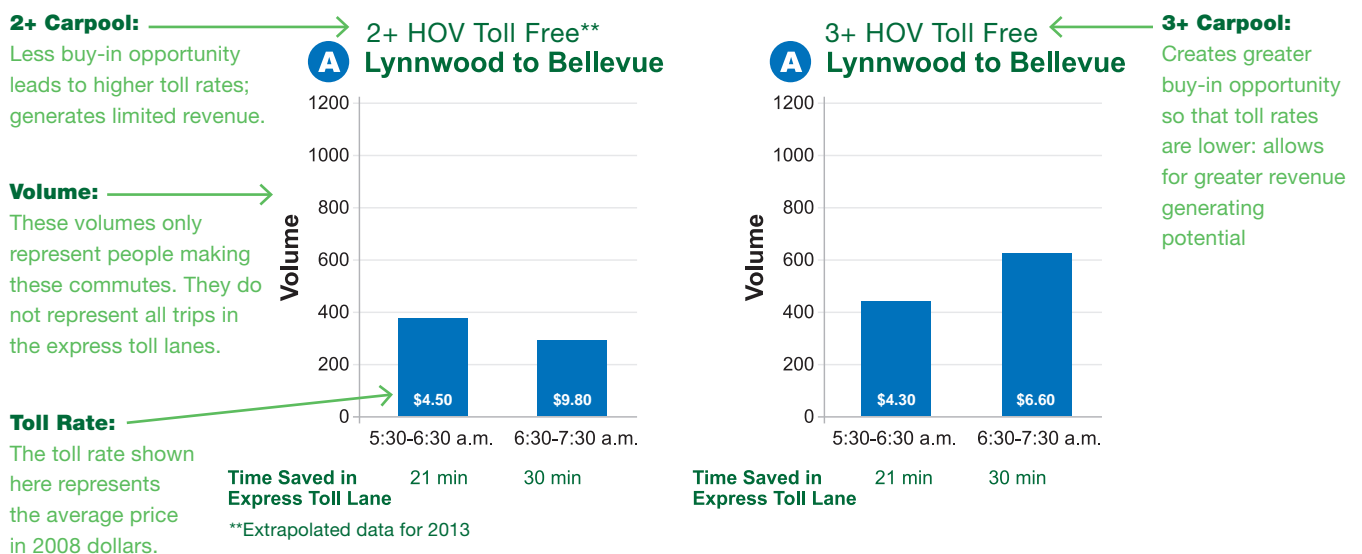


Figure 23: For a 2013 sample commute from Lynnwood to Bellevue, HOV 3+ toll-free provides a greater opportunity to buy in to the express toll lanes and lower tolls.

Figure 23 illustrates how a HOV 2+ toll-free designation would affect toll amounts and traffic volumes in the express toll lanes during the morning commute from Lynnwood to Bellevue on a typical commute day in 2013. It shows how fewer non-HOV vehicles are able to buy into the express toll lanes for HOV 2+, resulting in higher tolls than the HOV 3+ scenario.

Demand for HOV 2+ travel in the express toll lanes will continue to increase. Our traffic modeling shows that by 2020, demand during peak periods is so high that the express toll lanes will be restricted to HOV-only some of the time to assure free-flowing speeds (45 to 60 mph). This further reduces toll revenues and prohibits the choice to pay a toll for a reliable trip. In the long-term, effective Eastside Corridor express toll lanes operation will require an HOV 3+ toll-free designation.

Toll cap implications

Express toll lanes work best when toll amounts are adjusted dynamically based on demand for space in the express toll lanes. With dynamic tolls, supply and demand for space in the express toll lanes determines the toll amount. During peak hour travel, WSDOT may consider capping the toll amount if traffic demand would raise the toll rate to unreasonable levels. If a maximum toll rate, or toll cap, is set too low, the lane will close to all vehicles except HOVs, which negatively impacts traffic performance. To understand the impacts to traffic performance and toll collections, WSDOT reviewed study option 1 operations in 2013. We assumed a toll cap of \$12 in 2008 dollars with an HOV 3+ toll-free designation. In 2013, on a typical commute day, a \$12 toll cap would have virtually no affect on average toll amounts and the ability for non-HOV vehicles to buy into the express toll lane.

However, by 2020, traffic models show that peak-hour travel demand for express toll lanes is so high that the toll cap cannot effectively control traffic flow. Under these conditions, maintaining free-flow traffic in the express toll lanes will require making the lanes open to HOV 3+ only during some peak-hour travel times. Toll-paying users would be prohibited from use. By the year 2035, the toll cap would result in an HOV 3+ only requirement to maintain free flow speeds during almost all peak-hour travel times. Limiting potential toll paying vehicles from using the express toll lanes impacts the amount of toll revenue and eliminates the choice for a reliable trip by paying a toll. While the \$12 toll cap would have few impacts in 2013, it would eventually reduce the amount of time express toll lanes are available for toll-paying non-HOV 3+ vehicles, also reducing toll revenues.

Toll funding contribution implications

Over time, toll caps and HOV 2+ toll-free policies will reduce the availability of the option for non-HOV vehicles to pay to use the express toll lanes. With non-HOV vehicles no longer having the choice to pay for a quick, reliable trip when needed, fewer toll-paying users will reduce toll revenue. Reduced toll revenue limits the available funding through issuing bonds against net toll revenues. The funding and bonding results for HOV 2+ and toll caps for study option 1 are listed in Figure 18, and illustrated graphically here in Figure 24. Figure 24 shows that HOV 3+ toll-free revenues provide significantly more net bond proceeds than HOV 2+ toll-free revenues, and that implementing a toll cap reduces the amount of potential net bond proceeds.

Further details of this analysis are included in Appendix 2 - Traffic and Revenue Summary and Appendix 4 - Financial Feasibility Analysis.

Eastside Corridor Toll Funding Contribution for Study Option 1

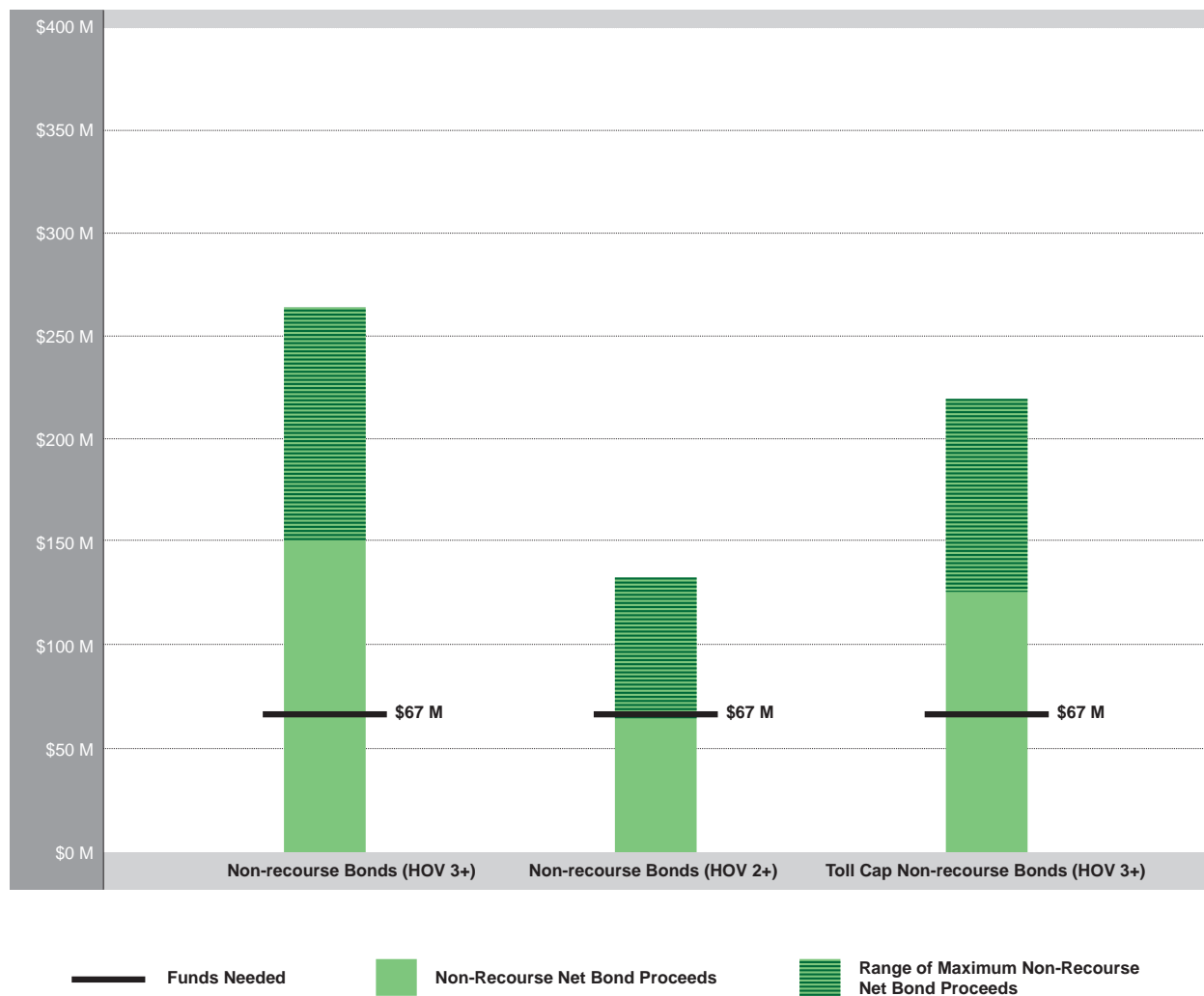


Figure 24: Net bond proceeds for study option 1 are reduced when a HOV 2+ toll-free designation, or a toll cap (\$12) are imposed.

12. Next steps

Moving forward with Eastside Corridor express toll lanes will require decisions and direction. The proposed implementation strategy is supported by the work conducted for this planning-level study and is consistent with the implementation principles developed by the EAG. The proposed implementation strategy allows WSDOT to build funded projects now to gain valuable operational experience, while establishing traffic and revenue history. Future implementation of the remaining projects included in study option 4 will establish a complete express toll lane system from SR 167 at the King/Pierce County line to the I-405/I-5 interchange in Lynnwood. Authorization from the Legislature to use tolls on the I-405 in 2010 would allow WSDOT to gain tolling experience, and support an early start on projects on the south end of I-405. Moving forward with our proposed implementation strategy requires:

- Legislative authorization to implement tolls on I-405
- Federal approval for WSDOT to operate I-405 as a tolled facility
- Legislative authorization to allocate currently unallocated Eastside Corridor construction savings to fill the \$67 million funding gap for Eastside Corridor express toll lane funded projects
- Legislative designation of SR 167 as a permanent “eligible toll facility” expanded south to Puyallup
- Legislative request for WSDOT to prepare a more detailed traffic and revenue study and finance plan for implementation of Eastside Corridor express toll lanes as described in study option 4



Future vision for Eastside Corridor express toll lane system

Appendices

Appendices to the Eastside Corridor Tolling Study include detailed information and analysis that support the findings and observations presented in this summary report. These appendices can be found on our Web site at www.wsdot.wa.gov/Tolling/EastsideCorridor/Report. WSDOT will provide appendices upon request by contacting Amy Danberg, Eastside Corridor Public Information, at amy.danberg-consultant@i405.wsdot.wa.gov.

1. Eastside Corridor Express Toll Lanes – Concept of Operations
2. Eastside Corridor Express Toll Lanes Traffic and Revenue Study
 - a. Traffic and Revenue Study Summary
 - b. 2009 Wilbur Smith Associates – I-405/SR 167 Express Toll Lanes: Planning Level Traffic and Revenue Study
3. Eastside Corridor Express Toll Lanes Operating and Maintenance Costs Summary
4. Eastside Corridor Express Toll Lanes Financial Feasibility Analysis
5. Eastside Corridor Express Toll Lanes Public Involvement Materials
 - a. Public Involvement Summary
 - b. Online Survey Report
 - c. Telephone Survey Report
 - d. Focus Group Report
 - e. Open House Materials and Summaries
 - f. Summer Outreach Summary
 - g. Comment Analysis Report
 - h. Briefings Summary
6. Eastside Corridor Express Toll Lanes Advisory Committee Materials
 - a. Advisory Committee Summary
 - b. Interagency Working Group
 - c. Executive Advisory Group
 - d. Transit Sub-Group
 - e. Local Jurisdiction Letters
7. Prior Managed Lanes Studies
 - a. History of Managed Lanes Studies
 - b. I-405 Managed Lanes White Paper (Prepared 2004, Updated April 2007)
 - c. 2007 Wilbur Smith Associates – SR 520 to I-5 Widening: Express Toll Lanes Alternative Traffic and Revenue Study
 - d. 2008 Wilbur Smith Associates – SR 167 to I-5 Update: Express Toll Lanes Alternative Traffic and Revenue Study



How do I get more information?

The complete report and all report appendices can be found on our Web site at www.wsdot.wa.gov/Tolling/EastsideCorridor/Report

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