

This chapter tells the story of the SR 520 Bridge Replacement and HOV Project—how it came about and why it is so important to the region's future. It describes the steady progress of the large, diverse group of stakeholders and citizens who came together agreeing on one thing: that something, somehow, needed to be done.

Chapter 1: Introduction to the Project

How have transportation needs shaped the project area?

For as long as people have lived here, the project area for the SR 520 Bridge Replacement and HOV Project has always served the purposes of transportation. Native Americans for centuries portaged canoes across the natural isthmus that divided what now is called Lake Washington from what is now called—aptly enough—Portage Bay. As early as the 1860s, settlers east of Lake Washington transported coal to Seattle by barges to the isthmus and by tram railway to the center of the city. By the 1880s, a sluiceway had been built on the isthmus to carry Eastside logs to Seattle lumber mills, contributing to lumbering's support for the early economy of the region.

By the early 1900s, passenger steamers and ferries short-cut the long roads around the lake to carry freight, agricultural products, and people back and forth from the end of the Madison Street streetcar line to the growing, yet still rural, communities on the east side of the lake. By that time Seattle neighborhoods like Montlake and Roanoke were developing; local park and recreational treasures like the Washington Park Arboretum were being created; and the University of Washington had established its presence and staked its future in the area.

A 1919 photo of the Kirkland ferry dock along the shores of Lake Washington

Around the time of World War I, the U.S. Army Corps of Engineers transformed Lake Washington and the entire project area by opening Seattle's own scaled-down version of the Panama Canal. This was the Ballard Locks, the Lake Washington Ship Canal, and the Montlake Cut, which together linked Lake Washington for the first time directly to Puget Sound. This project defined many current features of the built environment and fundamentally altered elements of Lake Washington's natural ecosystems.

Until 1940, cars drove around Lake Washington to the north and south, and only boats carried people and goods across the water. In that year,

the opening of the Lake Washington Floating Bridge—located where the I-90 floating bridge is today—ushered in a new era. Communities on the Eastside became more accessible and popular places to live, and their growth began to change the entire character of the Eastside. In 1963, the opening of SR 520 and the Evergreen Point Bridge reinforced the postwar residential and commercial growth east of the lake, helping to shape today's regional metropolitan area and its economy. Toll revenues paid off the bonds that were used to fund the bridge in 1979, 20 years ahead of schedule.

With continued growth in vehicle trips, congestion has become a fact of life for people crossing the Evergreen Point Bridge. Today, the 43-year-old bridge is fast becoming a victim of age and obsolescence. Despite the expansion of the I-90 bridge crossing to the south in 1989, the Evergreen Point Bridge and the adjoining stretches of SR 520 are choked with traffic for hours every weekday—and sometimes on weekends, too. Simply stated, more people want to use the highway than it can accommodate. Narrow shoulders and the lack of a high-occupancy vehicle (HOV) lane mean that a single breakdown can snarl traffic for hours, while buses and carpools creep along with everyone else in the resulting congestion. Meanwhile, strong winds and high waves threaten the integrity of the floating portion of the bridge and sometimes force its closure. In addition, the 10th Avenue East bridge over SR 520, the Portage Bay Bridge, the SR 520 on- and off-ramps in Seattle, and the west approach to the Evergreen Point Bridge are all supported by hollow columns that are especially vulnerable to damage in an earthquake. Meanwhile, traffic congestion grows worse every year.

Now, once again, the project area faces the imperative of updating its role in transportation. The SR 520 Bridge Replacement and HOV Project is one of the region's highest transportation priorities. Transportation congestion needs to be addressed and traffic safety and reliability improved. The obsolete and vulnerable structures built in the 1960s must be replaced. People's travel must be made more efficient by delivering on a long-deferred commitment to provide better transit options to automobile commuting–which now moves both directions across the lake every weekday morning and afternoon. The neighborhoods and the region as a whole must be better served by transportation infrastructure and better protected from the negative effects associated with a major transportation corridor.

This Draft Environmental Impact Statement (Draft EIS), prepared under the National Environmental Policy Act (NEPA), the State Environmental Policy Act (SEPA), and their implementing regulations, presents information about the project to inform citizens about the potential effects of project choices and to assist decision-makers in considering how the project should proceed. Working closely with other agencies, public officials, and citizens, the Washington State Department of Transportation (WSDOT) has refined many initial concepts into two detailed alternatives and a

Logical Termini

The project limits for the SR 520 corridor encompass the length of SR 520 from the I-5 interchange to the I-405 interchange. FHWA regulations (23 CFR 771.111(f)) outline three criteria for selecting the end points of a transportation project:

- The end points should connect logical termini (rational end points) that encompass a corridor of sufficient length to ensure that environmental effects are addressed on a broad scope.
- The project limits should represent a project that has independent utility. In other words, the project must be usable and a reasonable expenditure even if no other transportation improvements are made in the area.
- The project limits must not restrict consideration of alternatives for other reasonably foreseeable transportation projects.

number of options for evaluation and comparison The Draft EIS compares and contrasts the effects of building each of these alternatives with the effects of a No Build Alternative. Both the positive and negative environmental consequences are identified.

How did the SR 520 Bridge Replacement and HOV Project come about?

In 1997, the Washington State Transportation Commission commenced the Trans-Lake Washington Study to identify ways to improve transportation across and/or around Lake Washington. Although the key problem that led to the study was congestion on SR 520, the 47-member Study Committee considered improvements from I-90 on the south to SR 522 on the north, and from west of I-5 to the eastern end of SR 520. The study was designed to consider many possibilities in the proposed solutions, including increased capacity for moving people and vehicles, travel demand management, new or enhanced bicycle and pedestrian facilities, and environmental protection and enhancements. The most promising solutions were then expected to be advanced into a phase of more detailed design and study—the phase that includes this Draft EIS.

The Trans-Lake Washington Study Committee began by looking at specific individual actions, programs, or projects that could contribute to improving transportation. This approach focused on the question: How many ways are there to improve the movement of people and goods across and around Lake Washington? The list of initial ideas, created in the Study Committee and added to by public comments, included over 100 transit, roadway, and demand management/land use concepts, as well as proposals for environmental protection and enhancements.

The concepts suggested were not limited to expanding existing bridges. They included car and passenger ferries, new lake crossings on bridges or submerged tubes, and many HOV and transit options, including various rail technologies such as light rail, monorail, and maglev (a high-speed rail technology). Measures to manage traffic demand, such as tolls, increased parking prices, gas taxes, and transit incentives, were put into the mix, along with land use changes to encourage people to work and shop near their homes and use modes of travel other than their private automobiles. Some unusual ideas emerged, like the complete elimination of cars in urban centers. However, most of the concepts involved small to large changes in existing transportation systems, plans, or policies.

Next, the Study Committee developed six potential "solution sets" in addition to a No Action scenario. All the solution sets included roadway, transit, demand management, and environmental enhancement concepts, but they differed in their emphasis. Some solution sets were more focused on roadway and some on transit. Several combinations of HOV and gen-

The SR 520 Project Area

The SR 520 Bridge Replacement and HOV Project area includes neighborhoods in Seattle from I-5 to the Lake Washington shore and Eastside communities and neighborhoods from the Lake Washington shore to 124th Avenue Northeast just east of I-405. It also includes Lake Washington itself—an important environmental resource for the region—and Native American communities with treaty rights to fish in local water bodies. *Exhibit 1-1* shows the general location of the project. The project area encompasses:

- Seattle neighborhoods— Roanoke/Portage Bay, North Capitol Hill, Montlake, University District, Laurelhurst, and Madison Park
- The Lake Washington ecosystem and the bays, streams, and wetlands that are associated with it
- Eastside communities and neighborhoods—Medina, Hunts Point, Clyde Hill, Yarrow Point, Kirkland (the Lakeview neighborhood), and Bellevue (the North Bellevue, Bridle Trails, and Bel-Red/Northup neighborhoods)
- Usual and accustomed fishing areas of tribal nations—the Muckleshoot and Yakama—that historically used the area's aquatic resources and have treaty rights to them

Exhibit 1-1. **Project Vicinity Map**

eral-purpose lanes were explored, and various solution sets looked at light rail on I-90, SR 520, or both.

In July 1999, after evaluating the solution sets and taking public comments, the Study Committee adopted a set of recommendations for new transportation elements to be given further study in the framework of an EIS on the SR 520 corridor. These elements included one HOV lane in each direction throughout the corridor, with or without one additional general-purpose lane in each direction and/or high-capacity transit. The committee directed the project team to develop details of the various options, such as where added lanes would begin and end, whether the SR 520 corridor was the right place for high-capacity transit, and what changes might be needed to interchanges and local arterials.

In 2000, WSDOT, Sound Transit, the Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA) carried forward the Study Committee's SR 520 recommendations by initiating the EIS process to evaluate improvements in the SR 520 corridor, including replacement options for the Portage Bay and Evergreen Point bridges. For the next 2 years, the team continued to work on the project (at that time called the Trans-Lake Washington Project) while receiving ideas from the public and developing alternatives.

In 2002, state funding was cut and the project was put on hold temporarily. However, the Legislature's 2003 Transportation Funding package reinstated project funds. A new phase of the project began, including the continued preparation of an EIS for the project now called the SR 520 Bridge Replacement and HOV Project. The project limits were reduced to generally I-5 in Seattle to I-405 in Bellevue. WSDOT is leading the EIS for this project, along with FHWA and Sound Transit as co-lead agencies. FTA is no longer a co-lead federal agency on the project.

The Trans-Lake Washington Study Committee

The Trans-Lake Washington Study Committee was made up of 47 individuals who represented many interests in the SR 520 corridor. They included representatives of public agencies, neighborhoods, businesses, and advocacy groups. Tasked by the Washington legislature with identifying a set of "reasonable and feasible solutions" to improve mobility across and/or around Lake Washington, they met regularly for nearly 18 months from 1998 to 1999. Their work with the public to develop recommendations forms the core of the alternatives that are studied in this Draft EIS.

Why is this project needed now?

SR 520's bridges are vulnerable to catastrophic failure

The most compelling reason to carry out the SR 520 Bridge Replacement and HOV Project is the danger of structural failure of the components of the Evergreen Point Bridge or its approaches. Over the last several years, WSDOT studies have demonstrated that the aging spans of the Portage Bay and Evergreen Point bridges are highly vulnerable to windstorms and earthquakes. In 1999, WSDOT estimated the remaining service life of the floating portion of the Evergreen Point Bridge to be 20 to 25 years, based on its structural condition and the likelihood of severe windstorms. Its life expectancy now is only about 13 to 18 years.

The span was originally designed for a sustained wind speed of 57.5 miles per hour (mph). In 1999, WSDOT rehabilitated the bridge to allow it to withstand sustained winds up to 77 mph. This still falls well short of

KEY POINTS

Will the Evergreen Point Bridge last 20 more years?

The probability that the Evergreen Point Bridge will sustain serious structural damage from a major windstorm in the next 20 years is approximately 100 percent. In other words, serious damage to the bridge is virtually certain. Replacing the bridge is the only way to avoid this risk.

WSDOT's current design standard of 92 mph. Moreover, some bridge mechanisms have been damaged in recent storms. The floating pontoons currently float about 1 foot lower than originally designed, increasing the likelihood of waves breaking onto the bridge deck. Cracks in the structure leak water that WSDOT must pump out on a regular basis. The probability that the bridge will sustain serious structural damage over the next 20 years is high. To bring the SR 520 crossing up to current design standards, the existing span must be completely replaced.

The ever-present possibility of an earthquake in the Seattle area poses additional risks to other SR 520 bridges and the floating bridge approach structures. The columns of the Portage Bay Bridge and the Evergreen Point Bridge approaches are hollow, and do not meet current seismic design standards. Hollow-core columns are difficult and costly to retrofit to today's accepted seismic protection levels. Ramps at Lake Washington Boulevard and the 10th Avenue East bridge over SR 520 are also vulnerable to damage or collapse during an earthquake. WSDOT estimates that over the next 50 years, there would be a 20 percent chance of serious damage to these structures in an earthquake. *Exhibit 1-2* shows the vulnerable sections of SR 520.

For over 40 years, SR 520 has been a vital link in the Puget Sound region's transportation system. Building safe, reliable, well-designed bridges now will allow us to avoid the disastrous prospect of losing the existing bridges to an act of nature—a moment that will almost surely come if the bridges are not replaced. For this project, the No Build Alternative is not a good choice.

The Evolution of Floating Bridge Design

Today, bridge engineers can design floating spans to stand up to severe wind and weather. However, older floating bridges are vulnerable to the elements. In November 1990, the 50-year-old Lacey V. Murrow I-90 Floating Bridge sank to the floor of Lake Washington. While the bridge was closed for upgrades, its pontoons took on water during a Thanksgiving weekend rainstorm. In 1979, the west half of the Hood Canal Bridge suffered a similar fate after being battered by 85-mph sustained winds and 120-mph gusts. With knowledge gained from these experiences, WSDOT proposes to build the new Evergreen Point Bridge to withstand sustained winds of 92 mph—far higher than winds that now threaten the bridge during the worst windstorms. This new design standard reflects current knowledge of the expected storms on Lake Washington that may affect the Evergreen Point Bridge.

SR 520 is congested and unreliable, and does not encourage maximum transit and carpool use

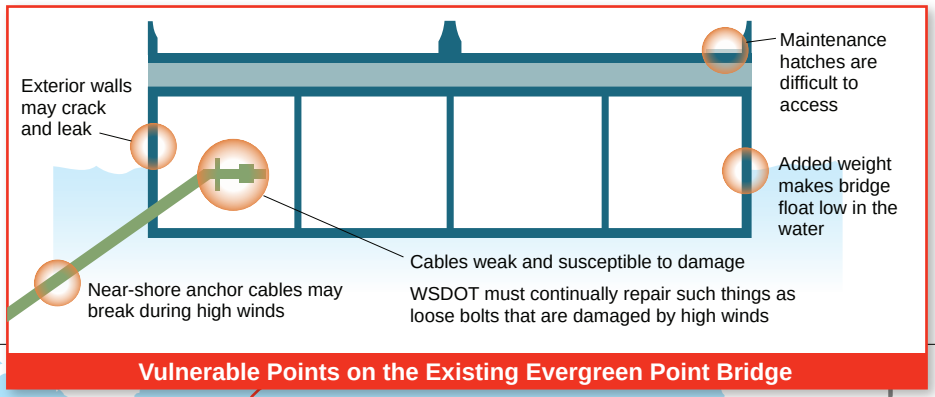
A second key reason for implementing this project now is the severe traffic congestion in the SR 520 corridor. As previously noted, this was the reason for initiating the original Trans-Lake Washington Study in 1998. As any traveler who has tried to cross the Evergreen Point Bridge during rush hour is well aware, traffic demand in both directions exceeds capacity. This means that more drivers want to use the highway than it can accommodate during many periods of time, resulting in breakdown of the traffic flow and long backups of vehicles traveling at very slow speeds.

Traffic congestion in the westbound lanes of SR 520

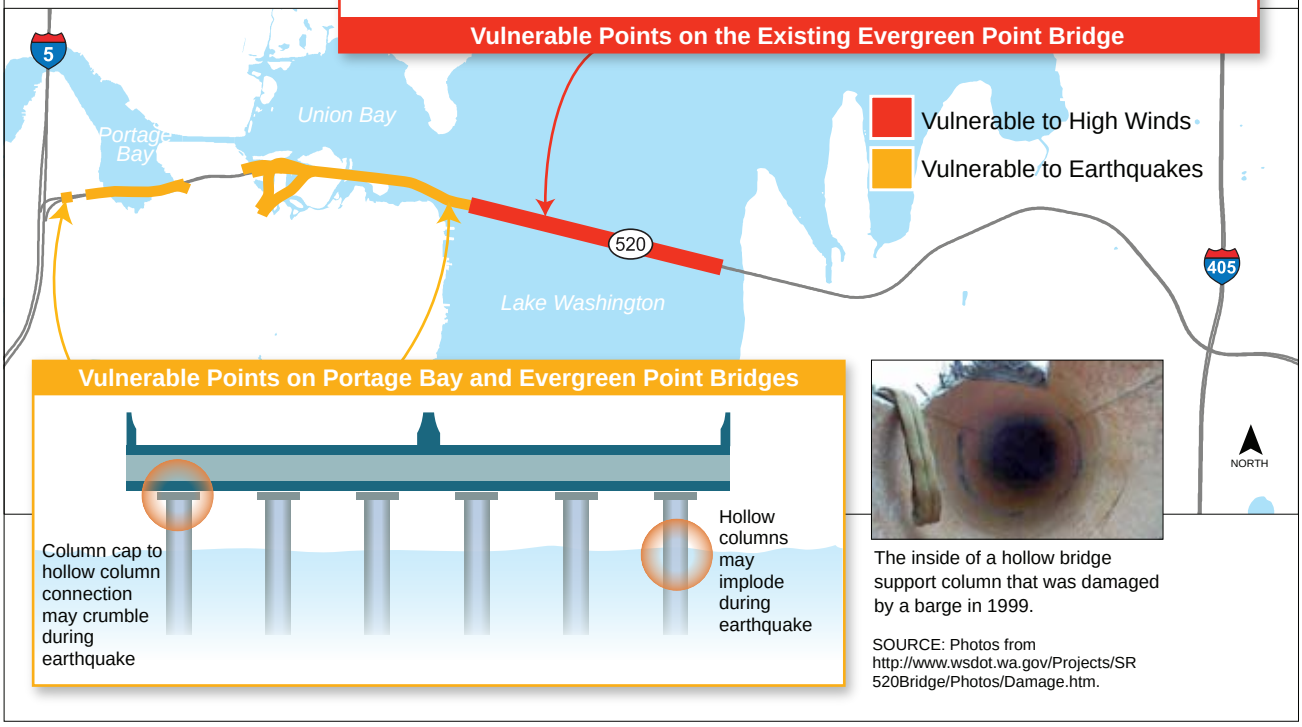
A number of factors have contributed to today's traffic congestion on SR 520. One factor is the pattern of population growth and the changing location of jobs in the project area since the highway opened in 1963. The new crossing of Lake Washington enabled many more people to live in Eastside communities and work in Seattle, increasing the number of westbound vehicles across the Evergreen Point Bridge in the morning and eastbound in the evening. Meanwhile, some of these Eastside communities began to develop their own commercial and employment centers, lead-

Exhibit 1-2. **Points Along SR 520 Vulnerable to Earthquakes or Windstorms**

A torn cable joint found during a routine inspection in February 2006. The cables connect the floating bridge pontoons to their underwater lakebed anchors.



Vulnerable Points on the Existing Evergreen Point Bridge



Vulnerable Points on Portage Bay and Evergreen Point Bridges

The inside of a hollow bridge support column that was damaged by a barge in 1999.

SOURCE: Photos from http://www.wsdot.wa.gov/Projects/SR520Bridge/Photos/Damage.htm.

ing to substantial growth of "reverse commute" traffic. Today, seven times more vehicles cross SR 520 each day than when the bridge first opened in 1963. During each rush hour period, the numbers of eastbound and westbound vehicles on SR 520 are virtually the same.

Beyond the sheer number of people and cars, another important factor causing today's congestion is the outmoded design of the Evergreen Point Bridge itself. By today's standards, the bridge is far too narrow. The lack of lane shoulders means that a vehicle that breaks down or gets into an accident has no place to wait for help that does not block other traffic. This immediately renders a full lane of traffic unusable, slows down the remaining lane as vehicles merge into the moving lane, and makes it difficult for emergency vehicles to gain passage. In addition, the westbound HOV lane on the Eastside ends at the bridge. This creates congestion as westbound traffic is forced to merge.

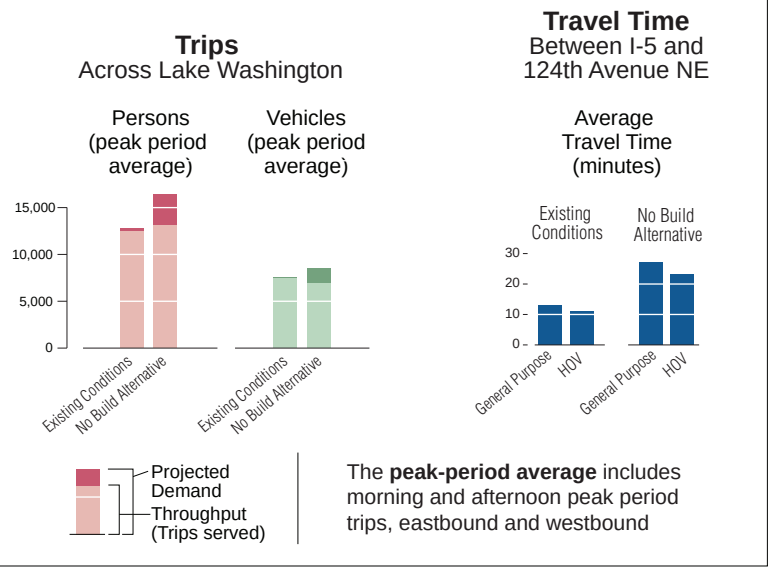
Together, growth and physical limitations will make the future traffic situation on SR 520 much worse if the corridor is not improved. Under free-flow conditions today, a vehicle traveling at the speed limit takes approximately 8 minutes to go across SR 520 from I-5 to the 124th Avenue Northeast exit. During the peak traffic period today, this trip takes an average of 13 minutes in either direction for a single-occupant vehicle—about 40 percent longer than it would if there were no congestion. But this delay seems minor when compared with the 27 minutes the same trip is predicted to take in 2030—more than double the time it takes today, and more than triple the time it would take if traffic were moving at free-flow speeds *(Exhibit 1-3).* Thanks to the westbound HOV lane on the Eastside, buses and carpools would fare slightly better, but their travel time would also double from the current average of 11 minutes to 23 minutes in 2030.

Traffic congestion near the Montlake Boulevard overpass

This level of congestion is not just an inconvenience for drivers. It also hurts the regional economy and the quality of our lives and communities. Delays increase business costs, discourage growth, and create disincentives for businesses to locate in the region. Traffic congestion also fills the air with pollutants from idling vehicles, which are much less efficient than vehicles operating at higher speeds.

The worsening traffic levels on SR 520 and the high likelihood of serious damage to its structures within the next 20 years are compelling reasons for providing a modern, reliable crossing that meets today's design standards. Although constructing the project will affect the region for a number of years, the long-term cost of not constructing it would be staggering—intolerable traffic congestion, regional economic losses, reduced quality of life in project area neighborhoods, and above all, the ever-present likelihood that wind or earthquake could suddenly destroy the SR 520

Exhibit 1-3. **Traffic Conditions on SR 520, Now and in 2030**



bridges, with consequences that would run the gamut from injury or loss of life to crippling disruptions to regional traffic.

What is the purpose of the project?

The Trans-Lake Washington Study Committee developed goals for the SR 520 Bridge Replacement and HOV Project that have been adopted by the co-lead agencies and all the project's committees:

- Improve safety and reliability
- Increase mobility for people and goods
- Avoid, minimize, and/or mitigate the project effects on neighborhoods and the environment

These goals have been developed into a statement of purpose for the SR 520 Bridge Replacement and HOV Project (shown in the sidebar to the right). The statement of purpose has helped the project team develop and evaluate alternatives for purposes of the EIS analysis by defining the objectives the alternatives must meet.

Trans-Lake Washington Study Committee

The Purpose of the SR 520 Bridge Replacement and HOV Project

The purpose of the project is to improve mobility for people and goods across Lake Washington within the SR 520 corridor from Seattle to Redmond in a manner that is safe, reliable, and cost-effective while avoiding, minimizing, and/or mitigating effects on the affected neighborhoods and the environment.

What are the choices?

This SR 520 Bridge Replacement and HOV Project Draft EIS evaluates three main alternatives, as shown in *Exhibit 1-4*.

- No Build Alternative
- 4-Lane Alternative
- 6-Lane Alternative, along with seven design options that expand the range of potential choices

WSDOT has also explored the feasibility of an 8-Lane Alternative, but has not carried this alternative forward because its implementation would have led to severe effects on I-5 and I-405.

No Build Alternative

Environmental impact statements describe an alternative that allows decision-makers to assess what would happen to the environment in the future if nothing were done to address the problem that a project is designed to solve. This alternative, called the No Build Alternative, would leave the existing highway the same as it is today *(Exhibit 1-4)*. The No Build Alternative provides a baseline against which to measure and compare the effects of all of the project's build alternatives.

The SR 520 project poses problems for analysis under a No Build Alternative because the existing Evergreen Point and Portage Bay bridges may not remain intact through 2030, the project's design year. If nothing is done to replace the Portage Bay and Evergreen Point bridges, there is a high probability that one or both structures could fail and become unusable to the public before 2030. To illustrate what could happen, two

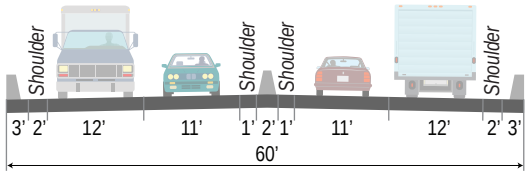
DEFINITION

Design Year

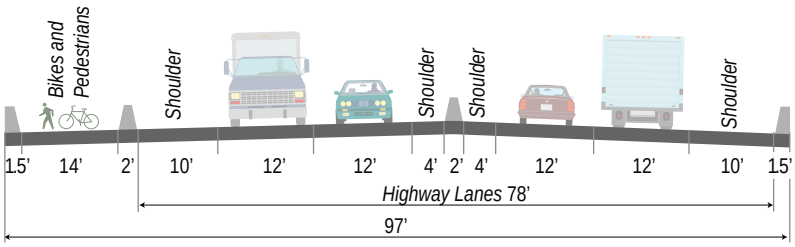
The "design year" is a concept that allows engineers to estimate the probable future traffic volume for which a highway will be designed. FHWA defines the design year as 20 years after the year that construction is expected to begin. The design year for the SR 520 project is 2030.

Exhibit 1-4. **No Build, 4-Lane, and 6-Lane Alternatives**

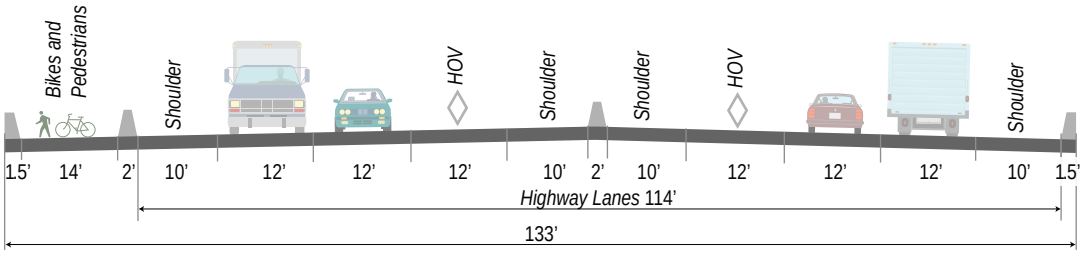
No Build Alternative



4-Lane Alternative



6-Lane Alternative



NOTE: Dimensions shown on diagrams are on the Evergreen Point Bridge.

What happened to the 8-Lane Alternative?

The Trans-Lake Washington Study Committee recommended that the EIS include an 8-Lane Alternative in the analysis. Between 2002 and 2005, WSDOT did several evaluations of the 8-Lane Alternative's effects under different design and tolling scenarios. Each of these studies reached two key conclusions:

- Although it might seem intuitive that an 8-lane roadway would carry more people and vehicles than a 4- or 6-lane roadway, choke points at the I-5 and I-405 interchanges and traffic volumes in those corridors would limit how many people could move through the SR 520 corridor and how fast they could travel. Because of the choke points at either end, the 8-Lane Alternative would not move people and goods appreciably better than the 6-Lane Alternative, but would cost substantially more. It would also tend to force additional traffic congestion onto local Seattle and Eastside streets near SR 520 interchanges.
- Substantial rebuilding of portions of I-5 and I-405 would be needed to make the 8-Lane Alternative work. For example, eight lanes would probably require that I-5 be widened from the SR 520 interchange all the way through downtown Seattle, requiring demolition of numerous residential and commercial buildings and billions of dollars in additional cost. On the Eastside, the SR 520/I-405 interchange would need to be completely reconstructed.

For these reasons, WSDOT, FHWA, and Sound Transit concluded that the 8-Lane Alternative should not receive detailed study in the Draft EIS. If it were brought back into consideration at some future date, WSDOT would need to do further environmental analysis. Chapters 3 and 4 contain more information on how we evaluated the 8-Lane Alternative.

scenarios representing the extremes of what is possible are evaluated as part of the No Build Alternative. These are the Continued Operation and Catastrophic Failure scenarios.

Under the Continued Operation Scenario, SR 520 would continue to operate as it does today—as a 4-lane highway without a cross-lake HOV lane nonstandard shoulders, and without a bicycle/pedestrian path. Continued operation would include using the same technology that is in place today, including ramp metering, traveler information, and incident response. This scenario assumes the Portage Bay and Evergreen Point bridges would remain standing and functional through 2030. Even though it is unlikely to occur—because the bridges are not likely to last that long—and is inconsistent with WSDOT's standards for safety and reliability, this scenario is the baseline to which the EIS team compared the other alternatives.

Waves breaking onto the Evergreen Point Bridge during a 2006 storm

The Catastrophic Failure Scenario assumes that both the Portage Bay and Evergreen Point bridges would be lost due to some type of catastrophic event, such as an earthquake or windstorm. Although in a catastrophic event one bridge might fail while the other stands, this Draft EIS assumes the worst-case scenario—that both bridges would fail.

The No Build Alternative includes WSDOT maintenance and repair activities that would help keep the bridge in as good condition as possible for as long as possible. These include pumping water out of the pontoons, inspecting the draw span machinery regularly, repairing electrical systems as necessary, and performing needed repairs after storm damage. In the future, if damage continues to occur, it may be necessary to close the bridge at lower wind speeds than the current standard, which would add to regional traffic congestion.

4-Lane Alternative

The 4-Lane Alternative was initially developed during the Trans-Lake Washington Project as a "minimum footprint" alternative with narrow shoulders that would replace the existing bridges to enhance safety, but would not provide any other transportation benefits. The alternative has since been changed to include standard shoulders for greater safety and better traffic flow, but it still would do little to increase SR 520's existing traffic-carrying capacity. It would have four lanes (two general-purpose lanes in each direction), the same number of lanes as today (see *Exhibit 1-4*). The existing westbound HOV lane on the Eastside, between Bellevue Way and the Evergreen Point Bridge, would also be included in the 4-Lane Alternative. SR 520 would be rebuilt from I-5 to Bellevue Way. WSDOT would replace both the Portage Bay and Evergreen Point bridges and rebuild all the bridges that carry local streets over SR 520. Roadway shoulders would meet current standards to provide improved safety and better incident response, which would help enhance traffic flow.

A new regional bicycle/pedestrian path would run along the north side of SR 520 through Montlake, across the Evergreen Point Bridge, and along the south side of SR 520 through Medina, Hunts Point, Clyde Hill, and Yarrow Point to 96th Avenue Northeast, connecting to Northeast Points Drive. This path could accommodate two-way bicycle traffic and eliminate the need for bicyclists to place their bicycles on bus racks to travel across SR 520. Sound walls would be built along much of SR 520 in Seattle and the Eastside. The floating bridge pontoons of the Evergreen Point Bridge would be sized to accommodate future installation of facilities for high-capacity transit. A bridge operations building would be built under the bridge on the east shore of Lake Washington as part of the new bridge abutment. This facility would include a dock for bridge maintenance boats. New stormwater treatment facilities would collect roadway runoff and ensure that its discharge is in accordance with applicable regulatory standards.

WSDOT would collect tolls from vehicles crossing the bridge using electronic technology that would not require toll booths. WSDOT would also implement a flexible transportation plan, which is a set of strategies to identify alternatives to single-occupant vehicle travel and to manage traffic during and after construction. The plan would include four major components: intelligent transportation and technology, traffic systems management, vanpools, and transit.

The 4-Lane Alternative would meet two of the SR 520 project's key goals: improving safety and reliability and protecting and enhancing neighborhoods and environmental values. However, although roadway shoulders would help reduce congestion caused by accidents or disabled vehicles, no additional travel lanes would be added. Therefore, the 4-Lane Alternative would do little to advance the third goal of increasing mobility for people and goods.

What is high-capacity transit, and how would SR 520 provide for it?

High-capacity transit is a public transit system that can accommodate large volumes of riders. Examples include light rail transit (such as Sound Transit's Link light rail) and bus rapid transit. WSDOT is designing the SR 520 bridges, roadways, and freeway stations to allow high-capacity transit to operate in dedicated right-of-way at some point in the future, after the road is built.

Sound Transit is in the process of developing a plan for the next phase of high-capacity transit investments in the region, ST2. Candidate projects have been identified and are being reviewed by the Sound Transit Board for potential inclusions in an ST2 plan. A candidate project for SR 520 proposes to evaluate high-capacity transit modes and routes. The study would provide information useful to a potential future phase for Sound Transit to implement high-capacity transit on SR 520. Please refer to the Sound Transit website at *www.soundtransit.org* for more information about the ST2 process and candidate projects.

6-Lane Alternative

The 6-Lane Alternative was also recommended by the Trans-Lake Washington Study for evaluation in the EIS. It would include six lanes—two outer general-purpose lanes and one inside HOV lane in each direction (see *Exhibit 1-4*). WSDOT would rebuild SR 520 from I-5 to 108th Avenue Northeast in Bellevue and add an auxiliary lane on SR 520 eastbound from east of I-405 to 124th Avenue Northeast. Both the Portage Bay and Evergreen Point bridges would be replaced; bridges that carry local streets over SR 520 would also be rebuilt. Roadway shoulders would meet current standards for a 6-lane highway. The floating pontoons of the Evergreen Point Bridge would be sized to accommodate future installation of facilities for high-capacity transit.

For this alternative, WSDOT would build five 500-foot-long landscaped lids across SR 520 to help connect communities now separated by the cor-

ridor. The project's Executive Committee determined that the lids should be part of the 6-Lane Alternative to help mitigate the effects of adding two new lanes to the corridor. Two lids would be located in Seattle—one between 10th Avenue East and Delmar Drive East, and one at Montlake Boulevard. On the Eastside, the three lids would be at Evergreen Point Road, 84th Avenue Northeast, and 92nd Avenue Northeast.

Like the 4-Lane Alternative, the 6-Lane Alternative would also include:

- A 14-foot-wide bicycle/pedestrian path
- Sound walls
- Stormwater treatment
- Bridge operations building and dock
- Tolls collected electronically
- Flexible transportation plan

The 6-Lane Alternative meets all three of the SR 520 project's goals: it would improve safety and reliability by providing new bridges; increase mobility for people and goods by including continuous HOV lanes throughout the corridor; and protect and enhance community and environmental values in the project area.

WSDOT is also evaluating seven possible design options for the 6-Lane Alternative. These options—three in Seattle and four on the Eastside—would reduce the footprint of the 6-Lane Alternative, address community desires to reduce the traffic congestion caused by the existing Montlake interchange, and/or improve transit mobility. On the next page is a birds-eye view of the Montlake area today, as compared to how it would generally look if the 6-Lane Alternative or the Pacific Street Interchange option were built. Chapter 3 describes the 6-Lane Alternative options and the way WSDOT has developed them. Further information on these alternatives and options is provided in Appendix A, Description of Alternatives and Construction Techniques, and Appendix V, 6-Lane Alternative Options Report.

What are the 6-Lane Alternative options?

- The ***Pacific Street Interchange option*** would consolidate the existing Montlake and Lake Washington Boulevard interchanges into one new interchange, a short distance east of the current Montlake interchange. It also includes a 4-lane bridge over Union Bay.
- The ***No Montlake Freeway Transit Stop option*** would eliminate the Montlake Freeway Station.
- The ***Second Montlake Bridge option*** would include a second drawbridge across the Montlake Cut, parallel to the existing Montlake Bridge, and eliminate the Montlake Freeway Station.
- The ***Bicycle/Pedestrian Path to the North option*** would place the bicycle/pedestrian path along the north side of SR 520 through the Eastside.
- The ***No Evergreen Point Freeway Transit Stop option*** would eliminate the Evergreen Point Freeway Station.
- The ***South Kirkland Park-and-Ride Transit Access – Bellevue Way option*** would add a new HOV/transit lane to the eastbound Lake Washington off-ramp.
- The ***South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option*** would add two new ramps for transit and HOVs to 108th Avenue Northeast.

How much would the project cost, and how do we estimate these costs?

For this project, WSDOT uses the Cost Estimation and Validation Process (CEVP) to identify the range of costs. CEVP helps estimate and communicate ranges of probable costs and schedules, and it explicitly identifies and quantifies risks for large, complex projects early in the planning and design phases. Some risks could not be conceived and are not included, such as alternative funding scenarios that depend on public votes, political and management changes, and "acts of God." These could change cost and schedule. Overall, it produces better information that the public and elected officials can use to make decisions, while allowing engineers to better manage projects. CEVP is updated every year for major

Montlake Interchange and Surrounding Areas

The photo to the left shows a birds-eye view of the Montlake interchange and surrounding areas as they exist today.

The bottom left image shows a simulated view of how the interchange and the landscaped lid over SR 520 at Montlake would appear with the 6-Lane Alternative.

The bottom right image is a simulated view of the Montlake interchange, the landscaped lid over SR 520 at Montlake, and the Pacific Street interchange and Union Bay Bridge (to the north) with the Pacific Street Interchange option.

projects like SR 520, and represents a "snapshot in time" for a specific project under the conditions known at that point in time.

Depending on the alternative and options selected, the total project cost for planning, design, right-of-way acquisition, and construction would range between $1.7 billion and $3.1 billion. Estimates were developed for a base cost drawn on construction costs prevailing in 2005, and assume that the year of expenditure is 2013, which is the approximate midpoint of construction. Ranges of risk for inflation impacts were based on analysis conducted in 2004. The estimates are presented as a range of probable costs to account for the identified risks and opportunities that were reasonably foreseeable when the estimates were prepared in 2005. The range for each alternative was estimated as follows:[1]

[1] WSDOT. 2005. June 13-16, 2005, Workshop, Final Report and Backup Documentation CEVP® (Cost Estimate Validation Process)

- 4-Lane Alternative: $1.7 billion to $2 billion
- 6-Lane Alternative without options: $2.3 billion to $2.8 billion
- 6-Lane Alternative with options: $2.3 billion to $3.1 billion

Several federal, state, regional, and local funding sources have been identified for the SR 520 project. $500 million for the project was designated for SR 520 from the 2005 Transportation Partnership Account. Combined with $52 million from the 2003 gas tax authorized by the state legislature and an estimated $700 million in toll revenue, this brings the total identified funds for the project to $1.25 billion. These available funds will pay for all environmental work, initial design, some right-of-way purchases, and part of project construction. Although the project has a substantial amount of its necessary funding, additional resources are needed to complete design, right-of-way purchases, and construction. WSDOT will look to secure the remaining funds from both regional and federal sources. In coming years, voters will have additional opportunities to choose whether and how to fund future transportation efforts.

CEVP and Cost Escalation Rates

Cost escalation has recently been increasing at a substantially higher rate than the historical inflation average. Key materials such as steel, structural concrete, and asphalt have increased due to international and domestic factors. These and market conditions have increased cost uncertainty, meaning more contingency may be included in bids. CEVP will be updated annually to include the most recent cost and escalation rates as conditions change.

Who is leading the environmental review for this project?

The NEPA and SEPA require that one or more "lead agencies" take responsibility for the environmental review process. This Draft EIS fulfills both NEPA and SEPA requirements. For the SR 520 project, FHWA is the federal lead agency under NEPA, and WSDOT is the state lead agency under SEPA. Sound Transit is working with WSDOT as a "co-lead" agency under SEPA, but WSDOT serves as the nominal lead agency and is responsible for complying with the duties of the lead agency under the SEPA rules (WAC 197-11-944). The lead agencies oversee the environmental review process. State legislators, elected officials from the affected jurisdictions, staff from these jurisdictions, and representatives of state and federal natural resource agencies all sit on project committees and give advice and/or recommendations to the lead agencies about the scope and content of environmental analysis. The lead agencies also give close consideration to public views on the project. Appendix B, Agency Coordination and Public Involvement, provides more information about project committees and public outreach conducted as part of the environmental review.

Why, and how, was this Draft EIS developed?

This Draft EIS responds to the requirements of NEPA and SEPA. Both laws require that projects with potential for significant adverse environmental effects be reviewed in an EIS. The EIS identifies alternative ways of meeting the project's purpose and need, evaluates these alternatives' effects, positive and negative, on the natural and built environments, and identifies measures to avoid, minimize, or mitigate negative effects. This process

allows decision-makers to include consideration of effects on the environment together with other important considerations such as need, feasibility, and cost. EISs are intended to disclose the effects of a project at a stage in the project where decision-making can still be shaped by the environmental analysis and by the comments of agency and public reviewers.

The document you are reading is the product of several years of technical analysis by engineers, planners, scientists, and other experts, as informed by the ongoing comments and suggestions of public officials and citizens. As the alternatives and options were identified, engineers developed them to a level of detail that would allow them to be evaluated in the environmental analysis. This meant defining their "footprint" on the ground, their vertical profiles, the materials that they would be built with, and the techniques generally to be used in their construction. With this information, environmental analysts could determine the project's effects on the built and natural environments. That in-depth analysis is documented in the 17 discipline reports and Draft Section 4(f) Evaluation that are included as appendices to this Draft EIS. These studies describe the affected environment and how the project would change it in over 2,500 pages of text and exhibits.

This Draft EIS is a summary of the extensive work done for the project. As NEPA provides, it is written for the benefit of readers without special expertise in the disciplines we studied. We designed it to be easily accessible to readers and to present information as concisely as possible in graphics, charts, and text. Readers seeking more detailed information on a particular topic or a specific geographic area can refer to the discipline reports, which cover all topics addressed by this Draft EIS in much greater depth. This approach—rather than writing a large, complex EIS primarily for an audience of federal and state agencies—is designed to allow the many people who use or are affected by the SR 520 corridor to easily understand the project and its effects, while providing ample detail in the appendices to satisfy virtually any reader.

How has the public been involved during the preparation of this Draft EIS?

At the beginning of the environmental analysis and decision-making process, the project team developed and implemented an ongoing program to engage the public and to provide information about the project. This program started with a public involvement plan that established specific goals and activities. We have attempted to reach out to all potentially affected members of the public, including low-income and minority populations and those with limited English proficiency. Some of our activities and resources to encourage public engagement are:

SR 520 project public outreach at University Village

- Newsletters
- Community and agency briefings
- Project Web site
- Media outreach
- Public meetings, workshops, and tours
- Interviews with social service providers and minority and low-income populations
- Outreach to the business community

The process of engaging the local communities during the Draft EIS development has encompassed over 25 open houses, 12 community design workshops, and over 100 community group meetings. Additional information on how the public has had the opportunity to participate to date in the SR 520 project is found in Appendix B, Agency Coordination and Public Involvement. Commenting on this Draft EIS is another very important way for the public to participate in the EIS process. See the last section of this chapter for information on ways to comment.

What groups of people has WSDOT worked with in the public outreach program?

A regional transportation facility like SR 520 affects a large number of people—those who travel on it, those who live and work near it, and, in a broader sense, any person or business that depends upon the region's ability to move people and goods across Lake Washington. WSDOT developed appropriate outreach methods to reach these different audiences. Audiences immediately affected along the SR 520 corridor included:

SR 520 project open house

- Cities and towns, including Seattle, Bellevue, Kirkland, Clyde Hill, Medina, Yarrow Point, and Hunts Point;
- Specific neighborhoods in Seattle, including Montlake, Capitol Hill, Portage Bay/Roanoke Park, Madison Park, University District, Laurelhurst, and Eastlake
- Major employers and institutions such as Microsoft and the University of Washington
- Several Puget Sound Tribes, including the Muckleshoot Indian Tribe, the Duwamish Tribe, and the Confederated Tribes and Bands of the Yakama Nation

The outreach also extended to a broader set of public audiences, which included:

- Commuters who use the corridor to travel via bus or car to and from Seattle and the Eastside
- Businesses that rely on the corridor for movement of employees, goods, and customers
- Chambers of commerce that are interested in transportation issues
- Minority, low-income, and limited English proficiency populations

- Social service and advocacy organizations that work with minority and low-income communities
- Interested groups such as bicycle, environmental, and neighborhood organizations

WSDOT also has worked with a large number of local, state, and federal jurisdictions and agencies that are involved in transportation and natural resource issues around the SR 520 corridor. These agencies are listed in Appendix B, Agency Coordination and Public Involvement.

Another way of increasing the project's reach in the community has been the formation of several committees to assist in developing and evaluating alternatives. The Executive, Technical, and Advisory Committees, described in the sidebar to the right, represent a spectrum of agency and public interests and have advised WSDOT on a regular basis throughout the project. Their involvement has been instrumental in developing the choices and the analysis for this Draft EIS.

What have we learned from these outreach efforts?

Reflecting the wide range of people with interest in the project, the comments received to date represent many viewpoints on what needs to be done in the SR 520 corridor. Some participants in the SR 520 project, such as project committee members, have been involved for many years and are ready for WSDOT to make a decision on the preferred alternative and move the project along into final design, environmental permitting, and construction. Many other public audiences are less engaged in specific points of detail and are more generally interested in ways to address traffic on SR 520 and the ways in which SR 520 affects its neighbors and the environment.

WSDOT keeps and evaluates all of the comments and opinions collected as part of the outreach process, including community events, e-mail, and the project hotline, as well as information and notes from meetings with project committees and interested organizations. Following is a summary of some of the opinions that have been expressed to date.

- Improving traffic flow in the SR 520 corridor is an almost universal priority.
- Neighborhoods adjacent to the SR 520 corridor on both sides of Lake Washington strongly support the inclusion of sound walls and lids.
- Some neighborhoods, especially those in Seattle adjacent to the SR 520 corridor, want the effects of the original freeway construction in the 1960s to be mitigated in ways that were not done when the corridor was first built.
- There is a clear majority opinion that additional capacity for both HOV traffic and transit needs to be included in any improvements to the corridor. No alternative commands complete consensus, but more people,

Three committees have been deeply involved in the alternatives development and environmental review process:

- The **Executive Committee** is made up of elected and agency officials. Its role is to advise WSDOT and co-lead agencies. Committee members receive input from the Technical Committee, the Advisory Committee, and the public in order to provide informed recommendations on scoping, the environmental review process, and selection of the preferred alternative.
- The **Technical Committee** is composed of technical staff from local jurisdictions and transportation and regulatory agencies. This committee reviews all technical aspects of the project, including transportation data, proposed alternative designs, and environmental effects. Its members advise the project team and provide input to the Executive Committee.
- The **Advisory Committee** is made up of citizens and interest group representatives. A valuable source of information for the public involvement program, its members were appointed by the Executive Committee to serve as a conduit for issues that are raised in the broader community. Advisory Committee members also serve as a resource to assist in identifying public involvement activities and support those efforts in the community.

Members of all three committees participated in the alternatives development process by reviewing community enhancement ideas, transportation data, and cost assessment findings. They also reviewed environmental findings and analyses of high-capacity transit alternatives, and recommended the alternatives to be analyzed in this Draft EIS. Appendix B, Agency Coordination and Public Involvement, provides additional information.

municipalities, and neighborhoods appear to support a 6-lane corridor rather than a 4-lane corridor.

- Regarding the Pacific Street Interchange option, the University of Washington, the Arboretum, and Seattle residents in some locales are concerned about potential effects of the options on the interests of their institutions or the environment. However, the Montlake Community Club supports the Pacific Street Interchange option, and others support its potential transportation benefits.
- There is strong support to ensure that the floating bridge replacement is constructed to allow space to incorporate high-capacity transit in the future.

What are the next steps?

NEPA allows lead agencies to identify a preferred alternative at the Draft EIS stage or to wait until the Final EIS is published. WSDOT, FHWA, and Sound Transit will not formally identify a preferred alternative for the Final EIS until after this Draft EIS is issued and the public has had an opportunity to comment on the choices. After circulating the Draft EIS and receiving comments from agencies and the public, the co-lead agencies expect to identify a preferred alternative for the SR 520 project in late 2006.

The preferred alternative may be one of the alternatives described in this document, or it may be a variation or combination of options. Comments on the Draft EIS will be a key consideration in identifying the preferred alternative. The lead agencies will also ask the project's Technical and Advisory Committees for their opinions, and Executive Committee member agencies will offer formal recommendations. In addition, the lead agencies will request concurrence from state and federal natural resource agencies on the preferred alternative to streamline the process for future environmental permits and approvals. After considering the information in the Draft EIS, public comments, and the committee recommendations, the co-lead agencies will identify the preferred alternative to be included in the Final EIS.

When a preferred alternative is identified, additional work will begin. WSDOT will further develop the engineering design for the project and begin to prepare concepts for project phasing, construction staging, and construction techniques. We may, if necessary, do additional environmental analysis, such as revising discipline reports to reflect updated project information. Identifying the preferred alternative also will allow us to develop more specific mitigation measures. These measures will be developed by WSDOT, and the co-lead agencies, in cooperation with the affected jurisdictions and resource agencies.

Some work that began during the Draft EIS development will also continue after publication of this document. For example, archaeological

investigations are ongoing to determine the nature and extent of cultural resources in the project area in accordance with the National Historic Preservation Act. Consultation with Tribes will continue, both with respect to cultural resource considerations and to issues presented within the framework of the Centennial Accord. A Design Advisory Group is working with WSDOT to identify aesthetic design features that would improve the appearance of the SR 520 corridor. Project engineers are developing plans for responding to the potential catastrophic failure of the SR 520 bridges in an earthquake or windstorm. The results of these additional analyses, including work done to define the preferred alternative, will be incorporated into the Final EIS, which will be published by late 2007 after the preferred alternative is identified. The Final EIS also will include all comments received on the Draft EIS during the public comment period, and the lead agencies' responses to these comments.

When the Final EIS has been issued, FHWA will prepare a Record of Decision, which documents the course of action it has decided upon as the federal lead agency. It identifies the selected alternative, explains the alternatives considered, and specifies an "environmentally preferable alternative." It also explains how the lead agencies plan to implement mitigation measures and conservation actions in compliance with NEPA and other laws.

DEFINITION

The Centennial Accord Plan

The Centennial Accord Plan was created in accordance with the 1989 Centennial Accord and the 1999 Centennial Accord Implementation Guidelines. The Centennial Accord mandated that each state agency must have a procedure to implement effective government-to-government relations. The WSDOT Centennial Accord Plan includes the WSDOT Tribal Consultation Policy (Adopted by the Transportation Commission on February 19, 2003); a Dispute Resolution Policy; and detailed descriptions of the programs, services, and funding each of the WSDOT divisions and offices offer to the tribes.

How can I be involved?

WSDOT, FHWA, and Sound Transit want the decision on a preferred alternative to be made with contributions from as many people as possible. The best way to be involved is to comment on this Draft EIS. WSDOT will respond to all substantive comments and will evaluate them carefully in determining the preferred alternative. There are several ways to provide comments:

- **Attend a public hearing on the Draft EIS.** WSDOT will hold three public hearing events in September 2006. Each will feature exhibits on the project; team members to answer questions; and the opportunity to comment in writing, on a computer, or by talking to a court reporter. Times and locations for these events are listed in the sidebar to the right.
- **Use the Web to comment on the Draft EIS.** WSDOT has posted links to the full text of the Draft EIS on its Web site at *www.wsdot.wa.gov/projects/SR520Bridge*. You can make comments on the Draft EIS directly at *www.sr520deiscomments.com*. The comment period ends at midnight on October 2, 2006. The comments will be compiled into a database that WSDOT staff will review. WSDOT will respond to all comments.

PUBLIC HEARINGS

Sept. 14, 2006

Hoquiam High School
501 West Emerson, Hoquiam
5:00 - 7:00 p.m.

Sept. 18, 2006

Museum of History and Industry
2700 24th Avenue East, Seattle
4:00 - 7:00 p.m.

Sept. 21, 2006

St. Luke's Lutheran Church
3030 Bellevue Way Northeast
Bellevue
4:00 - 7:00 p.m.

- **Provide written comments by mail.** You can write comments of any length and mail it (to be postmarked by October 2, 2006) to:

  Paul Krueger
  Environmental Manager
  SR 520 Project Office
  414 Olive Way, Suite 400
  Seattle, WA 98101

After the comment period has closed on October 2, 2006, WSDOT will continue to keep the public informed about decision-making and opportunities for input. If you provide your name and address when you comment, we will add you to the project mailing list, which allows you to receive regular newsletters and/or e-mail updates. If you have no comments on the Draft EIS but would still like to stay informed, get onto the mailing list by logging onto our Web site at *www.wsdot.wa.gov/projects/SR520Bridge* or calling the project hotline at 206-781-3922.

We look forward to hearing from you!