



## CITY OF KIRKLAND

### Department of Public Works

123 Fifth Avenue, Kirkland, WA 98033 425.587.3800

[www.ci.kirkland.wa.us](http://www.ci.kirkland.wa.us)

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**To:** Dave Ramsay, City Manager

**From:** Daryl Grigsby, Public Works Director  
David Godfrey, P.E., Transportation Engineering Manager

**Date:** April 23, 2008

**Subject:** SR 520 VARIABLE TOLLING ENVIRONMENTAL ASSESSMENT

#### RECOMMENDATION:

It is recommended that the City Council authorize the Mayor to sign a letter of comment on the Environmental Assessment that has been released by WSDOT (Attachment 1).

#### BACKGROUND DISCUSSION:

The Transportation Commission reviewed this subject at their April 22 meeting and members reviewed and edited the attached comment letter. The City Council adopted a tolling policy (see next page) in May 2008. The Transportation Commission examined the Assessment in the context of the this policy. Some parts of the policy, which address when and where tolling should occur are issues decided by State Legislature.

The SR 520 project is made up of several sub-projects, such as construction of the floating bridge pontoons, reconstruction of the floating bridge itself and improvements on the eastside of the bridge. Another of the sub projects is implementation of variable tolling.



*Example of gantry structure that could be used on the Evergreen Point Bridge*

WSDOT is seeking comments on the Environmental Assessment of the variable tolling project. The project scope is to add electronic tolling equipment to the existing eastern high rise. Tolls will be collected electronically using transponders compatible with other state tolling systems. There will be no toll booths, electronic tolling will be conducted at highway speed. If a vehicle does not have a transponder, a photo will be taken of its license plates the registered owner will be billed. Tolls are variable, they change by time of day. The toll rates do not change in response to the amount of traffic or congestion. The Assessment only looks at tolls on SR 520, tolls are not assumed on I-90. This scenario is consistent with legislation that is under

consideration by the State Legislature as of this writing.

The Commission felt that the two most important issues that are not addressed by the Assessment are 1)possible effects of traffic diversion and 2)possible effects of increased transit demand. While modeling for the project predicts little diversion no mitigation is identified for impacts that may occur if the modeling is incorrect. The tolling program is expected to produce increases in transit ridership on the order of 30%, but there is no specific funding in place to

provide increased service across the lake. The Urban Partnership Grant will likely fund purchase of additional coaches and could fund Park and Ride expansions, but construction of a TOD project at South Kirkland Park and Ride is complicated.

City of Kirkland Roadway Pricing Policy Statement (May 2008)

The City of Kirkland generally supports roadway pricing.

*Roadway pricing appears to be an effective tool for better managing our transportation system while at the same time being able to generate some additional revenue to leverage against existing revenue sources. We support early tolling of SR 520, tolling of I-90 when SR 520 is tolled and implementation of HOT<sup>1</sup> lane systems on I-405. Our support assumes that potential impacts to Kirkland are considered before and addressed after implementation of any such roadway pricing program.*

Revenues from pricing may be used for a variety of purposes, but there must be a reasonable nexus between collection and spending.

*Revenue need not be confined to paying the capital costs for construction of the facility where it was collected. Besides funding construction, examples of reasonable uses for pricing revenue include: transit service on the priced or parallel facilities, mitigation of pricing impacts like diversion onto non-priced routes and operations/maintenance of the priced facility. Pricing revenues should supplement not supplant current revenue sources.*

Pricing for management must have clear objectives.

*Pricing can be optimized to meet various objectives such as maximizing revenue, maximizing person trips or minimizing vehicle miles of travel. The objective for pricing will vary depending on the system being priced. This objective will typically be set by the agency operating the priced facility. However, prior to implementation of pricing, it is important that impacted jurisdictions have an opportunity to comment on the pricing objective.*

Any pricing efforts must include careful consideration of potential negative impacts.

*Before pricing is implemented funding should be designated to mitigate impacts from pricing. A comprehensive system of measurements should be made before and after pricing is implemented to evaluate its impacts especially with regard to traffic diversion. This is particularly important when considering early tolling of SR 520. In order to minimize negative impacts of pricing, choices such as high quality transit must be provided on priced corridors. Predictable and reasonable tolls will also help to minimize negative impacts.*

It is important to consider the needs of low income users of priced facilities.

*Experience from other parts of the county show that low income users are supportive of pricing systems both before and after such systems are implemented. With electronic tolling it is relatively easy to reduce the cost of pricing to individual users through subsidies. Low income users may benefit most from viable alternatives to pricing such as high quality transit.*

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<sup>1</sup> High Occupancy Toll (HOT) lanes – combine HOV and pricing strategies by allowing single occupancy vehicles to gain access to HOV lanes by paying a toll. The lanes are “managed” through pricing to maintain free flow conditions. HOT lanes are in operation now on SR 167.

Last year, the Tolling Implementation Committee<sup>2</sup> examined scenarios for tolling I-90 and/or SR 520. Extensive modeling was completed as part of the Committee's work and a final report (Attachment 2) was issued by the Committee. That report suggests for mitigation (below), much of which would address the concerns raised by the Transportation Commission. Most of this mitigation is not considered in the Environmental Assessment.

*Excerpt from Tolling Report, prepared by the Tolling Implementation Committee for the Washington State Legislature, January 28, 2009 Page 36. Mitigations relevant to Kirkland Comments:*

*Committee mitigation recommendations related to tolling include:*

- *System-wide instrumentation and traffic monitoring*
  - *Additional coverage would be needed on 522.*
  - *Local access roads may need to be added such as Ballinger Way, NE 145th Street, and Juanita Drive.*
- *A toll mitigation account to respond to traffic diversion effects would be set up to fund the noted mitigation strategies and to find other mitigation as necessary. A joint state/local process would be developed to decide which projects should be implemented to mitigate the actual effects of diverted traffic once tolling begins. Funds from the account would be focused on the six-year period following tolling authorization.*
- *A coordinated transit implementation plan developed by WSDOT, King County and Sound Transit.*
- *Transit service expansion via the Urban Partnership Agreement in the 520 corridor and possible other improvements to transit service in response to anticipated or actual traffic diversion.*
- *Transit-related improvements such as new or expanded park-and-rides should be added, including in the I-90 corridor, if it is tolled.*
- *Local jurisdictions support new transit service in the corridor. The Urban Partnership Agreement would fund the purchase of 45 new buses, but operational funds are needed.*
- *Funding to operate transit needs to be identified and secured. Using toll revenues to pay for that service is a policy decision to be made by the Legislature.*

The Environmental Assessment does include mitigations to account for disproportionate impact on minority or low income populations. These are listed below

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<sup>2</sup> The 520 Tolling Implementation Committee was created by the Washington State Legislature in 2008 to evaluate tolls as a means of financing a portion of the 520 Bridge Replacement and HOV Program, engage citizens and regional leadership in the evaluation, enhance understanding of tolling alternatives, and report to the Governor and Legislature in 2009.

*If the SR 520 Variable Tolling Project is undertaken, WSDOT has already decided to employ these five strategies to help minimize adverse effects on low income or limited-English proficient populations:*

**1. Permanent customer service center storefronts:**

*WSDOT will establish permanent customer service center storefronts at either end of the Evergreen Point Bridge. Both locations will be transit accessible. Drivers will be able to purchase Good To Go!™ transponders and establish prepaid accounts with cash at these centers.*

**2. EBT cards can be used to establish and replenish Good To Go!™ accounts:**

*Low-income Evergreen Point Bridge users will be able to establish and replenish their prepaid accounts using their Electronic Benefit Transfer (EBT) card. EBT functions like a debit card and allows recipients who receive federal benefits to pay for products and services, such as groceries and health care.*

**3. Transponder retail outlets:**

*WSDOT will explore the possibility of establishing permanent Good To Go!™ retail outlets at convenient locations, such as grocery stores, convenience stores, or pharmacies throughout the region. Low-income focus group participants and Spanish-speaking interview participants indicated that this will make it much easier for them to purchase transponders and set up prepaid accounts with WSDOT.*

**4. Multi-language outreach:**

*WSDOT will conduct outreach in multiple languages to provide information about how to purchase a transponder, establish an account, and use the system. Target languages will be the same languages that the Washington Department of Licensing uses for its translation: Chinese, Korean, Japanese, Russian, Spanish, and Vietnamese. WSDOT will also use pictograms whenever possible to explain the system. WSDOT will distribute information about the new tolling system and transponders throughout the region via community-based organizations, social service offices, churches, and schools; purchase SR 520 Variable Tolling Project EA 5-21 advertising in ethnic newspapers and radio stations; and establish hotlines with multi-lingual customer service agents well in advance of tolling.*

**5. Training of social service workers:**

*WSDOT will provide social service agencies with information about tolling and options to avoid the tolls. This will assist social service workers in sharing accurate information with clients. In addition, the following strategies could be considered for minimizing the effects of tolling on low-income populations. Some options may require legislative action, coordination with other agencies, or commitment of additional funding other than tolling revenue.*

*In addition, the following strategies could be considered for minimizing the effects of tolling on low-income populations. Some options may require legislative action, coordination with other agencies, or commitment of additional funding other than tolling revenue.*

**1. Targeted transit improvements:**

*The Washington State Legislature could consider allocating additional funding to King County Metro Transit and Sound Transit to increase service along SR 520 routes that are used by low-income populations, especially in the University District and Crossroads in Bellevue. These routes could be identified by overlaying the travel shed map with King County Metro and Sound Transit route maps. Service could also be increased between low-income residential neighborhoods and job/education centers.*

Memorandum to Dave Ramsay  
April 23, 2009  
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***2. Refunds to social service agencies:** The Washington State Legislature could allocate funding to provide refunds to social service agencies that broker transportation for low-income populations that meet certain thresholds.*

May 6, 2009

Mr. Paul W. Krueger  
WSDOT SR 520 Variable Tolling Project Environmental Manager  
401 2nd Ave S Suite 300  
Seattle, WA 98104

Dear Mr. Krueger:

Thank you for the opportunity to Comment on the SR 520 Variable Tolling Project. This letter is a summary of our comments on the Environmental Assessment. A set of comments that address some of Kirkland's main concerns in greater depth is included as an attachment.

The City of Kirkland supports replacement of the SR 520 floating bridge and recognizes tolling as an important mechanism for funding that project and the main reason for tolls at this time. We also understand that early tolling of SR 520 is a requirement for the 520 corridor to receive Federal Urban Partnership grant funding. Both of these principles are supported by the City of Kirkland's Roadway Pricing Policy Statement, which is attached to this letter.

The Environmental Assessment assumes that auto diversion from SR 520 to surrounding freeways and arterials will be small. This assumption is supported by the modeling developed by the Tolling Implementation Committee (TIC). However, because the modeling is subject to error, *a mitigation program as suggested in the TIC report (see next page) should be a part of the Variable Tolling Project. Careful monitoring of traffic diversion, including diversion to arterials, and specific funding for mitigation of these impacts should be part of the project.* Our Pricing Policy also supports this strategy.

Pairing high quality transit service with tolling is a theme throughout Kirkland's Roadway Pricing Policy Statement. Forecasts for decreased vehicle miles of cross lake travel with implementation of tolling are encouraging, as are forecasts for increased transit ridership. Because transit ridership is expected to increase by 30% under tolling it will be important that new transit service and additional coaches are available to carry the increased passenger loads. Coaches are likely to be funded through the Urban Partnership grant, but funding for new service has not been identified at this time. *Therefore, the Environmental Assessment should not assume adequate service and the project should include mitigation for the subsequent impacts.* Additionally, added Park and Ride capacity may be needed, in particular at the South Kirkland Park and Ride. The underutilized Houghton Park and Ride may also be a possible source of capacity. *As with traffic diversion, the transit related mitigations called for in the TIC report should be incorporated into the project.*

Letter to Paul W. Krueger  
May 6, 2009  
Page 2

We are pleased to see the proposed mitigations intended to minimize adverse effects on low income or limited-English proficient populations. Again, this is an important principle in our Pricing Policy.

Thank you for consideration of these comments.

Sincerely,

Kirkland City Council

By James L. Lauinger, Mayor

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- Transit-related improvements such as new or expanded park-and-rides should be added, including in the I-90 corridor, if it is tolled.
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May, 2008

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### Detailed Comments from City of Kirkland

**Transit demand versus capacity.** The EA assumes that there will be a sizable increase in transit ridership, between 26% and 32% depending on the toll scenario. It cites the fact extra transit capacity will be needed, however such capacity is not funded. The question remains: if the EA assumes transit service but such service is not available what will be the impacts? Therefore, there is a significant impact, increased transit demand, that is not mitigated. Previous environmental studies on SR 520 have also failed to answer this question.

**Transit service analysis.** Because of the increased demand for transit caused by tolling, the EA should analyze current transit service (load factors, platform hours, etc) and future transit demand to understand the type and location of future transit service that is needed. The EA mentions that a number of coaches may be available for future service but does not explore whether or not this is an adequate number of coaches or where they should be deployed. The EA references transit analysis completed as part of the 2006 DEIS for the SR 520 Bridge Replacement and HOV project. This analysis is out-of-date, particularly because of the significant and documented increase in transit ridership over the last few years. In addition, King County Metro is facing significant reductions in transit revenue and is considering reducing service levels throughout the system. The EA needs to identify how the shift from vehicles to transit will be accommodated - otherwise such a significant shift to transit appears to result in a significant impact to that mode of travel.

**Park and Ride analysis.** Similar to the transit service analysis, there is no analysis of current or future Park and Ride demand. In Kirkland, South Kirkland, Houghton and Kingsgate Park and Rides each service routes that cross SR 520 and will certainly be impacted by tolling on SR 520. Recently published park and ride utilization rates by PSRC indicate usage has increased over the last three years for most parts of King County. Like transit service, current and future demand should be analyzed to understand the impacts of tolling on Park and Ride facilities and appropriate mitigation should be part of the project.

**Diversion of traffic from SR 520.** The EA does not investigate the diversion of traffic from SR 520 to local streets. A paragraph at the bottom of page 5-2 describes that the model used is inadequate for exploring this question. This is not a sufficient treatment of the topic. As for other routes, the EA should include a clear and more detailed explanation of why diversion will be minor. Only fairly broad statements concerning temporal changes in trip making and reduction in trip making are now in the EA. What types of trips are not being made? If, for example, they are home-based work trips, it is unlikely that such shifts in land use patterns would take place over the "interim" time line that is proposed for this project. Therefore, the assumptions in the EA may be incorrect and these incorrect assumptions may lead to impacts that are not mitigated.

**Monitoring of traffic diversion.** The EA assumes that auto diversion from SR 520 to surrounding arterials will be small. Much of the analysis is based on the regional travel demand model which focuses on high level assumptions and regional freeway travel behavior. Mitigation of impacts to local arterials is not identified in the EA because the

analysis of traffic diversion was only evaluated at a very high level. Due to the difficulty in evaluating possible local traffic diversion, the EA should identify a traffic mitigation program to monitor possible impacts tolling may have on local arterials. The monitoring program should compare with and without tolling performance measures for specific arterials throughout the study area based on input from local agencies. Kirkland is particularly concerned about corridors in the northern part of the City and our proposed annexation area. Many of those corridors already serve a high proportion of traffic from SR 522, one of the main corridors where traffic diversion might occur. Tables 4-5 and 4-6 in the Transportation Discipline Report (Appendix E) are of particular interest because they indicate no likely change in travel times or speeds along SR 522 with implementation of tolls. Changes in travel times and speeds are just one example of the type of traffic data that should be monitored to truly determine and ultimately address possible impacts to the local arterial system. Specific funding should also be identified and allocated towards mitigation that could address local impacts as they arise.

**Purpose of the project.** Traffic congestion relief and funding for the SR 520 Bridge replacement appear to be joint purposes of the Variable Tolling project. The EA should further explain why each of these purposes is important. Providing revenue to complete the SR 520 bridge replacement project is a key purpose of tolling. If tolling revenue is not supplemented with other revenue to build the entire project, how is early implementation of tolling along SR 520 going to ensure the bridge is replaced?

**Land use changes.** Page 5-23 of the EA states that there will be "no effect on employment trends in the region" as a result of the project. This statement seems inaccurate, if fewer trips are being made across the corridor, or they are being shifted in time or route and some of these trips are work trips, it is likely that employment trends will change. The EA should have further explanation of why it is expected that there will be no effect on employment trends.



# SR 520 Variable Tolling Project

## Environmental Assessment

March 2009





# SR 520 Variable Tolling Project

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King County, Washington

Environmental Assessment

## Submitted Pursuant To:

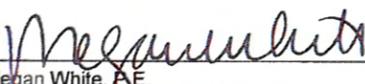
National Environmental Policy Act (Section 42 U.S. Code 4332 (2)(c) and 23 CFR Part 771)  
State Environmental Policy Act (Chapter 43.21C, Revised Code of Washington)

## Submitted By:

U.S. Department of Transportation, Federal Highway Administration, Washington Division, and  
the Washington State Department of Transportation

  
\_\_\_\_\_  
Pete Jilek, P.E.  
Federal Highway Administration  
Urban Area Engineer

3/31/2009  
Date of Approval

  
\_\_\_\_\_  
Megan White, P.E.  
Washington State Department of Transportation  
Director, Environmental Services

3/30/09  
Date of Approval

The following persons may be contacted for additional information concerning this document:

Pete Jilek, P.E.  
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Olympia, WA 98501  
(360) 753-9550

Paul W. Krueger  
SR 520 Variable Tolling Project  
Environmental Manager  
Washington State Department of Transportation  
401 2<sup>nd</sup> Avenue S, Suite 300  
Seattle, WA 98104  
(206) 716-1135

In compliance with the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA), this Environmental Assessment (EA) describes the environmental consequences of implementing a toll on all lanes of State Route (SR) 520 at the Evergreen Point Bridge across Lake Washington. This analysis concludes that the project will not have a significant effect on the environment.

Comments must be postmarked or received by May 11, 2009, and should be returned to:

Paul Krueger, SR 520 Variable Tolling Project Environmental Manager  
Urban Corridors Office  
Washington State Department of Transportation  
401 2<sup>nd</sup> Avenue S, Suite 300  
Seattle, WA 98104  
or email [SR520VariableTolling@wsdot.wa.gov](mailto:SR520VariableTolling@wsdot.wa.gov)

Information about how to obtain a copy of this document, as well as the date and location of the public hearing are found on the next page.

The Environmental Assessment is available for review at the Seattle Public Library and King County Library System libraries listed below.

**Seattle Public Library**

- ▶ Central Library
- ▶ Montlake Branch
- ▶ Northeast Branch
- ▶ Queen Anne Branch
- ▶ University Branch

**King County Library System**

- ▶ Bellevue Regional Library
- ▶ Bothell Regional Library
- ▶ Mercer Island Library
- ▶ Kirkland Library
- ▶ Library Connection at Crossroads
- ▶ Redmond Regional Library

Printed copies of this document may be purchased for \$14.60, which does not exceed the cost of reproduction. This document is also available online at:

<http://www.wsdot.wa.gov/Projects/LkWaMgt/>

Two public hearings on this Environmental Assessment will be held. The first will be on Tuesday, April 28, 2009, from 5:30 p.m. to 7:00 p.m. at:

**Bellevue Regional Library**

1111 110<sup>th</sup> Ave. NE

Bellevue, WA 98004

The second public hearing will be held on Thursday, April 30, 2009, from 4:00 p.m. to 7:00 p.m. at:

**Seattle Library/University Branch**

5009 Roosevelt Way N.E.

Seattle, WA 98105

# SR 520 Variable Tolling Project

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## Environmental Assessment

### Submitted Pursuant To:

National Environmental Policy Act Section (42 U.S. Code 4332 (2)(c) and 23 CFR Part 771) and State Environmental Policy Act (Chapter 43.21C, Revised Code of Washington)

### Submitted By:



### Abstract:

The U.S. Department of Transportation (USDOT) initiated a program, *National Strategy to Reduce Congestion on America's Transportation Network*, for federal, state, and local officials to consider as they work together to reverse current trends of congestion. The Urban Partnership Program is a major component of this initiative. The selected applicants will adopt the Four "Ts": tolling, transit, telecommuting and technology. These strategies have been found to effectively reduce traffic congestion. In 2007, Seattle was selected to join the Urban Partnership Program. This SR 520 Variable Tolling Project is included in the Lake Washington Urban Partnership Agreement (UPA).

State Route (SR) 520 is one of the main transportation corridors to cross Lake Washington. It connects Seattle with major population and employment centers on the Eastside. Congestion is a problem along the SR 520 corridor and will continue to worsen unless strategies are implemented to reduce it. Therefore, this Environmental Assessment (EA), in compliance with the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA), describes the environmental consequences of implementing tolling along SR 520.



## **Title VI**

WSDOT ensures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination against any person on the basis of race, color, national origin or sex in the provision of benefits and services resulting from its federally assisted programs and activities. For questions regarding WSDOT's Title VI Program, you may contact the Department's Title VI Coordinator at (360) 705 7098.

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A Federal agency may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those Federal actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

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# Acronyms

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ATM	active traffic management
B5	five percent biodiesel
B10	10 percent biodiesel
B20	20 percent biodiesel
BMPs	best management practices
CAA	Clean Air Act of 1970
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CSC	Customer Service Center
dBa	decibel (A-weighted)
EA	Environmental Assessment
EBT	Electronic Benefit Transfer
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ETC	electronic toll collection
FAZ	forecast analysis zone
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GHGs	greenhouse gases
HAC	high-accident corridors
HAL	high-accident locations
HSS	highway of statewide significance
HOV	high-occupancy vehicle
HOT	high occupancy toll
I	Interstate

# Acronyms

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mph	miles per hour
MSATs	Mobile Source Air Toxics
NAAQS	national ambient air quality standards
NAC	Noise Abatement Criteria
NCES	National Center for Education Statistics
NEPA	National Environmental Policy Act
NO <sub>2</sub>	Nitrogen Dioxide
NRHP	National Register of Historic Places
O <sub>3</sub>	Ozone
PAL	pedestrian accident locations
PM	Particulate Matter
PSCAA	Puget Sound Clean Air Agency
PSRC	Puget Sound Regional Council
SEPA	State Environmental Policy Act
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SOV	single-occupancy vehicle
SR	State Route
TESC	temporary erosion and sediment control
UPA	Urban Partnership Agreement
USDOT	U.S. Department of Transportation
VMT	vehicle miles traveled
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation



# Chapter 1 Executive Summary

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*Chapter 1 summarizes the project background, the effects of the project, how this document is organized, and the next steps in the process.*

## What is the SR 520 Variable Tolling Project?

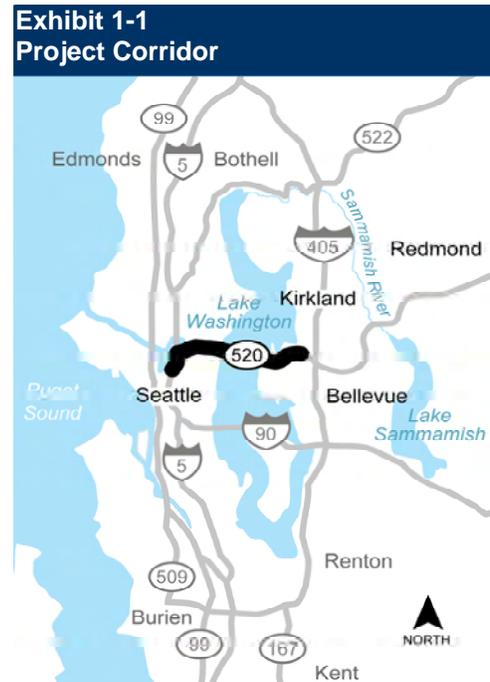
The SR 520 Variable Tolling Project will implement variable pricing (tolls) on all through-lanes of SR 520 between Interstate 5 (I-5) and Interstate 405 (I-405). All tolls will be collected electronically. The project will reduce traffic congestion and generate revenue. Revenue generated will be invested in the SR 520 corridor, subject to legislative appropriation, as required by state law (RCW 47.56.820).

## Where is the SR 520 Variable Tolling Project located?

The study area for the SR 520 Variable Tolling Project is bounded by SR 522 to the north, I-405 to the east, I-90 to the south, and I-5 to the west. As shown in Exhibit 1-1, the project corridor itself is along SR 520, bounded by I-5 on the west and I-405 on the east. SR 520 is one of only two east-west roadways that cross Lake Washington. The other is I-90.

## Who is leading the project?

The Federal Highway Administration (FHWA) and the Washington State Department of Transportation (WSDOT) are joint lead agencies for this project. FHWA is the lead federal agency complying with the



National Environmental Policy Act (NEPA). WSDOT is the lead state agency complying with the State Environmental Policy Act (SEPA).

## What are the benefits of the project?

**Reduced Congestion:** Variable pricing will encourage drivers to choose alternate routes, times, and travel modes, or to eliminate trips altogether. This will result in reduced congestion, providing a more reliable trip for users of SR 520 as described in the *Transportation Discipline Report* in Appendix E.

**Funding Improvements:** Revenue generated will be invested in the SR 520 corridor, subject to legislative appropriation. The toll revenue could be used for replacing bridges, adding HOV lanes, and other types of transportation improvements.

## How will the project affect the future environment?

The SR 520 Variable Tolling Project is an interim project that will be built and operated only until the existing Evergreen Point Bridge is replaced by a new bridge. The new bridge will have a different configuration and likely have different toll rates, so the conditions we analyzed for this document will no longer exist after the new bridge opens. WSDOT plans to open the replacement of the Evergreen Point Bridge in 2016. Therefore, we used 2016 as the horizon year for our analysis of how the project would affect the environment in the future. Our analysis does not extend beyond 2016.

**Transportation:** SR 520 connects Seattle on the west side of Lake Washington with Medina, Hunts Point, Yarrow Point, Clyde Hill, Kirkland, Bellevue, and Redmond on the east side of the lake. It serves as a critical connection for people and goods crossing Lake Washington.

The primary transportation effects of the tolling project are:

- ▶ Congestion relief on SR 520 in peak periods.
- ▶ Less traffic in general on all cross-lake routes during peak periods.

Peak period traffic volumes will be 11 percent to 18 percent lower on SR 520 after a toll is implemented than if a toll is not implemented. However, with a toll on SR 520, volumes on I-90 and SR 522 would increase only zero percent to four percent and volumes on I-405 and I-5 would not noticeably change.

The tolling project will result in minimal to no noticeable diversion of traffic to SR 522, I-90, I-405, and I-5 during peak periods because many people will be making other choices. They will change the time-of-day for their trip, use transit instead of driving, or choose a different destination that doesn't require crossing Lake Washington.

As a result of the changes in traffic volumes, we expect to see higher average travel speeds, lower travel times, and reduced vehicle miles traveled on SR 520 during peak periods and minimal changes on alternate routes.

**Social Resources:** The project will reduce traffic congestion during peak hours, thus improving travel reliability and reducing travel times. Increased mobility and reliability will benefit emergency service providers, and community cohesion will not be affected as a result of the project. There will be no effect on any park or recreation resource.

**Environmental Justice:** There are three principal ways in which project operation will adversely affect low-income or minority populations if not mitigated:

- ▶ The cost of the tolls will present a burden to low-income bridge users.

- ▶ The cost of the tolls will present a burden to social service agencies that depend on the Evergreen Point Bridge to serve their low-income or minority clients.
- ▶ Bridge users will be required to purchase a transponder and set up an account with the Washington State Department of Transportation (WSDOT) to pay the toll, which may present a burden to low-income Evergreen Point Bridge users who are less likely than the general population to have a credit or debit card.

If the SR 520 Variable Tolling Project is undertaken, WSDOT and its partners have already decided to employ the following strategies to help minimize adverse effects on low-income or minority populations:

1. WSDOT will establish permanent customer service center storefronts on both sides of Lake Washington.
2. WSDOT is exploring the possibility of establishing permanent *Good To Go!*<sup>TM</sup> retail outlets at convenient locations, such as grocery stores, convenience stores, or pharmacies throughout the travelshed.
3. Low-income users will be able to establish and replenish their prepaid accounts using their Electronic Benefit Transfer (EBT) card. An EBT card functions like a debit card and allows recipients who receive federal benefits to pay for products and services, such as groceries and health care.
4. WSDOT will conduct outreach in multiple languages to provide information about how to purchase a transponder, establish an account, and use the system.
5. WSDOT will provide social service agencies with information about tolling and options to avoid the tolls.

The above strategies will minimize barriers that otherwise would limit access to the SR 520 by low-

income populations. In addition, the following strategies could also be considered by the Washington State Legislature to further minimize adverse effects:

1. Allocating additional funding to increase transit service along SR 520 routes that are used by low-income populations.
2. Allocating funding to provide refunds to social service agencies that broker transportation for low-income and disabled populations that meet certain thresholds.

**Economic Resources:** The project will have little economic effect overall and no direct effects to businesses. Businesses located near the Evergreen Point Bridge are not expected to see any noticeable change in revenues as a result of the project.

**Water Resources:** The project will have minimal construction disturbance and will add a very small amount of impervious surface for mounting equipment cabinets. WSDOT will adhere to all existing state and federal laws pertaining to water quality by ensuring that the contractor implements best management practices (BMPs). As a result the project will have no perceptible or appreciable effect on water quality.

**Geology and Soils:** Because this project will have very minimal construction disturbance, geology and soils are not discussed in detail within this document. Potential effects related to soil erosion are described in the water resources section.

**Ecosystems:** The project will have no permanent effects to the natural environment. WSDOT will ensure that the contractor implements erosion control BMPs and timing restrictions to minimize temporary effects from soil disturbance and construction noise.

**Visual:** The project will cause very little change to visual resources in the project area. To minimize visual effects,

we will place the tolling equipment either on the existing truss structure or on a new gantry structure as close to the truss structure as possible. Structural elements will be painted the same color as the truss structure. The additional lighting at the tolling location will be designed to have negligible effect on existing ambient light levels and glare.



*Example of gantry structure that could be used on the Evergreen Point Bridge*

**Cultural Resources:** The Evergreen Point Bridge was completed and placed in service in 1963. It is eligible for listing on the National Register of Historic Places (NRHP). We determined that installing of the tolling equipment on the east highrise truss structure will have no adverse effect on the NRHP-eligible Evergreen Point Bridge.

**Public Utilities:** The project will not have an adverse effect on utilities. Some electricity will be required to operate the tolling equipment; however, the amount needed will be negligible.

**Land Use:** The duration of this project is too short to result in long-term land use changes.

**Hazardous Materials:** We do not anticipate any hazardous materials effects. The project will be constructed completely within WSDOT right-of-way and will be remote from any potential hazardous materials site.

**Energy:** We expect the project to improve traffic flow, reduce peak period traffic congestion along SR 520, and allow more cars to travel at more energy-efficient speeds. In addition, because little construction is involved with the SR 520 Variable Tolling Project, little energy will be spent in reducing congestion along the route. Overall, the project will reduce energy use compared to the amount of energy that would be used if the project was not implemented.

**Noise:** The project will not noticeably change noise levels on SR 520 or alternate routes. While peak period traffic

volumes on SR 520 would be lower, the reduction would not be enough to result in a perceptible difference in noise levels compared to existing noise levels. Similarly, the minimal diversion of traffic from SR 520 on to alternate routes (I-90, SR 522, I-405, and I-5) will not result in a substantial difference in future noise levels compared to existing noise levels. Construction activities will temporarily increase noise levels. Recommended construction noise mitigation measures are included in Chapter 5.

**Air Quality:** The project will not have an adverse effect on air pollutant emissions. Construction activities will temporarily generate air pollutants within the project area. BMPs to control air pollutants during construction are described in Chapter 5.

**Cumulative Effects:** In conjunction with other transportation and development projects planned in or near the project area, the SR 520 Variable Tolling Project could contribute to cumulative effects on transportation, Environmental Justice (low-income) populations, air quality, and climate change (greenhouse gas emissions).

A number of highway construction projects are planned on SR 520 and alternate routes between 2010 and 2016. The SR 520 Variable Tolling Project will not have any noticeable cumulative effect on travel patterns in combination with the construction of these projects. Existing capacity constraints on the highway system and planned construction on both of the direct routes across Lake Washington will limit diversion related to construction.

The SR 520 Variable Tolling Project, along with other planned highway and transit improvements, will cumulatively improve regional mobility. Transit users crossing Lake Washington will especially see benefits. They will experience a noticeable cumulative improvement as HOV lane projects are completed on both SR 520 and I-90, along with transit service increases by both King County Metro and Sound Transit. The use of transit use across Lake

#### **What major transportation projects are planned for construction in the study area between 2010 and 2016?**

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SR 520  
SR 520 Eastside Transit and HOV Project (2010-2013)

SR 520 Bridge Replacement and HOV Project (2012-2016)

I-90  
I-90 Two-Way Transit and HOV Operations Project (2010-2014)

Sound Transit East Link Light Rail Project (2013-2020)

I-405  
I-405 NE 195th to SR 527 Northbound Widening Project (2009-2010)

I-405 NE 8th Street to SR 520 Improvement Project (2009-2012)

Washington will also likely see a cumulative increase as more trips are added and people look for ways to avoid the toll on SR 520.

Construction planned for the un-tolled routes around or across Lake Washington may make it more time-consuming for low-income SR 520 users to take an alternate route to avoid paying the toll. A potential positive cumulative effect is the transit service improvements described above will make it easier for some low-income users to use transit to avoid the toll on SR 520.

This project, with other transportation projects planned to be completed between 2010 and 2016, will provide some cumulative reduction in congestion. This will likely reduce the amount of emissions emitted from autos. However, even if these projects are not built, vehicle emissions are likely to be lower in 2016 than present levels due to EPA programs to reduce emissions by 2020. Overall, we expect there will be little cumulative effect on regional air quality as a result of this project.

The project will contribute to the cumulative reduction of greenhouse gas emissions, along with other regional projects that reduce single-occupancy vehicle use and improve traffic flow. Quantitative modeling tools to evaluate greenhouse gas emissions for linear transportation projects are limited at this time. At the project level, WSDOT is currently unable to show the effect of improved traffic flow on emissions. However, since about half of the State of Washington's greenhouse gas emissions are from transportation (automobiles and trucks), reducing single-occupancy vehicle trips likely reduces greenhouse gases.

## How is this Environmental Assessment organized?

This environmental assessment presents information about the project to inform the public about the potential effects of project choices and assist decision-makers in considering how the project should be accomplished.

Chapter 2 provides a background and discusses the purpose for the project. Chapter 3 describes the development of the alternatives, explains how the Preferred Alternative was chosen, and summarizes public involvement. Chapter 4 gives a project description and describes the construction of the project. Chapter 5 includes a summary of the affected environment, potential effects, and proposed mitigation measures to avoid or minimize effects, if necessary. Chapter 6 describes the cumulative effects of the project. Chapter 7 is a list of preparers of the document and Chapter 8 is a list of references. Additional information has been provided within the appendices. The appendices include agency and public correspondence, a list of commitments, and other technical reports.

## What are the next steps in this process?

Once this EA is published, a 30-day public and agency comment period will begin, during which a public hearing will be held.

After the 30-day public comment period has ended, we anticipate that FHWA will complete the NEPA process by issuing a Finding of No Significant Impact (FONSI). FHWA will consider the analysis of environmental effects in this document and public comments when they decide if a FONSI is appropriate. WSDOT plans to complete the SEPA process by using this EA as the documentation for a SEPA Determination of Non-significance.

In addition to completing the NEPA and SEPA processes, the Washington State Legislature will need to authorize

### What is the Environmental Assessment Process?

#### The SR 520 Project

#### Technical Analysis

The technical analysis for the environmental resources, including two discipline reports and two technical memos, studies existing conditions, the proposed actions, and how effects to environmental resources will be avoided, minimized, or mitigated.



#### Environmental Assessment (EA)

The draft EA, prepared in compliance with the National/State Environmental Policy Act, discusses the purpose and need for the project, summarizes development of the alternatives, and includes an analysis of effects to determine if an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI) would be required.



#### FONSI or EIS

The FONSI is prepared only when the Preferred Alternative has no significant effect on the environment, and therefore, an EIS is not required. If any significant effect is discovered, an EIS would then need to be prepared and a FONSI would not be issued.

tolling SR 520 before final design and construction can proceed. In order to implement tolling in 2010, this will need to occur during the 2009 legislative session. The Washington State House of Representatives is currently considering two bills that would authorize tolling on the SR 520 corridor (HB 2211 and HB 2319).

Our proposed construction schedule includes several elements. The first is to develop documents that request proposals from companies to build the project. We plan to complete this in early to mid-2009. Next, we expect to give the notice to proceed for construction in mid- to late 2009. The project should be complete and opened in mid- to late 2010.

# Chapter 2 Introduction to the Project

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*Chapter 2 explains the project background, the purpose and need for the project, and how this project relates to other projects in the SR 520 corridor.*

## How did the SR 520 Variable Tolling Project come about?

In May 2006, the USDOT announced a major nationwide initiative to reduce transportation system congestion. The plan, called the *National Strategy to Reduce Congestion on America's Transportation Network*, provides a blueprint for federal, state, and local officials to consider as they work together to reverse the current trends of congestion. One major component of this initiative is the Urban Partnership Program. The USDOT solicited applicants that, if selected, would adopt the "Four Ts": tolling, transit, telecommuting and technology – strategies believed to be effective on a combined basis in reducing traffic congestion. In return, the USDOT will provide federal funding to the selected Urban Partners to support implementation.

In 2007, the Seattle area was selected to join the Urban Partnership program. The Lake Washington Urban Partnership Agreement (UPA) is an agreement between the USDOT and the Seattle-area Urban Partners: WSDOT, King County, and the Puget Sound Regional Council (PSRC). Variable tolling on SR 520 is just one component of the Lake Washington Urban Partnership Agreement (UPA). Other components include transit improvements, new technologies such as real-time traveler information systems and active

### What are the other elements of the Lake Washington Urban Partnership?

The Lake Washington Urban Partnership includes three elements in addition to tolling. Together these four elements will be implemented to help reduce congestion along the SR 520 corridor and will meet the terms of the Urban Partnership Agreement. Detailed information can be found on the Web at [www.upa.dot.gov/agreements/seattle.htm](http://www.upa.dot.gov/agreements/seattle.htm). The three additional elements include:

#### 1) Transit

King County Metro will improve transit service on SR 520 by expanding park-and-rides, adding at least 45 new buses, increasing service hours, and increasing rider information services.

#### 2) Technology

WSDOT will implement European-style active traffic management (ATM) techniques on SR 520 and I-90 to improve traffic flow and safety. These techniques involve the use of dynamic message signs suspended over each lane every half-mile to provide variable speed and lane control information to drivers, while queue warning information and other messages will be provided via variable message signs.

#### 3) Telecommuting

PSRC will develop programs to encourage telecommuting and the use of other transportation demand management tools. PSRC will work with employers to encourage flexible employment arrangements that improve worker productivity and reduce rush-hour traffic demands.

traffic management (ATM), and increasing telecommuting programs. These components are being implemented separately from variable tolling, with separate environmental reviews.

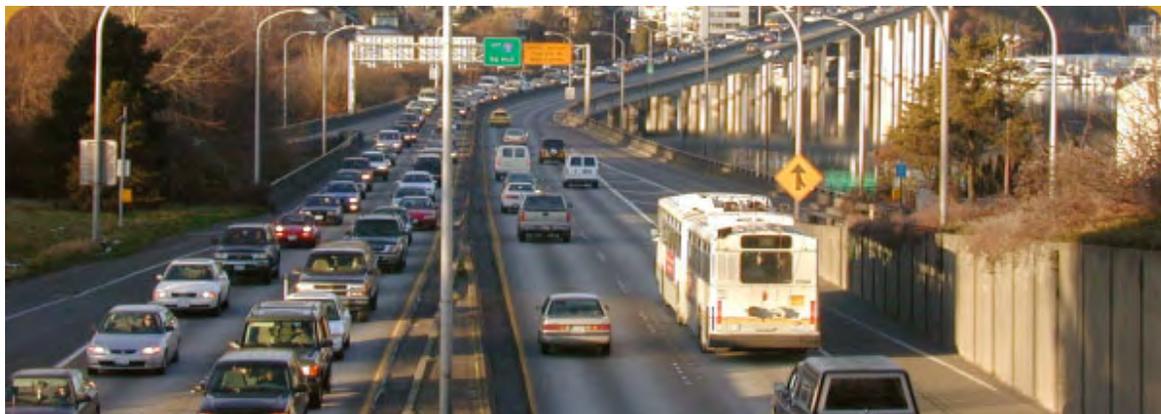
## What is the purpose of the project?

The purpose of the Urban Partnership SR 520 Variable Tolling Project is to reduce congestion on SR 520 between I-5 and I-405 by implementing tolling, meet the requirements of the UPA, and raise revenue for future transportation improvements on SR 520.

## Why is this project needed now?

**The movement of people and goods needs to be improved on this important corridor.**

SR 520 is a regionally important transportation corridor, connecting major employment and population centers with one of the only two bridges across Lake Washington (see Exhibit 2-1). Successful implementation of regional land use plans requires the ability to efficiently and reliably move an increasing volume of people and goods across the lake.



*Traffic congestion on SR 520*

### **Traffic congestion makes travel unreliable.**

This project needs to be implemented now because of the severe traffic congestion on SR 520. Population and employment growth in the central Puget Sound region has led to an increased demand for travel that exceeds the highway's capacity. This means that more drivers want to use the highway than it can accommodate. The result is a long backup of vehicles traveling at very slow speeds—a scenario that many people traveling during rush hour have experienced. Details of the traffic congestion analysis can be found in the *Transportation Discipline Report* in Appendix E.



*Existing peak traffic on SR 520*

### **The project must meet the requirements of the Lake Washington Urban Partnership Agreement.**

USDOT will only provide funding for the projects that are part of the Lake Washington Urban Partnership Agreement if the Seattle-area Urban Partners meet the requirements of the agreement. Implementing a variable toll on SR 520 is one of the requirements. The agreement also requires the toll be implemented on an accelerated schedule.

### **How does this project relate to other SR 520 projects?**

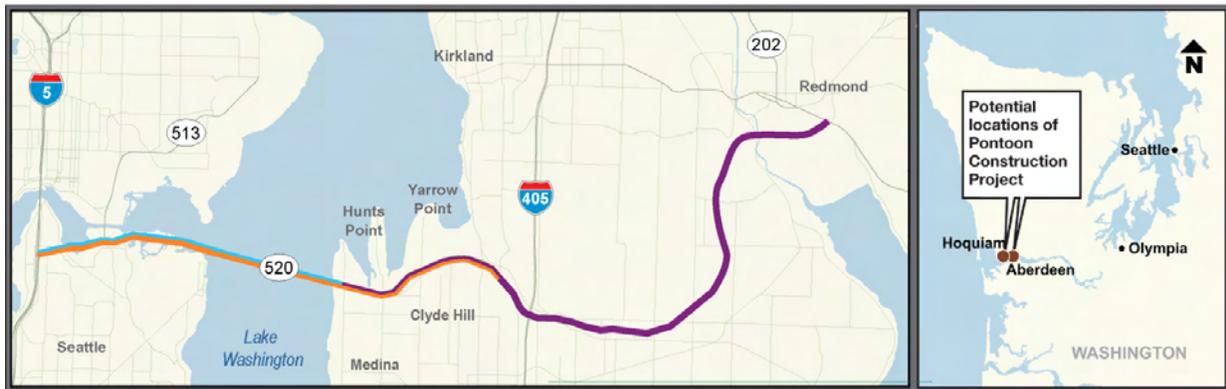
The SR 520 Variable Tolling Project is one of four projects that compose the SR 520 Bridge Replacement and HOV Program. Of those projects, three of them are physically located in the SR 520 project area. There is a fourth project, the Pontoon Construction Project, which will be located outside the project area. Exhibit 2-2 shows a brief summary of the four projects.

**Exhibit 2-2  
Summary of SR 520 Projects**

The SR 520 Bridge Replacement and HOV Program will replace the Portage Bay and Evergreen Point bridges and improve existing roadway between I-5 in Seattle and SR 202 on the Eastside.

The SR 520 Bridge Replacement and HOV Program includes four projects:

- **Urban Partnership** – Traffic management and tolling from I-5 to I-405.
- **Eastside Transit and HOV** – Evergreen Point Road to SR 202.
- **Pontoon Construction Project** – pontoons for catastrophic failure planning.
- **Bridge Replacement and HOV Project** – I-5 to the vicinity of Evergreen Point Road.



**SR 520 Bridge Replacement and HOV Project**

This project would improve the SR 520 corridor from I-5 in Seattle to the vicinity of Evergreen Point Road. It would include replacement of all the existing bridges with newer, safer bridges designed to better withstand earthquakes and windstorms. The project is currently being reviewed in a NEPA/SEPA EIS process and is planned to be open in 2016. Both the new roadway configuration and the toll rates would be different from what is being studied for the SR 520 Variable Tolling Project.

**SR 520 Eastside Transit and HOV Project**

The SR 520 Eastside Transit and HOV Project will enhance travel time reliability, mobility, access and safety, for transit and HOVs in rapidly growing areas along the SR 520 corridor east of Lake Washington.

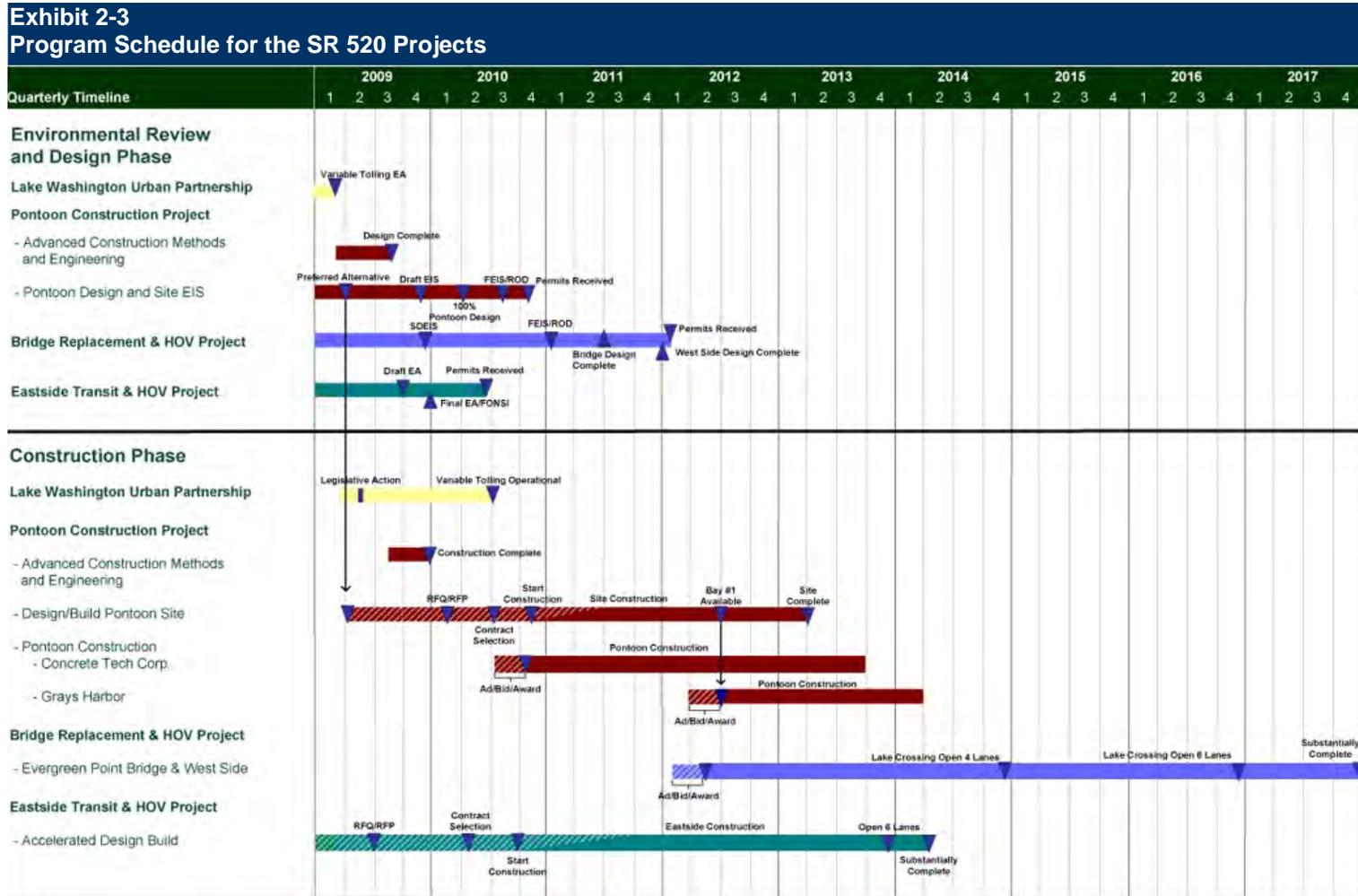
The project will improve and complete the HOV lanes on the 8.5 miles of SR 520 from the Evergreen Point Transit Station near Lake Washington to SR 202 in Redmond. The HOV lanes and transit stops will be shifted from the outside to the inside of the roadway. This work will include reconstructing the approximately three-mile section of SR 520 between the Evergreen Point Transit Station and 108th Avenue NE. WSDOT is currently preparing a NEPA Environmental Assessment for the project. The project is scheduled to be complete in 2013.

### **SR 520 Pontoon Construction Project**

This project will advance pontoon construction so the SR 520 floating bridge can be restored in the event of a catastrophic failure. The project also includes storing these pontoons until they are needed. WSDOT is currently evaluating two potential sites – one in Aberdeen and one in Hoquiam– for construction of a new casting basin facility. An existing site in Tacoma would also be used to construct some of the pontoons. WSDOT is currently preparing a NEPA/SEPA EIS for the project. Construction of the new facility would start by the end of 2010 to enable pontoon construction to start in 2012.

Related to this project is a separate project called Advance Construction Methods and Engineering that would test proposed construction methods before construction of the new facility starts.

See Exhibit 2-3 for the current program schedule for the projects in the SR 520 program.



# Chapter 3 Developing the Alternatives

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*Chapter 3 explains the development and screening of project alternatives, how the Preferred Alternative was chosen, and the public and agency involvement that was conducted.*



*Evergreen Point Bridge—Existing Structure*

## What factors affected the development of alternatives?

The range of alternatives that we considered was greatly narrowed by the need to satisfy the UPA requirements and the short timeframe of the project.

WSDOT plans to replace the existing Evergreen Point Bridge in 2016. This project is an interim project that will be built and operated only until the new bridge opens. Alternatives that take several years to plan, design, and construct would not operate long enough to justify implementing. Therefore, we did not consider any alternative that expanded or changed the configuration of SR 520 between I-5 and I-405.

The SR 520 Bridge Replacement and HOV Project, which will replace the existing bridge, and the SR 520 Eastside

### Open vs. Closed Tolling Systems

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Two common tolling methods are used, open and closed systems.

#### Open System

In the open system, there are toll facilities (such as a toll booth or electronic toll point) along the main-line toll road. Drivers pay a toll at each facility they encounter.

#### Closed System

In a closed system, typically used with ticketed toll facilities, the driver stops and receives a ticket stamped with the location of the entrance to the toll facility. The driver stops again upon exiting the facility and pays the toll, which is based on the point of entry and point of exit along the facility route.

Transit and HOV Project, are considering alternatives that will expand or change the configuration of SR 520 in this area. Environmental review for these projects is taking place concurrently with the SR 520 Variable Tolling Project.

## What alternatives were considered for the EA?

All of the alternatives we considered involved different ways to implement tolling in the SR 520 corridor. Details describing the various tolling alternatives considered can be found in the *Identification of Toll Configuration Alternatives* memo located in Appendix F.

In summary, we initially considered 10 tolling configuration alternatives for the SR 520 Variable Tolling Project. Variations among the alternatives included different locations for tolling, including various numbers of tolling points, and whether tolling collection equipment should be on the mainline or on off- and on-ramps. We also considered various toll pricing alternatives and discount options.

We used a screening process to identify one toll configuration and one pricing alternative to evaluate in this EA as the Preferred Alternative. In addition, we also evaluate a No Build Alternative in this EA.

## What is the No Build Alternative?

The No Build Alternative establishes a baseline for comparing the effects associated with the proposed project. The No Build Alternative maintains the status quo meaning only routine activities, such as road maintenance, repair, and safety improvements, or other projects that are already planned and permitted, would take place. SR 520 across Lake Washington will remain as it is today, which consists of a four-lane highway (two lanes in each direction of travel) with no shoulders on the floating part of the bridge. The only difference between

### What is Photo Tolling?

Photo tolling is a cutting-edge system of toll collection that uses high-definition cameras to record the license plates of vehicles that pass through a tolling point. The plate is then traced to the owner, who is billed.

### Toll Collection Method

Three types of toll collection are used at modern toll facilities:

**Manual, or staffed, toll facilities**  
Drivers pay the toll to an attendant who then raises a gate to permit the vehicle to pass.

**Coin-basket facility**  
The coin-basket facility uses an unstaffed booth where drivers stop at the tollbooth and toss the exact change in coins into a basket. The machine determines whether the correct amount of toll has been paid and, if so, raises a gate to permit the vehicle to pass.

**Electronic Toll Collection (ETC) systems**  
In the ETC system, drivers subscribe to a service and are given a transponder. Toll facilities are outfitted to detect the transponder and subtract the toll money from the driver's account when the vehicle passes the booth.

the No Build Alternative and the proposed project is the toll and the tolling equipment.

## What screening criteria were used to evaluate the alternatives?

The screening criteria we used to evaluate each preliminary alternative were primarily based on the purpose and need of the project, which is described in Chapter 2 of this EA. The following screening criteria for evaluating various toll configurations and pricing alternatives related to the purpose and need were used:

- ▶ Will the alternative reduce congestion along SR 520?
- ▶ Will the alternative meet the implementation schedule?
- ▶ How will the alternative affect the complexity of processing transactions?
- ▶ How easily can the tolling and pricing be explained to the public?
- ▶ Will the alternative be accepted by the traveling public?
- ▶ What is the likely effect of the alternative on congestion in the I-90 corridor?
- ▶ What effect will the alternative have on improving safety in the corridor?
- ▶ What effect will the alternative have on improving roadway operations in the corridor?
- ▶ What is the effect of the alternative on generating potential toll revenue?

In addition to the specific criteria related to the purpose and need, the following additional screening criteria were also used:

- ▶ Will the alternative cause local diversion of traffic from the corridor?



*Aerial view of the existing Evergreen Point Bridge looking west*

- ▶ What is the relative ease of enforcing an HOV 3+ discount requirement for the alternative?
- ▶ Does the alternative facilitate a phased approach to implementing a new toll system?
- ▶ How easy would it be to enforce toll payment under the alternative?
- ▶ How much would the alternative cost to implement?
- ▶ What is the effect of the alternative on the environment?

Details about how each of these criteria was applied and the result of the screening can be found in the *Screening Criteria for Toll Configuration and Pricing Alternatives* memo located in Appendix F.

## **How was the Preferred Alternative chosen?**

### **Toll configuration alternative**

The screening criteria listed above were used to identify the Preferred Alternative that is now the proposed project. This process is described in detail in the *Qualitative Evaluation of Toll Configuration Alternatives* memo found in Appendix F.

Based on the results of the alternative screening, the alternative known as Alternative 1 was chosen as the Preferred Alternative for the SR 520 Variable Tolling Project. Alternative 1 will consist of a single, two-way tolling location with variable pricing. It will be a multi-lane, open system. Tolls will be collected by a method known as all electronic toll collection (ETC). This equipment will be mounted on the existing truss structure on the east side of the bridge, or on a separate gantry structures near the eastside of Lake Washington.

This alternative will:

- ▶ Reduce peak period congestion on SR 520 by implementing a tolling system.
- ▶ Meet the schedule of opening in mid-2010.
- ▶ Simplify the tolling operations by using only one tolling location.
- ▶ Be more readily accepted by the public since it will be simple and easy to use.
- ▶ Increase transit use by encouraging travelers to use transit instead of paying the toll.

We decided to place the tolling location on the eastern end of the bridge over Lake Washington so only people crossing the bridge pay the toll, which minimizes diversion to local streets.

We also considered other locations on land at either end of the bridge. Having the detection equipment and cameras on the bridge structure is preferable to a site located east or west of the bridge. There is little room on the land on the west side of the bridge to build the structures required to hold the equipment, and the area is more environmentally sensitive than the east side. The land on the east side of the bridge would not be preferable either because of the potential for conflicts with two other SR 520 projects (the Eastside Transit and HOV Project and the SR 520 Bridge Replacement and HOV Project). Both projects will include construction just east of the bridge that will likely include lane shifts and require the relocation of any tolling equipment placed over those lanes. If most of the equipment is on the existing bridge structure itself, it will not have to be disturbed until it is moved to its final location upon completion of the new bridge.

### **Variable pricing alternative**

There are two types of variable pricing – static and dynamic. The main difference between the two is that static pricing has a set schedule of toll prices in advance of the trip, where dynamic pricing can change at any given time in response to changes in the amount of traffic.

Dynamic pricing works best when the decision to use the toll facility can be made close to where the toll will be applied. For SR 520, this decision would need to occur very far away from the corridor, such as south of I-90, or north of SR 522. Because of the distance required for notification, by the time a driver reaches SR 520, the toll could change dramatically. Also, static pricing does a better job of congestion reduction because a commuter will be able to make more informed decisions on their route. For example, commuters would know (while planning their trip from home or work) what tolls to expect at certain times of day. Static pricing should result in a more stable and reliable trip pattern for the corridor. Based on these reasons, we chose variable static pricing as the preferred pricing alternative.

One element of pricing that is still being studied on how to implement as part of the SR 520 Variable Tolling Project is discounted access for vehicles with 3+ occupants. We also considered other discount programs, such as resident discounts and low-emission vehicles discounts. We concluded that only the HOV discount program would help reduce traffic congestion by encouraging carpooling. However, since there is not a dedicated HOV lane at the tolling location, identifying HOV users is difficult. WSDOT has not yet found an effective method for identifying them and is working to resolve this issue. This issue does not substantially affect the traffic analysis or any other effects analysis completed for this EA.

For a detailed description of the screening of the pricing alternatives and the discount programs considered, see the *Identification and Evaluation of Pricing Alternatives* memo located in Appendix F.

## How have the public, tribes, and agencies been involved?

### Scoping Process

The SR 520 Variable Tolling Project team conducted two public scoping meetings. The first was held on June 24, 2008, from 4:00 p.m. to 7:00 p.m. at the Naval Reserve Building, Lake Union Park, 860 Terry Ave. N in Seattle. The second meeting was held on June 25, 2008 from, 4:00 p.m. to 7:00 p.m. at Bellevue City Hall, 450 110th Avenue NE in Bellevue.

Most of the comments generally supported the project. Some of the more common specific comments submitted at these meetings included:

- ▶ Would like to see the project implemented as soon as possible.
- ▶ Concerned about privacy and electronic toll collection.
- ▶ Would like to see what effect this will have on air quality.
- ▶ Concerned about how tolling impacts low-income families.
- ▶ Encouraged by the potential reduction in congestion.
- ▶ Increase the number of buses and bus routes.
- ▶ Like the plans for the electronic signage.

We held a separate scoping meeting for federal, state and local agencies, as well as Native American tribes on August 6, 2008, at the WSDOT Urban Corridors Office in downtown Seattle. We mailed letters on July 24, 2008, to

### Scoping

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NEPA regulations use the term "scoping" to refer to the process of defining the content (scope) of environmental documents and the range of alternatives that will be analyzed in the document. The scoping process is used to explain the project to agencies and the public and identify the major issues of concern to both regulatory agencies and local citizens.

all the agencies and tribes that have jurisdiction or possible interest in the project inviting them to this meeting. The letter also stated that if interested parties could not attend the meeting, written comments were welcome. Several municipalities attended the meetings. No Native American tribes attended the scoping meeting. We did receive feedback from a Muckleshoot Indian Tribe staff person over the phone. Her primary concern was the potential effect of additional lighting on fish in Lake Washington.

Details about the public and agency scoping meetings, including all comments received and responses to those comments, can be found in the *SR 520 Urban Partnership Variable Tolling Project Scoping Report* located in Appendix G.

### **Other Outreach**

The 520 Tolling Implementation Committee conducted additional public outreach between June and December 2008. The Committee solicited feedback from the public on several SR 520 tolling concepts, including tolling SR 520 in 2010 as proposed by this project. Rather than conduct an extensive parallel public outreach program to ask similar questions, we instead relied on the outreach efforts of the Committee.

The Committee conducted 9 open houses, 10 public meetings, and numerous presentations to over 20 local jurisdictions. More than 16,000 people visited the Committee's website, over 700 attended an open house, and 13,000 submitted comments or took an on-line survey to share their opinions on tolling options for the SR 520 corridor. In addition, the Committee conducted a statistically valid, random-sample telephone survey with results very similar to those received from the 8,000 people who took the on-line survey. Their surveys found:

### **What is the 520 Tolling Implementation Committee?**

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The 520 Tolling Implementation Committee was created by the state legislature in 2008 and comprised of the Executive Director of the Puget Sound Regional Council, the Washington State Transportation Secretary, and a Washington State Transportation Commissioner.

The Committee was responsible for gathering input from the public, evaluating diversion of traffic from SR 520 to other transportation corridors, evaluating different tolling technology, exploring opportunities to partner with businesses to reduce congestion and contribute to funding the project, and reporting to the governor and legislature by January 2009. Detailed information can be found on the Web at [www.build520.org](http://www.build520.org).

- ▶ Three-fifths of the respondents supported tolling the Evergreen Point Bridge as a means of paying for a portion of future corridor improvements.
- ▶ When respondents learned that electronic tolling means vehicles travel at normal speeds through the toll area, a third or more were much more likely to support tolling the Evergreen Point Bridge.
- ▶ More than half supported beginning tolling of the existing Evergreen Point Bridge in 2010 when they knew that such early tolling will result in lower tolls and financing costs.
- ▶ About half supported beginning tolling of the existing Evergreen Point Bridge in 2010 when they knew that such early tolling will result in faster travel speeds on the Evergreen Point Bridge.
- ▶ Most supported variable rate tolling, and it was even more appealing when respondents knew that the toll rates during off-peak times will be about half of peak toll rates.

### **Outreach to Low-Income and Minority Populations**

As mentioned above, the 520 Tolling Implementation Committee hosted a number of open houses. The Committee ran advertisements in the following newspapers to engage low-income and minority people:

- ▶ *Northwest Asian Weekly* (English language publication that serves an Asian-American audience)
- ▶ *Siete Dias* (Spanish language publication, translated advertisement)
- ▶ *The Seattle Medium* (targeting African-American audiences)
- ▶ *Northwest Observer* (targeting African-American audiences)

Placards advertising the open houses were placed on 1,300 King County Metro and Sound Transit buses.

In November and December of 2008, the Committee public involvement team held interviews with agencies that serve low-income and minority people. They initially sought to interview 10 to 12 agencies that serve low- and moderate-income people, but many of the agencies contacted declined the opportunity. The Committee public involvement team was successful in interviewing these agencies:

- ▶ Catholic Community Services
- ▶ King County Housing Authority
- ▶ YWCA of East King County

We also considered feedback documented in summaries of meetings that the SR 520 Bridge Replacement and HOV Project outreach team conducted with social service agencies in 2004 and 2006. These organizations included:

- ▶ Circle of Friends
- ▶ Foundation for International Understanding through Students
- ▶ Fremont Public Association
- ▶ University of Washington Ethnic Cultural Center and Theater Complex

In addition, we reviewed comments submitted by Hopelink in 2006 for the SR 520 Bridge Replacement and HOV Project Draft EIS.

The *Environmental Justice Discipline Report*, Appendix D of this document, includes summaries from the meetings with social service agencies and the public comments from Hopelink.

In general, the outreach to low-income and minority populations indicated varied support for tolling SR 520 among these groups. Of the comments received that did

not support tolling, most concerned not being able to afford the tolls. Also, most thought that transit was not a good alternative to paying the toll, but that un-tolled routes were viable. Comments were also received indicating that discounts for low-income users would make tolling more fair.



# Chapter 4 Project Description

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*Chapter 4 describes the features and details of the proposed Variable Tolling Project. It also describes how the project will be built and various permits and approvals that will be required.*

## What are the features of the project?

The SR 520 Variable Tolling Project includes several components:

- ▶ A single, two-way mainline tolling location on SR 520.
- ▶ Vehicle-mounted transponders.
- ▶ Signs on routes approaching the tolling location.
- ▶ A customer service center with storefronts on both sides of Lake Washington.

### Tolling Location

The project will place tolling equipment on the eastern end of the bridge either on the existing truss structure, or on a separate set of gantries near the truss structure. Tolling equipment will include overhead signs on the bridges for each direction of travel, an overhead automobile detection device, antennas, and other equipment that will read in-vehicle transponders, video cameras over each lane to capture license plate images, and either visible or infrared lighting.

In addition, roadside concrete pads, totaling approximately 150 square feet in area, with controller cabinets will be located on the east side of the lake just south of SR 520 in WSDOT right-of-way. A backup generator, or simply a generator transfer switch for



*Existing truss structure on Evergreen Point Bridge*

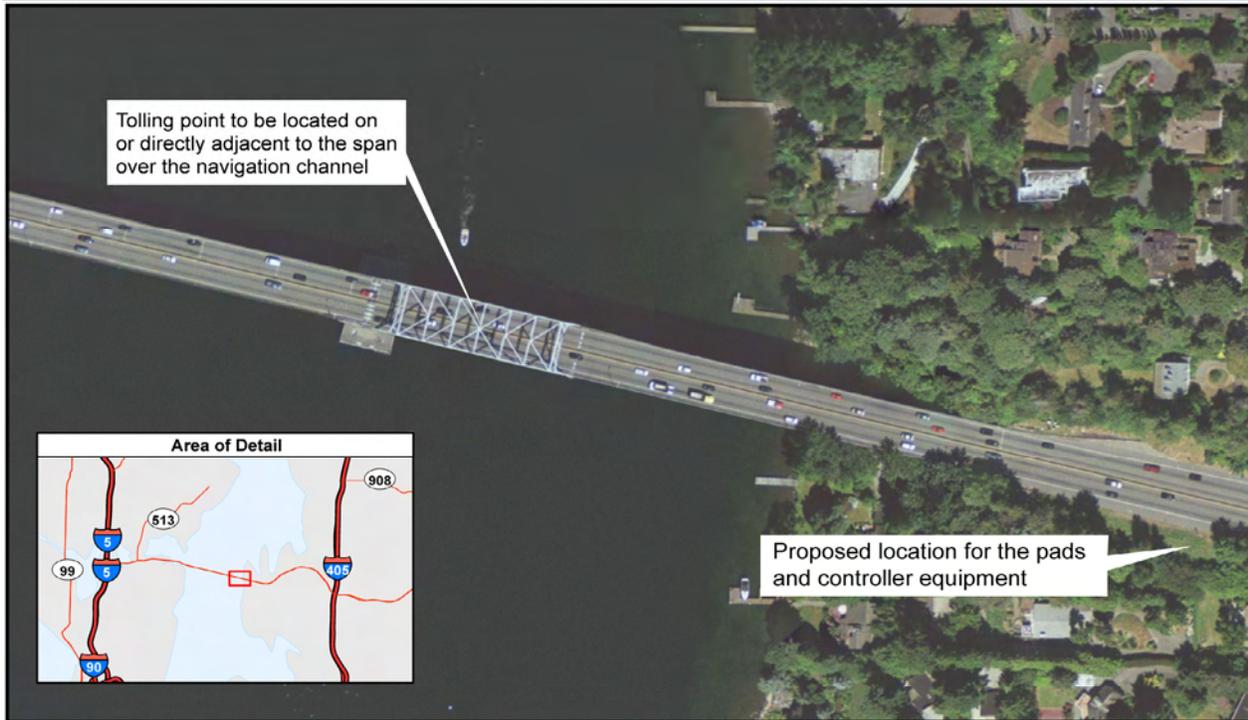


*Example of gantry structure that could be used on the Evergreen Point Bridge*

connection to a portable generator, will be included in case of power outages.

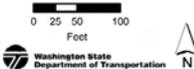
The proposed locations of the tolling equipment and the pads are shown in Exhibit 4-1.

**Exhibit 4-1  
Proposed Locations of the Tolling Equipment**



**Urban Partnership SR 520 Variable Tolling Project  
Proposed Tolling Point Location**

Data Source: State Routes from WSDOT at scale of 1:24K  
County Boundaries from WSDOT at scale of 1:500K  
Disclaimer: Tolling point location subject to change  
Produced by Urban Partners Environmental Office



July 21, 2008

GISWorkbench.mxd/Print Date

**Transponders**

WSDOT will encourage drivers to obtain a transponder to place in their vehicle that is linked to a prepaid *Good To Go!*™ account. They will receive statements for their use of the bridge. This system is being used on both the Tacoma Narrows Bridge and the SR 167 High-Occupancy Toll (HOT) Lanes Pilot Project. Those without *Good To Go!*™ accounts will automatically have their license plate photographed and a bill sent to the address of where the



*Windshield transponder*

vehicle is registered. A surcharge will be added to the toll.

## **Signs**

Signing along the corridor will be installed to inform drivers that they are approaching a tolled facility and identify the location of the last free exit. There are many options for the type and locations of the signing to be posted. For example, the toll rate could be posted, the price for the type of vehicle could be posted, the locations of the last opportunity to exit before being charged a toll could be posted, etc. We are currently studying these options and will make a decision before we implement tolling on SR 520. This decision will not affect the transportation analysis.

## **Customer Service Center**

The customer service center maintains customer account and transaction information for those customers using the toll facility. Customers with *Good To Go!*<sup>TM</sup> accounts will have the amount of the toll debited directly from their accounts. Customers without *Good To Go!*<sup>TM</sup> accounts will be invoiced based on license plate information. Customers may access their accounts or make payments during business hours via walk-in storefronts, which will be located on both sides of Lake Washington, or 24 hours a day via telephone and the Internet. WSDOT is also evaluating whether the use of mobile units or retail locations will provide greater access to opening and maintaining accounts. WSDOT plans to migrate all current *Good To Go!*<sup>TM</sup> accounts to the new customer service center at some point to provide a single, integrated statewide center for all WSDOT tolling operations.

## **What is variable tolling and how will it reduce congestion?**

Variable tolling can be defined as varying the price of tolls throughout the day to manage demand. This

reduces congestion by providing an incentive for drivers to change their behavior. For example, setting higher toll prices during the peak hours will encourage travelers to use an alternate route, an alternative mode of transportation, an alternate time of day, or eliminate trips altogether, which in turn will relieve congestion on SR 520 during peak periods.

WSDOT will collect tolls on SR 520 using electronic toll collection, which means no toll booths, no lines, and no delays for travelers since they will not have to stop and pay. This is similar to the way WSDOT collects tolls for the HOT lanes on SR 167 and a payment option for travelers using the Tacoma Narrows Bridge. The difference from these examples, however, is that electronic toll collection will be the only option for users of the Evergreen Point Bridge.

## **What toll rates are being considered?**

Although the actual toll rates have not been determined, WSDOT developed two tolling scenarios that we used for this analysis. These scenarios represent the low and high ends of the range of likely toll rates. The low toll scenario represents an average one-way toll of \$1.70, with daily rates between \$1.00 and \$2.95 depending on the time of day. The high toll scenario represents an average toll of \$2.36, with daily rates between \$1.50 and \$3.80. All of these toll rates are expressed in 2007 dollars.

## **When and how will the project be built?**

Currently our proposed construction schedule includes several elements. The first is to develop documents that request proposals from companies to build the project. We will complete this in early to mid-2009. Next, we will give the notice to proceed for construction in mid- to late-2009, and the project should be complete and opened in

mid- to late-2010. We expect construction to take approximately six months.

Prior to construction activities on SR 520, the WSDOT will require that the contractor install:

- ▶ High-visibility construction fencing to mark any sensitive areas located within the construction limits.
- ▶ Appropriate temporary erosion and sediment control measures in work areas prior to beginning construction activities. These measures will be monitored by WSDOT and the contractor for effectiveness throughout construction.

Installing tolling equipment above the roadway, building associated control equipment off the shoulder, and installing communications lines to connect the new system into the regional communications network will involve the following construction activities:

- ▶ Surveying the site to identify right-of-way limits, electrical and communication demarcation points.
- ▶ Clearing and grading areas adjacent to the existing highway where the tolling controller equipment will be located. WSDOT standard specifications, permit requirements and weather conditions (dry season or wet season) will limit the amount of clearing and open grading that can occur at any one time.
- ▶ Constructing the concrete pad upon which the control equipment will be mounted and installing the control equipment, transformer and backup generator on the concrete pad.
- ▶ Constructing the maintenance driveway to access the roadside equipment and the new electrical service. The driveway will be constructed of a pervious material like gravel. The new electrical service will be installed by the local utility company in coordination with WSDOT.

- ▶ Trenching in the south-side right-of-way east of the bridge structure and installing conduit to existing communications installations and the new electrical service.
- ▶ Installing conduit on the outside of the bridge, to connect over-lane equipment to the ground-mounted controllers.
- ▶ Running fiber optic lines and electrical conductors through the conduit. These will be connected on each end to create power and communications links to the new equipment.
- ▶ Installing lighting, cameras, and transponder readers overhead on the truss structure, over each lane.

The following final construction activities will be needed to complete the project:

- ▶ Testing the new equipment.
- ▶ Restoring roadside vegetation.
- ▶ Removing temporary erosion and sediment control measures and high-visibility construction fencing.

### **How will WSDOT let the public know about construction updates?**

WSDOT will use the following techniques to provide people information regarding project construction activities:

- ▶ Updating project websites that report construction activities and the main SR 520 project Web site regularly
- ▶ Sending people messages using the existing SR 520 E-mail distribution list and other WSDOT e-mail lists
- ▶ Distributing media alerts to notify the media
- ▶ Ensuring that any road closures and detours are prominently signed

## What permits and approvals will be required to build the project?

WSDOT will obtain the following permits and approvals for the project:

### State

- ▶ Washington Department of Fish and Wildlife
  - Hydraulic Project Approval
- ▶ Washington State Department of Ecology
  - Coastal Zone Management Program Consistency Certification

### Local

- ▶ City of Medina
  - Noise Variance
  - Shoreline Substantial Development Permit
  - Critical Areas Review

### What are Critical Areas?

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Critical Areas include wetlands, frequently flooded areas, critical recharge areas for local aquifers, geologically hazardous areas and fish and wildlife habitat conservation areas.

All cities and counties in Washington are required to adopt Critical Area regulations as stipulated by the Growth Management Act of 1995 (amended).



# Chapter 5 The Environment: Existing Conditions, Project Effects, and Mitigation

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*Chapter 5 describes the existing conditions, project effects, and proposed mitigation for the social, economic, transportation, and environmental resources along the SR 520 project corridor.*

## Transportation

SR 520 connects Seattle on the west side of Lake Washington with Medina, Hunts Point, Yarrow Point, Clyde Hill, Kirkland, Bellevue, and Redmond on the east side of the lake and, therefore, serves as a critical connection for people crossing Lake Washington. Because SR 520 connects major communities in the state, WSDOT considers it a highway of statewide significance.

In addition, the transportation system around Lake Washington is a complex system of interconnected highway and freeway facilities. There are currently only three major roadways providing access between the east and west sides of Lake Washington: SR 520, I-90, and SR 522. These east-west corridors are connected by two major freeways running in the north-south direction: I-405 and I-5, east and west of Lake Washington.

This project will implement a multi-lane tolling system on the existing Evergreen Point Bridge, which is described in Chapter 4. We analyzed different tolling strategies and prices to determine the effects on traffic in the region. A detailed explanation of this analysis can be found in the *Transportation Discipline Report* located in Appendix E. Below is a summary of our transportation effects analysis.

## How will the project affect traffic?

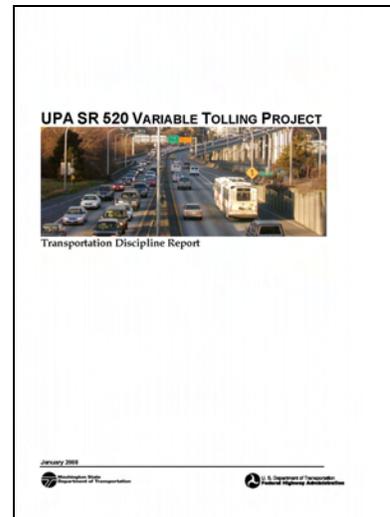
### ***Methods and Analysis***

We analyzed SR 520 and other major roadways in the area (I-405, I-5, I-90, and SR 522) to understand how the SR 520 Variable Tolling Project would affect future travel demand and operational performance on these roadways. We looked at 2010, which is when this project will begin, and 2016, the date currently planned for completion of a new six-lane Evergreen Point Bridge.

Because the proposed tolling will be all electronic, there will be no traffic disruptions such as those created by toll plazas. Therefore, the effects of the tolling within the project area relate to the change in the ‘cost’ of the route rather than to physical changes, such as a toll plaza. Since the toll rates have not been established, we analyzed these effects assuming both a low and a high price for the toll to understand the range of potential effects. The low and high toll scenarios are described in Chapter 4 of this document.

Projected future regional population and employment growth in the region will increase travel demand compared to existing conditions. We analyzed these future changes in travel patterns using the Puget Sound Regional Council’s Transportation Planning Model (a regional travel demand model), which includes King, Pierce, Snohomish, and Kitsap counties. We used this model to forecast the future traffic volumes for 2010 and 2016 and to determine the traffic diversion from SR 520 onto other cross-lake routes, such as I-90 and SR 522, when the Evergreen Point Bridge is tolled.

This regional model is a very good tool for comparing the relative effects on travel choices resulting from the different toll scenarios and alternatives at a regional level. However, this model is not detailed enough for predicting what might occur at a particular interchange or local intersection. The model runs we used for our analysis allow us to make relative observations about



potential changes in travel patterns using the major highways in the network.

### ***Total Cross-Lake Travel Volumes***

Currently, all routes that cross or go around Lake Washington operate poorly during peak periods due to congestion; these routes include SR 520, I-90, and SR 522. Once the tolls are in place on SR 520, we estimate the reductions in the total number of cross-lake trips on all routes combined (as compared with the no toll scenario or No Build Alternative) will be:

- ▶ **2010 Low Toll Scenario:** 3 percent for the morning peak and 4 percent for the afternoon peak.
- ▶ **2010 High Toll Scenario:** 5 percent for both morning and afternoon peaks.
- ▶ **2016 Low Toll Scenario:** 3 percent for the morning peak and 4 percent for the afternoon peak.
- ▶ **2016 High Toll Scenario:** 3 percent for the morning peak and about 4 percent for the afternoon peak.

This reduction in cross-lake traffic during the peak periods can be attributed either to people deciding to change the time of day of their trip (to avoid peak hours and the consequent higher tolls and congestion), to people changing their mode of travel from private vehicles to transit, or to people deciding not to make the cross-lake trip altogether.

Additionally, a system-wide analysis performed as part of the Tolling Implementation Committee *Tolling Report Prepared for the Washington State Legislature*, January 28, 2009 showed that the regional transportation network, (that is, beyond the limits of our study area) is relatively unaffected by the proposed tolling on SR 520.

### ***Traffic on SR 520***

The reduction in total cross-lake traffic can be attributed to the relatively large reduction in peak period volumes

### **What are peak period volumes?**

For this analysis, when we refer to peak period volumes we are talking about peak period bi-directional volumes. These are the sum of the a.m. and p.m. hourly volumes throughout the duration of the peak (6 a.m. to 9 a.m. in the morning and 3:00 p.m. to 6:00 p.m. in the afternoon) in both directions of travel.

specifically on SR 520 when compared with the No Build Alternative. We expect the reduction in peak period volumes on SR 520 due to people choosing other routes, changing to transit, or deciding not to make the trip across the lake will be:

- ▶ **2010 Low Toll Scenario:** 11 percent for the morning peak and 14 percent for the afternoon peak.
- ▶ **2010 High Toll Scenario:** 18 percent for the morning peak and about 17 percent for the afternoon peak.
- ▶ **2016 Low Toll Scenario:** 11 percent for the morning peak and about 12 percent for the afternoon peak.
- ▶ **2016 High Toll Scenario:** 14 percent for the morning peak and 13 percent for the afternoon peak.

This reduction in traffic will ease some of the increasing congestion expected on SR 520 by 2010 and 2016 compared to the No Build Alternative.

The results from the Puget Sound Regional Council model runs indicate that SR 520 will benefit—in terms of operational performance—from the tolling implementation as well. The reduction in traffic on this route will in turn yield better speeds and travel times. See Exhibit 5-1 for 2010 and Exhibit 5-2 for 2016.

**Exhibit 5-1**  
**Year 2010 Speeds and Travel Times**

		<b>Speeds</b>		<b>Travel Times</b>	
		Percentage Difference with No Build Alternative		Percentage Difference with No Build Alternative	
		<b>AM</b>	<b>PM</b>	<b>AM</b>	<b>PM</b>
SR 520	Low Toll	18%	38%	-14%	-25%
	High Toll	17%	38%	-13%	-25%

**Exhibit 5-2  
Year 2016 Speeds and Travel Times**

		<b>Speeds</b>		<b>Travel Times</b>	
		Percentage Difference with No Build Alternative		Percentage Difference with No Build Alternative	
		<b>AM</b>	<b>PM</b>	<b>AM</b>	<b>PM</b>
SR 520	Low Toll	18%	45%	-14%	-28%
	High Toll	18%	45%	-14%	-28%

Because traffic volumes will be reduced, we expect travel speeds to improve on SR 520 from 5 mph to 15 mph, depending on the peak period for both 2010 and 2016. This increase in average speed results in shortened travel times along the corridor by as much as 28 percent during the 2016 evening peak period.

The smaller differences in performance measures such as speeds and travel times observed between the low and high toll scenarios are likely due to the smaller difference between the high and low toll scenarios compared to the no toll (No Build) and low toll scenario. There is a 100 percent increase in cost from the no toll to the low toll scenario, whereas from the low to the high toll scenario the increase in cost is only 29 percent.

***Traffic on Alternative Routes***

As previously stated, the total cross-lake traffic is likely to decrease between three percent and five percent depending on the peak period. Therefore, the alternative routes (SR 522 and I-90) would only see a small increase in traffic in comparison with the No Build Alternative. For SR 522 – and depending on the peak period and the tolling alternative – this increase will vary between one percent and three percent in 2010 and between one percent and four percent in 2016. For I-90 – and also depending on the peak period and tolling alternative being considered – the traffic growth due to diversion

will range between one percent and three percent in 2010 and zero percent to three percent in 2016.

These small differences mean that levels of congestion on SR 522 and I-90 would be very similar to those which exist today.

### How will the project affect safety?

WSDOT performed a safety analysis for the SR 520 corridor that looked at accident records between 2000 and 2002. WSDOT identified the following four locations along the corridor as high-accident locations during the three-year study period (Exhibit 5-3):

- ▶ SR 520 mainline near the I-5 interchange between mileposts 0.00 and 0.31.
- ▶ SR 520/Montlake Boulevard interchange westbound on-ramp between mileposts 0.00 and 0.22.
- ▶ SR 520/Montlake Boulevard interchange eastbound on-ramp between mileposts 0.0 and 0.42.
- ▶ SR 520/Lake Washington Boulevard westbound off-ramp between mileposts 0.07 and 0.27.



The exposure to accident risk on a roadway is directly proportional to the average daily traffic. Because we expect a reduction in average daily traffic on SR 520 after tolling is implemented, the average exposure to accident risk on SR 520 will also be reduced. Thus, we expect the project to increase safety along SR 520.

The amount of additional traffic using SR 522 or I-90 after a toll is implemented will be small in relative (percent) terms. Therefore, we do not expect an increase in the exposure to accident risk on the other major roadways surrounding the lake beyond the natural increase that the no toll scenario (No Build Alternative) may produce by 2010 and 2016.

### **How will project construction affect traffic?**

Motorists traveling along SR 520 will experience some disruptions and inconvenience. Construction will require temporary lane reductions or closures. WSDOT and its contractor will work together to ensure the maximum access through and around the project during construction. Lane closures will typically be restricted to nighttime hours.

These disruptions and inconveniences are minimized because much of the project will be constructed away from the roadway, off of the eastbound SR520 shoulder. Most, if not all, construction equipment will operate from the shoulder, and will not require lane closures.

Lane closures will be required in order to mount equipment above each lane. This work will occur during nighttime hours. Further closures may be required to adjust equipment during testing.

The amount of construction truck traffic will be minimal due to the limited extent of construction. Construction traffic will access most work areas from eastbound SR 520. Some vehicles will use westbound SR 520, as well as the Montlake Blvd. interchange and 108<sup>th</sup> Ave NE interchange in order to turn around.

## How will construction effects on traffic be reduced?

WSDOT and its contractor will work together on the construction timing and sequencing to ensure the maximum access through and around the project area during construction. Some construction may be timed to avoid, as much as possible, the primary business hours at certain locations and special events. WSDOT will meet with individual businesses, local cities, and King County, as needed, to develop a plan that minimizes construction disruptions. The contractor will develop a traffic control plan that conforms to the established standards in the *Manual of Uniform Traffic Control Devices, Part VI* as well as any hour and/or date restrictions stipulated by WSDOT.

## Social Resources

### How many people are in the area and how is the area expected to grow?

According to the U.S. Census Bureau, the City of Seattle grew 9.1 percent from 516,259 in 1990 to 563,376 in 2000, while the City of Bellevue grew 26.1 percent (from 86,874 to 109,827). Together, Seattle and Bellevue comprise 37.2 percent of King County's total population. Exhibit 5-4 shows recent (2000 to 2007) population statistics for major cities and smaller municipalities that will be affected by the project.

According to forecasts prepared by the PSRC, King County is expected to grow by 38.2 percent between 2000 and 2040. An overview of the Puget Sound Regional Council's population forecasts for the major municipalities of Seattle, Bellevue,

**Exhibit 5-4  
Population Characteristics**

	2000**	2007**	Percent Change 2000 to 2007
Bellevue	109,827	118,100	7.5%
Kirkland	45,054	47,890	6.3%
Redmond	45,256	50,680	12.0%
Seattle	563,376	586,200	4.1%
Clyde Hill	2,890	2,810	-2.8%
Hunts Point	443	480	8.4%
Medina	3,011	2,950	-2.0%
Yarrow Point	1,008	975	-3.3%
King County	1,737,034	1,864,300	7.3%
Puget Sound Region	3,275,857	3,582,900	9.4%

Source: U.S. Census Bureau, Puget Sound Regional Council

\*\*Figures from 2000 are actual numbers from the Decennial Census, while figures from 2007 are estimated by the U.S. Census Bureau.

Kirkland, and Redmond, as well as King County, are provided in Exhibit 5-5.

#### Exhibit 5-5 Population Forecasts for Major Cities

	2000	2010	2030	2040
Bellevue FAZ**	104,003	111,004	137,692	149,219
Kirkland FAZ	44,009	47,758	54,848	56,809
Redmond FAZ	71,726	90,352	104,721	112,507
Seattle FAZ	563,313	586,365	672,441	718,651
King County FAZ	1,737,034	1,892,999	2,234,775	2,401,521

Source: Puget Sound Regional Council: Sub-County Forecasts, Amended 2007

\*\*FAZ = Forecast Analysis Zone, which do not necessarily correspond to municipal boundaries.

### What effects will the project have on social resources?

Due, in part, to the large amount of growth described above, congestion along SR 520 is expected to increase. The implementation of variable tolling on SR 520, compared to the No Build Alternative, will reduce traffic congestion during peak hours, thus improving travel reliability and reducing travel times. However, tolling on SR 520 will likely divert a small percentage of the traffic to nearby travel routes; most of this traffic will be redirected to I-90, I-405, and SR 522. We do not expect these small increases from diverted traffic to affect community cohesion. Further, the project will not construct any walls, separations, or barriers that would divide or separate communities.

### What are public services and where do they exist in the project area?

Public services include fire and police protection, schools, and emergency services. Exhibit 5-6 shows the locations of public services in and around the project area.

### What effects will the project have on public services?

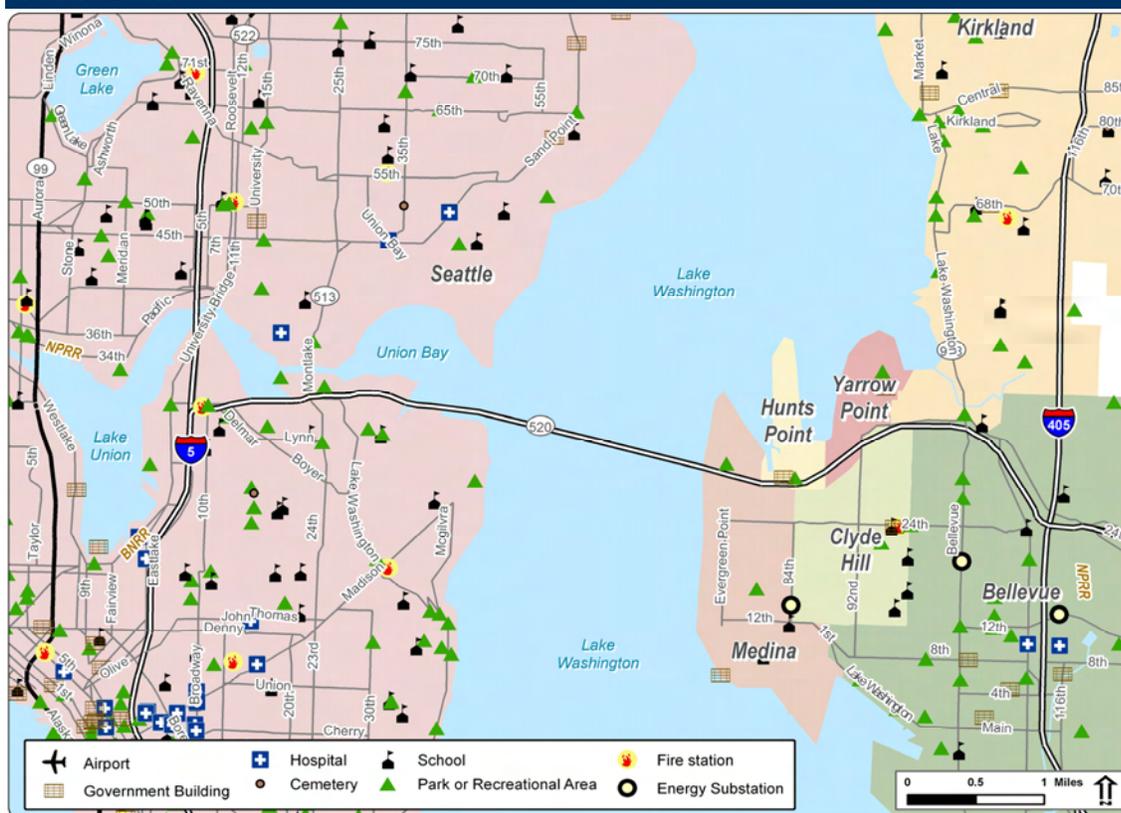
Increased mobility, increased reliability, and decreased travel times along SR 520 will benefit emergency service



Seattle Fire Station #22

providers who use the roadway as an emergency service route and improve access to any public service facilities located along SR 520. Conversely, a slight decrease in mobility along routes that will accommodate diversion traffic could affect emergency services by slightly increasing response times. We expect this effect on emergency response times to be minor. Public service providers will need to pay a toll to use the Evergreen Point Bridge; however, in the case of emergencies, the toll is refunded to the provider.

**Exhibit 5-6  
Public Services**



**How will construction effects on public services be minimized?**

WSDOT will coordinate in advance with emergency services, law enforcement, public service providers, and schools regarding planned detours and delays. WSDOT

will fully explain the project and familiarize them with the construction traffic plan that will be used. Additionally, WSDOT will regularly update project websites that report construction activities and the main SR 520 project website to provide information regarding construction activities and how drivers, residents, and businesses will be affected. WSDOT will require that road closures and detours are prominently signed and also widely distribute notice of changes to media covering the project area. WSDOT will coordinate with local emergency responders to ensure priority access for emergency and law enforcement vehicles.

**What recreational areas are located near the project area?**

Of the parks located immediately adjacent to SR 520, six are located in Seattle and four on the eastside of Lake Washington. Exhibit 5-7 lists these parks and recreational facilities located along SR 520.

**Exhibit 5-7  
Parks and Recreational Facilities Along SR 520**

Washington Park Arboretum	Seattle
Bagley Viewpoint	Seattle
Interlaken Park	Seattle
East Montlake Park	Seattle
Montlake Community Center and Playfield	Seattle
McCurdy Park	Seattle
Hunts Point Park (D. K. McDonald Park)	Hunts Point
Fairweather Park	Medina
Wetherill Nature Preserve	Hunts Point and Yarrow Point
Yarrow Bay Wetlands	Kirkland

Three trails fall within the project area: the Bill Dawson Trail (Montlake Bike Path) heads north from the Montlake Playfield in Montlake Park and travels underneath SR 520; the Arboretum Waterfront Trail starts in the north part of Washington Park Arboretum, crosses underneath SR 520, then heads west to East Montlake Park; and the Points Loop



*Wetherill Nature Preserve in Hunts Point.*

Trail is east of Lake Washington, adjacent to SR 520 on the north.

### **Will the project affect any recreational areas?**

The SR 520 Variable Tolling Project will not have any effect on parks or recreational facilities.

## **Environmental Justice**

### **Why is it important to consider Environmental Justice during planning?**

Environmental Justice acknowledges that the quality of our environment affects our lives, and negative environmental effects should not disproportionately burden low-income or minority communities.

Negative environmental effects associated with transportation projects may include, among others: limited access to a publicly-funded facility, disruptions in community cohesion, presence of hazardous materials, raised noise levels, or increased air or water pollution.

### **What studies did we complete for this analysis?**

We used four approaches to collect data on low-income and minority populations:

- ▶ Demographic analysis
- ▶ Surveys of Evergreen Point Bridge users
- ▶ Focus groups and telephone interviews with Evergreen Point Bridge users
- ▶ Public involvement activities

We also collected data on limited-English proficient populations to ensure that our outreach efforts take into account the potential need for translation. Based on the results of our data collection, surveys were translated

### **What federal orders and policies guide Environmental Justice?**

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Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations in 1994 was issued to reinforce the importance of fundamental rights and legal requirements contained in Title VI of the Civil Rights Act of 1964, as amended, and NEPA.

Each federal agency issued implementing orders. The USDOT (USDOT Order 5610.2) and FHWA (FHWA 6640.23) orders require federal agencies to explicitly consider human health and environmental effects related to transportation projects that may have a disproportionately high and adverse effect on minority or low-income populations.

Executive Order 13166 compels agencies to evaluate the effects of projects on people with limited-English proficiency (LEP), in order to avoid discrimination on the basis of national origin.

Other federal laws, such as the National Environmental Policy Act (NEPA), Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended, the Civil Rights Restoration Act of 1987, and the Transportation Equity Act (TEA-21) also include the nondiscrimination requirements outlined in Title VI.

into Spanish. For more information on how we collected information on bridge users, see Appendix D of this EA.

### **What neighborhoods may be affected by the project?**

Neighborhoods that have the potential to be affected by the project include:

- ▶ Neighborhoods from which traffic on the Evergreen Point Bridge originates.
- ▶ Neighborhoods surrounding the Evergreen Point Bridge.
- ▶ Neighborhoods surrounding untolled alternate routes that may be used by drivers who want to avoid paying the toll on the Evergreen Point Bridge. These include neighborhoods surrounding SR 522 north of Lake Washington and the I-90 Bridge.

### ***Neighborhoods from which traffic on the Evergreen Point Bridge originates***

The tolling of the existing Evergreen Point Bridge will affect users of the facility as much as it will affect people living and working near the facility. To identify Evergreen Point Bridge users, we examined the communities from which trips on the Evergreen Point Bridge originate. Residents within the SR 520 travelshed are comprised of low-income and/or minority populations, and non-low-income and/or non-minority populations (see Exhibit 5-8).

Our demographic analysis indicates that 8.8 percent of households in the SR 520 travelshed have incomes below the federal poverty level and 28 percent are minority, according to the 2000 U.S. Census. Based on this information, it is probable that at least some of these households use the Evergreen Point Bridge.

### **Why is public involvement important?**

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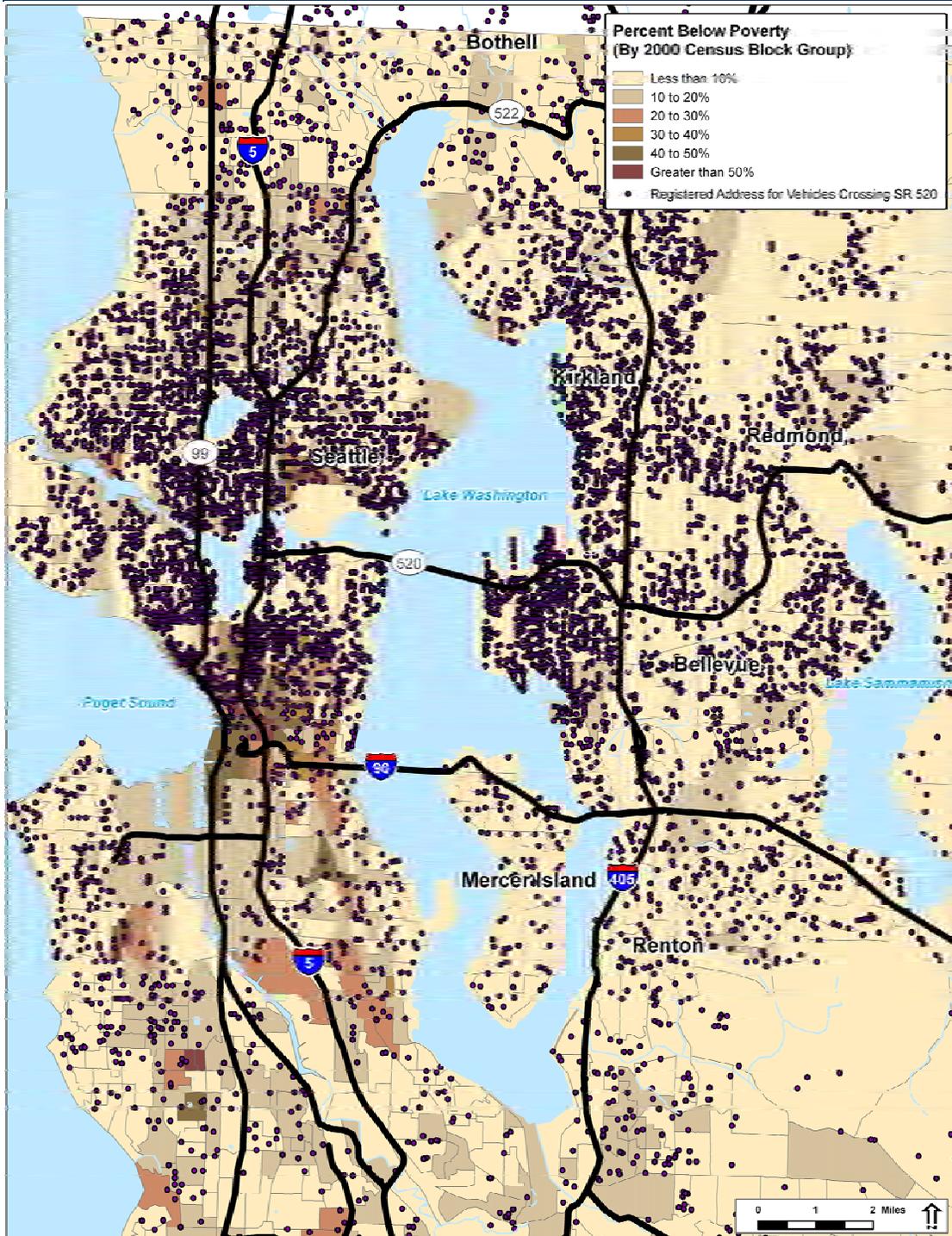
Public involvement is important so all the public, especially low-income or minority populations potentially affected by a project, have meaningful opportunities for involvement during project planning and development. Public involvement helps identify project impacts as early as possible so that they can be avoided and/or mitigated. Public involvement can include neighborhood meetings, open houses, and booths at community festivals.

### **What is a Travelshed?**

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A travelshed refers to the geographic area from which traffic on a given facility originates.

### Exhibit 5-8 Low-income Populations in Travelshed



In our telephone survey of Evergreen Point Bridge users, we spoke with 318 low-income and/or minority respondents. Seventy-one of the 318 respondents had household incomes below the federal poverty level. In our intercept survey of transit users on the Evergreen Point Bridge, 107 of the 442 respondents were low-income and/or minority. Twelve of those 107 had household incomes below the federal poverty level.

### ***Neighborhoods surrounding the Evergreen Point Bridge***

There are low-income and minority populations living in the neighborhoods surrounding the Evergreen Point Bridge. We made this determination after reviewing the demographic analysis completed for the Environmental Justice analysis for the SR 520 Bridge Replacement and HOV Project Draft EIS. For this analysis, the Environmental Justice study area was defined as the polygon created on an area map by applying a one-mile buffer around these two sections of highway:

- ▶ SR 520 from the I-5 interchange in Seattle east to the 124th Avenue NE interchange in Bellevue.
- ▶ I-5 from the SR 520 interchange south to the Boylston Avenue East on-ramp to I-5.

While most of the census block groups in this study area have low concentrations of low-income and minority populations, there are relatively high concentrations of low-income populations in a few census block groups in the University District and in the South Lake Union neighborhoods in Seattle. There are also relatively high concentrations of minority populations in the Crossroads neighborhood in Bellevue.

### ***Neighborhoods surrounding untolled alternate routes***

Because one potential effect of tolling the Evergreen Point Bridge is that traffic may increase on untolled

routes (such as I-90 or SR 522), it is important to examine the communities surrounding non-tolled alternate routes.

According to our demographic analysis of census block groups in neighborhoods surrounding the SR 522 corridor, nearly 10 percent of residents had household incomes below the federal poverty level. The percentage of residents in each block group with household incomes below the federal poverty level ranged from 2 percent to 31 percent. Twenty-three percent of residents were minority and 5 percent were Hispanic. The percentage of residents in each block group who were minority ranged from 10 percent to 57 percent, and the percentage of residents who were Hispanic ranged from 1 percent to nearly 15 percent.

The term Hispanic is used by the U.S. Census Bureau for anyone who is of Hispanic origin, regardless of race.

There are also low-income and minority populations living in the neighborhoods surrounding I-90 between I-5 and I-405. The majority of these populations are concentrated in the neighborhoods at the western end of the I-90 Bridge. According to our demographic analysis of census block groups occurring by the I-90 Bridge, nearly 15 percent of residents had household incomes below the federal poverty level in 2000. The percentage of residents in each block group with household incomes below the federal poverty level ranged from 0 percent to 49 percent. Nearly 42 percent of residents were minority and nearly 6 percent were Hispanic. The percentage of residents in each block group who were minority ranged from 4 percent to 78 percent, and the percentage of residents who were Hispanic ranged from 1 percent to nearly 25 percent.

The U.S. Census Bureau provides statistics on minority and poverty status for block groups in the study area. However, because the data is almost ten years old (data for the 2000 Census was collected in 1999), data from the National Center for Education Statistics (NCES) further confirmed the presence of minority and low-income populations. NCES collects demographic data on students enrolled in school during the 2006-2007 academic year.

### **What are the potential effects of the project?**

There are two ways in which project operation will benefit all users, including low-income and minority populations, compared to the No Build Alternative:

- ▶ People who drive across the Evergreen Point Bridge will benefit from improved speeds for all vehicles and trip reliability as a result of fewer cars on the bridge.

- ▶ With fewer cars on the Evergreen Point Bridge, transit riders, including low-income and minority riders, will benefit from improved transit speeds and reliability.

There are three ways in which the project will adversely affect low-income, minority or limited-English proficient populations compared to the No Build Alternative, if not mitigated:

- ▶ The cost of the tolls will present a burden to low-income bridge users.
- ▶ The cost of the tolls will present a burden to social service agencies that serve low-income populations.
- ▶ Bridge users may choose to purchase a transponder and set up an account with WSDOT to pay the toll, or have their license plate automatically photographed and receive by mail a bill for the toll with a surcharge added. Both options will present a burden to low-income and limited-English proficient Evergreen Point Bridge users.

FHWA directs WSDOT to apply two criteria to determine whether an effect is disproportionately high and adverse:

- ▶ Low-income and/or minority populations will predominately bear the effects.
- ▶ Low-income and/or minority populations will suffer the effects and the effects will be considerably more severe or greater in magnitude than the adverse effects suffered by the general population.

We determined that low-income and minority populations will not predominately bear the effects of this project. The toll will be charged to all bridge users and all bridge users may choose to purchase transponders or receive by mail a bill for the toll with a surcharge added. Even though it is not possible to determine exactly what proportion of bridge users are low-income, by looking at the travelshed map overlaid with U.S. Census data earlier in this section, it does not

appear that there are more bridge users coming from census block groups with higher proportions of low-income residents than other census block groups.

However, we did determine that the tolls on the Evergreen Point Bridge will be appreciably more severe for low-income users because they will have to spend a higher proportion of their income on the toll.

Previous analyses of tolling equity for several other projects have concluded the effect would not be disproportionately high and adverse for the following reasons:

- ▶ The benefits of improvements to trip reliability and speeds will offset the burden of the tolls.
- ▶ There are viable options to avoiding the toll. Furthermore, because low-income populations tend to use transit at a higher rate than the general population, improvements in transit speeds and reliability will offset the burden of the tolls.

While it is important to note that many low-income populations will benefit greatly from a faster, more reliable trip, Environmental Justice principles state that to offset a disproportionate adverse effect to low-income populations, the benefit also needs to disproportionately affect low-income populations. In this case, the benefits of a faster, more reliable trip apply to all people and not just low-income populations.

Although there are options for avoiding the toll, they may not be viable for many low-income bridge users. Based on the results of surveys, focus groups, and one-on-one interviews with low-income Evergreen Point Bridge users, it appears that transit is not a viable alternative to paying the toll for most low-income populations because service is infrequent, unreliable, requires several transfers, or takes too much time. Furthermore, although some national and regional studies suggest that low-income populations use transit

at a higher rate than the general population, results from our transit intercept survey suggest that transit routes on the Evergreen Point Bridge do not serve low-income populations at a higher rate than the general population.

In addition, although many survey respondents indicated that they would use un-tolled routes as an alternative to paying the toll, these routes will add substantial time, distance, and cost to the trip. The system could also limit access to the Evergreen Point Bridge for limited-English proficient populations, who may also have difficulty understanding how to purchase a transponder and set up an account.

A small amount of traffic currently crossing the Evergreen Point Bridge would use SR 522 north of Lake Washington or the I-90 Bridge instead of paying the toll on SR 520 (as documented in the Transportation Discipline Report for this project). Although there are low-income and minority populations living in the neighborhoods surrounding SR 522 and the I-90 Bridge, there should be no adverse effects on the low-income and minority populations living in these neighborhoods because there will not be a substantial amount of traffic diverting to SR 522 or I-90.

We do not anticipate that this project will have disproportionately high and adverse effects on minority populations. If reasonable mitigation strategies, such as those proposed later in this section are adopted, they will minimize disproportionately high and adverse effects on low-income and limited-English proficient populations.

### **What can be done to avoid or minimize adverse effects to low-income or minority populations?**

If the SR 520 Variable Tolling Project is undertaken, WSDOT has already decided to employ these five strategies to help minimize adverse effects on low-income or limited-English proficient populations:

1. **Permanent customer service center storefronts:** WSDOT will establish permanent customer service center storefronts at either end of the Evergreen Point Bridge. Both locations will be transit accessible. Drivers will be able to purchase Good To Go!<sup>TM</sup> transponders and establish prepaid accounts with cash at these centers.
2. **EBT cards can be used to establish and replenish Good To Go!<sup>TM</sup> accounts:** Low-income Evergreen Point Bridge users will be able to establish and replenish their prepaid accounts using their Electronic Benefit Transfer (EBT) card. EBT functions like a debit card and allows recipients who receive federal benefits to pay for products and services, such as groceries and health care.
3. **Transponder retail outlets:** WSDOT will explore the possibility of establishing permanent *Good To Go!*<sup>TM</sup> retail outlets at convenient locations, such as grocery stores, convenience stores, or pharmacies throughout the region. Low-income focus group participants and Spanish-speaking interview participants indicated that this will make it much easier for them to purchase transponders and set up prepaid accounts with WSDOT.
4. **Multi-language outreach:** WSDOT will conduct outreach in multiple languages to provide information about how to purchase a transponder, establish an account, and use the system. Target languages will be the same languages that the Washington Department of Licensing uses for its translation: Chinese, Korean, Japanese, Russian, Spanish, and Vietnamese. WSDOT will also use pictograms whenever possible to explain the system. WSDOT will distribute information about the new tolling system and transponders throughout the region via community-based organizations, social service offices, churches, and schools; purchase

advertising in ethnic newspapers and radio stations; and establish hotlines with multi-lingual customer service agents well in advance of tolling.

5. **Training of social service workers:** WSDOT will provide social service agencies with information about tolling and options to avoid the tolls. This will assist social service workers in sharing accurate information with clients.

In addition, the following strategies could be considered for minimizing the effects of tolling on low-income populations. Some options may require legislative action, coordination with other agencies, or commitment of additional funding other than tolling revenue.

1. **Targeted transit improvements:** The Washington State Legislature could consider allocating additional funding to King County Metro Transit and Sound Transit to increase service along SR 520 routes that are used by low-income populations, especially in the University District and Crossroads in Bellevue. These routes could be identified by overlaying the travelshed map with King County Metro and Sound Transit route maps. Service could also be increased between low-income residential neighborhoods and job/education centers.
2. **Refunds to social service agencies:** The Washington State Legislature could allocate funding to provide refunds to social service agencies that broker transportation for low-income populations that meet certain thresholds.

For further discussion on mitigation, see Appendix D.

### **How will project construction affect low-income or minority populations?**

No adverse construction effects are anticipated to disproportionately affect low-income or minority populations.

## **Economic Resources**

### **What is the existing and projected employment in the area?**

The Puget Sound Regional Council, which is the designated regional planning agency for the greater Seattle region that includes King, Kitsap, Pierce, and Snohomish Counties, releases yearly employment information by jurisdiction based on Washington State Employment Security Department data. Exhibit 5-9 displays employment information for 2007 for each jurisdiction surrounding the Evergreen Point Bridge, as well as King County and the Puget Sound Regional Planning Area.

As shown in Exhibit 5-9, Seattle has the largest population and employment numbers of any city in the region. Bellevue is second in these categories. This demonstrates the importance of an efficient transportation connection between the two cities.

### **What businesses located in the area surrounding the Evergreen Point Bridge may be affected?**

Some types of businesses, including manufacturing and wholesale trade, transportation, and utilities, rely on their location adjacent to major transportation corridors to reduce transportation costs and maintain a competitive advantage. Also, some commercial businesses rely on locations near heavily traveled corridors to capture a large portion of their clientele. These businesses include gas stations, convenience stores, and hotels that are located adjacent to SR 520.

Regionally, the major employment centers of the University of Washington, downtown Seattle, downtown Bellevue, and the Overlake area of Redmond (Microsoft) have large numbers of employees that commute along the SR 520 corridor.

**Exhibit 5-9  
Population and Employment by Jurisdiction, 2007**



**How will the proposed project affect current and future employment trends?**

Construction, operation, and maintenance of the toll facility on SR 520 will have no effect on employment trends in the region.

### **How will the project affect local and regional businesses that rely on SR 520?**

Businesses located near the SR 520 corridor and the potential diversion routes are unlikely to see changes in revenues. Few consumers are likely to alter their transportation patterns enough to affect sales at local businesses.

Businesses that use SR 520 to deliver goods and services around the region would experience higher transportation costs due to the toll, compared to the No Build Alternative. However, these businesses would also benefit from improved trip reliability across SR 520 and a corresponding increase in productivity as a result of the project. This benefit would generally offset the higher transportation costs.

### **How will tolling affect local tax revenues?**

Changes to sales and use tax revenues are unlikely, and overall spending habits are unlikely to change as a result of implementation of the project.

An improved transportation system and improved accessibility can help attract some business and residential development, which would increase tax revenues for affected jurisdictions. However, any improvement in congestion due to this project will likely have a negligible effect on development decisions, and therefore not have any noticeable effect on local tax revenues.

### **What will be done to avoid or minimize negative effects on economic conditions?**

We expect no negative economic effects as a result of implementing variable tolling on the Evergreen Point Bridge. Therefore, no mitigation measures are proposed.

# Surface Water, Water Quality, and Floodplains

## What surface waters were analyzed?

For water resources, the analysis focuses on the eastern shore of Lake Washington, which is the only surface water body potentially affected since construction activity will be limited to this area.

## What is the quality of the water in Lake Washington?

Lake Washington, at over 21,000 acres, is the largest lake in King County and the dominant water feature within the project area. The lake, long and narrow because of its glacial origins, has a drainage basin of approximately 470 square miles, much of which is residential. The lake drains into the Puget Sound via the Ship Canal.

Water quality in the lake is good for fish, wildlife, and recreational human use, but the lake is on the Washington State Department of Ecology 303(d) list for fecal coliforms (Ecology 2004). Pollutant sources for Lake Washington are typical of water bodies in urbanized areas and include runoff from commercial, industrial, and residential land uses.

## What effects will the project have to surface waters, water quality, and floodplains?

The SR 520 Variable Tolling Project has relatively little ground-disturbing activity and construction needs, so localized water quality effects will be minimal compared to the No Build Alternative.

There will be very slight increases in impervious surface due to the installation of the concrete pad for the utility cabinets; however, because of the small size of the concrete pads, there will be no appreciable effect to stormwater runoff or water quality in the project area.

No construction would occur within existing floodplains; therefore, no effect will occur to floodplains.

## What is groundwater and how is it affected?

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Groundwater is water held underground in soil or permeable rock, often feeding springs and wells. The project will have no effect to groundwater.

## What is the 303(d) list?

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The 303(d) list identifies surface water body segments (lakes, streams, and ponds) with degraded water quality. Washington State Department of Ecology assembles available water quality data and publishes this list, as required under Section 303(d) of the federal Clean Water Act.

## What are fecal coliforms?

Fecal coliforms are bacteria present in human and animal feces. These bacteria can indicate the potential presence of harmful bacteria and viruses.

## Why does impervious surface matter?

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Impervious surface, such as concrete or pavement, can collect and concentrate stormwater runoff, as well as eliminate recharge areas for aquifers.

## **What measures are proposed to avoid or minimize effects to water resources during construction?**

We will incorporate several measures into construction plans and specifications to reduce effects to water resources. These include:

- ▶ A Temporary Erosion and Sedimentation Control Plan will be prepared and implemented during construction. This plan will identify the best management practices (BMPs) that WSDOT and the contractor will use to control stormwater runoff and minimize sediment transport to Lake Washington.
- ▶ A Spill Prevention, Control, and Countermeasures Plan will be prepared according to WSDOT standards and implemented by the contractor during project construction. This plan details containment and cleanup procedures in the event of a spill of fuel or other chemicals during project construction. Effective implementation of this plan will greatly reduce the potential for release of toxic materials during construction.

By implementing these measures, WSDOT will avoid or minimize construction effects to project area waters, as well as the fish and wildlife that occur in or use these waters.

## **Ecosystems—Wetlands, Wildlife, Aquatic Habitat**

### **What is the local ecosystem like in the project area?**

Lake Washington, including the shoreline area, is the part of the local ecosystem that could be affected by the project. Fish populations using the lake include the Endangered Species Act (ESA)-listed Chinook salmon, bull trout, and steelhead. The Lake Washington shorelines are developed with residential structures and uses along most of the shoreline length. Most of the

### **Best Management Practices**

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Best management practices (BMPs), in terms of roadway construction water quality, refer to structural and nonstructural controls to minimize erosion and pollution. BMPs can include sediment basins, street sweeping, erosion control blankets, and seeding and/or mulching.

shoreline length has been armored to protect upland areas from erosion and this development has led to the loss of shoreline vegetation. However, numerous roost and nesting trees remain near the shorelines and are used by migratory songbirds and raptors including bald eagles.

### **How will this project affect the local ecosystem?**

New power lines, power boxes, and monitoring equipment will run along the existing right-of-way or will hang from existing structures. Because these components will be installed in areas currently disturbed by roadway and other structures, permanent effects to the local ecosystem from their installation and operation are unlikely. Temporary effects will be limited to erosion and sedimentation resulting from soil disturbance and to disturbance resulting from construction noise compared to the No Build Alternative. These temporary effects can be minimized or avoided through the use of BMPs and timing restrictions.

Gantries with transponder readers and video cameras will create a new 24-hour light source over the water compared to the No Build Alternative. The video cameras require low-level lighting to detect the license plates of passing vehicles. Lighting from the video cameras is activated by passing vehicles and is at a low intensity to avoid startling or distracting drivers. The project will place the new lights on the Evergreen Point Bridge over deepwater habitat in a location near a sockeye salmon spawning area on the eastern shoreline of Lake Washington. Studies have shown that artificial lighting can promote early emergence from eggs and increased activity among newly hatched fish. Artificial lighting also affects predator-prey interactions among fish. Further discussion of effects caused by lighting systems on fish populations is discussed in *Ecosystems Technical Memo*, Appendix F.

Although fish and wildlife respond to lighting, there is already highway lighting on this portion of the bridge. In addition, the low-intensity video camera lights will be coincident with the higher intensity lights of passing vehicles. The effect of the new lighting will be indistinguishable from these existing light sources. Furthermore, the video camera lights will be directed toward the road deck resulting in minimal additional light reaching the surrounding environment. As a result, the new lighting installed by the project will have no effect on fish and wildlife.

The upper surface of a gantry may provide roosting or resting opportunities for birds. Seagulls (Western and glaucous-winged), Canada geese, swallows, and pigeons are known to use the Evergreen Point Bridge for resting or roosting, and large raptors (bald eagles and osprey) occasionally land on the structure. Since the gantry will provide only limited areas of flat surface, and those areas will be exposed to wind and rain, bird use is likely to be limited to short-term roosting and resting.

There are no wetlands in the area where project construction will take place; therefore, the project will not affect any wetlands.

### **How will construction affect vegetation, wetlands, wildlife, and fish?**

Construction may generate noise and activity levels that will disturb wildlife in the area.

Temporary clearing or disturbance of vegetation will be likely limited to an area within 5 to 10 feet of the project footprint and the areas needed for staging.

If the project were to adversely affect surface water and groundwater through erosion, sedimentation, leaks, and/or spills, then these things would also adversely affect fish and fish habitat within the project area.

### **What will be done to minimize the effect of construction on ecosystems?**

WSDOT will require the contractor to minimize the area disturbed by construction by limiting the amount of soil exposed and vegetation removed. The contractor will restore the disturbed areas to prevent erosion of exposed soils and enhance wildlife habitat.

## **Visual Resources**

### **Why are visual resources considered when evaluating transportation projects?**

Visual perception is an important component of environmental quality that can be affected by transportation projects. Because of the public nature and visual importance of transportation projects, both negative and positive visual effects must be adequately considered and addressed. When analyzing visual effects of a highway project, two views must be considered: the view from the road or bridge, and the view of the road or bridge.

### **What views can be seen within the project area?**

When looking at SR 520 in the project area, the roadway alternates between sections that are at the same level as the ground around it, below ground level, and elevated above ground level on bridge structures. The Evergreen Point Bridge and roadway figure prominently in many views, and depending upon the vantage point, are a dominant part of the foreground and background.

The area where the project will affect visual resources is at the eastern end of the Evergreen Point Bridge. Although heavy vegetation limits views to and from SR 520 on the east side of Lake Washington, westbound drivers at the bridge approach see the Olympic Mountains in the distance on clear days and Husky Stadium and the Seattle shoreline in the middle distance. For viewers on the shoreline north and south of the bridge, the columns and roadbed



*Aerial view of the existing Evergreen Point Bridge looking west*



*View of the existing Evergreen Point Bridge looking west from the Eastside*

of the east approach are a dominant part of the foreground.

### **What will the project area look like after the SR 520 Variable Tolling Project is completed?**

There will be very little visual change in the project area due to the implementation of the SR 520 Variable Tolling Project compared to the No Build Alternative.

The project will place the tolling equipment on the eastern end of the bridge either on the existing truss structure, or on a separate set of gantries near the truss structure. Tolling equipment will include overhead signs on the bridges for each direction of travel, an overhead automobile detection device, antennas, and boxes that will read the transponders, video cameras over each lane to capture license plate images, and either visible or infrared lighting.

In addition, roadside concrete pads with controller cabinets will be located on the east side of the lake just south of SR 520 in WSDOT right-of-way. A backup generator, or simply a generator transfer switch for connection to a portable generator, will be included in case of power outages.

If we install the equipment on the eastern truss structure, it will be barely noticeable to drivers on the bridge. If a gantry needs to be constructed near the eastern truss structure, that will affect the immediate foreground view as drivers approach, but will not affect any midground or background views from the bridge. All options will not be very noticeable looking toward the bridge from the shoreline or lake.

As mentioned, the project will install a new 24 hour light source on the bridge at the tolling location to detect the license plates of passing vehicles. The type of lighting will either be infrared, which would not be visible to the human eye, or visible lighting. If visible lighting is used, it will be activated by passing vehicles and will be at a

low intensity to avoid startling or distracting drivers. The low-intensity video camera lights will be coincident with the higher intensity lights of passing vehicles and the effects will be indistinguishable. In addition, the video camera lights will be directed towards the road deck resulting in minimal light reaching the surrounding environment.

The roadside equipment that will be installed will be small and likely not noticeable from the roadway by the traveling public.

**What will be done to minimize visual effects of the project?**

The gantry structure added to the bridge will be placed as close as possible to the existing truss structure and painted the same color to avoid foreground impacts.

If roadside equipment is noticeable, vegetative screening will be used to minimize the visual impact.

**Will construction affect views?**

Construction activities will temporarily affect foreground views due to construction equipment and storage piles. The equipment and storage piles used during construction will be removed upon completion of the project.

To reduce the temporary visual effects during construction, WSDOT will require the contractor to minimize the removal of existing vegetation and locate storage and staging areas in places that are not visually prominent to the extent practical. The contractor will address light and glare associated with nighttime construction activities by using downcast lighting sources.

## Cultural Resources

### What cultural resources are in the project area?

Our analysis of potential effects to cultural resources focused on the areas that will be physically changed or directly affected by the project. These areas included the Evergreen Point Bridge and approaches, as well as the portion of SR 520 just east of the bridge, where the control pads and cabinets will be located. The project will not have an indirect effect on cultural resources. A more detailed description of the analysis and findings can be found in the *Cultural Resources Technical Memorandum* found in Appendix F.

Project construction on land will occur entirely in the SR 520 right-of-way, in areas previously disturbed by highway construction. Therefore, there is no potential for the project to affect archaeological historic properties.

We evaluated the Evergreen Point Bridge and approaches (also formally known as the Albert D. Rosellini Bridge) and concluded that the bridge is eligible for the National Register of Historic Places (NRHP).

### Why is the Evergreen Point Bridge historically significant?

The Evergreen Point Bridge was completed and placed in service in 1963, four miles north of the first floating bridge on Lake Washington – the Lacey V. Murrow Memorial Bridge. A second floating bridge was considered by local residents as early as 1946, but it wasn't until 1960 that work on the bridge actually began. It took over two years to construct the Evergreen Point Bridge. It was the world's longest floating bridge (1.4 miles), and at \$25 million, the world's most expensive. The floating section of the bridge alone cost 10.9 million. The bridge was partially financed by a thirty-five cent toll that helped pay for a forty-year, \$30 million bond. The bridge was more widely used than the State Toll Bridge Authority expected: the bond was paid off 24 years early, in June 1979. The toll booths were removed

### National Register of Historic Places (NRHP)

The NRHP requires federal agencies to identify and consider the effects of federally assisted projects on historic properties. Historic properties generally must be at least 50 years old, retain physical integrity and meet at least one of the four criteria of significance listed in the National Register Criteria for Evaluation.

that year. When the original Lake Washington floating bridge (the Lacey V. Murrow Memorial Bridge) sank in 1990, the Evergreen Point Bridge became Lake Washington's oldest floating bridge.

Although the Evergreen Point Bridge was constructed in 1963, it is eligible for listing in the NRHP. It is eligible under Criterion C for its significance in bridge engineering and Criterion G, "a property achieving significance within the past 50 years if it is of exceptional importance" (NR Bulletin, How to Apply the National Register Criteria for Evaluation). The bridge will be 50 years old in 2013.

### **Will the project have adverse effects on the Evergreen Point Bridge?**

Installation of the tolling equipment on the truss structure will constitute no adverse effect to the historic property under the regulations implementing the National Historic Preservation Act [36 Code of Federal Regulations (CFR) 800.5]. The tolling equipment will not compromise the Evergreen Point Bridge's integrity of location, design, workmanship, materials, setting, feeling, or association. The tolling equipment will only be minimally noticeable from the bridge, and will be limited to signs and some small equipment, such as cameras and transponder readers, over the roadway. This signage and equipment are minor, and will not alter any of the characteristics of the Evergreen Point Bridge that form the basis of its eligibility for listing in the NRHP. Department of Archaeology and Historic Preservation staff, on behalf of the State Historic Preservation Officer, has concurred with this determination.

## **Public Utilities**

### **What public utilities exist in the project area?**

#### ***Electricity and Natural Gas***

Puget Sound Energy provides electricity and natural gas to Medina, where the project will install tolling equipment. Overhead and underground transmission lines are located adjacent to SR 520.

#### ***Water and Sewer Services***

Bellevue Utilities Department provides water service to Medina. Various water mains cross under SR 520 to provide services to consumers in the area. Medina maintains its own stormwater drainage system.

The King County Department of Natural Resources Wastewater Treatment Division provides sewer treatment services for the entire project area.

### **What effects will the project have on public utilities?**

There will be no negative effect on utilities due to this project. Some electricity will be required to operate the tolling equipment, compared to the No Build Alternative; however, the amount needed will be negligible.

### **How will construction affects on utilities be minimized?**

WSDOT will require the verification of utility locations with permit and franchise holders during final design. All existing utility locations will be shown on the construction plans. Utility providers will be given advanced notice of construction activities. If utility relocations are necessary, WSDOT will work with the providers to relocate the utility in accordance with state law. In addition, the contractor will verify utility locations as required by law prior to any excavation work.

## Land Use

### What are the existing land uses in the project area?

SR 520 enters Seattle on the west side of Lake Washington. Land use in this area consists of mostly single-family residential, with scattered commercial uses and publicly-owned open spaces (Department of Planning and Development 2007). The University of Washington campus is located north of Portage Bay and Union Bay, just north of the Evergreen Point Bridge (SR 520).



*View of the University of Washington*

SR 520 enters Medina on the east side of Lake Washington. Most land use in Medina, Hunts Point, Clyde Hill, and Yarrow Point consists of single-family housing with scattered commercial businesses. A small part of the Lakewood neighborhood in the Kirkland abuts SR 520 just east of Yarrow Point. The Kirkland area is mainly composed of residential areas, park and open space, and office buildings.

Bellevue, located east of Clyde Hill, is the largest city on the east side of Lake Washington that will be affected by the project. The Bellevue area consists of retail and office centers, as well as low-, medium-, and high-density residential neighborhoods. Bellevue considers the area surrounding SR 520 to be a major employment center for the city (City of Bellevue 2008).

### What will future land use look like in the project area?

Little change in land use is expected for the area near SR 520 in Seattle (Department of Planning and Development 2007). Likewise, future land uses will not differ from existing uses in the smaller cities of Medina, Clyde Hill, and Hunts Point. Overall, these communities are largely built out, and little growth is anticipated over the next 20 years

However, land use changes are planned for the Bel-Red area of Bellevue situated immediately southeast of the SR 520 and I-405 interchange. On February 17, 2009, the Bellevue City Council approved a plan to guide the transition of the Bel-Red area from light industrial to a mixture of higher density retail, office and residential uses. This land use transition is likely to extend beyond the duration of the SR 520 Variable Tolling Project.

### **What effect will the project have on land use?**

We do not anticipate changes in land use as a result of the project: the duration of the project is too short to change anything but choice of routes to cross Lake Washington.

## **Hazardous Materials**

Hazardous materials can be encountered during the construction and operation of public projects. Examples of common hazardous materials include asbestos, lead-based paint, underground storage tanks, and total petroleum hydrocarbons.

Identifying known and potential contamination prior to construction is important because it can greatly reduce the possibility of exposure to people and the environment.

### **What contaminated sites are located in the project area?**

Our analysis of hazardous materials focused on the east side of the Evergreen Point Bridge because this is the only area where ground will be disturbed by project activity. We identified five sites with recognized environmental conditions within one mile of the proposed location of the concrete pad and utility cabinets to be installed as components of the tolling facility (see Exhibit 5-10).

### **What are recognized environmental conditions?**

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Recognized environmental conditions refer to sites with past or present contamination of soil or groundwater. These sites are determined through literature searches, site observation, and best professional judgment.

**Exhibit 5-10**  
**Potentially Hazardous Materials in the Project Area (WSDOT 2006)**



### **Will the project affect hazardous materials sites?**

Construction will not occur on or adjacent to any sites with recognized environmental conditions. Construction will be wholly within WSDOT right-of-way and remote from these sites.

### **How will the effects of hazardous materials be minimized during construction?**

WSDOT will specify in the construction documents that the contractor will avoid releasing or spreading any contaminated soil or groundwater encountered during construction. If excavation or dewatering of contaminated material is necessary, the contractor will properly segregate and contain the material during and after excavation and dewatering and will test the material to determine how it can be disposed of. The

contractor will handle and dispose of the material in accordance with applicable regulations.

## Energy

### **Are there effects to energy associated with the project?**

Fuel used by vehicles on SR 520 will be the main energy use related to this project. Therefore, this section focuses on fuel efficiency, particularly as related to congested driving conditions. The SR 520 corridor is heavily traveled and frequently congested. Current heavy traffic volumes on SR 520 force vehicles to travel at less efficient speeds during many hours of the day.

According to the U.S. Department of Energy, fuel efficiency is greatest when vehicles travel between 45 and 55 mph. Because of the current conditions on SR 520, vehicles are often traveling below 45 mph during peak periods and are, therefore, traveling at less efficient speeds.

Compared to the No Build Alternative, the project will improve traffic flow, reduce peak period traffic congestion along SR 520, and allow more cars to travel at more fuel efficient speeds. In addition, because the construction for the project is minor, very little energy will be expended to build it.

Since the project will improve traffic flow and increase average peak hour speeds, we anticipate that it will reduce overall energy consumption.

### **What measures will be taken to reduce effects on energy during construction?**

WSDOT will develop specifications for project construction to encourage energy conservation. WSDOT will also adhere to construction practices that promote efficient energy use, such as limiting idling equipment, encouraging construction workers to carpool, and locating staging areas near work sites.

### What is fuel efficiency?

For vehicles, fuel efficiency refers to how far a vehicle can travel per unit of fuel. This measure is usually expressed in miles per gallon or kilometers per liter.



*Traffic along SR 520 often creates stop-and-go conditions, which reduces fuel efficiency*

## Noise

Environmental noise may interfere with a broad range of human activities in a way that degrades public health and welfare. Therefore, traffic and construction noise analyses are required by law for federally funded projects and by State of Washington policy for other projects. Since this particular project is not adding lanes,

or changing the roadway configuration in any way, a full quantitative noise analysis with noise modeling is not required. However, we conducted a qualitative analysis to determine the potential for noise effects.

### What was the project area analyzed for this project?

According to the WSDOT *Traffic Noise Analysis and Abatement Policy and Procedures* (2006), all noise sensitive sites within 500 feet of the proposed edge of pavement should be evaluated for potential noise effects.

### What criteria are used for assessing noise effects?

The FHWA Noise Abatement Criteria (NAC) defines noise levels for land activity categories. WSDOT has adopted these NAC and defines noise levels that, if approached [within 1 decibel (dBA)] or exceeded, require noise abatement consideration (see Exhibit 5-11 for various land use categories). FHWA guidelines also state that noise abatement should be considered when the noise levels substantially exceed the existing noise levels [23 CFR 772.5(g)]. This criterion is defined by WSDOT as increases in the Leq of 10.0 dBA or more above existing noise levels.

### What are typical neighborhood noise levels?

Typically, nighttime noise levels are lower than daytime levels since most people are more active during the day. In general, rural areas can have noise levels ranging from 50 to 60 dBA, and urban areas can have noise levels as high as 70 to 80 dBA.

### What is sound (noise)?

Sound can be defined as any change in air pressure that the human ear can detect from barely perceptible sounds to sound levels that can cause hearing damage. For example, sitting in the front row of a rock concert would have greater changes in air pressure compared to a quiet whisper in the library. When sounds are perceived as unpleasant, unwanted, or disturbing, they are normally considered "noise."

### What are noise-sensitive sites?

A location of an outdoor area where frequent human activity takes place that may be affected by highway traffic noise.

### What are some key terminologies used to describe noise?

Decibels—a decibel is a unit of measure for sound.

dBA—This represents the noise levels in decibels measured with an A-weighted frequency. The A-weighted frequency corresponds to the frequencies that the human ear can detect.

### Exhibit 5-11 Noise Abatement Criteria, Hourly A-Weighted Sound Level Decibels (dBA)

Activity Category	L <sub>eq(h)</sub>	Description of Activity Category
A	56 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 (exterior)	Picnic area, recreational areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	71 (exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	None	Undeveloped lands.
E	51 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

#### How will the proposed project affect noise levels?

SR 520 is currently at capacity for much of the day. Compared to the No Build Alternative, traffic levels on SR 520 will be reduced between 11 percent and 18 percent as a result of implementing the variable toll. Typically, a reduction in traffic volumes by 25 percent will only reduce noise levels by one decibel. Therefore, we do not anticipate that there will be a substantial difference in future noise levels on SR 520 compared to existing noise levels.

We anticipate that I-90 will experience more of an increase in traffic volumes due to tolling SR 520 compared to other alternate routes, since this corridor would be the shortest alternate route for travelers crossing Lake Washington. SR 522 will have the lowest increase in traffic volumes since travelers would have a longer trip compared to using the SR 520 and I-90 corridors. Since these routes will receive additional traffic, some additional noise will occur as well. A doubling of traffic corresponds to an increase in noise of three decibels, which is typically the minimum change in noise level perceptible to the human ear. Because the total traffic increases along these routes will not be more

than one percent to four percent, noise levels are not likely to increase over one decibel. The change in noise levels on alternate routes is unlikely to be perceptible.

**Will noise levels be affected by construction activities?**

Noise levels will temporarily increase as a result of construction activities. These activities will only take place in Medina. Medina, like most cities, relies on the Washington Administrative Code (WAC), Chapter 173-60, Maximum Environmental Noise Levels.

The WAC states that construction activities should be conducted during daytime hours. If activities must occur during the nighttime hours, a noise variance will be required. Exhibit 5-12 summarizes the allowable exceedances for construction equipment during construction activities.



*Construction of tolling*

**Exhibit 5-12  
Washington State General Construction Allowable Exceedance**

Allowable Exceedance	Equipment Covered
25 dBA	Equipment on construction sites, including, but not limited to, crawlers, tractors, dozers, rotary drill and augers, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, trenches, compactors, compressors, and pneumatic-powered equipment
20 dBA	Portable-powered equipment used for temporary locations in support of construction activities, such as chainsaws, log chippers, lawn and garden equipment, and powered hand tools.
15 dBA	Powered equipment used in temporary repair or periodic maintenance of the grounds, such as lawn mowers and powered hand tools.

**How will noise effects be avoided or minimized during construction?**

The following is a list of typical noise mitigation measures that may be included in construction specifications:

- ▶ Require all engine-powered equipment to have mufflers installed according to manufacturer’s specifications.
- ▶ Require all equipment to comply with pertinent U.S. Environmental Protection Agency (EPA) equipment noise standards.



*Shielding of Stationary Equipment  
Generators are typically used during construction activities; shielding them with hay bales helps to reduce noise effects.*

- ▶ Limit the noisiest construction equipment to daytime hours.
- ▶ Minimize noise by regular inspection and replacement of defective mufflers and parts.
- ▶ Locate stationary construction equipment far from nearby noise-sensitive sites.
- ▶ Install temporary barriers around stationary construction noise sources.
- ▶ Minimize or avoid idling of equipment.
- ▶ WSDOT will use the Occupational Safety and Health Act (OSHA)-approved ambient sound-sensing backup alarms that can reduce disturbances at night.

## Air Quality

### Why is air quality considered when evaluating transportation projects?

Air quality can be affected by transportation projects through increased pollutants including vehicle engine emissions and airborne particulates. Exposure to these pollutants can adversely affect human health (e.g. respiratory problems), vegetation, and wildlife.

### Who regulates air quality?

The EPA, the Puget Sound Clean Air Agency (PSCAA), and the Washington State Department of Ecology regulate air quality in the project area.

### What are the standards for air pollutants?

The Clean Air Act of 1970, which was last amended in 1990, requires the EPA to set concentration standards for criteria air pollutants. These concentration standards are known as the national ambient air quality standards (NAAQS). The criteria pollutants include: ozone, carbon monoxide, particulate matter (PM10 and PM2.5), sulfur dioxide, nitrogen dioxide, and lead. The Washington

### What are criteria pollutants?

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Ozone (O<sub>3</sub>)—is a gas which occurs in the atmosphere when compounds from sources such as cars, trucks, power plants, and factories react with sunlight.

Carbon Monoxide (CO)—is an odorless, colorless, and toxic gas which is emitted from auto, truck, or bus exhaust on roadways and in parking areas.

Particulate Matter (PM)—consist of particles found in the air such as dust, dirt, soot, or smoke and is directly emitted from construction sites, unpaved roads, fields, smokestacks, or fires.

Nitrogen Dioxide (NO<sub>2</sub>)—consists of airborne particles that can often be seen as a reddish brown layer over many urban areas. Sources include on-road vehicles, non-road equipment, fossil fuel combustion, industrial processes, waste disposal, and fire.

State Department of Ecology and the PSCAA have adopted state and local ambient air quality standards that are equivalent to or more stringent than EPA’s NAAQS (see Exhibit 5-13). Pollutants typically associated with today’s vehicle traffic are ozone, carbon monoxide, particulate matter, and nitrogen dioxide. Therefore, sulfur dioxide and lead are not discussed in this section.

**Exhibit 5-13  
National, State, and Local Ambient Air Quality Standards**

Pollutant	National	Washington State	Puget Sound Region
Ozone 1 hour	0.075* ppm	0.12 ppm	0.12 ppm
Ozone 8 hour	0.075 ppm	n/a	n/a
Carbon Monoxide 1 hour	35ppm	35 ppm	35 ppm
Carbon Monoxide 8 hour	9 ppm	9 ppm	9 ppm
Nitrogen Dioxide 1 hour	n/a	n/a	n/a
Nitrogen Dioxide Annual	0.053 ppm	0.053 ppm	0.053 ppm
Particulate Matter (PM <sub>10</sub> ) 24 hour	150 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>
Particulate Matter (PM <sub>10</sub> ) Annual	50 ug/m <sup>3</sup>	50 ug/m <sup>3</sup>	50 ug/m <sup>3</sup>
Particulate Matter (PM <sub>2.5</sub> ) 24 hour	35 ug/m <sup>3</sup>	n/a	n/a
Particulate Matter (PM <sub>2.5</sub> ) Annual	15 ug/m <sup>3</sup>	n/a	n/a

Notes:

\*ppm=parts per million by volume; ug/m<sup>3</sup>=micrograms per cubic meter

n/a = No standard established.

Source:U.S. Environmental Protection Agency

**What are conformity requirements?**

Under the Clean Air Act, the SR 520 Variable Tolling Project must be in compliance with the NAAQS for all criteria pollutants. The project is located within King County in the Central Puget Sound Region. EPA has designated King County as a maintenance area for ozone, carbon monoxide, and particulate matter (PM10 only).

**Attainment Area**

An area designated by EPA where concentrations of a given pollutant are measured below the NAAQS.

**Maintenance Area**

An area that was formerly designated by EPA as a nonattainment area but whose recent monitoring data show pollutant levels have dropped below the NAAQS for a given pollutant. Although an area is considered attainment, it is subject to a 10-year maintenance period to ensure pollutant levels do not rise above the standards.

**Nonattainment Areas**

An area designated by EPA where concentrations of a given pollutant are above the NAAQS over a period of 3 years.

All nonattainment and maintenance areas are subject to the transportation conformity requirements set out in the Clean Air Act (40 CFR parts 51 and 93) and the Washington Clean Air Act.

Projects exempt from these conformity requirements include those that maintain the existing transportation facility, or improve mass transit or air quality, and are considered to have a neutral affect on air quality. The project is not proposing to construct additional travel or turn lanes; therefore, this project is exempt from a project-level hot-spot analysis for carbon monoxide.

The Clean Air Act requires transportation projects to conform to the State Implementation Plan (SIP), which means that the transportation activities will not produce new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS. The SR 520 Variable Tolling Project is included in the SIP.

### **What are Mobile Source Air Toxics?**

In addition to criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. NAAQS have not been established for Mobile Source Air Toxics (MSATs). Most air toxics originate from human-made sources, including on-road mobile sources (automobiles and trucks), non-road sources (airplanes), area sources (dry cleaners), stationary sources (factories or refineries), and non-road equipment (forklifts, backhoes, etc.). There are six primary Mobile Source Air Toxics: benzene, acrolein, formaldehyde, 1,3-butadiene, acetaldehyde, and diesel exhaust.

### **How will the project affect air quality?**

Traffic congestion contributes to the amount of air pollutants emitted into the air. The most common pollutants include carbon monoxide and particulate matter. Reducing congestion and allowing free flow of traffic will indirectly help to reduce air emissions compared to the No Build Alternative.

### **What are MSATs?**

#### **Mobile Source Air Toxics:**

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**Benzene**—is a colorless liquid with a sweet odor used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides.

**Acrolein**—is a colorless or yellow liquid with a disagreeable odor used as a pesticide to control algae, weeds, bacteria, and mollusks.

**Formaldehyde**—is a colorless, pungent-smelling gas. Sources include pressed wood products, cigarette smoke, and fuel-burning appliances.

**1,3-butadiene**—is a colorless gas with a mild gasoline-like odor and made from the processing of petroleum.

**Acetaldehyde**—is also known as ethanol and results from combustion, such as automotive exhaust and tobacco smoke.

**Diesel exhaust**—airborne contaminant in workplaces where diesel is used.

Implementation of tolling on SR 520 is anticipated to divert some traffic to alternate routes, such as I-90, SR 522, I-5, and I-405. Therefore, traffic will be reduced on SR 520 by approximately 11 to 18 percent, which will reduce emissions along SR 520 for all pollutants. However, traffic and emissions are anticipated to slightly increase along these alternate routes. Construction of the SR 520 tolling is anticipated to begin in 2009. By 2010, VMT along the alternate cross-lake routes is anticipated to increase compared to the No Build Alternative. I-90 would increase two to three percent and SR 522 would increase one to two percent. The north-south corridors were also analyzed showing no change in VMT along I-5 and a one to two percent decrease of VMT along I-405. The decrease in VMT along I-405 may be due to travelers choosing the nearest alternate cross-lake route instead of using SR 520.

Even though there would be a slight increase in VMT along the alternate cross-lake routes, the total VMT for all routes added together would decrease, which indicates travelers are choosing to travel during non peak hours, use more transit options during peak hours, or choose not to make the trip at all. Therefore, this project is not anticipated to have an adverse effect on air quality.

EPA has developed several emissions control programs for vehicle engines and fuels that will reduce MSAT emissions over the next 20 years. These programs include reformulated gasoline, national low-emission vehicle standards, Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and proposed heavy-duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Even if VMT increases, future MSAT emissions are likely to be lower than present levels due to these EPA programs. (FHWA 2006)

#### **Vehicle Miles Traveled (VMT)**

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VMT stands for vehicle miles traveled and is the number of miles vehicles travel each year. For transportation projects with set boundaries, VMT can refer to the aggregate number of miles that all the vehicles travel using the specified roadways.

### **Will construction activities temporarily generate air pollutants?**

Construction activities will temporarily generate air pollutants within the project area. Particulate matter (fugitive dust) is the most common air pollutant emitted during construction activities. Fugitive dust may become airborne during material transport, grading, driving of vehicles and machinery on and off site, and through high winds.

### **How will adverse effects from construction activities be avoided or minimized?**

The construction contractor will be required to control fugitive dust during construction activities.

The following BMPs to control fugitive dust are typically used during construction activities:

- ▶ Spraying exposed soil with water or other suppressant to reduce emissions and deposition of particulate matter.
- ▶ Using phased development to keep disturbed areas to a minimum.
- ▶ Using wind fencing to reduce disturbance to soils.
- ▶ Minimizing dust emissions during transport of fill materials or soil by wetting down or by ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks.
- ▶ Cleaning up spills of transported material on public roads promptly.
- ▶ Scheduling work task to minimize disruption of the existing vehicle traffic on streets.
- ▶ Locating construction equipment and truck staging areas away from sensitive receptors, as practical, and in consideration of potential effects on other resources.

- ▶ Providing wheel washers to remove particulate matter that will otherwise be carried off site by vehicles to decrease deposition of particulate matter on area roadways.
- ▶ Covering dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris.

Mitigation strategies to reduce MSAT emissions include:

- ▶ Reducing engine activity.
- ▶ Redirecting work or changing shift times to avoid community exposures.
- ▶ Making adjustments to equipment, including PM traps, oxidation catalysts, and other devices that provide an after-treatment of exhaust emissions.
- ▶ Using clean fuels, such as ultra-low sulfur diesel.



# Chapter 6 Cumulative Effects

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*Chapter 6 describes the cumulative effects that could result from this project, including effects to transportation, Environmental Justice, air quality, and climate change.*

## **What are cumulative effects?**

NEPA and its implementing regulations require federal agencies to identify and analyze the direct, indirect, and cumulative effects of a proposed federal action to make an informed decision. Analyzing cumulative effects helps to understand the “big picture” effects of a project and the possible effects that can be made on the regional environment. A federal agency’s responsibility to address these effects in the NEPA process was established by the Council of Environmental Quality (CEQ) regulations. The CEQ regulations define a cumulative effect as:

*“...the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” (40 §CFR 1508.7).*

As defined above, “actions” include construction of other transportation or development projects, such as a highway interchange, a light rail route, a housing subdivision, or an office park.

Cumulative effects are the summation of effects on a resource resulting from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes those actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

## How were cumulative effects identified?

Our cumulative effects analysis only considers those resources that could be substantially affected by the project in combination with other past, present, and reasonably foreseeable future actions. Direct and indirect effects of the project are discussed in Chapter 5.

Based on our direct and indirect effects analysis, we determined that the SR 520 Variable Tolling Project may contribute to cumulative effects on the following elements of the environment:

- ▶ Transportation
- ▶ Environmental Justice
- ▶ Air quality
- ▶ Climate change

## What sources were used to collect data for this section?

We used comprehensive plans, local city websites, PSRC research publications, and the *Puget Sound Regional Council Land Use and Travel Demand Forecasting Model* (January 2007) to analyze cumulative effects for the project area. In addition, we used the Cumulative Effects Discipline Report from the *SR 520 Bridge Replacement and HOV Project Draft EIS* (May, 2005) as a source of information for this section.

### Why don't we study cumulative effects for all resources?

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CEQ guidance only requires us to study cumulative effects on resources we affect either directly or indirectly. If there are no direct or indirect effects, there cannot be any cumulative effects

## **What are the geographic and temporal boundaries for this cumulative effects analysis?**

The geographic resource boundaries we used for our cumulative effects analysis are based on the resources of concern and the potential effects to these resources.

For cumulative effects associated with traffic and transportation we used a geographic resource boundary comprising the area between I-5 and I-405 (SR 520, I-90, and SR 522), including I-5 and I-405. Because SR 520 is an integral link in a complex system of interconnected highways, changes to any one of these corridors could cumulatively affect the other corridors. At a more local scale we also considered reasonably foreseeable plans for development or redevelopment within approximately 1/4 mile of the proposed project area on SR 520.

These same cumulative transportation effects could also affect low-income populations in the same general area. Therefore, our boundary for the cumulative effects analysis associated with this element uses the same geographic resource boundary described above for transportation and traffic.

For air quality, we considered a wider area for cumulative effects because it must be looked at on a regional scale. Our geographic boundary for cumulative effects to air quality is King County.

Climate change is a global issue. Our analysis qualitatively addresses the potential effect of the project on climate change in the context of statewide efforts to address the issue.

The temporal boundaries for the analysis of cumulative effects should allow for the recognition of long-term trends as well as consider the effects of any future actions. The beginning boundary typically is based upon the availability of data or a meaningful event that has

influenced existing conditions (construction of a highway or railroad, for example).

We set the beginning of the temporal boundary for our cumulative effects analysis of this project with the opening of the first bridge across Lake Washington in 1940. This event drastically altered transportation and development patterns within King County.

Our cumulative effects analysis time frame extends in the future to 2016. We chose that year because it is when the SR 520 Bridge Replacement and HOV Project is expected to be completed. At that time, the existing Evergreen Point Bridge will no longer be in use. The new bridge built by the SR 520 Bridge Replacement and HOV Project, which is currently undergoing a separate environmental review, will likely have a different roadway configuration and different toll pricing. Therefore, the conditions we've analyzed in this document will no longer exist once the new bridge is completed in 2016.

## What is the history of the area?

Historically, residential and commercial uses in the region were concentrated in Seattle. Until the Lake Washington Floating Bridge (later known as the Lacey V. Murrow Floating Bridge) was completed in 1940, the primary way people crossed Lake Washington was by ferry boat. However, the new bridge drastically reduced the time necessary to cross the lake and the Eastside became an attractive residential choice for those working in Seattle.

After World War II, residential and commercial land uses expanded east across Lake Washington as a result of a new national trend of suburbanization; Medina, Hunts Point, Clyde Hill, Yarrow Point and Bellevue incorporated in the 1950s. Between 1960 and 1963, construction of the Evergreen Point Bridge (SR 520) additionally contributed to rapid growth east of Lake Washington.



*Interstate 90: the Homer M. Hadley bridge (left) and the Lacey V. Murrow (right) floating bridges, looking east toward Mercer Island.*

In the last quarter of the twentieth century, the spread of urbanization resulted in greater population and employment on the Eastside of Lake Washington than in Seattle. With the increase in jobs on the Eastside, traffic across Lake Washington grew heavily in both directions. In 1989, the Homer M. Hadley Floating Bridge was built to provide more capacity across the lake on I-90; however, this additional bridge was not enough to offset the growth in traffic. Today, both corridors across Lake Washington are frequently congested.

## What does the future hold for the area?

According to PSRC forecasts, the population in the Puget Sound region is expected to increase from approximately 3.5 million in 2006 to nearly 4 million people in 2016. Growth will be focused in urban growth areas, thereby increasing the density of development (PSRC's *Destination 2030*). Exhibit 6-1 shows existing and future employment and population characteristics for the four-county Puget Sound region.

**Exhibit 6-1  
Existing and Future Population and Employment  
Characteristics for the Puget Sound Region**

	2006	2010	2016
Total Population	3,507,603	3,695,504	3,967,418
Total Households	1,386,593	1,470,054	1,612,194
Low Income Households	346,199	367,511	403,062
Upper-Income Households	347,085	367,510	403,048
Retail Employees	337,567	351,883	380,855
Government Employees	228,345	244,182	254,512
Employees in Education	90,302	93,613	98,768
Employees in Manufacturing	201,765	219,391	216,115
College Students	152,295	171,759	175,543

Source: PSRC Population and Employment Data model

Among the four counties (King, Kitsap, Pierce, and Snohomish) in the Puget Sound region, King County is expected to see the most change in both population and employment numbers (*Destination 2030*).

## **What projects were considered for this cumulative effects analysis?**

We considered, for this analysis, effects from any other projects located within or close to our project's study area. The projects also must be reasonably foreseeable. This typically means that the project is likely to happen or probable, rather than merely possible.

### **Development**

Seattle has not issued any permits for new non-transportation related development within the project area along SR 520. Medina, Hunts Point, Clyde Hill, and Yarrow Point do not anticipate any future (non-transportation related) development other than the construction of new single-family homes on the few remaining vacant lots in the communities and the demolition of single-family homes to be replaced by larger homes. According to a Planning Information Specialist in the Kirkland Planning and Community Development Department (E-mail on October 9, 2008), a developer is proposing to construct an additional office building at the Plaza at Yarrow Bay located at 10220 Lake Washington Boulevard (north of SR 520).

### **Transportation**

There are a number of transportation projects planned in or near the project area:

- ▶ SR 520 Bridge Replacement and HOV Project
- ▶ SR 520 Eastside Transit and HOV Project
- ▶ I-90 Two-Way Transit and HOV Operations Project

- ▶ I-405 NE 195th to SR 527 Northbound Widening Project
- ▶ I-405 NE 8<sup>th</sup> Street to SR 520 Improvement Project
- ▶ I-405 South Bellevue Widening
- ▶ Sound Transit University Link Light Rail Project
- ▶ Sound Transit East Link Light Rail Project
- ▶ Other Transit Improvements
- ▶ Other Lake Washington Urban Partnership Projects

Descriptions of these transportation projects are provided below.

### ***Highway Projects***

#### **SR 520 Bridge Replacement and HOV Project**

This project will improve the SR 520 corridor from I-5 in Seattle to the vicinity of Evergreen Point Road. It would include replacement of all the existing bridges with newer, safer bridges designed to better withstand earthquakes and windstorms. WSDOT plans to be open the project to traffic in 2016. Both the new roadway configuration and the toll rates would be different from what is being studied for the SR 520 Variable Tolling Project.

#### **SR 520 Eastside Transit and HOV Project**

This project will complete the HOV lanes from Lake Washington to SR 202. HOV lanes and transit stops will be shifted from the outside to the inside of the roadway. Extensive improvements will be constructed along the approximately three-mile section of SR 520 between Lake Washington and 108<sup>th</sup> Avenue NE. These improvements include a new eastbound HOV lane and HOV lane direct access ramps to and from the west at 108<sup>th</sup> Avenue NE. Construction on this project is expected to begin in 2010 and be completed in 2013.

### I-90 Two-Way Transit and HOV Operations Project

This project, a partnership between WSDOT and Sound Transit, will add HOV lanes to the I-90 outer roadway between Seattle and Bellevue. The project also includes new I-90 HOV on- and off-ramps on Mercer Island, and will improve I-90 HOV access at Bellevue Way. Stage 1 of the project, which includes new westbound HOV direct access ramps at Bellevue Way SE and 80<sup>th</sup> Avenue SE, opened for service on October 10, 2008. Stage 2 of the project involves improving eastbound I-90 from Mercer Island to Bellevue, and is scheduled to be constructed from 2010 to 2012. Stage 3 will provide improvements to eastbound and westbound I-90 between Seattle and 80<sup>th</sup> Avenue SE on Mercer Island and will be constructed from 2011 to 2014.

### I-405 NE 195th to SR 527 Northbound Widening Project

The NE 195<sup>th</sup> to SR 527 Northbound Widening Project will add a new lane on northbound I-405 between NE 195<sup>th</sup> Street and SR 527. Construction is scheduled to start in 2009 and be complete by Winter 2010.

### I-405 NE 8th Street to SR 520 Improvement Project

The I-405 – NE 8<sup>th</sup> Street to SR 520 Improvement Project will build new structures to separate northbound traffic exiting to SR 520 from traffic entering I-405 at NE 8<sup>th</sup> Street in Bellevue. In addition, a new eastbound lane along SR 520 will be built to separate the on and off-ramps between I-405 and 124<sup>th</sup> Avenue traffic. A new on-ramp at NE 10<sup>th</sup> Street to SR 520 will also be built. Construction is scheduled to begin in 2009, and the affected area will be open to traffic in 2012.

### I-405 South Bellevue Widening

The I-405 – South Bellevue Widening Project, also known as the 112<sup>th</sup> Avenue SE to SE 8<sup>th</sup> Street Project, will help to relieve congestion for travelers coming in and out of Bellevue. Between 112<sup>th</sup> Avenue SE and I-90, a new northbound lane will be added, and the existing

northbound bridge over Coal Creek Parkway will be widened. Between I-90 and SE 8<sup>th</sup> Street, one new lane in each direction (from I-90 to SE 8<sup>th</sup> Street) will be added; the Wilburton Tunnel will be removed; a new three-lane, southbound bridge over I-90 will be built; and the existing southbound bridge over I-90 will be converted to carry northbound HOV traffic. Construction on this project began in spring 2007, and is scheduled to be finished in fall 2009.

### ***Light Rail Projects***

#### **Sound Transit University Link Light Rail Project**

University Link is a 3.15-mile light rail extension that will run from downtown Seattle to the University of Washington, with stations at Capitol Hill and on the University campus near Husky Stadium. Sound Transit is currently finishing final design work, and construction is scheduled to begin in early 2009. Sound Transit plans to open University Link for service in 2016.

#### **Sound Transit East Link Light Rail Project**

East Link is an approximately 18-mile long light rail extension that will run along I-90 from downtown Seattle to the Eastside. It will have 11 to 14 stations serving Seattle, Mercer Island, south Bellevue, downtown Bellevue, Bel-Red/Overlake, and Redmond. Although Sound Transit has not identified a final alignment yet, all alignments being considered will convert the center roadway of I-90 across Lake Washington to light rail operation. Sound Transit expects to start construction in 2013, with operations starting as early as 2020.

### ***Other Transit Improvements***

#### **Lake Washington Urban Partnership**

The transit elements of the Lake Washington Urban Partnership are focused on reducing congestion along SR 520 by providing alternatives to driving and paying a toll. King County Metro is the lead agency for the transit

elements of the Lake Washington Urban Partnership. King County Metro will purchase twenty 60-foot and twenty-five 40-foot hybrid motor coaches, and improve bus stops through real-time information signs about bus arrivals (at seven stops) and improved passenger shelters and lighting (at two stops). King County Metro will also expand park-and-ride facilities that serve the SR 520 corridor. They plan to replace a 613-space surface parking lot with an 853-space parking garage and by build a new 386-space parking garage.

#### King County Metro—Transit Now

King County Metro is currently implementing their Transit Now service expansion that was approved by voters in 2006. One element of Transit Now is RapidRide – a new streamlined bus service that will provide frequent, all-day service in several corridors. One of the five RapidRide corridors funded by Transit Now is the Eastside RapidRide line. It will operate between the new downtown Redmond Transit Center and the Bellevue Transit Center via the Crossroads and Overlake neighborhoods. Riders will be able to connect to high-frequency bus service across Lake Washington at the Overlake Transit Center and Bellevue Transit Center.

#### Sound Transit 2

Sound Transit will be increasing express bus service in the region in 2009 as a result of the Sound Transit 2 ballot measure approved by voters in 2008. The Sound Transit service expansion will increase the frequency of service on many routes, including three that cross Lake Washington. These routes are the 545 between Redmond and Seattle, 550 between Bellevue and Seattle, and the 554 between Issaquah and Seattle.

## ***Other Lake Washington Urban Partnership Projects***

### **Telecommuting Project**

The telecommuting element of the Lake Washington Urban Partnership involves expanding telecommuting opportunities and transportation demand management beyond what it is today. PSRC is the lead agency for the telecommuting element of the Lake Washington Urban Partnership. Their efforts will include increasing outreach to employers about alternative transportation options and incentives to use them, and providing improved traveler information and trip planning services to employees. Widespread broadband Internet access and support from major employers will enable the expansion of telecommuting programs so more people can have the option to telecommute or use flextime. This will help reduce work trips during weekday peak commute times in the mornings and evenings.

### **UPA Active Traffic Management Project**

This project will use Active Traffic Management techniques to help reduce congestion along SR 520. Specific techniques allow for the detection of incidents, facilitate the removal of disabled vehicles, and provide travelers with real-time information about traffic conditions, such as through 511 and electronically changeable roadway signage. WSDOT will install variable speed limit signs to facilitate smoother traffic flow during peak travel periods. Variable speed limits, improved on- and off-ramp access and real-time traveler information signs, will provide commuters with the tools and information they need for a more reliable trip.

## **What cumulative effects would result from the SR 520 Variable Tolling Project?**

The following sections describe the potential cumulative effects of the SR 520 Variable Tolling Project compared to the No Build Alternative.

### **Transportation**

Most of the projects described above will be under construction during the period 2010 and 2016 when the SR 520 Variable Tolling Project is operating. Both SR 520 and I-90 are likely to have construction projects between I-5 and I-405 throughout this period. WSDOT also plans to have some projects under construction on I-405 through 2012. We do not expect the SR 520 Variable Tolling project to have any noticeable cumulative effect on travel patterns in combination with the construction of these projects. Existing capacity constraints on the highway system and planned construction on both of the direct routes across Lake Washington will limit diversion related to construction. Overall, we expect construction of other projects to have a negligible incremental cumulative effect with the diversion related to the SR 520 Variable Tolling Project.

As the highway and transit improvements we identified are completed, we expect they will cumulatively improve regional mobility in addition to the congestion reduction from the SR 520 Variable Tolling Project. Transit users crossing Lake Washington will especially see cumulative benefits. The SR 520 Eastside HOV and Transit Project and the I-90 Two-way Transit and HOV Project will provide noticeable improvements in transit service reliability across Lake Washington on both corridors. Coupled with the transit improvements being implemented by King County Metro and Sound Transit, many transit users crossing Lake Washington will experience a noticeable cumulative improvement in

transit service between now and 2016. Transit use across Lake Washington will also likely see a cumulative increase as service improves and people look for ways to avoid the toll implemented by the SR 520 Variable Tolling Project.

## Environmental Justice

Construction planned for the un-tolled routes around or across Lake Washington may make it more time-consuming for low-income SR 520 users to take an alternate route to avoid paying the toll. A potential positive cumulative effect is the transit service improvements described above will make it easier for some low-income users to use transit to avoid the toll on SR 520.

## Air Quality

A reduction in congestion and a decrease in the volume of vehicles will likely reduce the amount of emissions emitted from autos. However, even with increases in traffic volumes, emissions are likely to be lower than present levels due to EPA's programs to reduce emissions by 2020. Overall, little affect is expected for air quality.

## Climate Change

### *What are greenhouse gases and climate change?*

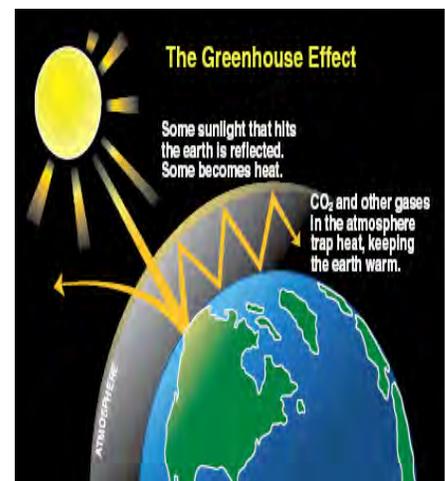
Vehicles emit a variety of gases during their operation; some of these are greenhouse gases (GHGs). The GHGs associated with transportation are water vapor, carbon dioxide (CO<sub>2</sub>), methane (also known as "marsh gas"), and nitrous oxide (used in dentists' offices as "laughing gas"). CO<sub>2</sub> makes up the bulk of the emissions from transportation. Any process that burns fossil fuel releases carbon dioxide into the air.

Vehicles are a major source of GHG emissions and contribute to global warming primarily through the burning of gasoline and diesel fuels. National estimates

### Will I-90 be tolled also?

The Washington State Legislature is currently considering a proposal to toll I-90 across Lake Washington. No decisions had been made at the time we did our analysis, so we did not consider a toll on I-90 reasonably foreseeable.

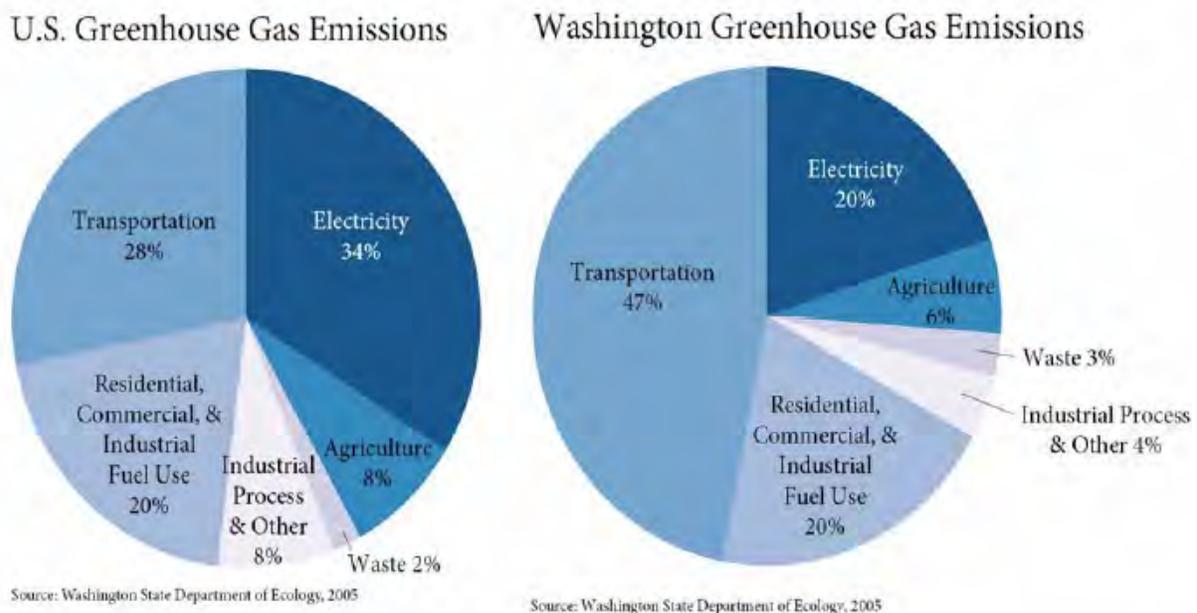
If I-90 were to be tolled, it will limit the un-tolled alternate routes available for crossing Lake Washington. A separate environmental review would be required for tolling I-90.



*Greenhouse Gas Effect*

show that the transportation sector (including on-road, construction, airplanes, and boats) accounts for almost 30 percent of total domestic CO<sub>2</sub> emissions. However, in Washington State, transportation accounts for nearly half of GHG emissions because the state relies heavily on hydropower for electricity generation, unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity. The next largest contributors to total gross GHG in Washington State are fossil fuel combustion in the residential, commercial, and industrial sectors at 20 percent; and in electricity consumption, also 20 percent. Exhibit 6-2 shows the gross GHG emissions by sector, nationally and Washington State.

**Exhibit 6-2**  
**GHG Emissions by Sector, 2005, U.S. and Washington State**



***What efforts are underway to reduce greenhouse gas emissions in Washington State?***

In February 2007, Governor Gregoire issued Executive Order 07-02 requiring state agencies to find ways to reduce GHG emissions and adapt to the future that

climate change may create. On May 3, 2007, the Washington legislature passed Senate Bill 6001 that, among other things, adopted the Governor's climate change goals into state law. This law sets greenhouse gas reduction goals, sometimes referred to as benchmarks, for Washington State:

- ▶ 1990 greenhouse gas levels by 2020.
- ▶ 25 percent reduction below 1990 levels by 2035.
- ▶ 50 percent by 2050.

In 2007 the Climate Advisory Team was formed to carry out the Governor's executive order. The final report included recommendations of actions to reduce Washington's emissions.

The Washington legislature passed and the Governor signed HB 2815 in the Spring of 2008. This bill includes, among other elements, statewide per capita VMT reduction goals as part of the state's GHG emission reduction strategy.

In 2008, a group similar to 2007's Climate Advisory Team was established as the Climate Action Team. This group worked to refine 2007's broad recommendations into specific actions the state can take to reduce emissions. Among other items, the group focused on strategies to reduce VMT and include climate change in SEPA evaluations. More information on this statewide process is available at [http://www.ecy.wa.gov/climatechange/2008CAT\\_overview.htm](http://www.ecy.wa.gov/climatechange/2008CAT_overview.htm).

In addition to working in partnership with the Climate Action Team, WSDOT is working to reduce GHG emissions through other activities. WSDOT is a state leader in developing effective, measurable, and balanced emission reduction strategies. Current WSDOT activities that reduce GHG emissions include, but are not limited to:

#### **Vehicle Miles Traveled (VMT)**

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VMT stands for vehicle miles traveled and is the number of miles vehicles travel each year. For transportation projects with set boundaries, VMT can refer to the aggregate number of miles that all the vehicles travel using the specified roadways.

**Transportation Options:** For 30 years, WSDOT has supported carpooling, vanpooling, and public transportation through the funding, building, and maintenance of the freeway HOV system, ferries, rail, and other programs. These investments help to reduce the number of vehicles on the roadway during peak congestion and help reduce total VMT.

In addition to working to reduce emissions on the transportation network, WSDOT is taking action to reduce the agency's emissions. Steps include:

**No-Idle Policy:** In 2006, WSDOT adopted a no-idle policy to reduce fuel use and vehicle emissions. It is estimated that by reducing vehicle idling by 50 percent, WSDOT can save as much as \$500,000 annually in fuel costs.

**Reducing Diesel Emissions:** In 2005, WSDOT started using 5 percent biodiesel (B5) mixed with regular diesel in maintenance vehicles operating in the Central Puget Sound area. Currently, 25 WSDOT fueling stations have 10 percent biodiesel (B10) available and there is a goal toward using 20 percent biodiesel (B20), depending on availability.

In addition to the recent state activities focusing on climate change, WSDOT and its partners are actively implementing the 2005 Transportation Partnership Act, a 16-year plan to meet Washington State's most critical transportation needs. Many of the local, regional, and statewide transportation system improvements in conjunction with ongoing programs will help reduce the VMT each year. Together these efforts combine to create more efficient driving conditions, offer mode choices, and help move toward state GHG goals.

***How do we determine the effect transportation improvements have on greenhouse gas emissions?***

Quantitative modeling tools to evaluate GHG emissions for linear transportation projects are limited at this time.

**Did you know?**

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An average car emits one pound of carbon dioxide for every mile it is driven. So for every mile you avoid driving, you reduce the carbon dioxide added to the atmosphere by one pound.

At the project level, WSDOT is currently unable to show the effect of improved traffic flow on emissions.

WSDOT and regional transportation planning organizations are working on methods and models to improve the quality of information and guidance for evaluating GHG emissions from transportation. Tools under development will allow for GHG calculations that account for changes in VMT and other factors, depending on project size and type in the future. Guidelines for applicable projects and how to discuss GHG emissions in a more meaningful way are also under development.

***How will the SR 520 Variable Tolling Project help to reduce GHG emissions and climate change?***

Since about half of the State of Washington's GHG emissions are from transportation (automobiles and trucks), reducing single-occupant vehicle trips is a good place to start. HOV lanes have been shown to encourage people to carpool, vanpool, or take the bus rather than drive by themselves. Every two-person carpool reduces the amount of GHG emissions created by that trip by about half of what it would be if both people drove. Vanpools would reduce GHGs by much more. The SR 520 Variable Tolling Project will encourage more people to use the bus and carpool, thus assisting in reducing GHG emissions and climate change. Also, since the project will improve traffic flow and increase average peak hour speeds, we anticipate that it will reduce overall energy consumption. Reducing energy use should decrease GHG emissions.

**What measures will be taken to minimize cumulative effects?**

No mitigation measures, beyond those already described for direct and indirect effects in Chapter 5, will be taken to minimize cumulative effects.



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## **520 Tolling Implementation Committee**

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**Tolling Report Prepared for the  
Washington State Legislature  
January 28, 2009**



**This report is submitted in compliance with ESHB 3096, as approved by the 2008 Washington State Legislature.**



**Bob Drewel,**  
Executive Director, Puget Sound Regional Council



**Paula Hammond,**  
Washington State Secretary of Transportation



**Richard "Dick" Ford,**  
Washington State Transportation Commission

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January 28, 2009

To: Governor Chris Gregoire  
Members of the Washington State Legislature

It is our pleasure to submit the 520 Tolling Implementation Committee's report, in accordance with ESHB 3096 as approved by the 2008 Washington State Legislature. The Committee was charged with evaluating tolls as a means of financing a portion of the 520 Bridge Replacement and HOV Program, engaging citizens and local and regional leadership in the evaluation, enhancing understanding of tolling alternatives, and reporting to the Governor and Legislature in 2009. The Committee also was charged with recommending potential mitigation measures for diversion resulting from tolls.

The Committee and its staff developed and evaluated ten scenarios with tolls on 520 or on both 520 and I-90. Four were presented to the public in the summer. Based upon the feedback received, six new scenarios were conceived, analyzed and brought back for public review in the fall.

Extensive efforts were made to reach a broad range of people, through public meetings, online opportunities and face-to-face discussions with local elected leaders from around Lake Washington. 16,000 people visited our website, build520.org, hundreds attended our open houses and thousands submitted written comments and petition signatures. More than 7,800 people took our web survey and another 1,200 participated in a random sample telephone survey. We also conferred with more than 20 local jurisdictions and spoke to civic and citizen groups.

We found great interest in the subject of funding the 520 project with tolls. Major findings include:

- Support for tolling as a way to help fund the bridge replacement.
- Support for the idea of variable tolling in which tolls vary by time of day.
- Support for full electronic tolling with transponders and no toll booths.
- Support for tolling the existing 520 bridge in 2010 when construction begins.
- Majority support for tolling I-90 in addition to 520, but strong opposition from I-90 users.

Overall findings from the scenario analysis include:

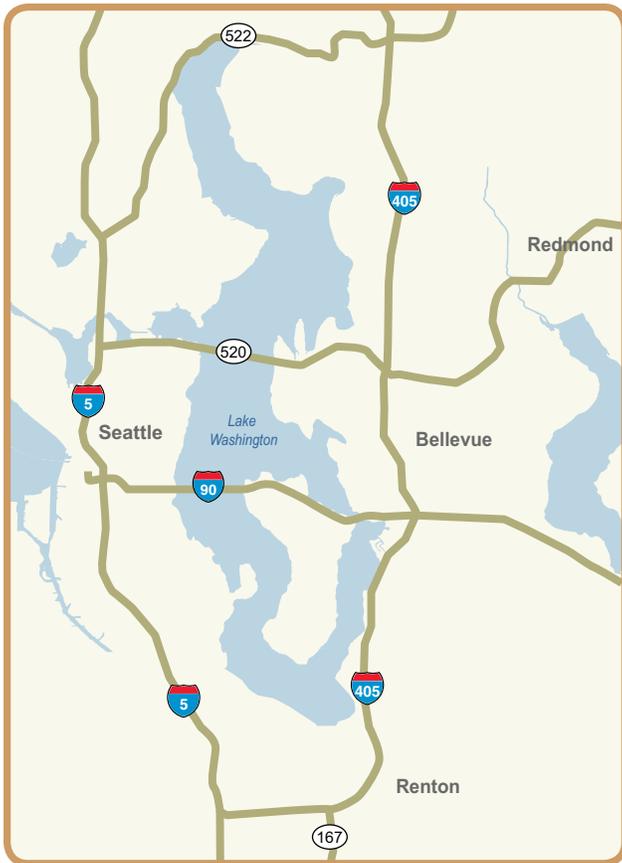
- Toll scenarios raised between \$522 million and \$2,457 million in bridge funding.
- Tolling 520 in 2010 raises more funds and reduces the cost of borrowing compared to tolling in 2016.
- When tolls are in place, traffic volumes decrease and speeds improve on tolled facilities.
- When tolls are in place, some people choose a new route, change the time of their trip, take transit or carpool or change their destination to not cross Lake Washington.

The Committee also was asked to evaluate traffic diversion and make mitigation recommendations, evaluate tolling technologies and new applications of advanced traffic technologies, and explore opportunities to partner with the business community. These and all other findings are included in this report or in the detailed appendices that can be found on the build520.org website. For questions about the report, please contact David Hopkins at WSDOT by calling 206-464-1194 or e-mailing him at hopkida@wsdot.wa.gov.

We especially would like to thank the thousands of people who participated in the process and the local jurisdiction leaders and staff who were instrumental in the success of this effort. We also thank you for giving us this task and stand ready to assist you in any way in your discussions regarding tolling.

Bob Drewel, Executive Director, Puget Sound Regional Council  
Paula Hammond, Washington State Secretary of Transportation  
Richard "Dick" Ford, Washington State Transportation Commission

# executive summary



Lake Washington and surrounding highways

The 520 Tolling Implementation Committee was created by the Washington State Legislature in 2008 to evaluate tolls as a means of financing a portion of the 520 Bridge Replacement and HOV Program, engage citizens and regional leadership in the evaluation, enhance understanding of tolling alternatives, and report to the Governor and Legislature in 2009.

The existing State Route 520 bridge structures across Lake Washington and Portage Bay are vulnerable to earthquakes and windstorms and need to be replaced. In 2008, the Legislature asked for an evaluation of toll scenarios that could produce \$1.5 to \$2.0 billion in financing.

The Committee and its staff developed and evaluated ten scenarios with tolls on 520 or tolls on both 520 and I-90. The Committee initially evaluated four scenarios, and collected extensive public and local jurisdictional input on those results. That input helped staff develop an additional six scenarios for evaluation. The Committee then re-engaged the public and local jurisdictions with results for all ten scenarios. It now reports all findings to the Governor and Legislature.

## Overall Findings From Public Engagement

As requested by the Legislature, the Committee and its staff led a public outreach and input-gathering effort in conjunction with the tolling analysis and evaluation process. Thousands of people participated directly by attending Committee meetings or public open houses, visiting the website, taking part in a web survey or writing to the Committee. A random sample, statistically-valid telephone survey was also conducted. Committee members and staff met regularly with jurisdictions, technical staff and other stakeholder groups to understand their concerns and aspirations related to tolling. The Committee found the following:

- Generally, people support tolling, and support tolling the existing 520 bridge in 2010 (59 percent in web survey and 64 percent in phone survey).
- The phone survey showed that most people support the idea of tolling I-90 in addition to 520, although most users of I-90—in particular Mercer Island residents—are opposed to this concept. Support increases among I-90 users if toll revenue is used for I-90 improvements.
- Among those who support tolling, variable tolling is also supported as a way to reduce congestion and improve traffic conditions. Those who oppose the overall concept of tolling also oppose variable tolling.
- Electronic tolling is also supported. Most people appear to understand the connection between electronic tolling (no toll booths needed) and improving traffic flow. Some did ask questions about logistics associated with electronic tolling.



The Committee aimed to provide guidance on a key question: *“How can funding be secured for the new 520 bridge under the best terms for taxpayers, bridge users and adjacent communities?”*

## Overall Findings from Scenario Analysis

### Financial capacity

- The toll scenarios examined raise between \$522 million and \$2,457 million in corridor funding from tolls. The most a 520-only scenario raised was \$1.5 billion. Most scenarios that toll both 520 and I-90 raised more than \$2.0 billion.
- Only one 520-only scenario met the low end of the Legislative target (\$1.5 billion).
- All two-bridge scenarios (520 and I-90) met the Legislative target and four of five scenarios exceeded the high end (\$2.0 billion).

### Begin tolling in 2010 vs. 2016

- Tolling 520 in 2010 raises more funds and may reduce the cost of borrowing compared to tolling 520 in 2016.
- Tolling starting in 2010 enables use of \$154 million in federal funds from the USDOT Urban Partnership Agreement. There would be \$86 million available for tolling and active traffic management infrastructure. An additional \$41 million would be used to buy transit coaches in the corridor. \$27 million would be available in funds for ferries.

### Traffic conditions with tolling

- When tolls are in place, volumes go down and speeds improve on the tolled facility.
- If tolls are placed on both bridges, traffic volumes go down and speeds improve on both bridges.
- Speeds decrease on alternate routes. This decrease, however, is less than the speed improvements on the tolled routes.

### Diversion due to tolls

- People may change their travel choices to take transit, carpool, or vanpool; shift the time of day of their trip; or change their destination.
- Some people do change their route, but the overall effect of those route changes tends to be distributed across the transportation system.
- Diversion is reduced by existing congestion levels, limited alternate routes and resulting lack of time savings from using another route.

In addition to these findings, the Committee is also providing the Legislature with requested research into advanced tolling technologies; new technologies

for managing traffic; opportunities to partner with businesses; and potential traffic mitigation opportunities. Appendices listed below contain additional details and analysis for all topics and are available on disk and on the Committee's website (build520.org).

## Mitigation Recommendations

ESHB 3096 requested the Committee recommend mitigation measures associated with potential diversion resulting from tolling. The Committee is recommending a two-part approach.

In Part 1, keeping traffic on 520 is the priority. The intent is to manage toll levels to keep people on the 520 bridge while also meeting revenue expectations. This can be accomplished through variable tolling, identifying funds to provide transit service and working with employers to reduce congestion. Ultimately, the new 520 bridge, with its expanded capacity, will keep traffic on 520.

Part 2 includes recommendations targeted to the five locations most likely affected by potential diversion (522, I-90, I-405, I-5 and the University area) as found in traffic diversion analysis. Mitigation measures could include system-wide instrumentation and traffic monitoring, electronic driver information signs (particularly for the 522 corridor), advanced traffic technology, transit expansion and coordination for new service, and related projects such as new or expanded park-and-rides.



### Appendices available on disk and on the website:

#### Volume 1:

A: Legislation - ESHB 3096

B: Outreach Events and Materials

C: Travel Demand Modeling and Financial Analysis

D: Travel Demand Model Peer Review

E: Active Traffic Management

F: Toll Collection Technology

G: Mitigation Recommendations for Diversion

H: Discussions on I-90

#### Volume 2:

I: Public Comments

- Letters from jurisdictions
- Summaries of public comment
- All public comments received

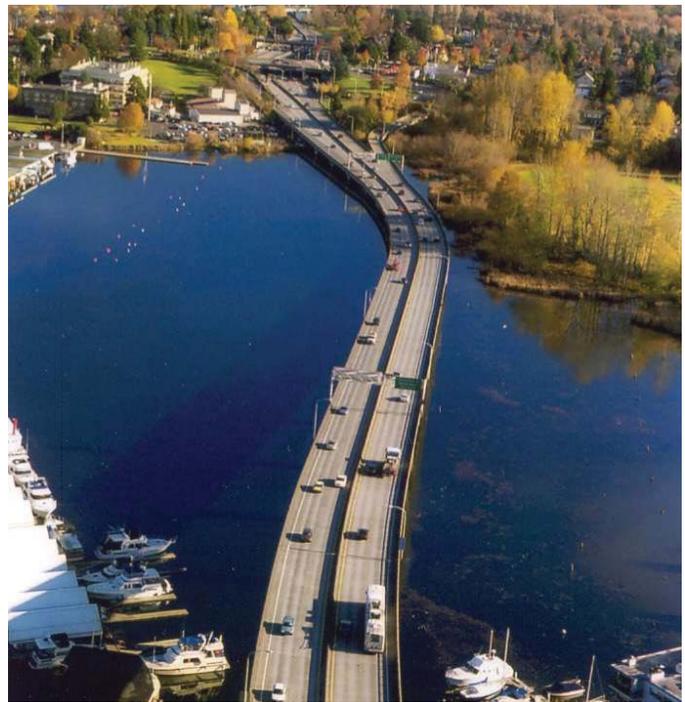
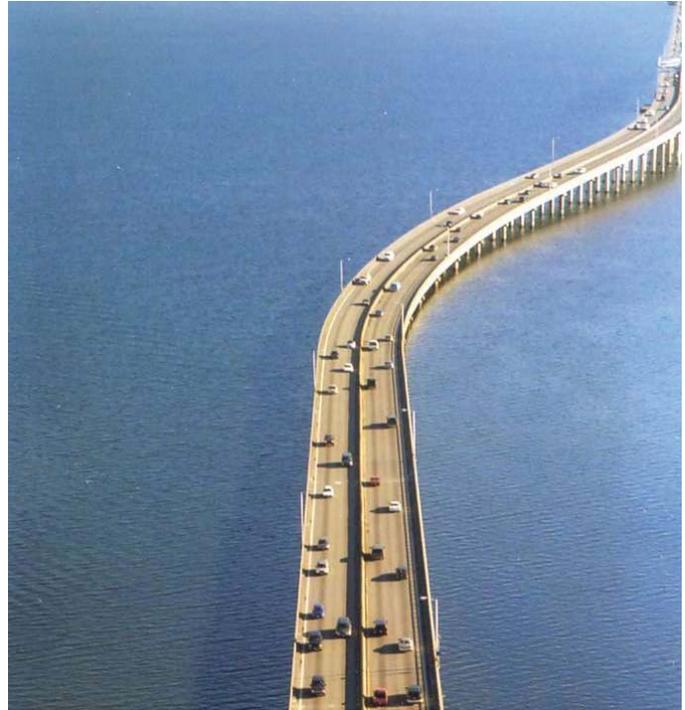
# 520 bridge replacement and HOV program background

State Route 520 is one of two east-west highways across Lake Washington. Approximately 158,000 people cross the 520 floating bridge (Evergreen Point Bridge) each day, traveling in some 115,000 vehicles.

Built in 1963, the Evergreen Point Bridge and the Portage Bay Bridge are vulnerable to windstorms and earthquakes. A collapse of these bridges or their approach structures could cause serious injury or loss of life, and would overwhelm all major regional highways with re-routed traffic. 520 is also a crucial and often congested corridor between job centers and growing communities around Lake Washington. The existing corridor is heavily congested during morning and afternoon commute times.

The 520 Bridge Replacement and HOV Program will replace all existing bridges, including the Portage Bay Bridge and Evergreen Point floating bridge, with new, safer bridges that are designed to withstand earthquakes and windstorms. Commuters will benefit from better transit reliability and improved travel times between Seattle and the Eastside.

Construction of bridge pontoons will begin in 2009. The new 520 bridge is scheduled to open in 2014 with four lanes. When the bridge and corridor are complete in 2016, there will be six lanes; four general purpose, two HOV, a bike/pedestrian path, and shoulders.



*Top: 520 bridge mid-span during windstorm*

*Top right: 520 bridge approach to west high-rise*

*Bottom right: Portage Bay Bridge*



**For more information:** [www.wsdot.wa.gov/projects/sr520bridge](http://www.wsdot.wa.gov/projects/sr520bridge)

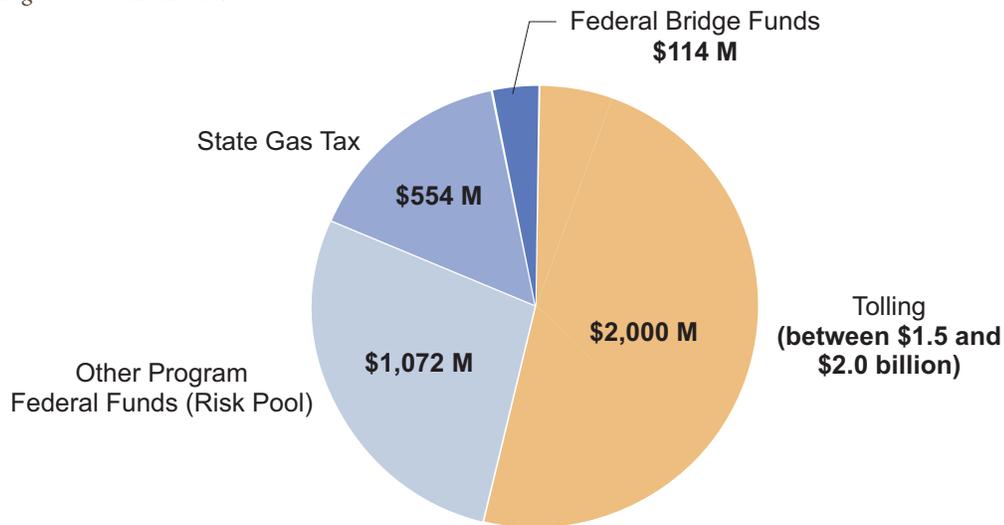


## Funding a New 520 Bridge

The project cost was estimated in April 2008 at between \$3.7 and \$3.9 billion. A combination of federal funds, state gas tax funds and tolls were expected to pay for the project.

In November 2008, WSDOT released updated cost estimates that show the overall program costs have increased. These revised costs include estimates for each of the three alternatives currently being considered by the 520 mediation group. Once agreement is reached on a preferred alternative for the project, WSDOT will update the cost estimate and finance plan. The Committee's work was based on the project estimates of costs and funding sources as of April 2008, and the Legislative target established in ESHB 3096. The results are reported against that baseline estimate.

Figure 1. Anticipated funding sources identified by Legislature in ESHB 3096



Project estimate as of April 2008 was \$3.7 billion – \$3.9 billion  
(Low end of range reflects \$180 million in sales tax deferral)

## Previous and Future Finance Plan Work

In January 2008, WSDOT presented the 2007 SR 520 Finance Plan to the Governor and Legislature. The finance plan examined the funding potential from tolls under a number of scenarios looking at tolling 520 only and discussed the financial shortfall facing the project. WSDOT is preparing a new financial plan for the 2009 Legislative session.

The 520 corridor is also part of an USDOT Urban Partnership Agreement. The Urban Partnership Agreement is a federal grant that provides \$154 million for variable tolling infrastructure on 520, the purchase of 45 buses to serve the corridor, and funding for ferries in the Puget Sound region. Funding to operate the buses needs to be identified and secured. Under terms of the Agreement, the State Legislature must authorize variable tolling on 520 in 2009 to secure the remaining \$136 million in pending grant funds.

## Funding the Existing 520 Bridge

Tolls paid for the existing 520 bridge. When it opened to drivers in 1963, the popularity of the bridge allowed the bonds to be paid off ahead of schedule.

### August 1963:

Car toll ..... \$0.35  
2007 dollars ..... \$2.48

4-axle truck toll ..... \$1.00  
2007 dollars ..... \$7.08

### June 1979:

Car toll ..... \$0.35  
2007 dollars ..... \$1.05

Car with 3 or more people  
toll ..... \$0.10  
2007 dollars ..... \$0.30

4-axle truck toll ..... \$1.00  
2007 dollars ..... \$3.01

Note: Historical inflation based upon U.S. Consumer Price Index for all urban consumers.



## Urban Partnership Agreement Funds

Tolling and Active Traffic Management ..... \$86 million

Transit/Park-and-Rides ..... \$41 million

Ferry Projects ..... \$27 million

# committee charge and legislative direction



*520 mid-span and east high-rise*

## **520 Tolling Implementation Committee**

The 520 Tolling Implementation Committee was created by the State Legislature in 2008 (ESHB 3096). The Committee is composed of: Bob Drewel, Executive Director of the Puget Sound Regional Council, who served as Chairman, Washington State Transportation Secretary Paula Hammond and Washington State Transportation Commissioner Richard “Dick” Ford.

The Committee was charged with evaluating tolling for financing the 520 Bridge Replacement and HOV Program, engaging citizens and regional leadership in the evaluation, enhancing understanding of tolling alternatives, and reporting to the Governor and the State Legislature in January 2009.

The act recognizes that \$1.5 to \$2.0 billion in funding from toll revenue may be required to secure financing for the project. Different approaches to tolling have implications for state resources already secured for the project, toll payers, adjacent communities and the wider region.

The act charges the Committee with:

- Evaluating the potential diversion of traffic from 520 to other parts of the transportation system, including 522 and local roadways and recommending mitigation measures.
- Evaluating advanced tolling technology.
- Evaluating new applications of emerging technology to better manage traffic.
- Exploring opportunities to partner with the business community to reduce congestion and financially contribute to the project.
- Conferring with mayors and city councils of jurisdictions adjacent to 520, 522 and I-90.
- Conducting public work sessions and open houses.
- Providing a report to the Governor and Legislature by January 2009.

The Committee was specifically charged with engaging citizens on the following topics:

- Funding a portion of the 520 project with tolls on the existing bridge.
- Funding the 520 project and improvements on the I-90 bridge with a toll paid by drivers on both bridges.
- Providing incentives and choices for transit and carpooling.
- Implementing variable tolling as a way to reduce congestion.

# committee criteria

## Evaluation Criteria for Scenario Analysis

Prior to the first round of analysis, the Committee established a set of evaluation criteria. These criteria, their significance, and relevant data sources are included in Figure 2.

Figure 2. Descriptions of evaluation criteria.

Criteria	Significance	Analysis Applied
How much revenue (financial capacity) is generated and when?	<p>Expected financial capacity from each toll scenario.</p> <p>How revenue generation meshes with cash flow needs of bridge replacement.</p>	The Office of the State Treasurer estimated the finance capacity for each toll scenario.
Are the tolls “reasonable”?	Different toll rates have different effects on diverted traffic, financial capacity, and bridge performance, and may seem more or less reasonable to travelers.	<p>Toll rates were determined for each toll scenario by time of day and weekday or weekend.</p> <p>The average toll for each scenario was estimated based on 24-hour traffic volumes.</p>
What are the diversion effects of a bridge toll?	If people choose not to pay a bridge toll, they may choose a different time of day, mode (i.e. transit or carpool), route, or destination.	The diversion effects were calculated for each scenario and time period (peak and off-peak) for weekday travel on 520, I-90, I-405, and 522, and local arterials around Lake Washington.
How do tolls affect the performance of the bridge(s)?	Tolling, especially variable tolling that is based on time of day, can improve traffic flow.	For each scenario, performance was expressed as the increase or decrease in average speeds for selected facilities at peak and off-peak times.
What effects might a toll have on lower-income bridge users?	Lower-income bridge users may be disproportionately impacted by tolls.	<p>A survey by the 520 project team examined the attitudes of lower-income bridge users about tolling 520.</p> <p>Social service and educational institutions were contacted for their views on how tolling might affect their clients/students.</p>

# travel demand model peer review

At its first public meeting in June 2008, the Committee requested an independent peer review of the Puget Sound Regional Council’s regional travel demand model used to analyze the toll scenarios. The peer review team was led by Dr. Yoram Shiftan, a University of Michigan visiting professor with extensive experience in travel demand modeling.

The peer review team recommended slightly modifying the model to address high destination diversion (trips not crossing Lake Washington), improve model consistency, and look at results in more detail and with additional model runs using different assumptions. Detailed recommendations are included in Appendix D. Several suggestions were incorporated in the model and were applied to all toll scenarios in September 2008.

The peer review team concluded that the travel demand model used is comparable to the best in the nation, and noted that new elements incorporated in recent years have significantly improved the model’s ability to analyze variable tolling.

## committee work approach

The Committee used the schedule and work program shown in Figure 3, aiming to evaluate scenarios, engage the public, re-evaluate scenarios, engage the public again, and report all findings to the Legislature.

In September 2008, the Committee selected six new scenarios and directed staff to present results in November and launch the second round of public outreach including telephone and web surveys.

The Committee had a two-part approach to public outreach. The four initial scenarios were selected by the Committee in June 2008. Based on the public outreach and comment on the first four scenarios, a number of other possible new scenarios or variations were suggested to the Committee.

The Committee also directed staff to rerun the first four scenarios so that refinements to the regional travel demand model suggested by the independent peer review panel would be applied to all the scenarios. All the scenarios were updated and assessed for financial capacity by the Office of the State Treasurer.

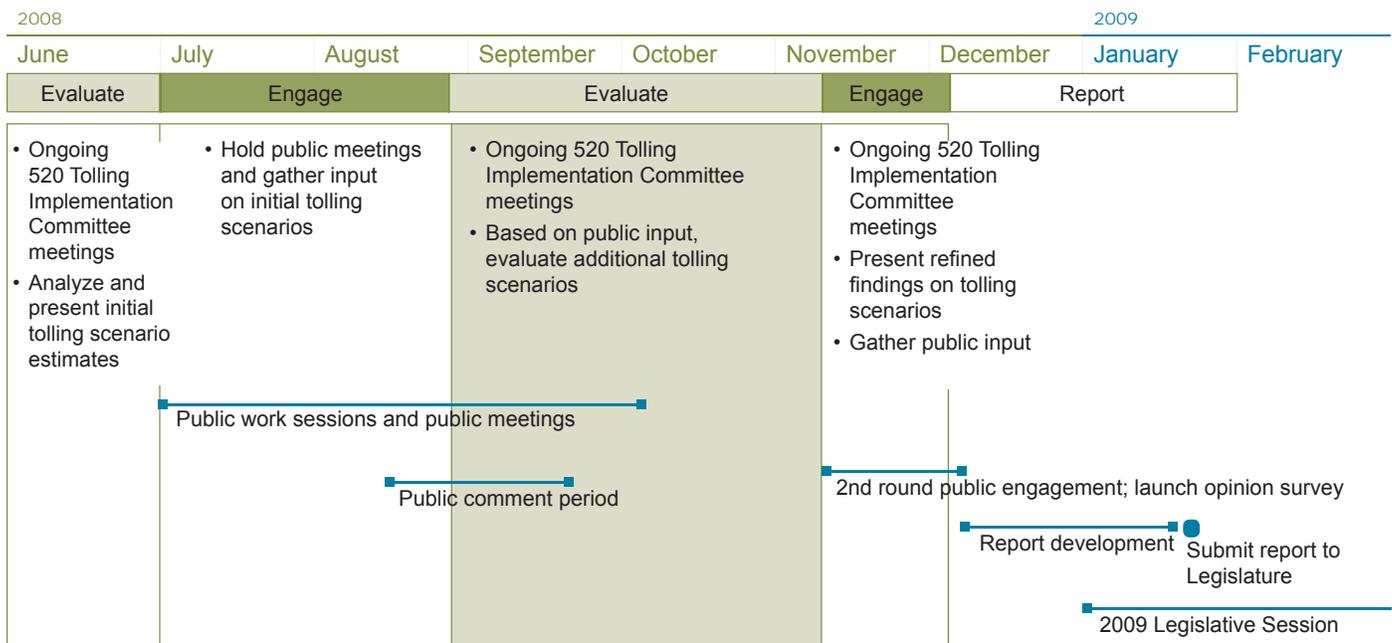


Figure 3. 520 Tolling Implementation Committee work program and schedule.

# public engagement

The Committee’s goal was to engage the public in open and transparent discussion of tolling, based upon the data related to the various scenarios studied. There were two rounds of engagement. Four tolling scenarios were presented in July. Based upon the input received, revisions to the initial four scenarios were made, five new scenarios were analyzed, and results of the revisions and new scenarios were introduced to the public in November. Analysis of the tenth scenario (high-occupancy toll lanes on I-90) was completed in December.

The Committee was specifically charged with engaging citizens on the following topics:

- Funding a portion of the 520 project with tolls on the existing bridge.
- Funding the 520 project and improvements on the I-90 bridge with a toll paid by drivers on both bridges.
- Providing incentives and choices for transit and carpooling.
- Implementing variable tolling as a way to reduce congestion.

The Committee’s meetings and open houses were well publicized on radio, television, and major daily and local newspapers. More than forty news stories were generated by the Committee’s work. Paid advertising in newsprint and media websites promoted the Committee’s open houses and public engagement opportunities. King County Metro announced both rounds of open houses with flyers on all 1,300 of its buses. The Committee also sent e-mail or postcard notices to more than 19,000 people on lists maintained by WSDOT for the 520 project.

Between June and December 2008, thousands of people participated in the discussion of these topics using a variety of outreach methods. Public outreach events and activities are outlined here and a complete list is included in Appendix B.



## By the Numbers

- 16,000 visited the build520.org website
- 7,800 participated in the web survey
- More than 8,000 wrote comments
- More than 700 people attended at least one of the nine open houses
- More than 1,000 participated in a Sierra Club postcard campaign
- More than 3,300 signed a petition from “No Toll on I-90” expressing opposition to tolling I-90



*The 520 Tolling Implementation Committee at their July 10 meeting*

# key findings from public comment

The entire body of comments and survey results has been summarized by issues the Legislature directed the Committee to research and by the Committee's evaluation criteria for toll scenarios. Survey results referenced below can be found on page 17.

## Input Sought by the Legislation

- **Funding a portion of the 520 replacement project with tolls on the existing bridge**  
The majority (58 percent) of respondents to a statistically-valid phone survey conducted in November 2008 supported tolling the existing bridge in 2010 if it results in lower tolls and financing costs. Many public comments supported tolling on the existing bridge (in 2010), particularly if tolling reduces out-of-pocket costs to drivers and improves traffic. In the phone survey, support was less if tolling causes speeds on I-90 to decrease. Among written comments, support for tolling in general was a common response, but so was opposition to any tolling, or concerns about costs to the public.
- **Funding the 520 replacement project and improvements on the I-90 Bridge with a toll paid by drivers on both bridges**  
The majority (65 percent) of phone survey respondents supported tolling I-90, though less than half of I-90 users were supportive of the idea. Tolling both bridges was supported by many comments, but was largely opposed by I-90 users. There is also strong opposition to tolling I-90 from many Mercer Island residents, and a "No Toll on I-90" group organized a petition opposing the idea. Among I-90 users, slightly more than half were supportive of the idea of tolling I-90 when they learned that toll revenue would also be used to support improvements on I-90.
- **Providing incentives and choices for transit and carpooling**  
Nine percent of statistically-valid phone survey respondents said they would take transit if there was a toll on 520. Many respondents felt providing improved transit service was important if tolling is implemented, and some suggested transit as a mitigation for lower-income bridge users. A postcard campaign organized by the Sierra Club identified transportation choices as a priority use for toll revenue.
- **Implementation of variable tolling as a way to reduce congestion**  
Variable tolling is supported as a way to reduce congestion and improve traffic conditions, with more than two-thirds of phone survey respondents supporting it. Electronic tolling (no toll booths) increases support for tolling on the bridge.

## Evaluation Criteria

- **How much revenue is generated and when**  
Public comments show a general trend toward generating revenue sooner, in 2010, rather than later, in 2016, particularly if this results in lower toll rates for travelers.
- **The "reasonableness" of the toll**  
Few directly commented on the "reasonableness" of toll rates. Some said that toll rates of \$3 or more were too high, others recommended rates ranging from \$0.50 to \$2. Among those who opposed tolling, some said that the annual cost to their family would be too high given the proposed rates.
- **The diversion effects of a bridge toll**  
Many respondents and jurisdictions were concerned with the diversion effects of a bridge toll. Communities north and south of Lake Washington were concerned about diversion around the lake, while those on the east and west sides were concerned about diversion to neighborhood streets as a result of segment tolling.



## Definitions for Tolling

**Variable Tolling:** Toll rates that vary by time of day.

**Segment Tolling:** Drivers pay a partial toll for using just a portion of a tolled route (such as trips between I-5 and Montlake in Seattle).

**Electronic Tolling:** Collecting tolls without the use of toll booths, generally with an electronic transponder, so drivers do not need to slow down or stop.

**HOT (high-occupancy toll) Lanes:** Offer an option for non-HOV drivers to use the HOV (high-occupancy vehicle) lanes for a fee. Toll rates change with traffic levels to ensure that cars in the lane move at or above a set speed.

**Dynamic Tolling:** Toll rates change with traffic levels to ensure that traffic moves at or above a set speed. HOT lanes use dynamic tolling.



- **The performance of the bridge**  
Most respondents appear to understand the connection between variable tolling and improved traffic flow; however, the need for bridge replacement and concerns about traffic on roadways approaching the bridge were mentioned more often than bridge performance.
- **The effects a toll may have on lower-income bridge users**  
Many respondents were concerned with potential impacts to lower-income bridge users, with some suggestions that lower-income bridge users be exempt from tolls. Many respondents suggested that increased transit options should be provided for those unable to pay the toll or that a free alternate route should always be available.

## 2010 or 2016— How We Chose These Years

2010 was selected because that is when 520 construction begins. 2016 was selected because that is the year construction is expected to be completed.

# outreach events & activities

## Outreach to Mayors and Councils

The Committee was charged with conferring with leadership from adjacent jurisdictions and conducting extensive outreach with local and regional elected officials from around Lake Washington. An overview is below, and a detailed list is in Appendix B.

Several jurisdictions provided letters, touching on the following general issues:

- Diversion and traffic congestion
- Toll exemptions and effects on bridge users
- Transit service and capacity
- Use of toll revenue
- Timing of tolling implementation

An overview of comments from each jurisdiction is included in Figure 4 on pages 13-15. Many jurisdictions in similar areas shared concerns. Grouped by geography, major themes include:

- North – concerns about diversion to 522 and the further deterioration of traffic conditions.
- East – concerns about diversion to local arterials and streets; lack of park-and-rides; lack of adequate transit service.
- South – need to see I-405 improvements completed to keep traffic moving.
- West – diversion to local routes.
- Mercer Island – concerns about charging tolls to Mercer Island residents who travel off-island for many services.

## Outreach to Legislators

As part of the Committee’s efforts, Legislators from districts in and near the 520 and I-90 bridges received the media updates from the Committee, as did all the members of the House and Senate Transportation Committees. Members of House and Senate leadership were also invited to Committee briefings. Various Legislators attended open houses or other community meetings.



## Local Elected Leaders Conferred With:

Puget Sound Regional  
Council Boards and  
Committees

## Subarea Transportation Forums

- Eastside Transportation Partnership
- South King County Area Transportation Board (SCATBd)
- SeaShore Transportation Forum

## Cities and Counties:

- Bellevue
- Bothell
- Clyde Hill
- Hunts Point
- Issaquah
- Kenmore
- King County
- Kirkland
- Lake Forest Park
- Mercer Island
- Medina
- Newcastle
- Redmond
- Renton
- Sammamish
- Seattle
- Yarrow Point

Before the release of results from the first four scenarios in July and the nine scenarios in November, Legislators were invited to a briefing on the results. An e-mail notification of the findings was also distributed to the Legislators noted above and staff was available to provide briefings or answer questions.

Committee staff also made a formal presentation to the House Transportation Committee in Olympia on September 11, 2008 and on August 12, 2008 the Committee members presented the results of the initial scenario analysis to the Joint Transportation Committee.

## Washington State Transportation Commission

Committee staff made presentations to the Washington State Transportation Commission. Staff presented the results of the initial scenarios to the Commission at its October 22, 2008 meeting. Results of public outreach, including the statistically-valid telephone survey and the web survey were presented on December 17, 2008.

## Business and Civic Outreach

The Committee was charged with outreach to the business community as one of the key stakeholders. 520 connects some of the region's most vibrant and important job centers, including downtown Redmond, the Overlake area in Redmond that is home to Microsoft, the University of Washington and downtown Seattle. It also provides vital access to downtown Bellevue and to businesses in the city of Kirkland.

Committee members spoke before a number of business groups to inform them of the work of the Committee and to ask for their input. These included the board of the Bellevue Chamber of Commerce, the Transportation Committee of the Greater Seattle Chamber of Commerce, the Freight Mobility Roundtable, and the Mercer Island Chamber of Commerce. The Bellevue Chamber submitted a formal comment letter to the Committee that is included in Appendix I.

Staff for the Committee spoke to both the Redmond and Mercer Island Rotary Clubs about tolling on 520 and I-90. Committee members Paula Hammond and Dick Ford conferred with Mark Emmert, President of the University of Washington.

## Website

The Committee used a website, [www.build520.org](http://www.build520.org), as one way to communicate with citizens. The website included up-to-date information about toll scenarios and analysis, as well as all Committee materials, and an online comment form, e-mail and mail addresses. The website received more than 16,000 unique visitors and more than 85,000 page views between June and December 2008.

## Open Houses

Nine open houses were held throughout the corridor communities to present results of tolling scenarios and ask for public views, questions, and opinions. Six open houses were held in July and August and three in November. More than 700 people attended the open houses. The Committee received more than 400 comments from people attending the open houses.



## As a result of meeting with local jurisdictions, the Committee received letters from:

- City of Bellevue
- City of Bothell (2)
- City of Clyde Hill
- City of Issaquah
- City of Kirkland
- Cities of Lake Forest Park, Kenmore, Woodinville and King County Councilmember Bob Ferguson (2)
- City of Lake Forest Park
- City of Medina
- City of Mercer Island (5)
- City of Newcastle
- City of Redmond (2)
- City of Renton (3)
- City of Seattle
- City of Shoreline
- King County Department of Transportation (2)
- Mercer Island School District (2)
- Mercer Island Mayor
- Seashore Transportation Forum
- South County Area Transportation Board
- Town of Hunts Point
- Town of Yarrow Point
- Town of Beaux Arts
- Washington State Treasurer

See Appendix I.



## Comments from Local Jurisdictions

This chart highlights city and county comments regarding tolling 520 and/or I-90, as well as their concerns about potential diversion. It should be noted that nearly all cities had comments beyond diversion and mitigation issues, which provided meaningful comments and input. Among the common issues was opposition to “segment” tolls – tolls collected on the highways leading to the bridge – because of the potential for greater diversion to local streets and arterials. All letters are included in Appendix I.

Figure 4. Local jurisdictional comments

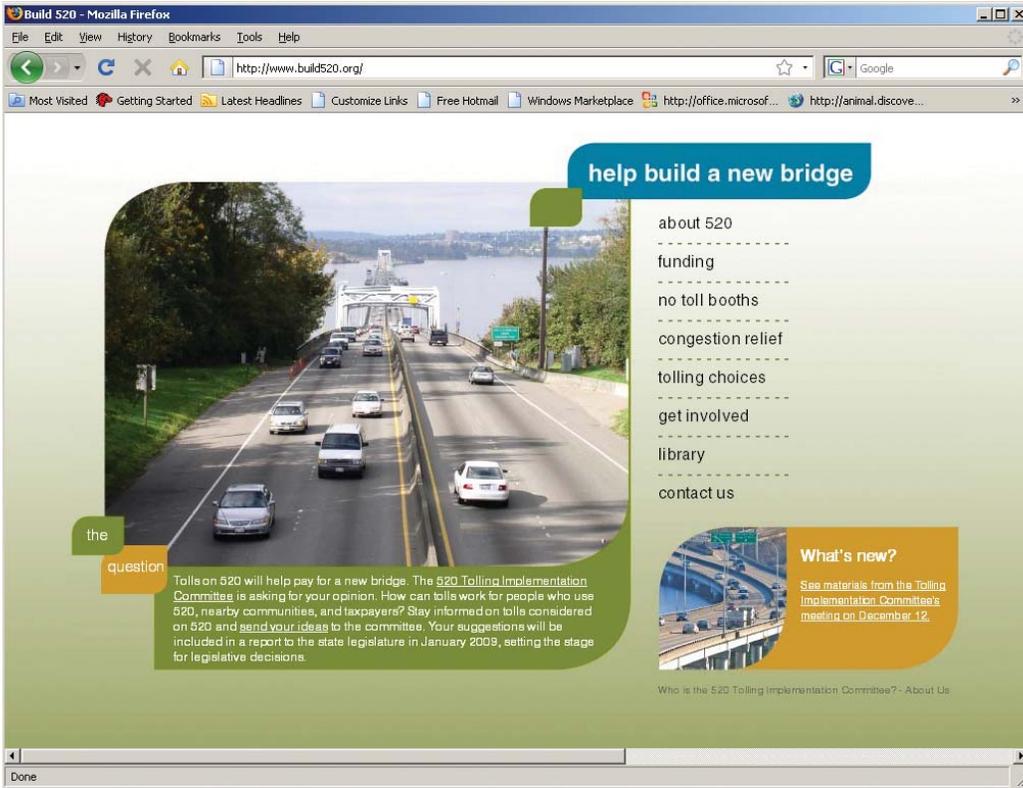
Jurisdiction/ Agency	Toll 520 in 2010	Toll I-90	Diversion	Mitigation ideas and other comments
Town of Beaux Arts Village (Town Council)				Toll 520 and I-90 at the same time; toll revenue should be used for capital improvements in the corridor, operations and maintenance and for early mitigation of impacts to local roadways; don't use toll revenues for transit
City of Bellevue (Mayor)	Support only if it allows early completion of project, and provides a lower toll for users	Prefer tolling only 520; if more funds needed, seek other state or federal sources; toll I-90 only when R-8A improvements are in place, and at a lower rate than 520	Minimize diversion to local roadways	
City of Bothell (Council and Mayor)			Concern about 522 and neighborhood streets	Improve transit service and capacity; improve park-and-ride facilities; add capacity to 522; use toll revenues for mitigation; concern about potential for hazardous materials to move through city streets; seek \$20 million commitment to assist with 522 corridor improvements; want 100th Ave and Juanita Drive added to traffic monitoring; want variable message signs and EIS for tolling
City of Clyde Hill; Town of Hunts Point; City of Medina; Town of Yarrow Point (Mayors)	Support	Support	Concern about diversion to local roadways	Toll revenue should be used for capital improvements in the corridor, operations and maintenance and for early mitigation of impacts to local roadways; don't use toll revenues for transit

Figure 4. Local jurisdictional comments

Jurisdiction/ Agency	Toll 520 in 2010	Toll I-90	Diversion	Mitigation ideas and other comments
City of Issaquah (Council)	Support	Maintain a free or low cost option on I-90; consider HOT lane; toll only after diversion to I-405 is mitigated	Concerns about I-405 diversion	Want transit improvements at I-90/18; efficient toll collection system and good public education are important
City of Kirkland (Council)	Support	Support		Reasonable uses of toll revenue include: construction and transit service on tolled route or parallel facilities; mitigation of diversion; operations and maintenance of tolled facilities; tolls should not replace current revenue sources; concern about needs of lower-income drivers
Mercer Island School District (Superintendent)		Oppose; or provide a free option		53 percent of employees commute eastbound; 47 percent commute westbound on I-90
City of Mercer Island (Council and Mayor)	Support tolls at a low rate to discourage diversion to I-90	Oppose tolls on travel to and from Mercer Island on I-90, the only access route to and from Mercer Island		Highlights city's rights according to I-90 Memorandum of Agreement; does not want traffic to or from Mercer Island to be tolled; desires mitigation if access is decreased; wants tolls to be used on facility where collected; analyze tolling I-405 and I-5; wants financial information on revenues collected if Mercer Island traffic is not tolled; says exempting Mercer Island traffic from tolls does not diminish capacity to fund 520
Mayors of Cities of Lake Forest Park; Kenmore; Woodinville and King County Councilmember Bob Ferguson			Concern about diversion to 522	Improve transit capacity and transit service; add park-and-rides; add capacity to 522, 202, and Woodinville-Duvall Road; use toll revenues to fund transit

Figure 4. Local jurisdictional comments

Jurisdiction/ Agency	Toll 520 in 2010	Toll I-90	Diversion	Mitigation ideas and other comments
City of Lake Forest Park (Mayor and Council)	Only with monitoring of real time changes to 522		Concern about diversion to 522	Add transit capacity; increase transit service; add park-and-ride capacity; add community circulator vans; implement a traffic monitoring and reporting program to measure real-time changes
City of Newcastle (Mayor and Councilmember)		Oppose		Cover 520 costs at least expense to users; concern about potential delays to I-405 and R-8A projects
City of Redmond (Council and Staff)	Yes	Best scenario to fully fund 520 and related improvements		Mitigation recommendation is reasonable; concerns about lower-income households and tolls; want freight impacts analyzed; use revenues for 520 and I-90 capital and maintenance expenses only
City of Renton (Mayor and Council)			Concern about diversion to city arterials	Complete I-405 improvements; support basic concepts of mitigation recommendations as applied to I-405 and parallel north-south corridors; consider transit improvements on all impacted corridors
City of Seattle (Council)	Support	Support		Toll revenues should be used for transit; consider reducing vehicle miles traveled; tolling should be systematic to reduce congestion throughout the region
City of Shoreline (Council)				Improve 523 (145th) in Shoreline to mitigate transit and traffic impacts; improve I-5 near 523; improve pedestrian connections at I-5 and 523; use toll revenue to fund transit service
King County DOT (Director)	Support	Support		Support using toll revenues for transit, including funds for operating UPA service; seek \$6 to \$8 million in mitigation funds for increased operational costs due to loss of Montlake flyer stop; mitigation account should be available to fund transit operations and capital costs



Left: Screenshot of the homepage for build520.org

Above: Open house attendees review tolling scenarios

## Web Survey

After the release of the second round of tolling scenarios, the Committee also hosted an online survey November 10-30, 2008. The purpose was to provide a formal way for people to provide input, whether or not they could attend a meeting. The web survey also served as the primary comment tool for the second round of open houses. Through web banner ads in select media outlets and e-mail distribution lists, more than 7,800 individuals filled out some or all of the web survey. The web survey was also sent to more than 700 workplaces in King County with more than 100 employees. This tool should not be considered statistically-valid, as respondents are self-selected. Highlights are included in Figure 5.

## Phone Survey

In November 2008, the Committee also conducted a random sample statistically-valid telephone survey of 1,200 people that included four groups of participants: people who use I-90, people who use 520, people who use both bridges and people who use neither bridge. The intent was to evaluate the validity of input the Committee was receiving, and to compare the web survey and statistically-valid phone survey.

The results of the web and phone surveys were similar in most cases. They show support for:

- Using tolls to help fund the new 520 bridge
- Electronic tolling
- Variable tolling

Both surveys show that people are supportive of tolling in 2010 if it reduces out-of-pocket costs and if it improves traffic. Highlights are included in Figure 5.



## Committee Open Houses

- July 29, Bothell
- July 31, Renton
- Aug 5, Seattle
- Aug 6, Bellevue
- Aug 7, Kirkland
- Aug 13, Mercer Island
- Nov 12, Bellevue
- Nov 13, Seattle
- Nov 17, Mercer Island



## Tolling Implementation Committee Meetings

- June 17, Seattle
- July 10, Seattle
- July 23, Bellevue
- Aug 12, Seattle
- Sept 11, Lake Forest Park
- Sept 30, Kirkland
- Nov 10, Redmond
- Dec 12, Mercer Island
- Jan 8, Seattle
- Jan 28, Seattle



## Web and Phone Survey Highlights

The phone survey was a random sample, statistically-valid survey of 1,204 participants with a three percent margin of error. The survey was conducted during November 2008, and included four sub-groups of respondents: 520 users, I-90 users, users of both bridges and people who don't use either bridge.

The web survey was also conducted in November 2008. The 7,800 respondents were self-selected and results should not be considered statistically valid even though the findings are similar to the random sample phone survey.

Figure 5. *Web and phone survey highlights.*

Respondents support	Web survey	Phone Survey
Support tolling to help fund new 520 bridge.	Nearly 2:1 margin (59% to 30%)	More than 2:1 margin (64% to 30%) <ul style="list-style-type: none"> <li>Highest support from non-bridge users at 67%.</li> <li>Lowest support from I-90 users at 60%.</li> </ul>
Support for tolling 520 increases when respondents learn about electronic tolling and “no toll booths.”	69%	73% <ul style="list-style-type: none"> <li>Highest support from 520 users at 78%.</li> <li>Lowest support from non-bridge users at 69%.</li> </ul>
Respondents support variable tolling.	More than 2:1 margin (65% to 31%)	More than 2:1 margin (70% to 27%) <ul style="list-style-type: none"> <li>Highest support from 520 users at 73%.</li> <li>Lowest support from I-90 users at 66%.</li> </ul>
Respondents support tolling in 2010 if it results in lower tolls and financing costs.	Nearly 3:1 margin (60% to 23%)	Less than 2:1 margin (58% to 36%) <ul style="list-style-type: none"> <li>Highest support from non-bridge users at 59%.</li> <li>Lowest support from users of both bridges at 55%.</li> </ul>
Support goes down for tolling in 2010 if it makes 520 faster, but slows down I-90.	55%	51% <ul style="list-style-type: none"> <li>Highest support from 520 users at 56%.</li> <li>Lowest support from I-90 users at 47%.</li> </ul>
Support for tolling both bridges goes up (but not among I-90 users) if it makes speeds go up on both bridges.	61%	61% <ul style="list-style-type: none"> <li>Highest support from 520 users at 75%.</li> <li>Lowest support from I-90 users at 47%.</li> </ul>
Support for tolling both bridges goes up (but not among I-90 users) if toll rates are lower than just tolling 520.	61%	61% <ul style="list-style-type: none"> <li>Highest support from 520 users at 73%.</li> <li>Lowest support from I-90 users at 47%.</li> </ul>
Support for tolling both bridges goes up among I-90 users when they know improvements will be made to I-90.	64%	65% <ul style="list-style-type: none"> <li>Highest support from 520 users at 75%.</li> <li>Lowest support from I-90 users at 53%.</li> </ul>

## Written Comments

In addition to the surveys, more than 8,000 written comments were received, including more than 1,000 comments from a Sierra Club postcard campaign and more than 3,300 signatures from “No Toll on I-90” petitions.

Comments from the “No Toll on I-90” petitions opposed a toll on I-90, advocated toll exemptions for residents and workers coming to and from Mercer Island, and opposed using funds from I-90 to support 520.

The Sierra Club effort supported variable tolling as a way to reduce traffic congestion, reduce climate change, and fund transportation choices.

In addition to comments from these organized sources, the most common themes in general public comments were:

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### • **Generally supports tolling**

Comments were in favor of the idea of tolling to fund the 520 bridge and improve the flow of traffic.

*“I strongly support tolls being added to 520 between Seattle and Bellevue. I think this is a responsible solution to pay for the roadway by those who use it.”*

### • **Generally opposes tolling**

Some comments said tolling is a “tax” and others saw it as a “double tax.” Many said other funding should be used, and some said tolling was not affordable, either for themselves or for other drivers.

*“No tolls, of any kind, not on any state highway... No tolls in Washington State!”*

### • **Decision-making process**

Many respondents were interested in or concerned about how tolling decisions are being made.

*“Make a decision and move forward.”*

### • **Concerns about the tax burden on residents**

The majority of these respondents said that taxes in this region are already high, and felt that tolling would add to this burden.

*“I don’t think a toll should be required considering the amount of gas tax we are already paying that supports roads.”*

### • **Opposes tolling both bridges**

Some opposed a toll on I-90 as a way to fund improvements to a different corridor, while others said it was important to have a non-tolled alternative route across Lake Washington, and still others felt it would hurt Mercer Island residents.

*“People that use 520 should be responsible for paying for the new bridge.”*

*“Mercer Island residents don’t have a choice about rerouting and avoiding tolls, we live here and use the bridge for basic services.”*

### • **Supports increased transit service**

Comments often said that increased transit service would be a necessary complement to tolling on 520.

*“I strongly support increased transit and bicycle facilities across the 520 bridge.”*

### • **Supports tolling both bridges**

Comments suggested that both the 520 and I-90 bridges be tolled, and many said tolling should begin on the two bridges at the same time and in 2010. Some were concerned about diversion effects or lower revenues if only the 520 bridge is tolled.

*“We all paid for the I-90 bridge to be rebuilt, we all should pay for the 520 to be expanded. I am for both bridges to be tolled.”*

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Complete comment summaries and full text of all comments are available in Appendix I.

# evaluating and comparing toll scenarios



The Legislature directed the Committee to study three basic scenarios:

- Toll 520 when the new bridge opens
- Toll the existing 520 bridge
- Toll both the 520 and I-90 bridges and fund improvements on both

Committee staff developed scenarios intended to demonstrate the effects of tolling 520 or tolling both 520 and I-90. For the summer 2008 outreach effort, four scenarios were developed and presented to the public. Based on outreach and public input, the Committee selected six additional scenarios for the fall 2008 outreach effort. Detailed results of each of these scenarios are included in Appendix C.

The basic scenarios were expanded to ten by the Committee to provide the public with examples of tolling effects. Analysis of the tenth scenario (HOT lanes on I-90) was completed after the other scenarios. A more detailed traffic model was used—one that addresses lane configuration, on and off ramps, and other bridge design elements. The model also allowed toll prices in the HOT lane to change with traffic conditions, rather than by time of day.

The Committee used a three-step approach to evaluating toll scenarios. These steps were:

- **Travel Demand Modeling**—Forecasts the number of vehicles and people, the routes they take and the modes (single occupant, carpool, transit) they use.
- **Revenue Analysis**—Projects gross revenue, deductions for toll collection and maintenance, and net revenue available for bridge funding.
- **Financial Capacity Analysis**—Assesses how much project funding can be supported by tolls, including bonds and pay-as-you-go construction spending. Financial capacity is the bottom line for how much funding is needed and available to pay for the bridge through tolls.

## 520-Only Toll Scenarios

1. **Toll 520 in 2016, when project is complete**—This is the traditional approach to tolling, one that was used on the Tacoma Narrows Bridge. However, unlike the Tacoma Narrows Bridge, variable tolling was used in this scenario.
2. **Toll 520 in 2010, when construction begins**—By tolling sooner rather than later, lower overall toll rates can yield the same level of funding with less borrowing. Traffic on the bridge will also flow better when variable tolls are in place.
5. **Toll 520 at a flat rate in 2016**—This approach is the most similar to the Tacoma Narrows Bridge. A flat rate toll that does not change by time of day would begin when the new bridge opens in 2016.
6. **Toll 520 in 2010 at a rate that attempts to maximize funding by tolling only 520**—This approach was intended to find a toll rate at which the funding gap for the project could be closed by tolling only 520. The toll rates studied are the highest of the ten scenarios.

7. **Toll 520 in 2010; increase rate in 2016**—Some have suggested that while tolling early makes sense from a financial perspective (enabling a significant reduction in financing costs), the corridor will still be under construction during these early years and drivers will not have the full benefit of the six-lane facility. Others have suggested that a lower toll initially would provide an opportunity to test congestion benefits associated with tolling and enable a tolling rate to be established later when the corridor is complete. This may provide a balance between improving corridor performance, raising revenue for the project and managing diversion impacts.

## Two-Bridge (520 and I-90) Scenarios

3. **Toll both bridges (520 and I-90) in 2016**—Tolls I-90 and 520 bridges in 2016, when the 520 bridge opens.
4. **Toll 520 bridge in 2010 and I-90 in 2016**—Tolls 520 in 2010 when construction begins on the bridge, but tolls on I-90 would not begin until 2016 when the new capacity is in place on 520.
8. **Toll 520 at a higher rate than I-90 in 2016**—At the public meetings, residents in the I-90 corridor were concerned that the bulk of the tolling revenue from the two bridges would go toward improvements on 520. Also, it was noted that when both bridges are tolled equally, more traffic is attracted to the 520 corridor. Having a higher toll on 520 than on I-90 could balance, from a traffic management standpoint, the use of both bridges. This scenario would have drivers on 520, where the bulk of the improvements are planned, paying more toward the cost of replacing the bridge.
9. **Toll both bridges in 2010**—This scenario provided the Committee with information about traffic effects and the amount of early funding raised from lower toll rates.
10. **Full bridge toll on 520; HOT lanes on I-90**—In this scenario, 520 would be tolled starting in 2010. To provide a congestion relief benefit to those using I-90, a HOT (high-occupancy toll) lane system could be implemented on I-90. This scenario continues to provide a free travel alternative in the I-90 corridor and meets the intent of the multi-jurisdiction Memorandum of Agreement regarding the corridor. The Memorandum of Agreement is available in Appendix H.

# variables examined in toll scenarios

Toll scenarios differed in their use of key variables that might or might not be part of a final tolling plan for 520 and/or I-90. Some important variables include:

- **Toll collection locations (single-point or segment)**—A tolling location could be at a single point, such as the eastern end of the 520 bridge. There could also be several tolling locations, so that drivers would pay a partial toll for using just a portion of the 520 corridor, such as for trips between I-5 and the Montlake interchange in Seattle. Some toll scenarios were modeled with single-point tolls and some with segment tolls.

## Single-point toll on both existing and new 520 bridges

- Beginning in 2010 for Scenarios 2, 4, 6, 7, 9
- Beginning or continuing in 2016 for Scenarios 5, 7, 8, 9



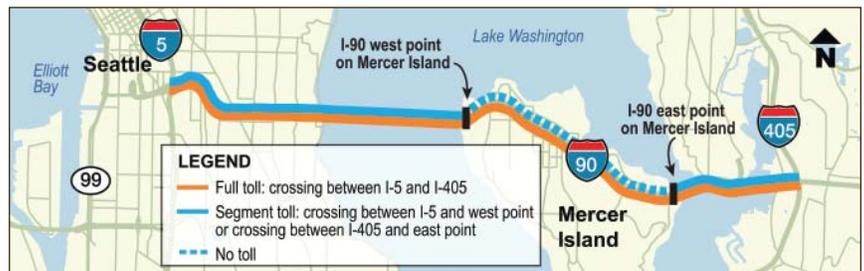
## Segment tolls on new 520 bridge

- Beginning in 2016 for Scenarios 1, 2, 3, 4, 6



## Segment tolls on I-90

- Beginning in 2016 for Scenarios 3, 4



## Single-point toll on I-90

- Beginning in 2010 for Scenario 9
- Beginning in 2016 for Scenario 8



Figure 6. Options for toll collection locations.

- **Toll exemptions**—For the purposes of the scenario analysis, some scenarios assumed all vehicles would pay the toll. Others assumed that only transit vehicles would be exempt and still others exempted carpools with three or more people from toll payment. By looking at a variety of exemption types, the Committee could assess the revenue implications of exemptions.
- **Variable tolls or flat tolls**—All but two of the scenarios assume variable tolls, set by time of day, that are higher in the peak travel periods and lower at all other times. Variable toll rates would not change automatically according to traffic conditions. One scenario examined a flat rate toll that stays the same twenty-four hours a day, and another (the HOT lane scenario) examined a toll on I-90 that increases or decreases according to actual traffic conditions.
- **Toll rate ranges**—For the purposes of this analysis, the Committee presented tolls in the following time frames:

Time of Day	Range of Tolls Evaluated (2007\$)
Morning Commute (5 am - 9 am)	\$2.15 - \$4.25
Mid-day (9 am - 3 pm)	\$1.05 - \$2.75
Afternoon Commute (3 pm - 7 pm)	\$2.80 - \$5.35
Evening (7 pm - 10 pm)	\$1.00 - \$2.55
Overnight* (10 pm - 5 am)	\$0.00 - \$0.95
Weekend	\$0.80 - \$1.60

\*Tolls would be in effect 24 hours a day after bridge completion in 2016.

Figure 7.  
Chart shows the range of one-way toll rates that were assumed across nine of the ten scenarios (I-90 HOT lanes since they would be dynamically priced, are not included). Actual toll rates would vary within these time periods.

Toll rates for 520-only scenarios are shown in Figure 8 on the opposite page. Toll rates for two-bridge (520 and I-90) toll scenarios are in Figure 9 on page 24. For the purposes of the analysis and report, all toll rates are reported in 2007 dollars. The tolls are then assumed to increase yearly at the assumed rate of inflation of 2.5 percent. The 2010 scenarios do not include an overnight toll.

The average toll paid under each of the ten scenarios is for a one-way trip. The average round trip toll would be double that amount. This rate is useful for comparison purposes among the scenarios. The actual rates paid would depend on the time of day that a person made the trip across the bridge.

For the purpose of this analysis, trucks are broken into three categories, including light, medium and heavy. Light trucks pay the same toll as a passenger vehicle while medium trucks pay twice that rate and heavy trucks pay three times the passenger rate.

For Scenario 10, the HOT lanes on I-90 were priced between 10 cents and 70 cents per mile, depending on the time of day and the direction of travel. These rates for the HOT lanes were then combined with Scenario 6 (Toll 520 in 2010 at a rate that attempts to maximize funding by tolling only 520).

Figure 8. 520-only toll scenario rates, one-way, expressed in 2007 dollars.

Chart shows minimum toll, maximum toll and average toll paid in each 520-only toll scenario.

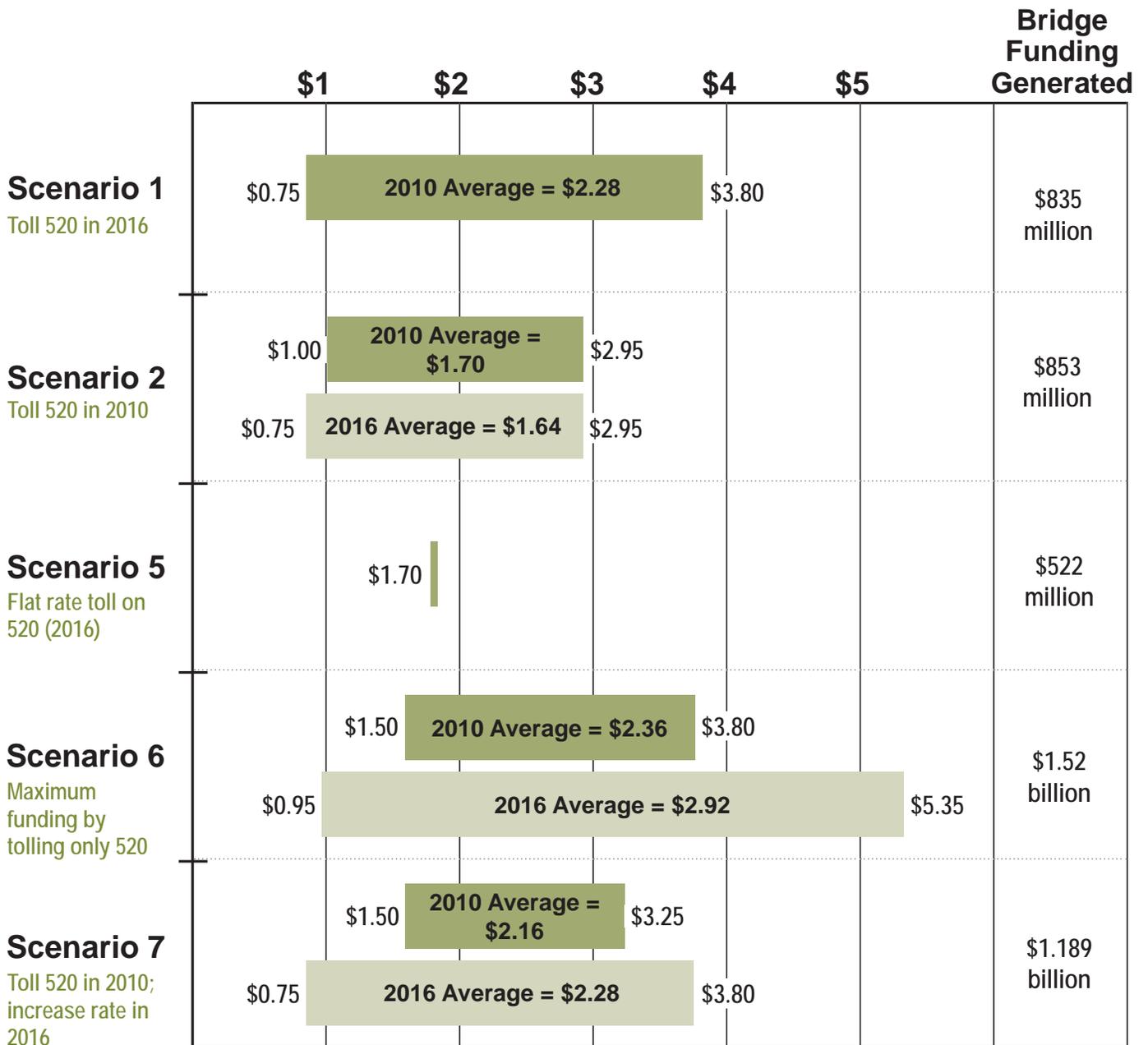
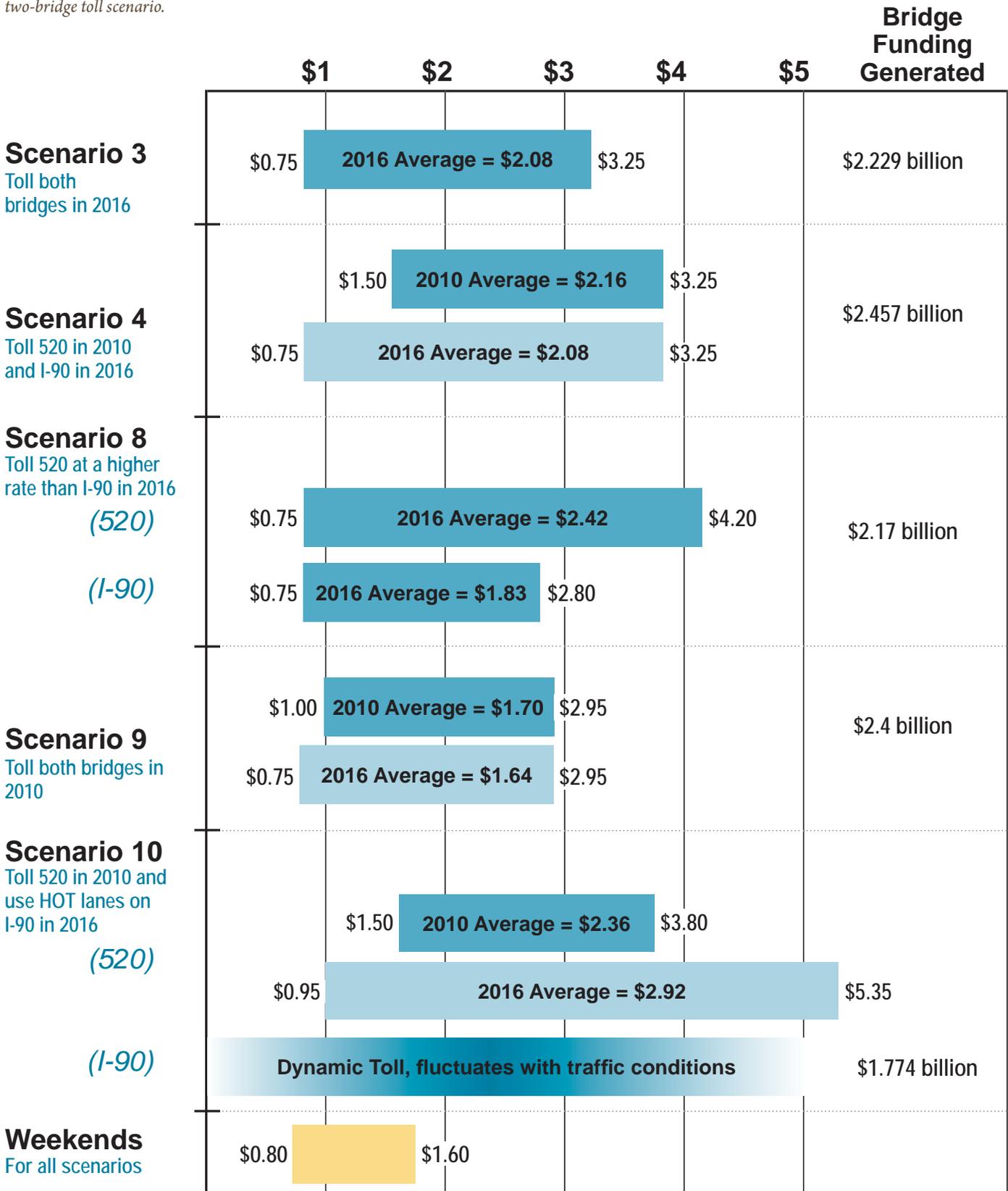


Figure 9. Two-bridge (520 and I-90) toll scenario rates, one-way, expressed in 2007 dollars.

Chart shows minimum toll, maximum toll and average toll paid in each two-bridge toll scenario.



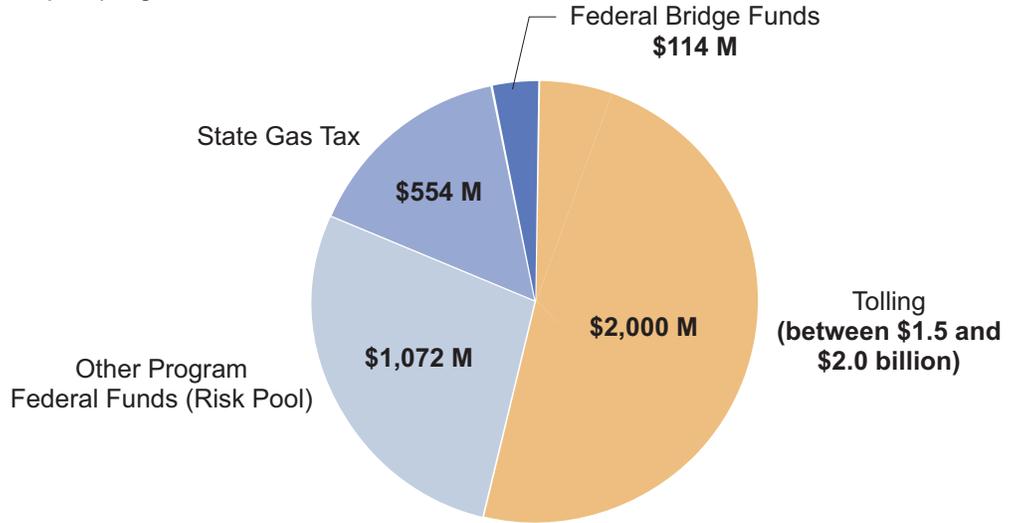
# comparing scenarios

## The Legislature's Funding Target

Section 3 of ESHB 3096, calls for "recognition of revenue sources that include...one billion five hundred million dollars to two billion dollars in toll revenue..."

This funding target was based on the project budget as it stood in April 2008. The pie chart in Figure 10 shows the funding sources identified by the Legislature.

Figure 10. Anticipated funding sources identified by Legislature in ESHB 3096

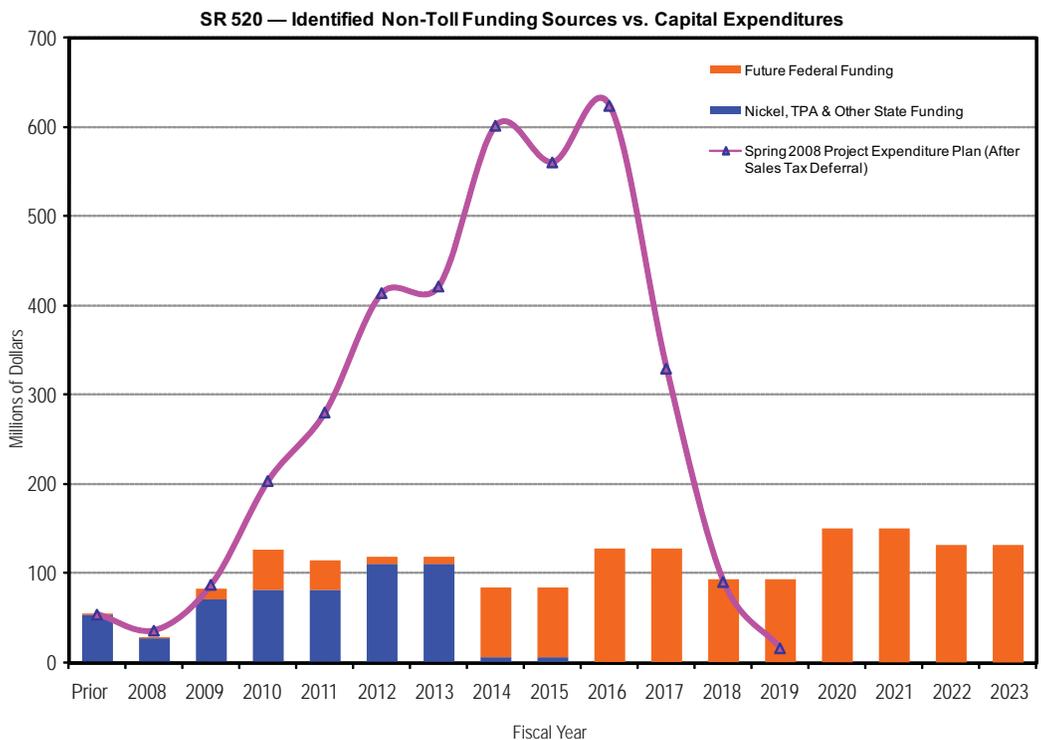


Project estimate as of April 2008 was \$3.7 billion – \$3.9 billion (Low end of range reflects \$180 million in sales tax deferral)

## Cash Flow Required

The funding target established by the Legislature did not account for the fact that some of the funds allocated to the project would not be available until after project completion. This will require bonds to be issued in anticipation of that future revenue and will raise the project finance costs. Figure 11 shows the cash flow needs for the project against the current identified state and federal funding sources, as of April 2008.

Figure 11. Project cash flow needs and identified funding sources



## Financial Capacity Results

Figure 12 below illustrates how scenarios relate to the 2008 Legislative funding target.

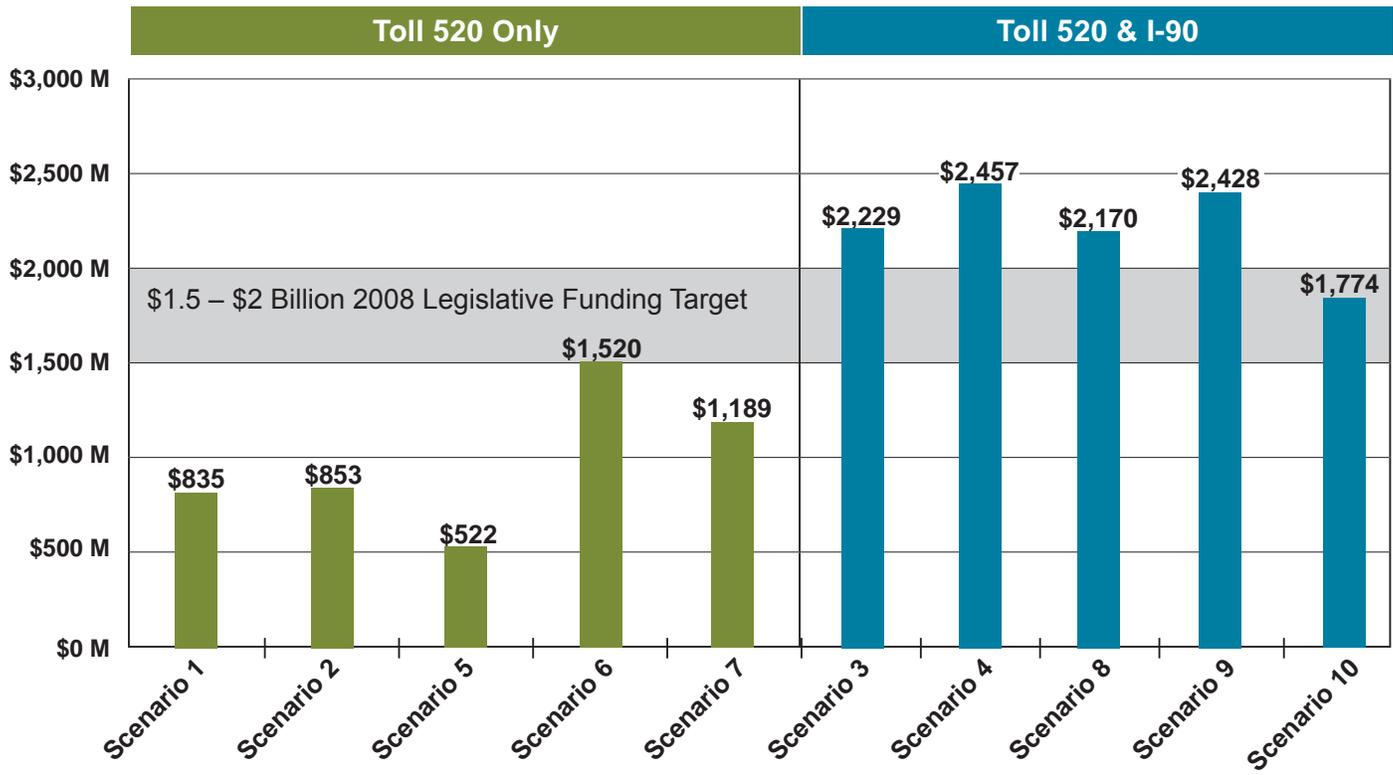


Figure 12.  
Financial capacity of ten toll scenarios.

Given the cost of the project, the cash flow needs for construction as of April 2008, and the timing and availability of funds, more than \$2.0 billion from tolls would be needed to fully fund the project if no additional revenue sources are found. It should be noted, however, that the final project budget and the exact cash flow needs have yet to be determined.

For these estimates, interest rates were assumed to be 6.0 percent for current interest bonds and 6.5 percent for capital appreciation bonds to reflect changing market conditions. Peak years for cash flow will be 2014 through 2016, and for purposes of the Committee’s work, the project cost was assumed to be \$3.7 to \$3.9 billion. Detailed information about the finance assumptions is included in Appendix C.

# the “reasonableness” of the toll

## Flat Rate Toll vs. Variable Toll

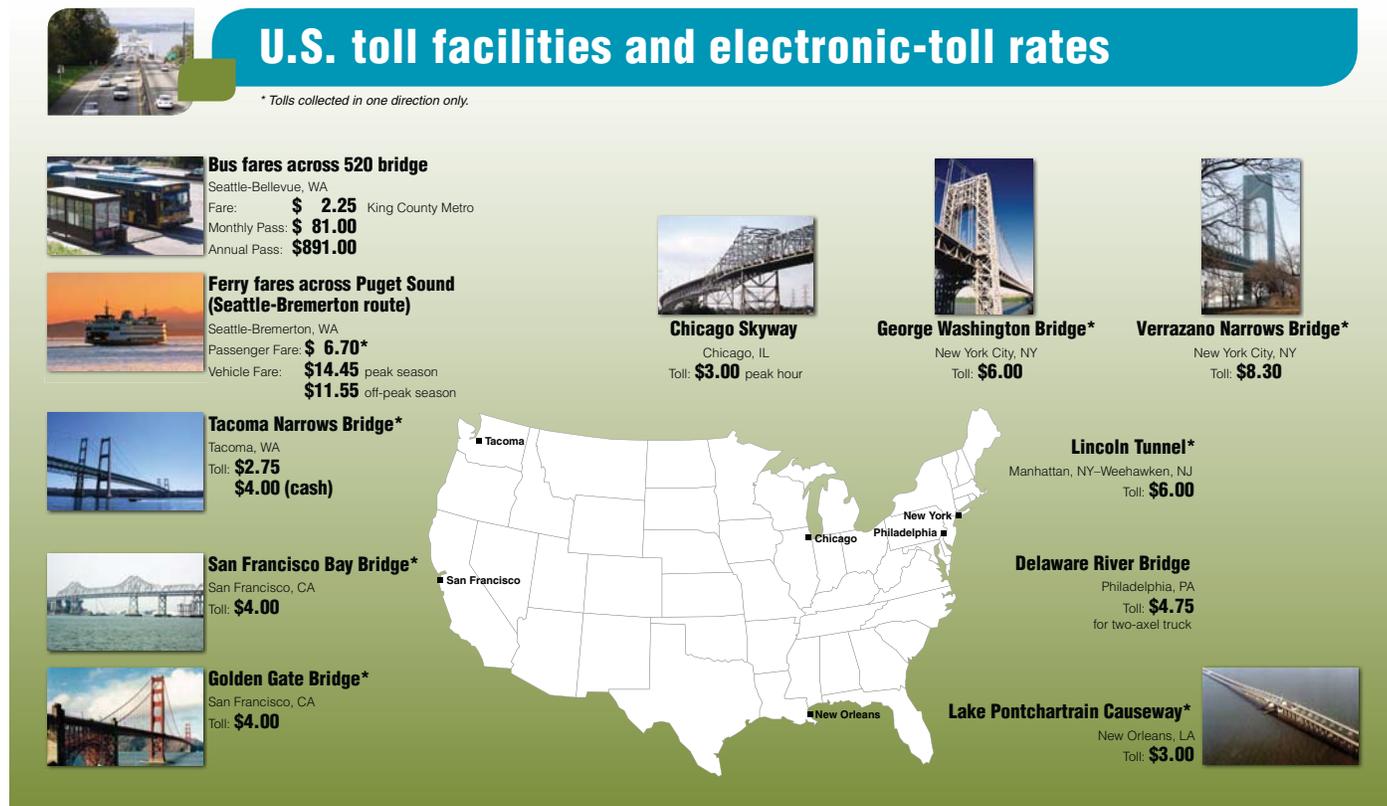
Results from the analysis suggest that the bridge performs better with variable tolls than with flat rate tolls and that variable tolls provide greater financial capacity. A flat rate toll is relatively low during rush hour compared to a variable toll, encouraging more people to use the bridge at peak times, and limiting speeds. During the mid-day or at night when there is little or no congestion on other facilities, such as I-90, more people will divert to those routes to avoid paying the flat rate toll, which is higher than the variable toll would be at the same time of day.

## Average Toll Paid

The average toll paid is also useful for a comparison of toll rates against other facilities. Figure 13 shows the tolls charged on a number of other tolled facilities across the nation. In our region, the best example is the Tacoma Narrows Bridge that opened in July 2007. The current toll on the Tacoma Narrows is \$4.00 if using a toll booth and \$2.75 with a *Good to Go!* transponder. That toll is only collected in one direction. The graphic also compares toll rates to bus fares and ferry fares.

Figure 13.

Toll rate and transit fares shown are one-way.



# how bridge tolling affects diversion

Diversion can be defined in four ways: take another route, shift to transit, change destination or travel at a different time of day. Diversion rates are sensitive to several factors. The major factor is toll rate, followed by availability of alternate routes. If no good alternate route is available, many people will continue to take trips on the corridor rather than divert. This seems to have been the case with the Tacoma Narrows Bridge, where the traffic levels have been higher than projected. If there is a nearby alternate route (for example I-90), diversion may be more significant.

The situation changes if two bridges are tolled. Bridge users would face the choice of diverting to the north or south ends of Lake Washington should they want a non-tolled route. Traffic levels, and thus diversion rates, may change as a result of economic conditions. Mitigation measures for toll-related diversion are discussed on page 36 and in Appendix G.

## Diversion to Specific Routes

In all scenarios, most traffic will stay on 520. Those who change routes can choose between 522, I-90 or I-405.

In general, analysis found that most people continue to use the tolled bridge, either by paying the toll, carpooling, taking transit or changing the time of their trip. Some people do change their route, but the overall effect of those route changes tends to be distributed across the transportation system.

The diversion data in Appendix C are presented for 520-only and two-bridge scenarios and for 2010 and 2016. Data is also broken down by peak and off-peak periods and for vehicle volumes and person trips. This data is generated by the regional travel demand model.

### For the 520-only scenarios:

- Transit ridership increases 15 to 30 percent, provided service is in place in 2010. This represents about three percent of all 520 users.
- Peak period traffic on 520 decreases, because some people choose other routes. The higher the toll rate, the higher the diversion rate.
- Peak period traffic on I-90 increases less than 5 percent, except in the highest toll 520-only scenario where it increases 8 percent.

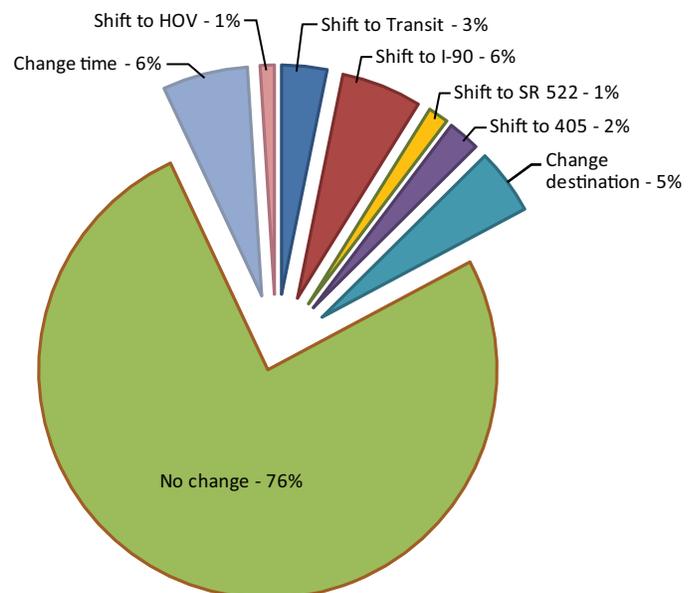
- Peak period traffic on 522 (at 61st Avenue in Kenmore) increases by no more than 5 percent.
- Peak period traffic on I-405 (at 167 in Renton) increases by no more than 3 percent.
- Between 3 and 11 percent choose to travel at a different time of day in 2010.

### For the two-bridge (520 and I-90) scenarios:

- There is a decrease in volumes on both 520 and I-90 as some people choose other routes, modes, or destinations.
- Peak period traffic on 522 (at 61st Avenue in Kenmore) increases by no more than 5 percent.
- Peak period diversion to I-405 (at 167 in Renton) is greater in two-bridge scenarios, with volume increases reaching 8 percent.

Figure 14. Diversion from 520.

The pie chart below illustrates diversion findings from one scenario and is not meant to represent all findings. It is from Scenario 6 and shows the travel decisions people make during peak periods in 2010. Text in the left-hand column describes general changes in vehicle traffic.



### Diversion effects on arterials

Local roadways leading to tolled bridges have less traffic when tolls are in place, while access routes leading to alternate routes would see an increase in volumes. The regional travel demand model does a good job of showing how regional traffic is projected to shift routes or modes when tolls are placed on one of these major routes. Data has been generated for major roadways; however, additional traffic modeling is needed to see specific arterial effects. (See 520 Tolling Screenline and Location Traffic Estimates in Appendix B.)

### Diversion in 520-only vs. two-bridge scenarios

When only 520 is tolled, the greatest route diversion effects are seen on I-90. When both bridges are tolled more traffic moves to the north and south ends of Lake Washington. I-405 south of I-90 is affected more than 522, because much of the diversion to 522 comes from tolling 520. I-405 only becomes a viable option for many people if I-90 is tolled.

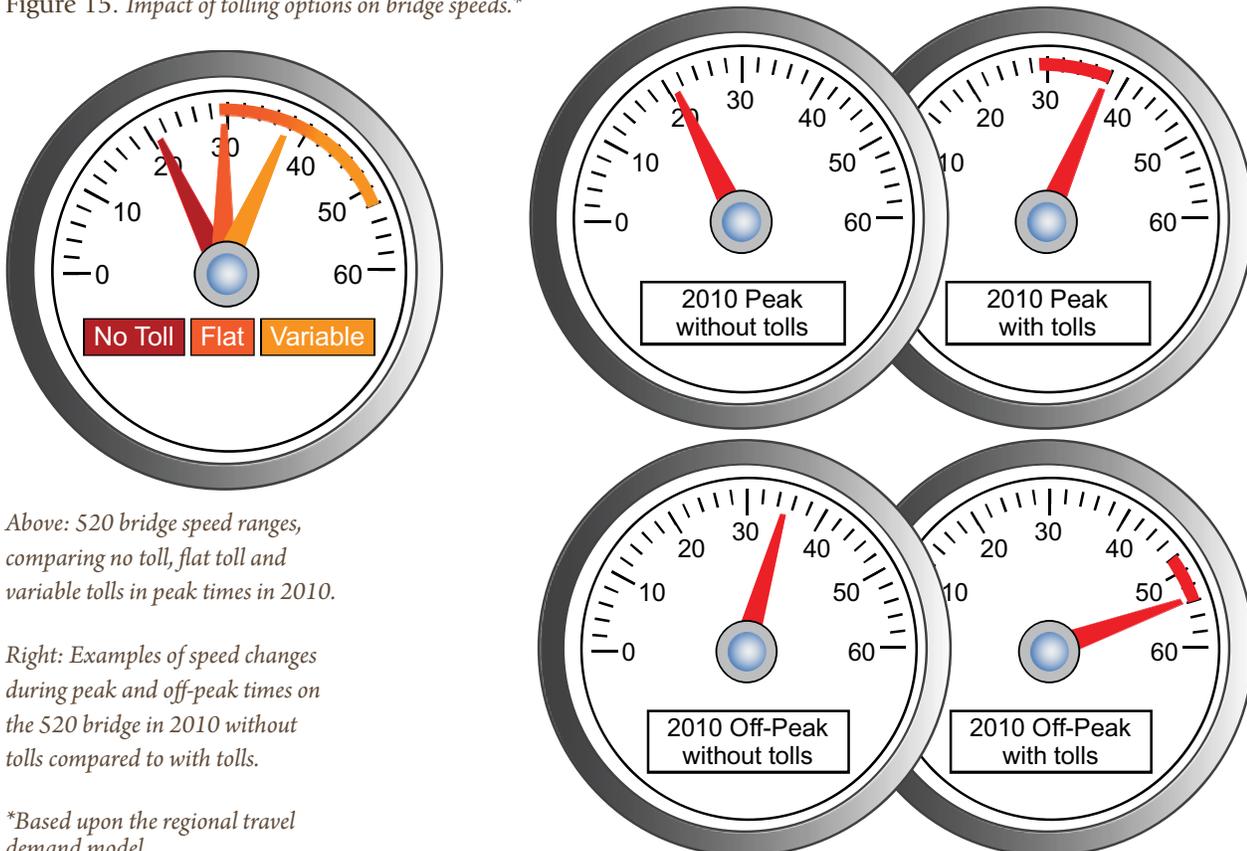
## bridge performance

One of the key evaluation criteria is how tolls affect bridge performance and traffic flow. Toll should provide improved speeds.

### Impacts on Bridge Speeds

When tolls are in place traffic volumes go down and speeds improve.\* On 520, speeds increase as much as 40 percent (under the highest toll rate scenario). Speeds increase on average from 10 to 30 miles per hour in the corridor between I-5 and I-405. When both 520 and I-90 are tolled, speeds improve on both bridges in peak and off-peak times.

Figure 15. Impact of tolling options on bridge speeds.\*



Above: 520 bridge speed ranges, comparing no toll, flat toll and variable tolls in peak times in 2010.

Right: Examples of speed changes during peak and off-peak times on the 520 bridge in 2010 without tolls compared to with tolls.

\*Based upon the regional travel demand model.

# incentives for transit and carpooling

Incentives for transit and carpooling provide an alternative to paying the toll. The 2006 Commute Trip Reduction (CTR) Efficiency Act focused on urban growth areas and congested corridors. There are more than 570 employers participating in CTR program, with more than 337,000 employees.

The program focuses on the Seattle and Bellevue central business districts, as well as the Overlake and Totem Lake areas, making the CTR program central to reducing traffic congestion on 520 and other area highways. The CTR Board estimates that CTR programs save an average of five minutes for a typical commuter from Seattle to Bellevue.

The Urban Partnership Agreement also includes transportation demand management, including shifting trips to transit or carpool travel. Currently, King County Metro and Sound Transit buses carry more than 15,000 riders each day on 520, and the Urban Partnership Agreement would fund purchase of 45 new buses carrying 5,000 additional riders each day. Funding to operate the buses has not been identified.

Almost all major employers in King County use CTR programs, and their programs include:

- University of Washington UPASS
- FlexPass and PugetPass
- Vanpool and Carpool Subsidies
- Emergency Ride Home
- Parking Management
- R-TRIP In Redmond

## Transit Need and Availability

Transit ridership is expected to grow 30 percent or more on 520 if the Urban Partnership Agreement service is added. In addition, the recently approved Sound Transit 2 includes 100,000 systemwide hours of additional bus service that could improve transit in this corridor. Bus rapid transit could also be used on 520 in the future to meet transit demand.



Figure 16.  
*Urban Partnership Agreement service levels and costs.*

	Metro	Sound Transit
Buses (\$41 million)	30	15
Annual Service Hours	28,000	10,000
Annual Operating Cost	\$3,500,000	\$1,250,000

*(Purchase of buses included in Urban Partnership Agreement; service costs unfunded. Source: Sound Transit and King County Metro.)*

### Telecommuting

One of the key components of the Urban Partnership Agreement is promoting telecommuting and flextime as options for some employees. By encouraging employees to work from home at least part-time and/or adjusting their work schedules to take advantage of lower toll rates, businesses will contribute to the goal of decreasing traffic in this busy corridor.

### Providing Choices

WSDOT plans major outreach efforts to occur in the months leading up to the start of tolling across Lake Washington. All publications and presentations related to tolling will include information on the choices available to drivers, including transit, carpooling, telecommuting, and flextime. A small change in the number of drivers who choose an alternative to driving alone will have a significant effect on traffic flow. By offering a range of choices, drivers can determine what changes work for them.

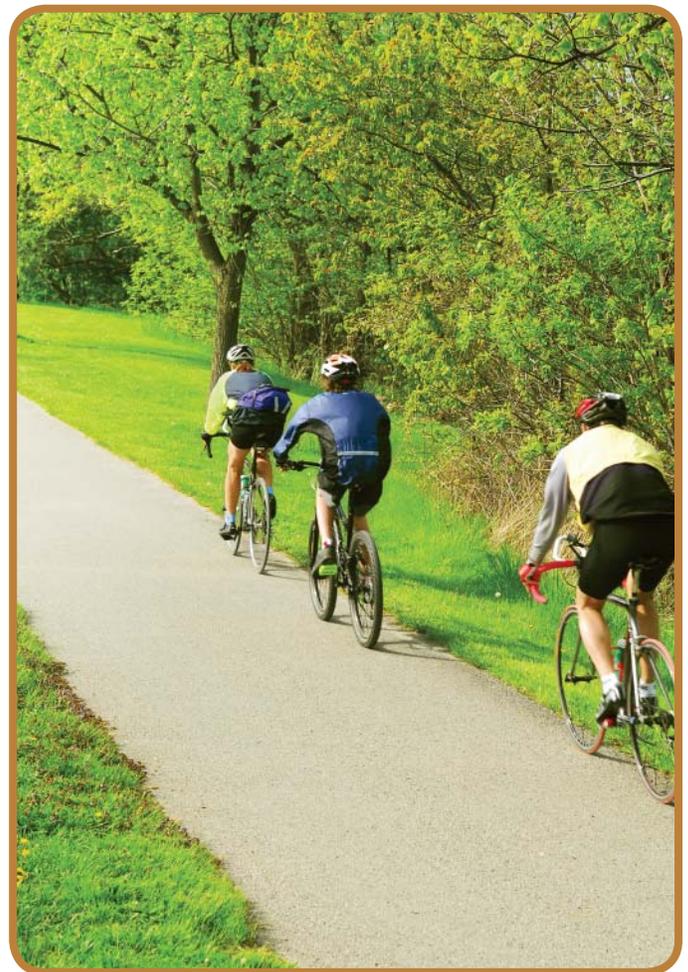
### Public Comment on Transit

When asked what they would do if a toll were charged on 520, nine percent of participants in the statistically-valid phone survey said they would take transit. Of web survey respondents, 17 percent said they would take transit if a toll were charged. This compares with 76 percent of phone survey respondents and 78 percent of web survey respondents saying it is important to have transit available as an alternative to paying tolls.

In the written comments received in fall 2008, 13 percent of respondents expressed support for increased transit service. In the written comments received in summer 2008, 21 percent of respondents expressed support

for increased transit service in these corridors. These respondents often said that increased transit service would be a necessary complement to tolling on 520. Others expressed general support for transit service, including both bus and rail service on 520, I-90, and throughout the region.

Most comments that referenced transit mentioned alternatives to paying a toll. Transit improvements were often mentioned as way to reduce effects on lower-income travelers. Some respondents advocated using toll revenue to fund transit improvements, while others were opposed to funding transit with toll revenue. Use of toll revenue for transit service is a legislative policy decision.



# potential effects on lower-income bridge users

## Committee Outreach Activities

As part of its outreach, the Committee publicized its open houses and website information in minority newspapers, social service newsletters, transit, and at community events. It coordinated with the 520 program on surveys and focus groups, and met with social service agencies to better understand how tolling may affect lower-income commuters.

Current services that meet the needs of lower-income customers:

- Customers can establish *Good To Go!* accounts with cash. There is no need for a credit or debit card.
- Lower-income users can establish and replenish a *Good To Go!* account using their EBT (Quest) card issued by DSHS.
- Full-service *Good To Go!* customer service centers are available for cash customers.
- Mobile *Good To Go!* center is available to set up at events, businesses, and high-traffic areas.

## Findings and Input

- A higher proportion of lower-income families' budgets will go toward tolls.
- Putting \$30 in a pre-paid *Good to Go!* account may be difficult for lower-income families. They may not have credit or debit cards to automatically replenish online accounts.
- Most trips across the bridge are for people accessing social services, work or medical appointments.
- Buses don't always work for those with children in day care who must be dropped off before continuing on to work.

Additional options to consider:

- Implement more bus service in the corridor to better meet demand. Forty-five new buses are planned for the corridor under the Urban Partnership Agreement, but funding to operate the buses has not yet been identified.
- Investigate partnering with retail outlets to make purchase and replenishment of cash and *Good to Go!* accounts more widely accessible.
- Translate tolling materials into several languages.

- Educate service providers who can explain the system to those who do not read.
- Explore a transportation allowance for those who use the bridge that will provide additional toll allowances on EBT cards, consistent with existing eligibility requirements.
- Analyze the relationship between toll rates and transit fares.

## Puget Sound Data

- In the 2005 census, 10 percent of King County households were below the national poverty line of \$19,971 for a family of four.
- The median household income in King County was \$58,351.
- Transit serves many lower-income residents. According to a 2006 King County Metro Rider / Non-Rider Survey, 25 percent of the riders who participated in the survey had household incomes below \$35,000, compared to only 12 percent of non-riders.

## National Research

National research on the effects of tolls on lower-income populations is limited, with most studies focused on HOT (high-occupancy toll) lanes. Definitions of lower-income vary across studies, making clear conclusions difficult. In general, national research indicates:

- The cost of purchasing a transponder and the possible need for a credit card to set up an electronic account can limit accessibility for lower-income people.
- Lower-income drivers are more likely to pay for a toll if it results in time savings or reliability.
- Lower-income populations are more likely to use transit and more likely to carpool.



A recent UCLA study suggested that a toll would adversely affect lower-income users of a highway but would be more equitable than a sales tax that affected all lower-income people regardless of whether or not they drive.

# opportunities to partner with businesses

The Committee did not find business interest in providing direct funding assistance for the 520 project. Opportunities do exist to partner with businesses and educate their employees about tolling through the various Commute Trip Reduction (CTR) programs.

Specifically, the Puget Sound Regional Council is working to create CTR zones in employment centers. The current program targets employers with over 100 employees in one location who commute during peak times. Changing the focus to employment centers will expand CTR services and funding to smaller businesses.

Businesses will play a primary role in future outreach activities focused on educating drivers about electronic tolling and how the *Good To Go!* system will work in the 520 corridor. Marketing activities will include presentations to employees, e-newsletters, breakroom posters, news articles, employee and client handouts, and on-site *Good To Go!* account sign-ups. The business community has responded positively to this role on the Tacoma Narrows Bridge project and is expected to be an important partner in sharing information and encouraging employees to participate in the electronic tolling program. In return, businesses recognize the benefits of improved traffic conditions, potential added transit service, and variable toll rates for their employees and clients.



# advanced tolling technology

## Toll Collection Technology

When the Tacoma Narrows Bridge opened in 2007, Washington State launched an electronic tolling system called *Good to Go!*. More than 70 percent of traffic using the new bridge travels non-stop at highway speeds without stopping at toll booths. During peak times, the number is 85 percent. Solo drivers on 167 in Southeast King County can now use this same electronic tolling system to pay for a quicker trip on the HOT lanes.

The 520 corridor will use 100 percent electronic tolling – no toll booths at all. This means all traffic on 520 can cross without stopping to pay.



*Simulation of toll collection on existing 520 east high-rise*

With *Good to Go!* electronic tolls are collected with a transponder, about the size of a credit card. Drivers affix the transponder on the inside of their cars' windshields. When driving on a tolled facility, an overhead antenna links the transponder to account information, and deducts the correct toll from a prepaid account. Automatic replenishment allows drivers to easily manage accounts by authorizing payments from a credit card or bank account.

To use this no toll booth technology, regular users should have pre-paid transponder accounts. However, some people will not have transponders or may be visiting from



out of town. Their vehicles will have their license plate photographed and can prepay (online or by phone) or be invoiced for the toll, which will include an additional administrative fee for processing. Transponder technology and license-plate recognizing cameras are used today as part of the *Good to Go!* program on the new Tacoma Narrows Bridge and at tolling facilities around the world.

All electronic tolling for 520 is important for a number of reasons:

- **High Volume:** The current daily crossings on 520 are approximately 115,000 vehicles per day and 150,000 on I-90. The Tacoma Narrows Bridge averages about 40,000 toll transactions per day.
- **Traffic Flow:** If vehicles on 520 are required to stop and pay tolls, the resulting congestion would negate the benefit of improving the facility.
- **Variable Tolling:** Electronic toll technology supports the use of variable tolling, which provides lower toll rates during non-peak hours and helps keep traffic moving.

## Advances in Tolling Technology

As technology continues to develop, additional technologies will become available and could make toll collection easier and more cost efficient. Technologies that may be available for toll collection in the future include:

- Transponders that include a button or switch indicating if the vehicle is currently a high-occupancy vehicle (HOV).
- Global positioning system (GPS)-based tolling technology.
- Stored-value card for transit, ferries and tolled facilities.
- Rental car companies outfitting rental cars with transponders or using license plate images to pay tolls for their rental fleets.

# active traffic management

Active traffic management is the use of high-tech traffic tools to make roadways safer and less congested. These tools provide more accurate real-time information about what is on the road ahead and help improve traffic flow.

If given approval to implement tolling on 520, WSDOT will expand current use of these technologies and focus on low-cost projects that have high benefits for drivers.

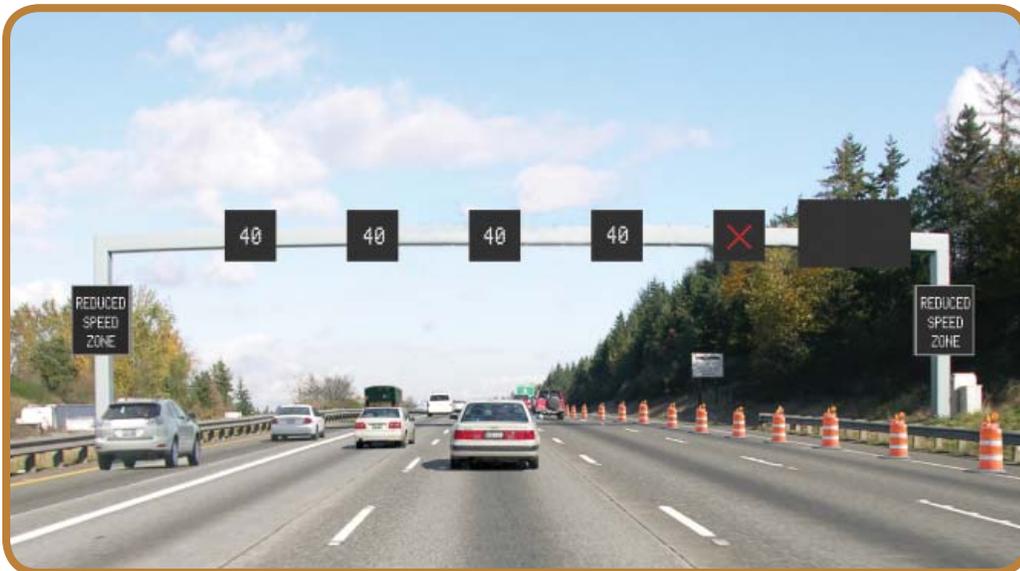
## Today's Tools and Technologies Include:

- **Real-time information for drivers**, such as electronic driver information signs, traffic cameras, traffic centers and online traffic maps. The Puget Sound region already has more than 475 traffic cameras, 169 electronic driver information signs, and seven traffic management hubs.
- **Ramp meters**, or stop-and-go traffic signals, that automatically space vehicles entering the flow of traffic on the highway. Today, 135 ramp meters help keep traffic moving on some of Washington's busiest routes.
- **Incident response teams** that clear roads and help drivers. WSDOT used more than 55 trucks and responded to more than 52,000 incidents in 2007.
- **Using HOV lanes more efficiently**, with projects including a four-year high-occupancy toll (HOT) lane pilot project on 167 between Auburn and Renton that converted a HOV lane to a HOT lane.

## Smarter Roadways Tomorrow

Building upon the successes already seen, new techniques are available and can be used in the Puget Sound region, including:

- Installing overhead signs, which convey variable speed limits; lane closures and warning signs, to alert drivers to slow down or change lanes because of collisions and backups.
- Where possible, building additional emergency pull off areas for vehicle breakdowns or collisions.



*Future variable speed limit and driver information signs will improve traffic flow and safety on northbound I-5 between Boeing Access Road and I-90. Similar signs will also be used in the 520 corridor.*

# mitigation recommendations for diversion related to tolling

The Committee was tasked by the Legislature with evaluating potential tolling diversion from 520 to other roadways and recommending mitigation to address diversion. All the tolling scenarios had similar effects on traffic diversion, although specific amounts and locations varied based on toll rates and facilities tolled.

## What Happens on Local Roads?

Generally, in the 520-only toll scenarios, traffic drops on direct access routes to 520 (such as Montlake Boulevard and Lake Washington Boulevard) and increases somewhat on direct access routes to I-90 (such as Rainier Avenue and Bellevue Way). In two-bridge scenarios, traffic on all direct access routes drops somewhat. Local access routes to 522 have increases in traffic in all toll scenarios. Complete diversion data can be found in Appendix C.

## A Proposed Two-Part Approach to Mitigation

The Committee is recommending an approach that attempts to keep traffic on the tolled 520, and takes actions to mitigate the effects of diversion off of 520. Additional detail on this approach is in Appendix G.

### Part 1: Approaches to keep traffic on the tolled 520

- Use variable tolls to improve performance during peak periods and encourage traffic to stay on the bridge in the off-peak when tolls are lower.
- In addition to meeting debt requirements, manage toll levels to keep traffic on the bridge; higher tolls will divert more traffic off 520.
- Segment tolls are opposed by jurisdictions throughout the region. Segment tolls may cause traffic to divert to local arterials to avoid a toll; however, segment tolls also lower traffic on bridge approaches and improve traffic flow.
- Identify funding to operate Urban Partnership Agreement transit service, and continue working with employers to reduce solo commutes in these corridors.
- Replace the 520 bridge. An expanded bridge will improve traffic flow and bring traffic that currently diverts because of congestion back to the 520 corridor.

### Part 2: Mitigation recommendations

Based on discussions with jurisdictions, the Committee identified five areas of concern related to traffic diversion:

- 522, Bellevue/Points communities arterials, I-90, I-405 South, Seattle/University of Washington.

Committee mitigation recommendations related to tolling include:

- System-wide instrumentation and traffic monitoring
  - Additional coverage would be needed on 522.
  - Local access roads may need to be added such as Ballinger Way, NE 145th Street, and Juanita Drive.
- 522 mitigation
  - Traffic reporting with electronic driver information signs at decision points on I-5, I-405, and along 522.
  - Traffic signal reliability and coordination.
- A toll mitigation account to respond to traffic diversion effects would be set up to fund the noted mitigation strategies and to fund other mitigation as necessary. A joint state/local process would be developed to decide which projects should be implemented to mitigate the actual effects of diverted traffic once tolling begins. Funds from the account would be focused on the six-year period following tolling authorization.
- Advanced traffic management technology on 520, I-90, I-405 and I-5.
- A coordinated transit implementation plan developed by WSDOT, King County and Sound Transit.
- Transit service expansion via the Urban Partnership Agreement in the 520 corridor and possible other improvements to transit service in response to anticipated or actual traffic diversion.
- Transit-related improvements such as new or expanded park-and-rides should be added, including in the I-90 corridor, if it is tolled.
- In a two-bridge scenario, expansion work on I-405 and I-405 alternate routes should proceed as quickly as possible.
- Local jurisdictions support new transit service in the corridor. The Urban Partnership Agreement would fund the purchase of 45 new buses, but operational funds are needed.
- Funding to operate transit needs to be identified and secured. Using toll revenues to pay for that service is a policy decision to be made by the Legislature.

## **appendices**

### Volume 1:

- A: Legislation - ESHB 3096
- B: Outreach Events and Materials
- C: Travel Demand Modeling and Financial Analysis
- D: Travel Demand Model Peer Review
- E: Active Traffic Management
- F: Toll Collection Technology
- G: Mitigation Recommendations for Diversion
- H: Discussions on I-90

### Volume 2:

- I: Public Comments
  - Letters from jurisdictions
  - Summaries of public comment
  - All public comments received

**How can tolls work for people who use 520, nearby communities, and taxpayers?**



## **for more information contact:**

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