



Chapter 2: Alternatives

This chapter begins with a description of how the alternatives for SR 520 were developed and evaluated, from the Trans-Lake Washington Study through the identification of the Preferred Alternative. The second part of the chapter provides a detailed description of the Preferred Alternative in comparison to the No Build Alternative and the three 6-Lane Alternative design options (A, K, and L) that were evaluated in the SDEIS.

Planning for the SR 520 corridor began in 1998 with the work of the Trans-Lake Washington Study, initiated by the legislature to explore ways of improving mobility across and around Lake Washington. Many potential solutions for the corridor have been developed and evaluated since that time. The first part of this chapter summarizes how WSDOT, FHWA, and numerous stakeholders have worked through the years to identify and screen potential alternatives and design options. It provides an overview of the project's NEPA process and the alternatives and design options that have been evaluated. The *Range of Alternatives and Options Evaluated* report (Attachment 7) provides additional detail on alternatives analysis from 1998 to 2009.

In April 2010, after consideration of comments received on the SDEIS, FHWA and WSDOT announced a Preferred Alternative for the SR 520, I-5 to Medina project. The second part of this chapter describes the characteristics of the Preferred Alternative and how it responds to input from agencies, tribes, and the public. It also compares the Preferred Alternative to the 6-Lane Alternative design options (A, K, and L) that were evaluated in the SDEIS.

2.1 How were the alternatives and design options for SR 520 identified and evaluated during project scoping?

In the Trans-Lake Washington Study, a 47-member stakeholder group evaluated a broad range of potential modes and routes for crossing Lake Washington. The concepts the group considered included new project

corridors (for example, a crossing from Sand Point to Kirkland); different crossing methods, such as tubes and tunnels; new travel modes, such as ferries or rail; and the management of travel demand through tolling or land use changes.

These concepts were screened, and the most promising were combined into “solution sets,” which ultimately formed the basis for the alternatives evaluated in the Draft EIS. The study recommended that the following configurations of SR 520 be carried forward as build alternatives:

- “Minimum Footprint” alternative (maintain existing four general-purpose lanes with improved shoulders and bicycle/pedestrian access)
- Add one HOV lane in each direction, for a total of six lanes
- Add one HOV and one general-purpose lane in each direction, for a total of eight lanes

The study also recommended that the 6-lane and 8-lane alternatives be evaluated with and without high-capacity transit (HCT) in the corridor because no regional decision had yet been made on whether SR 520 or I-90 would be the initial corridor to carry HCT across the lake to the Eastside. A more detailed description of the Trans-Lake screening process and results is included in the Range of Alternatives and Options Evaluated Report in Attachment 7.

In 2000, FHWA, WSDOT, Sound Transit, and the Federal Transit Administration (FTA) initiated the EIS for what was then called the Trans-Lake Washington Project. This included establishing a series of committees (Executive, Technical, and Advisory) to help provide project oversight and guidance. The committees collaborated with the project leads on the development of the project purpose and need statement (discussed previously) and two levels of screening criteria, based on effectiveness, environmental effects, and cost (described in the Range of Alternatives and Options Report in Attachment 7) to be used in evaluating how well alternatives met the purpose and need.

Public scoping for the project was conducted from June to August 2000. To gather input, WSDOT held public meetings and community briefings, distributed newsletters, and set up a project website and hotline. During the scoping period, the following potential alternatives were suggested:

- No Build
- Minimum footprint
- HOV lanes only
- Bus and vanpool lanes only
- General-purpose lanes only
- Conversion of existing lanes to HOV or transit

- Combinations of general-purpose and HOV lanes
- HOV tunnel
- New crossing between Sand Point and Kirkland
- HCT in SR 520 corridor
- HCT in I-90 corridor
- New cross-lake HCT corridors (not on SR 520 or I-90)
- Passenger ferry
- New arterial connections
- Increased effectiveness/investment in travel demand management

WSDOT evaluated all these potential solutions using the first-level screening criteria. The alternatives identified to be carried forward to second-level screening were:

- No Build
- Minimum footprint
- HOV lanes only
- Combinations of general-purpose and HOV lanes
- Bus and vanpool lanes only
- HCT in SR 520 corridor (seven route options)
- HCT in I-90 corridor (two route options)
- New mid-lake HCT corridor

Through the screening process, the co-lead agencies reached the conclusion that I-90, rather than SR 520, would be the initial east-west corridor for fixed-guideway (i.e., rail) HCT, although SR 520 would continue to be studied as a potential route for bus rapid transit (BRT) if HOV lanes were included in the new design. Based on this decision, FTA ceased participating as a co-lead agency in the SR 520 program. See Section 2.4 for more information on the history of regional high-capacity transit planning for the SR 520 and I-90 corridors.

As part of the screening process, WSDOT also evaluated the available technical options for crossing Lake Washington. Although the facility characteristics had not yet been defined, the evaluation assumed two, three, or four travel lanes in each direction (with or without HCT) as well as pedestrian and bicycle access. The structural solutions evaluated included bored tunnels below the lake bottom, sunken tunnels on the lake bottom, floating tunnels immersed below the lake surface, floating bridges on the lake surface, and fixed bridges above the lake surface. Because of their high cost, environmental concerns, design and geotechnical risks associated with lakebed soils, and limited ability to connect with surface roads and ramps, tunnels were dismissed from further consideration. Although some fixed bridge designs could have been feasible, they had much higher costs than a

Why can't SR 520's vulnerable bridges be retrofitted?

WSDOT has performed several evaluations of the potential to retrofit the existing bridges for safety rather than building new structures. Retrofitting has been studied for both the floating bridge and the fixed structures. These studies have concluded the following:

- The floating bridge has already undergone extensive repairs, which have reduced its buoyancy; cracks in the structure leak water that WSDOT must pump on a regular basis. Additional repairs would add more weight and are not feasible.
- Although it is technically feasible to retrofit the fixed bridges, the cost and environmental impact of doing so would be almost as high as that of building new structures. The retrofitted bridges would have a much shorter life span than new bridges, so a retrofit is not cost-effective.

floating bridge and would have had high environmental and visual impacts. As the lowest-cost and lowest-impact solution, a floating bridge was recommended as the preferred crossing technique.

The second-level screening process resulted in the following recommendations by the project's Executive Committee in January 2002:

- Continue analyzing the 4-Lane Alternative, built to current standards.
- Evaluate the 6-Lane Alternative with an HOV lane that could be used for BRT, with and without an additional Montlake Cut crossing.
- Carry forward the 8-Lane Alternative, consisting of three general-purpose lanes plus one HOV/BRT lane in each direction.
- Support the Sound Transit Phase II vision of placing fixed-guideway HCT in the I-90 corridor first.
- Accommodate long-term future exclusive right-of-way for HCT on SR 520, taking into account maximum flexibility for HCT technologies.
- Evaluate significant investment in travel demand management.

Table 2-1 provides an overview of the project's NEPA process and alternatives and the design options that have been evaluated.

Table 2-1. History of SR 520, I-5 to Medina Project NEPA Process and Alternatives		
Trans-Lake Washington Study (1998 –1999)		
NEPA/Project Element	Goal/Purpose and Need	Address traffic congestion across and around Lake Washington.
	Screening	Study committee identified and evaluated potential solutions.
	Alternatives	Seven "solution sets" representing different mixes of roadway, transit, transportation demand management and transportation systems management solutions developed
Process	6-Lane Design Options	N/A
	Activities	Identified and evaluated potential solutions: new corridors, new modes (ferry, high-capacity transit), increased capacity on existing corridors, crossing methods (tubes, tunnels), demand management.
	Recommendations and Outcomes	Move forward with improvements to SR 520. Prepare EIS to evaluate the following alternatives: No Build, 4-Lane, 6-Lane (with and without HCT), 8-Lane (with and without HCT).
EIS Initiation and Alternatives Screening (2000 – 2002)		
NEPA/Project Element	Goal/Purpose and Need	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 impacts on affected neighborhoods and the environment.
	Screening	Two levels of screening criteria developed from Purpose and Need and applied to Trans-Lake alternatives.
	Alternatives	Project corridor alternatives evaluated: No Build, 4-Lane, 6-Lane, 8-Lane.

Table 2-1. History of SR 520, I-5 to Medina Project NEPA Process and Alternatives

Process	6-Lane Design Options	N/A
	Activities	Developed Purpose and Need statement based on Trans-Lake findings. Established screening criteria.
	Recommendations and Outcomes	Evaluate No Build, 4-Lane, and 6-Lane Alternatives in DEIS. Do not further evaluate 8-Lane Alternative. Do not further evaluate new corridors and crossing methods due to risk, impacts, and cost. Continue regional planning assumptions of I-90 as initial HCT corridor. Defer HCT on SR 520 in near term, but provide long-term compatibility.
Draft EIS (Released August 2006)		
NEPA/Project Element	Goal/Purpose and Need	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 impacts on affected neighborhoods and the environment.
	Screening	Design options proposed by community members were screened using original criteria.
	Alternatives	Project corridor alternatives evaluated: No Build, 4-Lane, 6-Lane, 8-Lane (described rationale for dropping), Eastside options.
Process	6-Lane Design Options	Evaluated: Pacific Street Interchange (PSI), Second Montlake Bridge, No Montlake Freeway Transit Stop.
	Activities	Conducted coordination and outreach with local jurisdictions, resource agencies, and the public. Prepared and published Draft EIS incorporating evaluation of No Build, 4-Lane, and 6-Lane Alternatives and 6-Lane design options. Seattle City Council Resolution 30974 provided guidance on design elements and mitigation measures to be included in replacement alternative.
	Recommendations and Outcomes	Traffic modeling identified 6-Lane Alternative as better meeting Purpose and Need. 4-Lane does not meet mobility portion. 6-Lane Alternative improves mobility overall. PSI option provides best local mobility in Seattle, but increases impacts to wetlands, aquatic habitat, and parks compared to 6-Lane base. Gov. Gregoire identified 6-Lane Alternative as “best serving needs of regional transportation system.”
Supplemental Draft EIS (Released January 2010)		
NEPA/Project Element	Goal/Purpose and Need	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 impacts on affected neighborhoods and the environment.
	Screening	Mediation group identified shortlist of options (A, K, L); FHWA and WSDOT agreed to evaluate.
	Alternatives	Draft EIS 6-Lane Alternative and design options dropped from further analysis. SDEIS evaluated: No Build, 4-Lane (traffic analysis only), 6-Lane with design options noted below.
Process	6-Lane Design Options	Evaluated: Option A: new Montlake bascule bridge; Option K tunnel under the Montlake Cut and lowered SPU; Option L diagonal bridge over the Montlake Cut and surface SPU.
	Activities	Legislation (ESSB 6099) directed development of a 6-lane corridor interchange design for the Montlake area through a mediated community involvement process. Seattle City Council Resolution 31109 comments on results of mediation and confirms City recommendations for corridor. Mediation explored 12 design options

Table 2-1. History of SR 520, I-5 to Medina Project NEPA Process and Alternatives

		but did not reach a consensus solution. Prepared discipline reports to evaluate the impacts of Options A, K, and L. Conducted coordination and outreach with agencies and the public. Legislative Workgroup created by legislation (ESHB 2211) recommended Option A with suboptions.
	Recommendations and Outcomes	4-Lane Alternative not further considered after updated traffic analysis confirms it fails to meet Purpose and Need. Mediation participants agree on three options to carry forward: A, K, and L. WSDOT evaluates A, K, and L in the SDEIS. Preferred Alternative identified following comments on SDEIS.
Final EIS (Released June 2011)		
NEPA/Project Element	Goal/Purpose and Need	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 impacts on affected neighborhoods and the environment.
	Screening	N/A
	Alternatives	No Build and Preferred Alternative.
Process	6-Lane Design Options	Options A, K, and L compared to Preferred Alternative.
	Activities	Prepare final evaluation of Preferred Alternative and compare to SDEIS design options.
	Recommendations and Outcomes	Proceed with preparation of Record of Decision.

N/A = not applicable

2.2 What were the alternatives and design options studied in detail in the Draft EIS?

Between 2003 and 2005, the SR 520 team advanced conceptual design of the corridor alternatives and conducted transportation and environmental analysis for the Draft EIS. During this time, the 8-Lane Alternative was dropped from further evaluation because transportation analysis showed that the increased traffic flow on SR 520 would necessitate extensive improvements and major impacts on I-5 and the SR 520/I-405 interchange. Thus, only the 4-Lane and 6-Lane alternatives were studied in the Draft EIS. Both build alternatives were assumed to be tolled to provide funding for the project.

- The 4-Lane Alternative** evaluated in the Draft EIS would replace the existing SR 520 corridor with two general-purpose lanes in each direction—the same as today—and would include wider lanes and shoulders to meet current highway standards. All of the vulnerable structures in the corridor would be replaced with new structures, but no HOV and transit capacity would be added. While the 4-Lane Alternative improved safety and reliability in the corridor, the Draft EIS traffic analysis showed that it did not meet the project purpose of improving the movement of people and goods across SR 520.

- **The 6-Lane Alternative** evaluated in the Draft EIS included two general-purpose lanes and one inside HOV lane in each direction, along with wider lanes and shoulders to meet current highway standards. It would replace all of the corridor’s vulnerable structures and add new capacity for transit and carpooling. Unlike the 4-Lane Alternative, the 6-Lane Alternative included lids across SR 520 designed to help reduce the effects of adding two new lanes to the corridor and to connect communities on either side of the highway. The Draft EIS analysis indicated that the 6-Lane Alternative would fully meet the project purpose, because in addition to improving safety and reliability by providing new bridges and wider lanes, it would increase mobility for people and goods by including continuous HOV lanes throughout the corridor.

What were the Draft EIS 6-Lane Alternative design options?

In 2005, after the 6-Lane Alternative had been developed and discussed with project stakeholders, neighborhoods adjacent to the highway expressed concern that the 6-Lane Alternative, as then configured, was too wide in the Montlake interchange area. Communities and transit agencies also expressed interest in developing better connections between SR 520 and proposed regional transit facilities. In response, WSDOT worked with stakeholders to develop several additional “design options”—different configurations of the 6-Lane Alternative within the Montlake interchange area that would reduce the 6-Lane Alternative’s effects and/or enhance its benefits. The Draft EIS evaluated three 6-Lane Alternative design options in Seattle:

- **The Pacific Street Interchange option** proposed to consolidate the existing Montlake and Lake Washington Boulevard interchanges into one new interchange, located east of the existing Montlake interchange. It also included a 4-lane bridge over Union Bay, terminating at the existing intersection of Montlake Boulevard East and Pacific Street. This option was designed to provide more reliable transit connections to the Montlake multimodal center and the future Sound Transit Link light rail station near Husky Stadium.
- **The Second Montlake Bridge option** proposed a second drawbridge across the Montlake Cut, parallel to the existing Montlake Bridge. Like the Pacific Interchange option, it eliminated the Montlake freeway transit station, but provided more reliable connections to the Montlake multimodal center and the Link light rail station at Husky Stadium.
- **The No Montlake Freeway Transit Stop option** proposed to eliminate this freeway transit station, independent of other design changes. This would require relocation of transit riders and services currently using the facility.

The *SR 520 Bridge Replacement and HOV Project Draft EIS* (WSDOT 2006a), which evaluated the alternatives and options described above, was published in August 2006. The Draft EIS text is included in Attachment 12.

What types of comments did FHWA and WSDOT receive on the Draft EIS?

The Draft EIS comment period lasted from August 18 to October 31, 2006. Interested parties commented on the document online, by mail, by e-mail, and at two public hearings. In all, WSDOT received 1,734 comments from agencies, tribes, organizations, and individuals. Chapter 11 provides additional detail on the number and nature of comments received.

The largest proportion of comments from the public expressed a preference for or against one or more of the 6-Lane Alternative design options. The Pacific Street Interchange option generated over 800 of these comments, far more than any other design option. Many commenters from the Montlake community expressed strong support for this option, while commenters from other areas voiced concerns regarding its impacts and expense. Parks, and in particular the Washington Park Arboretum and its natural areas, were a topic of concern; over 40 botanical gardens around the United States sent letters opposing the Pacific Street Interchange because it had larger effects on this park than other options. Other comments from the public focused on traffic, transportation systems, and transit; urban design and aesthetics; neighborhood impacts; and other topics such as tolling, noise, bicycle and pedestrian access, and wetlands.

Government agencies, institutions, and tribes submitted 36 comment letters during the Draft EIS comment period. Common themes included the need for more detailed discussion of project effects, especially during construction; the importance of avoiding and minimizing impacts as part of project design; and the need for more specific mitigation measures to be provided in the Final EIS. A number of resource agencies and the University of Washington expressed specific concerns about the Pacific Street Interchange design option, including statements that it had a higher potential for substantial effects than other choices and that it was the most environmentally damaging. These concerns were based primarily on the larger in-water footprint of this option compared to the other 6-Lane Alternative options and its effects on wetlands in the Arboretum, including on Marsh Island. Because the interchange would have required a substantial amount of land from the University of Washington's south campus, the University stated in its comment letter that "the Pacific Street Interchange option appears to be the one that would have the greatest negative impacts on our mission."

WSDOT's responses to the comments received on the Draft EIS are summarized in the Draft EIS Comment Summary Report in Attachment 13. Because many of the topics raised in these comments have

been addressed in subsequent analyses, WSDOT has prepared summary responses that address key themes in the comments. The original comment letters are also provided in Attachment 13 on the DVD attached to the Executive Summary rather than printed.

2.3 What alternatives and design options were studied in the SDEIS?

How did WSDOT move forward following the Draft EIS?

In December 2006, in a report entitled *A Path Forward to Action* (Gregoire 2006), Governor Christine Gregoire identified the 6-Lane Alternative as the state's preference for the SR 520 corridor. Governor Gregoire stated:

I believe the needs of the regional transportation system will best be served by an alternative that replaces the four existing general-purpose lanes and adds two HOV lanes to strengthen regional transit services. The ongoing environmental review process provides support for this approach.

However, the Governor noted the diversity of public opinions expressed in the Draft EIS and through public outreach efforts regarding the configuration and effects of the 6-Lane Alternative and its design options. She concluded:

The impacted communities on the west end of the project need to determine what design from Union Bay and westward to I-5 will best serve the neighborhoods, the University of Washington, and parks and natural resources. City and community leaders and residents need to come together and develop a common vision on the best solution that fits the character and needs of the local communities. I have asked WSDOT to provide support when requested for such a process.

In spring 2007, responding to the Governor's request, the Washington State Legislature passed Engrossed Substitute Senate Bill (ESSB) 6099. The bill directed the Office of Financial Management to hire a mediator and appropriate planning staff to develop a 6-lane corridor design for the Seattle portion of the project area. Specifically, the bill directed the mediation group to prepare a project impact plan to address the impacts of the SR 520 Bridge Replacement and HOV Project's design on Seattle city neighborhoods and parks. The bill also directed that the project impact plan provide a comprehensive approach to mitigating the impacts of the project, including incorporating construction mitigation plans. It required that the plan be submitted to the Governor and legislature by December 2008.

Legislative goals identified for ESSB 6099 included the following:

- Minimize the total footprint and width of the bridge.
- Minimize the project impact on surrounding neighborhoods.

- Incorporate the recommendations of a health impact assessment.
- Effectively prioritize travel time, speed, and reliability.
- Provide six total lanes, with four general-purpose lanes and two HOV lanes.
- Articulate in environmental documents the alignment of the selected design.

Who participated in mediation?

The mediation participants were identified through interviews with a broad range of stakeholder organizations, including those identified in the legislation and others who had been actively involved with the SR 520 project during development of the Draft EIS. (See the text box at right for a list of organizations that were represented in the mediation group.) Over the course of 2008, the mediation participants developed and reviewed more than a dozen design options for the configuration of SR 520 through Seattle.

What were the design options developed through mediation?

The mediation participants brainstormed design options that were aimed at meeting identified community interests. Nearly all focused on the area between the Portage Bay Bridge and the western end of the floating bridge. The design options (designated with the letters A through L) included the following:

- **Option A.** Redesign of the Montlake interchange options evaluated in the Draft EIS to address Seattle City Council resolution elements and Draft EIS comments.
- **Option B.** Redesign of the Pacific Street Interchange design option evaluated in the Draft EIS to address Seattle City Council resolution elements and Draft EIS comments.
- **Option C.** Evaluation of the following “full tunnel” options:
 - Tunnel from the floating bridge to I-5 with no access points in Seattle, with a separate 2-lane bus tunnel from the floating bridge to the light rail station, and with a vertical profile 50 feet below grade. Reconfigured I-5 to remove the weave—all entrances/exits would be on the right side. Reclaimed SR 520 right-of-way would be used for a trail and park.
 - Tunnel from the floating bridge to I-5 with distributed access points.
- **Option D.** Retrofit of the current 4-lane bridge with a separate 2-lane tunnel for transit to the light rail station (separate structure across the lake and then a tunnel from the floating bridge).

Organizations Represented in the Mediation Group

- WSDOT
- Sound Transit
- Office of the Governor (representing state agencies, including the Departments of Ecology, Fish and Wildlife, Archaeology and Historic Preservation, Natural Resources, and the Recreation and Conservation Office)
- University of Washington
- King County Metro Transit
- Seattle Mayor's Office
- Seattle City Council
- Seattle Design Commission
- Arboretum Foundation/Arboretum and Botanical Garden Committee
- Cascade Bicycle Club
- Friends of Seattle's Olmsted Parks
- Transportation Choices Coalition
- Boating Community
- Greater Seattle Chamber of Commerce
- Bellevue Chamber of Commerce
- Freight Advisory Committee
- Montlake Community Council
- Madison Park Community Council
- Roanoke/Portage Bay Community Council
- Laurelhurst Community Council
- University District Community Council
- North Capitol Hill Community Council
- Eastlake Community Council
- Ravenna Bryant Community Association
- City of Yarrow Point
- City of Medina
- City of Clyde Hill
- City of Hunts Point
- City of Bellevue
- City of Kirkland
- FHWA
- National Marine Fisheries Service (also representing U.S. Fish and Wildlife Service and fishery interests)
- U.S. Coast Guard
- Washington State Legislature (one seat available to any legislator who wished to attend a mediation session)

- **Option E.** A car/bus tunnel to the University of Washington, with a submerged exit/entrance just west of the floating bridge under Union Bay that would surface at Pacific Street.
- **Option F.** Second Montlake Cut bridge—design would emulate and reflect, but not copy, the historic bridge.
- **Option G.** Tunnel and viaduct—tunnel from the floating bridge under the Washington Park Arboretum with a viaduct through Portage Bay.
- **Option H.** Similar to the Draft EIS Pacific Street Interchange design option, with a refined single-point urban interchange (SPUI) northeast of the Washington Park Arboretum (interchange with two levels), and a bridge to Pacific Street and Lake Washington Boulevard.
- **Option I.** Retrofit with revised alignment and tunnel to the north of the Washington Park Arboretum, with a “people mover” below ground from the transit station to the University of Washington and a second Montlake Cut bridge.
- **Option J.** Interchange between the Montlake and Pacific Street Interchange options from the Draft EIS, with a short tunnel, a spur to Lake Washington Boulevard, an intersection under the main line, and no Washington Park Arboretum ramps.
- **Option K.** Tunnel in Washington Park Arboretum and East Montlake interchange with a tunnel under the Montlake Cut to the Pacific Street and Montlake Boulevard East intersection.
- **Option L.** Interchange east of Montlake Boulevard East (similar location as in Option K above), with a bridge across the east end of the Montlake Cut instead of a tunnel.

How were the mediation options evaluated, and what were the conclusions?

Mediation participants evaluated and refined design options at monthly meetings that were held from November 2007 through December 2008. The meetings included presentations from WSDOT, independent experts, and the mediation participants. More information on how the mediation options were evaluated can be found in the Final Project Impact Plan (Parametrix 2008) and the Agency Coordination and Public Involvement Discipline Report Addendum and Errata (Attachment 7).

In February 2008, mediation members agreed to focus on Options A, K, and L with various suboptions for each. Subsequent meetings of the mediation group focused on refining these options to more closely meet the goals of mediation participants. The mediation design options ultimately agreed upon by the group were described in the Final Project Impact Plan (Parametrix 2008). As noted above, WSDOT agreed to evaluate these design options in an SDEIS. As required by NEPA and SEPA, the SDEIS objectively analyzed and disclosed the effects of the project with each of the

design options. WSDOT continued to work with resource and permitting agencies and tribes to share information on the design options and to ensure that the analysis reflected the regulatory and treaty requirements with which the project must comply. The SDEIS reflected the results of this coordination and provided information on how the design options perform with regard to mobility, safety, and environmental effects.

What were design options A, K, and L?

Design options A, K, and L, shown in Exhibit 2-3 in the section *What is the Preferred Alternative?*, represented three possible configurations of the 6-Lane Alternative in Seattle. Their greatest physical differences were in the Montlake Cut crossing, the location of the interchange in the Montlake area, and the profile of the west approach bridge connecting the Evergreen Point Bridge floating span with the Montlake shoreline. The options are described briefly below and are compared to the Preferred Alternative in more detail later in this chapter. Like the Draft EIS alternatives and options, all of the SDEIS design options were assumed to be tolled to provide funding for the project.

Option A was most similar to today’s configuration, but had six lanes (four general-purpose and two HOV lanes) rather than the existing four general-purpose lanes. It maintained the existing location of the Montlake interchange and added a new bascule bridge over the Montlake Cut, parallel to the existing Montlake Bridge. Its profile rose from the west shore of Union Bay to a height of 15 to 20 feet over Foster Island, descended to a low point east of Foster Island, and then rose again to meet the west transition span. Evaluated with Option A were three potential suboptions:

- Add an eastbound HOV direct access ramp from Montlake Boulevard.
- Add an eastbound on-ramp and a westbound off-ramp between SR 520 and Lake Washington Boulevard.
- Use the Option L profile for the west approach bridge, which maintained a constant slope from the Montlake shoreline to the west highrise.

Option K included a new single-point urban interchange about a half mile east of the existing Montlake interchange. The new interchange ramps would pass beneath the SR 520 roadway, with the northern leg of the interchange crossing beneath the Montlake Cut in a tunnel. The profile of Option K would remain low throughout the west approach area; on Foster Island, the roadway would be excavated to about 4 feet below the existing grade to accommodate construction of a “land bridge” over the top.

Option K had one potential suboption: the addition of an eastbound off-ramp from SR 520 to Montlake Boulevard.

Option L also included a SPUI with an alignment similar to Option K. However, instead of being beneath the SR 520 mainline, the interchange



Is it a highrise or a transition span?

A transition span is a bridge span that connects the fixed approach bridges to the floating portion of the bridge. The Evergreen Point Bridge has two transition spans, one at the west end of the floating bridge transitioning traffic on and off of the west approach, and one on the east end of the floating bridge transitioning traffic on and off of the east approach. These spans are often referred to as the “west highrise” (shown) and the “east highrise” during the daily traffic report, and the west highrise even has a traffic camera mounted on it.

For the FEIS, highrise and transition span are used interchangeably, and refer to the area along the bridge where the east and west approach spans transition to the floating span.

The existing highrises have two characteristics—large overhead steel trusses and navigation channels below the spans where boat traffic can pass underneath the Evergreen Point Bridge. The new design for the floating bridge would not include overhead steel trusses on the transition spans, which would change the visual character of the highrise.

ramps would rise above it. The northern leg of the interchange would cross the Montlake Cut at a diagonal on a new bascule bridge. The west approach would rise at a constant slope from the west shore of Union Bay to the west transition span, with an elevation of approximately 10 to 15 feet above Foster Island. Option L had two potential suboptions:

- Add one northbound lane to Montlake Boulevard from Pacific Street to 25th Avenue NE.
- Add left-turn access from Lake Washington Boulevard to the SPUI south ramp.

All of the design options placed an emphasis on multimodal transportation by decreasing reliance on single-occupancy vehicle travel and facilitating transit connections. All would improve the overall flow of SR 520 traffic compared to the No Build Alternative. Each included a number of common elements of the 6-Lane Alternative, such as landscaped lids, stormwater treatment, and a regional bicycle/pedestrian path, although details of those features differed among the options. While the design options varied mainly in the Montlake area, other differences included the width and the type of aesthetic treatment to be used for the Portage Bay Bridge, as well as the roadway profile across Foster Island and eastward to the floating bridge.

Why were alternatives and design options in the Draft EIS not considered in the SDEIS?

The 4-Lane Alternative was identified in the Draft EIS as not fully meeting the project purpose and need. While it would improve safety by replacing vulnerable structures and widening lanes and shoulders, it would not meet the project purpose of improving mobility in the SR 520 corridor. Additional modeling for the SDEIS, using the same updated traffic model used to estimate travel demand for Options A, K, and L, confirmed that the 4-Lane Alternative would provide substantially lower mobility benefits than the 6-Lane Alternative for both general-purpose traffic and transit. Therefore, the 4-Lane Alternative was eliminated from further study.

The 6-Lane Alternative design options evaluated in the Draft EIS were also eliminated from consideration. As discussed above, public comments on the Draft EIS expressed strong opinions either for or against specific design options. A plurality of the comments expressed strong support of the Pacific Street Interchange option; however, comments from members of the public, environmental resource agencies, and the University of Washington reflected serious concerns about the impacts of this option. Findings by the Seattle City Council indicated that the 6-Lane Alternative and design options, as described in the Draft EIS, were too wide through the corridor and that mitigation for their construction effects needed to be further defined. The level of controversy and concern generated by the Draft EIS design options was a key factor leading to the establishment of

the mediation process. Consequently, the design options resulting from mediation were the only ones considered in the SDEIS. The 6-Lane Alternative studied in the SDEIS was also narrowed throughout the corridor to reduce its overall footprint.

As noted earlier, the Trans-Lake Washington Project also evaluated an 8-Lane Alternative, which was one of the original alternatives recommended by the Trans-Lake Study Committee. Various studies indicated that this alternative would not perform effectively due to existing bottlenecks at I-5 and I-405. On the basis of these findings, the 8-Lane Alternative was eliminated from further study prior to the Draft EIS.

ESHB 2211 and the SR 520 Legislative Workgroup

In May 2009, after the mediation process had ended, Governor Gregoire signed Engrossed Substitute House Bill (ESHB) 2211, which authorized tolling on the Evergreen Point Bridge beginning in 2010 and set the budget for the SR 520 Program at \$4.65 billion. The bill also established a legislative workgroup on SR 520, which was charged with the following responsibilities:

- Recommend design options that provide for a full SR 520 corridor project that meets the needs of the region's transportation system, while providing appropriate mitigation for neighborhoods and communities in the area directly affected by the project. The group was also tasked with identifying projects in the corridor for which WSDOT would apply for federal stimulus funds under the American Recovery and Reinvestment Act of 2009.
- Review and recommend a financing strategy, in conjunction with WSDOT, to fund the projects in the SR 520 corridor that reflect the recommended design options.
- Present a final report with recommendations on financing and design options to the legislature and the Governor by January 1, 2010.
- Form a subgroup to conduct a detailed review of design options between I-5 and the west end of the floating bridge, consult with affected neighborhood and community groups, and make recommendations.

The legislative workgroup met from July through December 2009. The group received extensive input from mediation participants about ideas for modifying the design options to reduce cost and/or to better achieve project objectives. WSDOT assisted with layout of the new concepts and provided information to support the work of an expert review panel, which validated WSDOT's budget and schedule estimates. The workgroup also solicited advice from resource agencies, local jurisdictions, the Seattle Parks Department, the Coast Guard, and other stakeholders. State budget officials

and financing specialists identified potential funding sources and scenarios for the project.

New ideas proposed to the workgroup by the mediation participants included the following:

- Option A+, which would add Lake Washington Boulevard ramps and an eastbound HOV direct-access ramp to Option A to increase mobility, as well as a constant-slope profile for the west approach to improve stormwater drainage and treatment. These proposed changes had little or no impact compared to the original Option A and were all evaluated as suboptions in the SDEIS.
- Option M, which would eliminate the Option K SPUI and replace the excavated tunnel with an immersed-tube tunnel that would be built by dredging across the Montlake Cut rather than tunneling below it. This option was not evaluated in the SDEIS; because of its cost, risk, and greater environmental impact than the design options already under study, it was determined not to be a reasonable alternative to meet the project purpose and need.

On November 17, 2009, the workgroup made a draft recommendation to forward Option A+ to the legislature and the Governor as its preferred design option for the 6-Lane Alternative. In support of its recommendation, the group cited the following considerations:

- It met the purpose and need of the project and complies with statutory requirements to implement a six-lane bridge replacement project (per ESSB 6099 and ESHB 2211).
- It met the transportation needs of the corridor with the least impact to the surrounding environment.
- It could be constructed within the \$4.65 billion financial threshold.
- The impacts were covered within the SDEIS.
- It met the needs of transit providers within the SR 520 corridor and on local surface streets.
- It had broad-based support from local communities, including the University District Community Council, Ravenna Bryant, and Friends of Olmsted Parks, and from regional organizations including the University of Washington, Greater Seattle Chamber of Commerce, King County Metro, and the Eastside Transportation Partnership.

The workgroup's recommendations were presented to the Seattle City Council on November 24, 2009, and to the public in a town hall meeting that same evening. Both meetings provided opportunities to comment on the options and the workgroup's decision process. At each meeting, people expressed support for a variety of choices, including Option M, Option A+ with and without the Lake Washington Boulevard ramps, a transit-optimized 4-Lane Alternative, and retrofitting the seismically vulnerable

bridges to allow more time to develop a long-term solution. A number of commenters expressed the general sentiment that no matter what solution was chosen, it should be implemented quickly to provide jobs, enhance mobility, and reduce the risk of catastrophic failure.

On December 8, 2009, the workgroup voted 9-3 to present its draft recommendations report to the full legislature. The workgroup's final report was presented to the legislature in December 2010. The report reiterated the recommendation of Option A+ for the 6-Lane Alternative, and included a minority report by two of the workgroup members who opposed the recommendation.

What types of comments did FHWA and WSDOT receive on the SDEIS?

The SDEIS for the SR 520, I-5 to Medina project was published on January 22, 2010. During the public comment period, which was extended from its original closing date of March 8, 2010, to April 15, 2010, WSDOT received 415 comment cards, letters, and e-mails. Of these, 392 were from the public, including individuals, businesses, and community organizations. The categories that were most frequently mentioned by the public, along with examples of the topics addressed, included:

- **Transportation:** Transit and HOV use of SR 520, including timing for potential addition of light rail; inclusion of Lake Washington Boulevard ramps and associated traffic effects in the Arboretum; assumptions and conclusions of traffic and transportation modeling; transit reliability and connectivity with removal of Montlake Freeway Transit Stop; bicycle and pedestrian mobility
- **Engineering design:** Bridge width, particularly with respect to Portage Bay Bridge; height of proposed floating bridge compared to existing bridge; design components specific to a geographic area; replacement for functions of Montlake Freeway Transit Stop; infrastructure needs for accommodation of light rail in the SR 520 corridor
- **Design Option A:** Opinions for and against the option; questions regarding need for design components, especially Lake Washington Boulevard ramps and second Montlake bridge; requests for additional information
- **Funding and cost:** Funding method (tolling, taxes, private funding); concerns regarding accuracy of project costs, particularly estimates of tunneling cost; concerns that mitigation and enhancement measures would be eliminated if project was not fully funded; magnitude of project planning and analysis costs; use of public dollars; project budget
- **Recreation:** Impacts of project on Washington Park Arboretum, including land acquisition, noise and visual effects, traffic, and wetland

filling/shading; effects on other local parks; effects on recreational activities that may be affected during construction and/or operation, such as recreational boating and Opening Day events

- **Section 106 effects:** Concerns that effects on historic properties had not been fully evaluated, particularly with regard to construction effects; requests for additional and/or improved coordination through Section 106 consulting party process
- **NEPA-related topics:** Assertions that SR 520, I-5 to Medina project was improperly segmented from Eastside and/or pontoon projects; suggestions that additional alternatives, such as a transit-optimized 4-Lane Alternative and immediate implementation of light rail transit, were reasonable and should have been evaluated further; statements that preferred alternative selection was predetermined by WSDOT and the legislature.

Of the 415 comment cards, letters, and e-mails received during the SDEIS comment period, 23 were from government entities, including federal, state, and regional agencies; local jurisdictions; and tribes. The categories that were most frequently mentioned by agencies, jurisdictions, and tribes, along with examples of the topics addressed, included:

- **Agency and tribal coordination:** Requests for continued coordination between WSDOT, regulatory agencies and tribes; requests to provide more information on impact calculation methods and engage agencies and tribes in developing more detailed proposals for mitigation in anticipation of permitting requirements
- **Traffic and transportation:** Requests for additional study of light rail transit and/or exclusive transit use of the HOV lanes; assertions that funding would be needed to replace the function of the Montlake Freeway Transit Station and meet additional service demands; requests for additional coordination with City of Seattle to better integrate pedestrian/bicyclist and transit features in Montlake interchange vicinity
- **Engineering design:** Bridge height, including a general preference by resource agencies for higher bridges to reduce intensity of shading; desire for narrower width of the Portage Bay Bridge; questions as to whether design of the floating bridge and west approach was compatible with light rail transit; elements in specific geographic areas; effects of Option A on NOAA Northwest Fisheries Science Center campus; design considerations for components like lids, transit stops, and bridge segments
- **Natural resource effects:** Concerns regarding lack of agency and tribal participation in mitigation development; effects of wider floating bridge on lake circulation and temperature; effects of project construction and operation on salmon stocks; construction impacts and aquatic fill under Option K

- **Mitigation:** Need to avoid and minimize effects before mitigating; requests for additional information about natural resources, social, economic, transit-related, and air quality effects in order to assess appropriate mitigation requirements; temporary versus permanent effects
- **Recreation:** Concerns regarding impacts to the Washington Park Arboretum and other local parks; requests to provide specific mitigation under federal laws protecting recreational resources; requests for continued engagement with agencies with jurisdiction over parks

All comments received on the SDEIS are responded to in this Final EIS. Attachment 11 includes the original comments alongside FHWA's and WSDOT's responses. Due to the volume of material (over 3,000 pages), Attachment 11 is provided on the DVD attached to the Executive Summary. Section 2.5 below identifies design elements of the Preferred Alternative that respond to comments made on the SDEIS.

2.4 What additional alternatives were considered after the SDEIS?

NEPA requires that if new reasonable alternatives are proposed via comments on a draft (or supplemental draft) environmental document, they must be fully analyzed. Commenters on the SDEIS suggested two alternatives that they believed should have been evaluated further:

- A “transit-optimized” 4-Lane Alternative
- An alternative that would include light rail transit (LRT) on SR 520 when it opened, rather than accommodating it as part of a future project

Although both the 4-Lane Alternative and a multimodal alternative including LRT were evaluated and eliminated earlier in the NEPA process, WSDOT re-evaluated both to determine whether changed conditions might result in their being considered “reasonable alternatives” as defined by NEPA (40 Code of Federal Regulations [CFR] Section 1502.14(c)).

Reasonable alternatives are considered “those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant” (from Question 2(a) Answer in CEQ 40 FAQs).

This section begins with a brief overview of regional land use and transportation planning, which helps to frame the range of reasonable alternatives for study in an EIS. This is followed by a discussion of why the two alternatives described above were determined not to be reasonable alternatives, and are therefore not considered further.

Although there was not a formal request for its analysis in the SDEIS comments, several comments suggested that Option M, which was

proposed by the former supporters of Option K during the legislative workgroup process, was dropped without sufficient consideration.

Option M had a similar alignment to Option K, but substituted a dredged tunnel across the Montlake Cut for the excavated tunnel included in Option K. WSDOT's evaluation of Option M at that time indicated that it was not a reasonable alternative. A brief discussion of the factors considered in this conclusion is also provided below.

How do regional land use and transportation planning affect the range of reasonable alternatives for SR 520?

A key component of the SR 520, I-5 to Medina project purpose and need is improving mobility in the SR 520 corridor. Measuring whether alternatives achieve this purpose requires that WSDOT establish baseline (or No Build) conditions for the project design year (2030) as a basis for comparison. This, in turn, requires predictions about how population and employment are likely to change in the region, and what transportation choices people will make in response to these changing conditions.

As an agency whose primary purpose is to build and operate the statewide highway and ferry systems, WSDOT does not make decisions about where people live and work or how communities will grow. The framework for local jurisdictions' future development is established by their comprehensive land use plans. Under Washington's Growth Management Act (Chapter 36.70A Revised Code of Washington [RCW]), these plans include growth targets for employment and population within each urban area that are based on land use and zoning designations. The Puget Sound Regional Council (PSRC)—the regional metropolitan planning organization—uses these projections to estimate future regional population and employment within geographic areas called “transportation analysis zones.” This allows a computer model to predict how many people in each zone will need to drive, take a bus or train, carpool, or travel by some other mode in a given period of time (e.g., daily or during the peak hour). By adding new features, like lanes or interchanges, to the transportation network, planners can see how many people would use these features and how they would affect the overall performance of the system. This is how alternatives are compared to No Build in a traffic model.

Because PSRC is the region's metropolitan planning organization, it is responsible for guiding the integration of transportation and land use planning. Therefore, WSDOT's traffic analysis is required to use PSRC's estimates for future population, employment, and travel patterns. Under the Growth Management Act, WSDOT has a responsibility to provide transportation infrastructure that will accommodate the region's planned growth. For this reason, PSRC's *Transportation 2040: Toward a Sustainable Transportation System* (PSRC 2010a) includes a 6-lane configuration for

SR 520. The project is also consistent with federal, state, and local policies (including City of Seattle policies) that call for completion of the HOV system to increase the range of transportation choices.

Although WSDOT has an integrative function among statewide transit agencies (see RCW 47.01.330), those agencies must develop their own plans for provision of service. Sound Transit and King County Metro are each charged with determining transit service levels and planning future transit routes. They are also responsible for infrastructure associated with providing their services, such as maintenance facilities or (in the case of Sound Transit) rail lines. WSDOT partners with these agencies to support the provision of facilities such as HOV lanes, direct-access ramps, and park-and-ride lots to enhance mobility and increase transportation choices. For the SR 520, I-5 to Medina project, WSDOT has worked extensively with both King County Metro and Sound Transit to ensure that the project will be compatible with their long-term service planning. This effort has included the agencies' collaboration on the *SR 520 High-Capacity Transit Plan* (WSDOT, Sound Transit, and King County Metro 2008), which would implement rapid transit in the proposed HOV lanes and provide improved regional and local transit connections at the Montlake Multimodal Center.

Under NEPA, WSDOT is not limited to evaluating alternatives that are within its own jurisdiction if other alternatives provide reasonable ways of meeting the project purpose and need. However, to support the integration of NEPA with local planning processes, agencies are required to consider consistency with adopted state, local, and regional plans, or, in the case of conflicts, to describe how the agency would reconcile its proposed action with those plans (40 CFR 1506.2(d)).

Why is a transit-optimized 4-Lane Alternative not evaluated further?

A number of commenters expressed the opinion that the 4-Lane Alternative had been unfairly dismissed because it was not “transit-optimized” and did not include refinements that were made to the 6-Lane Alternative and options following publication of the Draft EIS in 2006. Although there was no clear consensus among the comments on the design refinements needed to optimize the 4-Lane Alternative for transit, commenters suggested tolling to reduce general-purpose travel demand to the point where four lanes of traffic could flow freely, thereby reducing delay and increasing reliability for transit. This tolling approach is different than the original assumption for the 4-Lane and 6-Lane Alternatives, which was that the primary purpose of tolls would be to provide funding for the project (although they would also help to manage congestion).

To evaluate this suggestion, WSDOT performed travel demand modeling to determine what level of tolling on a 4-lane SR 520 would be required to achieve free flow (see Attachment 19). As discussed in the preceding

What is “transit-optimized”?

The term “transit-optimized” refers to a 4-lane alternative that would achieve the same travel time benefits for buses and HOVs as those provided by the HOV lane in the 6-lane Alternative.

section, the model used growth forecasts for 2030 that were based on adopted land use plans. The modeling results indicated that in order to achieve free flow on SR 520 with 4 lanes, peak-hour tolls on the bridge would need to be a minimum of \$5.50. At this toll rate, enough traffic would divert from SR 520 to I-90 that I-90 would be well over its capacity; in effect, congestion would be transferred from one cross-lake route to the other. Congestion on I-90 would result in higher emissions of both criteria pollutants and greenhouse gases from vehicles operating at lower, less efficient speeds, and potentially in localized traffic effects from vehicles queuing at ramps or cutting through local neighborhoods in an effort to reduce travel times. In addition, this scenario would create a greater hardship for low-income populations using SR 520, who would need to choose either to pay a higher toll or to spend more time in the increased congestion on I-90. Tolling of I-90 in addition to SR 520 might balance congestion somewhat between the two lake crossings, but would likely result in non-free-flow conditions on SR 520 and a resulting continued disincentive to transit use. Finally, a 4-lane SR 520 is inconsistent with regional plans and policies, which over the past decade have continued to affirm the importance of completing the regional HOV system.

The 4-Lane Alternative evaluated in the Draft EIS was not evaluated further because it was determined not to meet the project purpose of improving mobility on SR 520. While a 4-Lane Alternative operating at free flow would, by definition, improve mobility in the SR 520 corridor, it could only achieve this objective by creating substantial adverse effects on regional traffic, with corresponding effects on the built and natural environment. Because trips from SR 520 would be forced onto other congested facilities, many of the travelers that this project is intended to serve would experience these congested conditions, which is inconsistent with the project's mobility goals. Creating congestion in other corridors also conflicts with the project goal of avoiding or minimizing impacts on affected neighborhoods and the environment. Conversely, the 6-Lane Alternative would provide substantial benefits for transit and HOV mobility on SR 520 with minimal traffic diversion compared to No Build. Based on these considerations, FHWA and WSDOT concluded that a transit-optimized 4-Lane Alternative does not merit further consideration.

Why is initial implementation of light rail transit on SR 520 not evaluated further?

In February 2010, Seattle Mayor Mike McGinn stated his opposition to the Legislative Workgroup's recommendation of Option A+ and his support for "a 520 bridge replacement that maintains its current auto-capacity and features light rail from the start" (McGinn 2010). Mayor McGinn engaged a consultant to explore the possibilities of building light rail transit in the SR 520 corridor; the resulting report, entitled *SR 520 Light Rail Alternatives* (Nelson/Nygaard Consulting Associates 2010), was issued in draft form on

April 6, 2010, prior to the close of the SR 520 public comment period. Although the report did not include a recommendation for immediate implementation of light rail in the corridor, many commenters voiced a request for FHWA and WSDOT to consider initial light rail implementation as an alternative. This section discusses the regional planning context for light rail transit and additional analysis that WSDOT performed to evaluate the reasonableness of this potential alternative. Because the report stated that WSDOT's current designs were incompatible with future light rail in the corridor, this section also includes a discussion of how the Preferred Alternative would accommodate light rail if and when a regional decision is made to provide it on SR 520.

The decision to site Sound Transit's initial east-west LRT corridor on I-90 rather than SR 520 was made through extensive regional deliberation. Table 2-2 illustrates the history of regional decisionmaking on east-west mass transit routes, which began in 1967 when the *Report on a Comprehensive Public Transportation Plan for the Seattle Metropolitan Area* (De Leuw Cather & Company 1967) identified a rail corridor from Seattle to Bellevue and Redmond across I-90. Additional studies and agreements over the subsequent 40 years have all continued to affirm I-90 as the preferred rail transit corridor, with similar or higher predicted ridership than SR 520 and substantially lower costs and environmental impacts. Some key milestones include:

- In **1986**, the Puget Sound Council of Governments Multi-Corridor Analysis found that LRT on SR 520 would have lower ridership, lower feeder bus potential, higher cost, and lower cost-effectiveness than I-90. As a result, SR 520 was eliminated as an alternative LRT corridor.
- In **1996**, Sound Transit's first long-range plan identified the I-90 corridor as an HOV expressway with potential LRT service, and began NEPA evaluation of two-way transit and HOV operations in that corridor. The plan designated SR 520 for "local bus service" (later identified as regional express bus service).
- In **2002-03**, the multi-modal alternatives analysis for the Trans-Lake Washington Project (see discussion above), conducted by co-lead agencies WSDOT, FHWA, Sound Transit, and FTA, concluded after evaluating both SR 520 and I-90 that I-90 would be the region's initial cross-lake corridor for HCT. The agencies agreed that SR 520 would be designed to accommodate HCT in the future. FTA and Sound Transit subsequently ceased to be co-lead agencies.
- In **2005**, Sound Transit's long-range plan update continued to designate I-90 as the priority HCT corridor, while calling for SR 520 to include BRT in the proposed HOV lanes.
- In **November 2008**, voters approved funding for Sound Transit's ST2 plan to extend LRT east from downtown Seattle across I-90 to downtown Bellevue and east to the Overlake Transit Center in

Redmond, as well as north from the University of Washington station to Northgate. The plan also allocates funding for study of potential future rail transit on SR 520.

- In **December 2008**, WSDOT, Sound Transit, and King County Metro published the *SR 520 High-Capacity Transit Plan*, which provided an outline for how transit could build on capital investments identified for the SR 520 corridor by substantially increasing service and improving off-corridor transit facilities to help meet future demand. The plan identified up to five BRT routes in the SR 520 HOV lanes, and predicted a growth in transit ridership of 60 percent in the corridor by 2020 if funding is identified to implement the recommended service improvements. The HCT plan reiterated ST2's commitment to a planning study of light rail on SR 520 to evaluate potential alignments, stations and costs, and potential implementation strategies.

Table 2-2. Regional High-Capacity and Light Rail Planning

Year	Action/ Event
1967-9	Comprehensive Public Transportation Plan for the Seattle Metropolitan Area – 1985 Horizon identifies rail corridor from Seattle-Mercer Island-Bellevue-Redmond Included in Forward Thrust bond measure in 1968 – had simple majority but did not meet required 60% supermajority needed for financing
1970s	Region debates at length whether to expand and modernize I-90, including whether transit should have semi- or fully-exclusive right-of-way
1976	I-90 Memorandum of Agreement – specifies dedicated transit facility to be included on new I-90 bridge Signed by cities of Seattle, Mercer Island, and Bellevue and King County Metro Transit and WSDOT
1986	Puget Sound Council of Governments – Metro performs the Multi-Corridor Analysis LRT on SR 520 eliminated as alternative in Phase II analysis due to low ridership, lower feeder bus potential, higher cost, and lower cost-effectiveness compared with I-90
1990s	Joint Regional Policy Committee (JRPC) begins planning regional HCT JRPC, which includes King, Pierce, and Snohomish counties and WSDOT, is pre-cursor to Regional Transit Authority (RTA)
1993	JRPC completes EIS on Regional Transit System – light rail on I-90 identified as preferred mode Following adoption of JRPC's Regional Transit Plan, Central Puget Sound RTA forms
1994-5	RTA conducts public outreach on JRPC's Regional Transit Plan and identifies set of HCT investments for vote 1994 RTA plan includes I-90 LRT from Seattle to Redmond, but fails in 1995 ballot RTA develops Sound Move investment plan, with express bus service in HOV lanes substituted for LRT
1996-8	Sound Transit adopts first long-range plan, which highlights I-90 corridor as HOV expressway and potential LRT SR 520 identified in plan for "local bus service" (later identified as regional express bus service) I-90 Two-Way Transit and HOV Project EIS started
1999	For Trans-Lake Study, Sound Transit (a co-lead) states a goal of either confirming I-90 as preferred cross-lake corridor or defining a better crossing location Trans-Lake Study Committee recommends that an HCT element be carried forward into development of EIS alternatives

Table 2-2. Regional High-Capacity and Light Rail Planning

Year	Action/ Event
2000	Trans-Lake Washington Project studies confirm that I-90 rather than SR 520 is the preferred corridor for light rail due to higher ridership, lower cost, and lower environmental impact
2004	Amendment to 1976 I-90 Memorandum of Agreement identifies a preferred alternative from I-90 Two Way Transit and HOV Project as first step to having transit operating in dedicated right-of-way PSRC prepares Central Puget Sound Region High Capacity Transit Corridor Assessment Report - findings about 520 HCT/LRT
2005	Following SEIS and public outreach, Sound Transit updates and adopts long-range plan designating I-90 as LRT or convertible BRT corridor Long-range plan identifies HOV/BRT system for SR 520 corridor
2006	Sound Transit Board passes Resolution No. R2006-15 identifying light rail as the preferred mode for HCT for Seattle to Bellevue and Redmond via I-90
2007	Legislature directs Sound Transit, King County Metro, and WSDOT to prepare a High-Capacity Transit Plan for SR 520 Draft HCT Plan identifies up to five BRT routes across SR 520, adding 130,000 service hours by 2022
2008	Sound Transit adopts ST2, calling for LRT construction on I-90, BRT on SR 520, and planning studies for LRT on SR 520 ST2 funded by voters
2010	SR 520 Bridge Replacement and HOV Program revisits SR 520 with LRT Seattle Mayor's Office issues report asserting that SR 520 SDEIS options are not compatible with future LRT WSDOT identifies Preferred Alternative incorporating design features to enhance future LRT compatibility

Source: Document prepared for Regulatory Agency Coordination process (RACp) meeting held on August 6, 2009.

WSDOT has worked with Sound Transit since 2003 to design for future rail compatibility in the corridor. The Mayor's April 2010 report identified several changes to the SDEIS options that were believed to be necessary to "meet the mayor's goal of an SR 520 bridge that is readily convertible to rail." While WSDOT believed that the design already met this goal, it worked with the City of Seattle and Sound Transit to identify changes that would enhance the corridor's rail compatibility. The Preferred Alternative reflects these design change and allows for two future rail options:

- **Option 1:** Convert the HOV/transit lanes to light rail. This approach would accommodate light rail by converting the HOV lanes to exclusive rail use. Trains would use the direct-access ramps at Montlake Boulevard to exit, or could use a 40-foot gap between the westbound and eastbound lanes of the west approach to make a more direct connection to the University Link station at Husky Stadium. This gap would narrow across Foster Island to minimize effects on the Arboretum, while still allowing the rail line to turn north toward the station.
- **Option 2:** Add light-rail-only lanes, also utilizing the gap between the westbound and eastbound west approach lanes. This approach would

allow several connections—via a high bridge, a drawbridge, or a tunnel, as suggested in the Nelson/Nygaard report (2010)—to the University Link station.

Both approaches would require the addition of supplemental floating bridge pontoons to support the additional weight of light rail, should the regional decision to do so be made and funded. Such a decision would need to be planned and programmed by regional land use and transit agencies, funded by a public vote, and evaluated in its own environmental analysis. An SR 520 rail project would need to have logical termini and independent utility, which would require detailed study of routes, stations, ridership, and potential connection points to existing and planned LRT routes on either side of the lake.

Although any future decision to make SR 520 a rail corridor will require additional authorizations and detailed study, WSDOT undertook additional analysis following the SDEIS to help answer public questions about how rail in this corridor might operate and the ridership it might generate. The analysis revisited the potential for implementing LRT on SR 520 *in place* of the planned HOV/transit lane between the Montlake interchange and the Eastside (see Attachment 19). This evaluation was completed by:

- Determining a “representative light rail alignment” and associated stations to serve the SR 520 corridor
- Modifying the Preferred Alternative transit network in the SR 520 Final EIS travel demand model to serve the representative light rail alignment and associated stations
- Evaluating model results to determine effects on SR 520 and I-90 transit ridership and vehicle volumes (general-purpose and 3+ HOV)

The analysis concluded that light rail would not provide mobility benefits before 2030 because of service duplication with East Link. Modeling showed that opening of the East Link route, coupled with BRT service across SR 520 beginning in 2016, would absorb much of the demand for east-west transit service until 2030. Cross-lake transit trips were forecasted to increase by only 4 percent when the SR 520 corridor was assumed to be served exclusively by light rail, as compared to a BRT system using HOV lanes and other dedicated bus facilities. The effect on a region-wide basis was even less significant, with total transit trips increasing by less than 1 percent with light rail on SR 520. By 2030, transit ridership across SR 520 was forecasted to be approximately the same as it is today. Thus, LRT service on SR 520 before 2030 would have relatively low ridership and would likely fail to meet cost-effectiveness criteria used by FTA in ranking projects for grant funding. The existing economic climate and the resulting challenges in implementing even adopted and funded plans (see Sound Transit’s ST2/Sound Move Integration and Implementation White Paper, October 2009) reinforce the decision to prioritize BRT on SR 520 for the

nearer term, while continuing to evaluate future implementation of LRT as regional demand increases.

These findings support the conclusions drawn from past similar work and the resulting decisions made, i.e., that the long-range cross-lake transit market can be adequately served by a combination of BRT service along the SR 520 corridor and a light rail system on I-90. Transit demand along the SR 520 corridor may eventually warrant significant alteration to the system currently being planned to serve cross-lake needs, and the proposed SR 520 bridge design and HOV/transit improvements anticipate and support future HCT. Periodic monitoring of the corridor's transit system performance should provide an indication of when it is appropriate to conduct another assessment of the next generation of transit improvements for cross-lake travel. While the findings demonstrate that replacing the proposed HOV improvements on SR 520 (and much of the bus service that would use these improvements) with a light rail system could result in more transit trips using cross-lake facilities, light rail would not induce an increase in ridership to a degree that would warrant the significant investment and impacts accompanying such an undertaking.

Why was “Option M” not evaluated in the SDEIS?

As discussed previously in this chapter, a coalition of Seattle mediation participants that had previously supported Option K presented a new design option, called Option M, to the SR 520 Legislative Workgroup in the fall of 2009. Option M followed a similar alignment to Option K, but was constructed with an immersed tube tunnel rather than the excavated tunnel of Option K. Rather than tunneling beneath the Montlake Cut, the immersed tube tunnel would dredge a channel in open water across the cut, and then a concrete tube that had been formed offsite would be sunk into the dredged excavation and backfilled to the original depth.

One of the key drivers for Option M's development was the potential for reduced costs compared to Option K, which had by far the highest cost of the SDEIS design options (\$4.1 billion to \$4.2 billion from I-5 to Medina, compared to \$2 billion to \$2.3 billion for Option A). At the time Option M was proposed, WSDOT worked with the option's proponents to develop a design concept that would allow its costs and impacts to be evaluated. Although preliminary analysis suggested that the substitution of a dredged tunnel for an excavated tunnel had the potential for cost savings, the overall costs of Option M would still have been substantially higher than those of Option A. The cost review panel supporting the workgroup expressed concern that, given the range of probable costs for Option M, it was unlikely to fit within the legislatively established budget for the project.

In addition to the cost concerns posed by Option M, WSDOT's initial discussions with resource agencies and tribes regarding this option indicated that the construction effects of open-channel dredging might have posed

insurmountable difficulties in project permitting, given that lower-impact options were available. The legislative workgroup’s final report (SR 520 Legislative Workgroup, December 2009): “Because the Montlake Cut is an environmentally sensitive area, we believe the permitting of Option M’s wetland impacts will be risky and very costly to mitigate and we believe there would be a high likelihood of a much longer delay (12 to 24 months) in order to negotiate the permitting issue with the U.S. Army Corps of Engineers.” In light of these cost and environmental concerns, Option M was not carried forward for further consideration in the NEPA process.

2.5 What is the Preferred Alternative, and how was it chosen?

How were comments on the Draft EIS and SDEIS used in developing the Preferred Alternative?

Comments on the 2006 Draft EIS (discussed in Section 2.2) were focused primarily on the 6-Lane Alternative design options then under consideration, and thus are not directly relevant to the options evaluated in the SDEIS. However, some key themes from those comments guided the development of the mediation design options as well as the Preferred Alternative. These themes include:

- Narrow the corridor as much as possible to minimize impacts on neighborhoods, parks, and the environment.
- Reduce the project’s effects on the Washington Park Arboretum.
- Improve local traffic congestion, particularly on Montlake Boulevard and for traffic moving between SR 520 and areas to the north.
- Incorporate innovative measures wherever possible to reduce traffic noise.
- Provide more detailed information on construction impacts and project mitigation measures.

During and after the SDEIS comment period, FHWA and WSDOT carefully reviewed all public, tribal, and agency comments. Comments on the SDEIS (summarized in section 2.3) were a key consideration in developing the Preferred Alternative. On April 29, 2010, Governor Gregoire announced the details of the Preferred Alternative to the public. Table 2-3 identifies how design elements of the Preferred Alternative respond to specific themes in the SDEIS comments. The remainder of this chapter describes the Preferred Alternative and compares it to SDEIS Options A, K, and L.

Table 2-3. Design Elements in Preferred Alternative that Respond to Public, Agency, and Tribal Comments

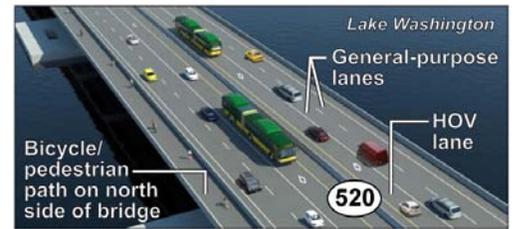
Comment	Source of Comment	How Preferred Alternative Responds to Comment
Project design is not compatible with addition of light rail.	Seattle Mayor's Office, community groups, individuals	Although project has always been designed to accommodate future rail, modifications have been made to better facilitate potential future rail connections to University Link station, either within HOV lanes or on separate structure.
New floating bridge would be too high compared to existing conditions and would block views.	Community groups, individuals	Height of bridge has been lowered from approximately 30 feet (in Draft EIS and SDEIS) to approximately 20 feet above lake surface.
Footprint across Arboretum and Foster Island is too wide.	Tribes, Seattle Parks, Arboretum Foundation, individuals	Footprint in Arboretum has been further refined, with right-of-way acquisition reduced from SDEIS options
West approach bridge should be as high as possible to minimize shading.	Resource agencies, tribes	Preferred Alternative includes a constant slope profile slightly higher than that of SDEIS Option L.
Noise in the corridor should be reduced using methods other than walls, e.g., innovative methods identified by Noise Expert Review Panel.	Community groups, individuals	As identified by the Noise Expert Review Panel, the Preferred Alternative includes 4-foot concrete traffic barriers, noise-absorptive coatings on barriers and lid portals, and lower speed limit west of Montlake lid; as a result, fewer noise walls are warranted. Quieter pavement is also included, although its effectiveness is still being evaluated and it is not an approved noise mitigation measure.
Portage Bay Bridge should be as narrow as possible (6 lanes maximum).	City of Seattle, community groups, individuals	Portage Bay Bridge includes 6 lanes plus a managed shoulder to improve traffic operations during peak hours; overall width is 7 feet less than SDEIS Option A.
The Option A Montlake lid is discontinuous and would not effectively reconnect communities.	Community groups, individuals	Montlake lid has been lengthened to approximately 1,400 feet and extended across SR 520.
Option A with Lake Washington Boulevard ramps would increase wetland impacts and create more traffic in the Arboretum.	Community groups, individuals	No Lake Washington Boulevard ramps, as access to Lake Washington Boulevard has been consolidated with Montlake interchange; traffic through Arboretum is projected to decrease compared to No Build.
Construction of Option K tunnel would have severe impacts on aquatic habitat and species.	Resource agencies, tribes	Preferred Alternative does not include a tunnel.
Mitigation measures are not adequately defined.	Resource agencies, tribes, City of Seattle, community groups, individuals	Detailed mitigation measures and implementation steps have been developed and are included in this Final EIS and its attachments.

How was the Preferred Alternative refined based on ESSB 6392?

As described in Chapter 1, during the 2010 legislative session, the Washington State Legislature passed ESSB 6392. Signed into law by Governor Gregoire, the bill outlined specific areas and elements of the Preferred Alternative to refine through a multi-agency process.

ESSB 6392 directed WSDOT and the Mayor and City Council of the City of Seattle to establish two workgroups that bring together King County Metro, University of Washington, Sound Transit, and other designees to consider design refinements to and transit connections within the Preferred Alternative. WSDOT was also directed to convene a workgroup with King County Metro and Sound Transit to study options for planning and financing high-capacity transit through the SR 520 corridor. In addition, the bill directed WSDOT to work with the governing board of the Arboretum to develop a mitigation plan, and established various reporting timelines for the different work efforts.

The legislature directed that design refinements to the preferred alternative be “consistent with the current environmental documents prepared by the department for the supplemental draft environmental impact statement,” so as to accommodate a “timely progression” of the SR 520, I-5 to Medina project. Accordingly, the ESSB 6392 workgroup recommendations included only design refinements that were within the range of impacts studied in the SDEIS and would not require additional supplemental analysis.



6-Lane Floating Bridge Roadway

What is the Preferred Alternative?

The SR 520, I-5 to Medina project Preferred Alternative would widen the SR 520 corridor to six lanes (Exhibit 2-1) from I-5 in Seattle to Evergreen Point Road in Medina and would restripe and reconfigure the lane channelization in the corridor from Evergreen Point Road to 92nd Avenue Northeast in Yarrow Point. It would replace the vulnerable Evergreen Point Bridge, including the floating bridge and west and east approaches, and the Portage Bay Bridge with new structures. The project would complete the regional HOV lane system across SR 520, as called for in regional and local transportation plans. Major features of the Preferred Alternative are described below; the major variations among the Preferred Alternative and SDEIS design options A, K, and L are discussed in Section 2.3.

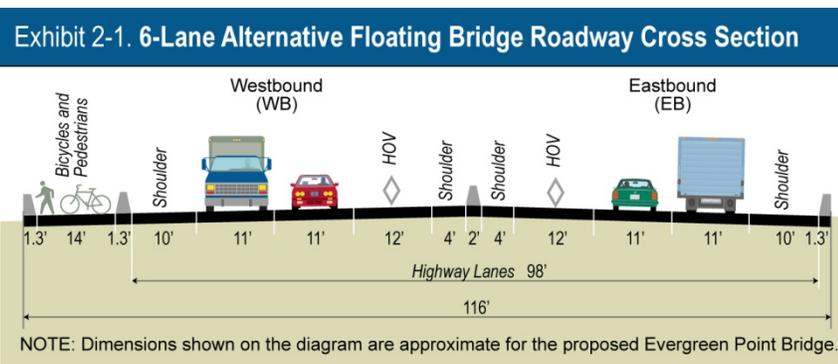


Exhibit 2-2. Overview of Geographic Areas Along Project Corridor

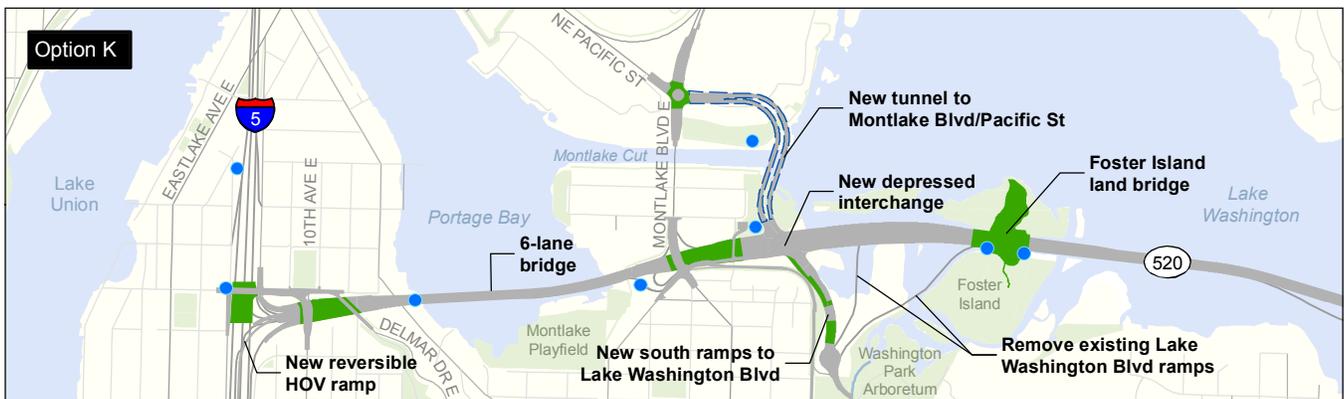
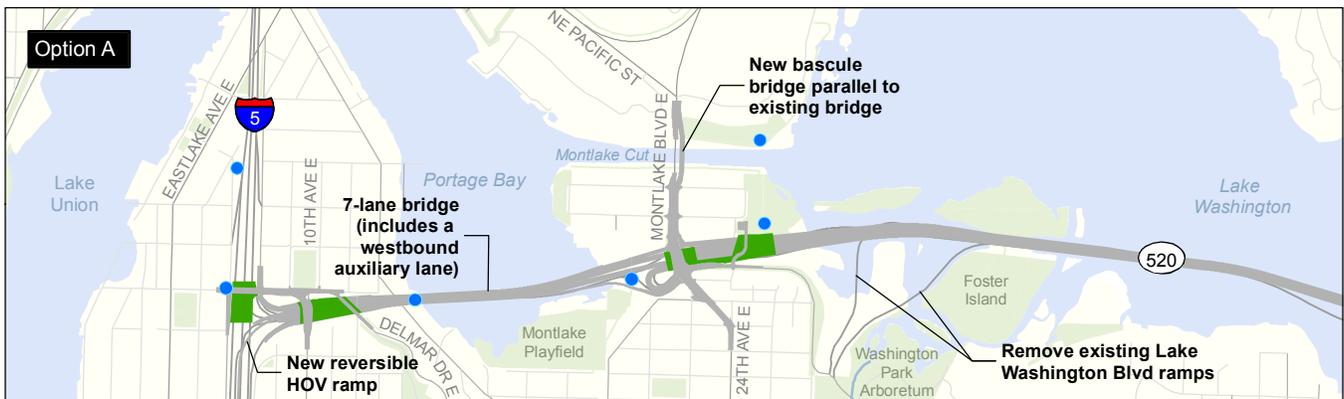
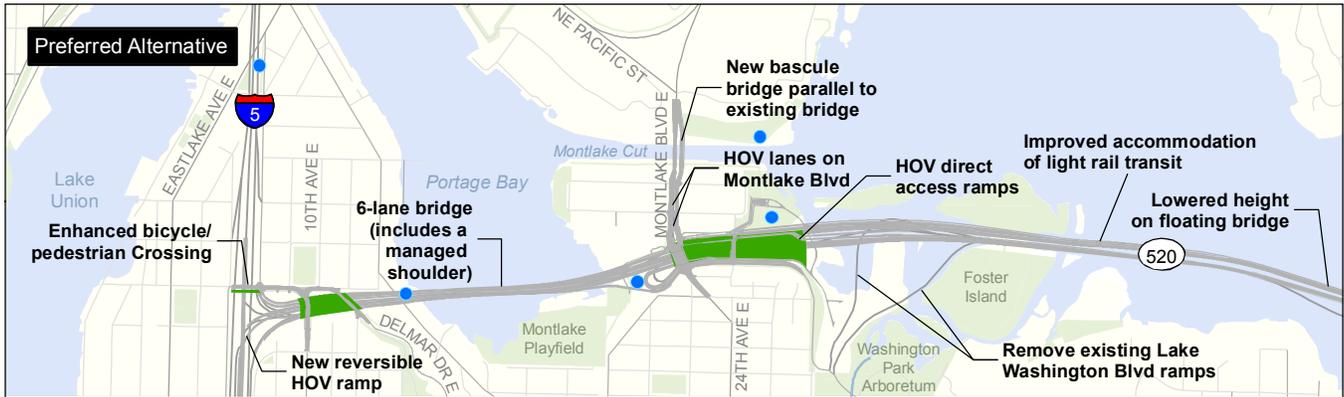


Exhibit 2-2 shows the project limits and identifies the portions of the project within three larger study areas: Seattle, Lake Washington, and the Eastside. SR 520 would be six lanes (two 11-foot-wide outer general-purpose lanes and one 12-foot-wide inside HOV lane in each direction), with 4-foot-wide inside shoulders and 10-foot-wide outside shoulders across the floating bridge (Exhibit 2-1). The typical roadway cross-section would be approximately 116 feet wide, compared to the existing width of 60 feet, as shown in Exhibit 2-1. In areas where there are ramps and/or gaps between lanes, the overall width of the roadway would be greater. The additional width is needed for the new HOV lanes and to accommodate wider, safer travel lanes and shoulders. It has, however, been reduced by 18 feet from what was shown in the Draft EIS to respond to community concerns. The Preferred Alternative also includes:

- Landscaped lids over the highway
- A regional bicycle and pedestrian path
- Noise reduction measures
- Reversible ramps to and from I-5
- A bridge maintenance facility
- Stormwater treatment facilities
- A new bascule bridge parallel to the existing Montlake Bridge

The Preferred Alternative incorporates a number of features that respond to comments on the SDEIS from the public, agencies, and tribes. It is most similar to SDEIS Option A, but includes the following refinements (Exhibit 2-3):

Exhibit 2-3. Preferred Alternative and Options A, K, and L



- Reduction in the overall mainline footprint by narrowing the shoulders, and reducing the posted speed to 45 miles per hour between I-5 and Montlake Boulevard.
- Portage Bay Bridge design that incorporates a 14-foot-wide westbound managed shoulder rather than an auxiliary lane, and narrower inside shoulders to reduce overall footprint.
- An expanded, 1,400-foot landscaped lid at Montlake Boulevard that provides complete coverage of SR 520 along with bicycle and pedestrian amenities, HOV direct access ramps, and transit facilities.
- Elimination of the Lake Washington Boulevard ramps.
- Improved accommodation of potential future light rail transit in the corridor, either in the HOV lanes or in a new dedicated right-of-way.
- A narrower overall footprint across Foster Island
- Northbound and southbound HOV lanes on Montlake Boulevard to improve transit reliability.
- Innovative measures to reduce noise in adjacent neighborhoods and parks, resulting in fewer recommended noise walls.
- A lower height on the floating span to minimize visual effects.

The discussion below describes major project features that are common to the Preferred Alternative and SDEIS Options A, K, and L. Section 2.6 is a detailed comparison of the Preferred Alternative with the SDEIS options.

Lids and Landscape Features

The Preferred Alternative includes lids at the following locations:

- 10th Avenue East and Delmar Drive East
- Montlake Boulevard

The lids would reconnect neighborhoods, enhance movement of pedestrians and cyclists, restore and create views, and provide access to existing and new transit stops.

The following lids were included in Options A, K, and/or L, but are not part of the Preferred Alternative (see Exhibit 2-3):

- I-5/East Roanoke Street (Options A, K, and L)
- Montlake Boulevard NE and NE Pacific Street (Options K and L only)
- Foster Island “land bridge” (Option K only)

The I-5/East Roanoke Street lid was not included in the Preferred Alternative due to the constraints it would place on potential future expansion of I-5. The other lids not included in the Preferred Alternative were unique to the designs of Options K and L.

Regional Bicycle/Pedestrian Path

The project includes a 14-foot-wide bicycle/pedestrian path along the north side of SR 520 through the Montlake area and across the Evergreen Point Bridge to the Eastside. In the Montlake area, the path would connect to the existing Bill Dawson Trail that crosses underneath SR 520 near the eastern shore of Portage Bay. It would also connect to the Montlake lid and East Montlake Park. On the Eastside, the path would connect to the bicycle/pedestrian path proposed as part of the SR 520, Medina to SR 202: Eastside Transit and HOV Project.

A new path beginning in East Montlake Park would pass under the west approach bridge at Montlake to connect to a proposed new trail in the Arboretum. The portion of the existing Arboretum Waterfront Trail that crosses SR 520 at Foster Island would also be restored or replaced after construction of the SR 520 west approach structure. There would be no new bicycle/pedestrian path along SR 520 west of Portage Bay.

Noise Reduction

Under FHWA regulations (23 CFR Part 772), noise abatement measures must be considered when highway noise levels approach or exceed the thresholds set in FHWA's noise abatement criteria, as they do along much of the SR 520 corridor and would continue to do under the No Build Alternative. (See Section 4.7 for information on existing noise levels and the FHWA criteria.) Such measures must meet FHWA and WSDOT guidelines for feasibility and reasonableness, including a WSDOT requirement of making every reasonable effort to attain a 10-decibel or greater reduction in the first row of properties affected by project noise. Feasibility deals primarily with engineering considerations (such as whether substantial noise-level reductions could be achieved or whether property access would be negatively affected). Reasonableness is a cost-benefit analysis based on predicted future noise levels.

The SDEIS evaluated traffic noise reduction measures for each design option. Option A was defined as including noise walls and/or quieter rubberized asphalt pavement. Option K was defined as including only quieter rubberized asphalt pavement for noise reduction. Option L would include noise walls similar to those defined in the Draft EIS, which would extend along most of the corridor.

The Preferred Alternative includes several design elements and general corridor improvements that were added as a result of recommendations from the SR 520 Noise Expert Review Panel and in response to community input. The Preferred Alternative design includes 4-foot concrete traffic barriers, noise-absorptive material on the traffic barriers and around the lid portals, and encapsulated bridge expansion joints. Additionally, the posted speeds on the Portage Bay Bridge between I-5 and the Montlake lid would be reduced to 45 mph. These measures, coupled with project design

features such as a higher profile in the west approach area would collectively reduce noise levels throughout the SR 520, I-5 to Medina corridor. Quieter concrete pavement would also be used throughout the corridor in response to public input. However, because the effectiveness of quieter concrete has not been demonstrated in this region, it is not considered a mitigation measure, and no noise reduction benefits were assumed from its use in the project noise analysis.

The noise reduction measures outlined above were incorporated into the Preferred Alternative in response to strong opposition to noise walls expressed in SDEIS comments and in community forums. However, as required, noise walls were evaluated for the Preferred Alternative, as they were for Options A, K, and L, to determine if they would meet the feasibility and reasonableness criteria. By reducing noise levels, the design refinements of the Preferred Alternative reduce the number of recommended noise walls compared to those recommended for Options A, K, and L.

Stormwater Treatment

The project includes the installation of stormwater treatment facilities to collect and treat stormwater runoff. Three facility types incorporating Ecology-approved stormwater best management practices have been identified for the project: biofiltration swales, constructed stormwater treatment wetlands, and media filter vaults (Option K only). Table 2-4 identifies which facility types are proposed for each project area drainage basin.

Table 2-4. Proposed Stormwater Treatment Facilities - Preferred Alternative and SDEIS Options

Drainage Basin	Type of Proposed Facility
Lake Union	Biofiltration swale
Portage Bay	Constructed stormwater treatment wetland and biofiltration swale
Union Bay	Constructed stormwater treatment wetlands and biofiltration swale Media filter vaults (Option K only)
Lake Washington	Biofiltration swale; high-efficiency sweeping in conjunction with modified catch basins and stormwater lagoons on the new floating bridge and approach structures

Biofiltration swales are vegetation-lined channels designed to remove suspended solids from stormwater. They offer *basic* water quality treatment to remove pollutants such as metals, suspended solids, and nutrients from contaminated stormwater.

Stormwater treatment wetlands offer *enhanced* treatment, achieving greater removal of dissolved metals from stormwater than basic treatment. These

Basic versus Enhanced Treatment

Basic and enhanced stormwater treatment best management practices (BMPs) are different types of BMPs that have been designated in the Highway Runoff Manual (HRM) to treat stormwater (see page 3-15, Chapter 3 of the HRM [WSDOT 2008a]).

Basic treatment BMPs remove pollutants such as metals, suspended solids, and nutrients from contaminated stormwater. The HRM performance goal for basic treatment BMPs is 80 percent removal of total suspended solids (WSDOT 2008a).

Enhanced treatment BMPs are designed to achieve greater removal of dissolved metals than basic treatment. In addition to removing 80 percent total suspended solids, the HRM performance goal for enhanced treatment is 50 percent removal of dissolved copper and zinc for influent concentrations, ranging from 0.003 to 0.02 milligram per liter (mg/L) for dissolved copper and 0.02 to 0.3 mg/L for dissolved zinc (WSDOT 2008a).

While these families of BMPs have different performance goals for the stormwater they are designed to treat, the intent of treatment is the same—to produce stormwater discharges that comply with state and federal water quality criteria.

wetlands provide enhanced treatment by using multiple cells and wetland vegetation to reduce the amount of these pollutants in runoff.

Media filter vaults are enclosed treatment facilities (usually underground) that provide stormwater filtration. Vaults house one or more structures, each with a filtering cartridge. The vault channels the collected stormwater through the filtering cartridge(s) at a controlled flow rate. These cartridges trap particulates and dissolved pollutants including metals, hydrocarbons, and nutrients. Media filters alone provide basic water quality treatment. For the SR 520, I-5 to Medina project, media filter vaults are only included to address stormwater needs at Foster Island as part of Option K.

Enclosed spill containment lagoons are also part of the proposed floating bridge design. Surface pollutants would be removed on a periodic basis under normal monitoring and maintenance activities. The lagoons would also allow dilution of remaining pollutants prior to mixing with lake waters beneath the bridge.

Lighting

Similar to today's roadway lighting configuration, continuous lighting would be provided along the SR 520 corridor from I-5 to Foster Island and on bridge structures crossing the Montlake Cut. Recessed lighting would illuminate the proposed bicycle and pedestrian path along the west approach structure and the Evergreen Point Bridge. Lighting would be designed to minimize effects on aquatic habitat, likely through the use of downlights similar to those on the I-90 floating bridges.

Tolls

Both the 2006 SR 520 Draft EIS and the 2010 SDEIS identified tolling as a way to generate revenue for project construction, and assumed a toll as part of the traffic modeling analysis for all build alternatives. The SDEIS traffic analysis made the following assumptions for how the project would be tolled:

- Segmental tolling (i.e., tolls collected at multiple locations along the corridor) between I-5 and I-405
- Variable toll rates depending on the time of day and whether trips are taken on a weekday or a weekend
- A maximum toll rate of \$3.81 (year 2007 dollars) for all vehicle types for a full-length trip, with exemptions for transit and HOVs with three or more riders

These assumptions were updated for the Final EIS traffic analysis based on new legislation and public comment received during outreach events for the Tolling Implementation Committee. The Final EIS traffic analysis made the following assumptions for how SR 520 would be tolled:

- Single-point tolling at one location for vehicles crossing the Evergreen Point Bridge



Recessed Downlighting

Tolling Assumptions

Tolling assumptions included in the transportation model for the Final EIS are:

- Single-point tolling implemented on SR 520 between I-5 and I-405
- Variable toll rates depending on the time of day and whether trips are taken during a weekday or during the weekend
- A maximum toll rate of \$3.81, with exemptions for transit and HOVs with three or more riders

Like the SDEIS, the Final EIS assumes that the 2030 No Build Alternative would not include tolls. This is because the toll planned to go into effect on SR 520 in 2011 would sunset before 2030. For more information on how tolling was evaluated, please see Chapter 1 and the Final Transportation Discipline Report (Attachment 7).

- Variable toll rates depending on the time of day and whether trips are taken on a weekday or a weekend
- A peak toll rate of \$3.81 (year 2007 dollars) for all vehicle types for the bridge crossing, with exemptions for transit and HOVs with three or more riders

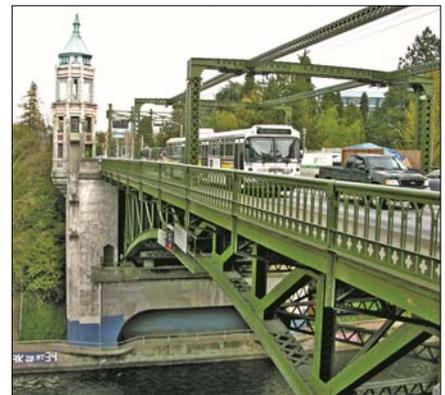
These assumptions are used as a basis for comparison among the design options. Actual toll rates and how the tolls would be applied will be determined by the legislature (based on recommendations from the Transportation Commission) after the final project financing plan is developed. Since the traffic modeling assumptions were applied consistently across the alternatives, they show the relative performance of each in comparison to No Build. See Chapter 1 for a discussion about what legislation has been passed to authorize tolling.

All vehicles with one or two occupants would be charged a toll to cross the Evergreen Point Bridge. Users who are required to pay the toll would have transponders, or “cards,” that would be read by an electronic card reader. Transponders allow drivers to pay tolls without stopping at a toll booth. Two types of transponders could be used: transponders that would attach permanently to a vehicle’s windshield and portable transponders that could be transferred among multiple vehicles. Drivers who do not purchase a transponder would have their license plates photographed as they crossed the tolling point, and bills would be sent by mail to the address at which the vehicle is registered.

2.6 How does the Preferred Alternative compare with SDEIS options A, K, and L?

The greatest physical differences between the Preferred Alternative and the SDEIS design options are in the location and lid configuration of the interchange in the Montlake area (see Exhibit 2-2) and in the profile of the west approach. The Preferred Alternative and the SDEIS options can be summarized as follows:

- The Preferred Alternative is similar to today’s configuration in terms of its geometry, although wider. It maintains the existing location of the Montlake interchange but changes the westbound off-ramp so that it connects to 24th Avenue East first, followed by a connection to Montlake Boulevard. It adds a new bascule bridge over the Montlake Cut, parallel to the existing Montlake Bridge. It includes a 1,400-foot continuous lid over Montlake Boulevard with landscaping, ramps, transit facilities, and pathways, and provides near-term transit enhancements along with the ability to accommodate potential future light rail on SR 520.
- Option A was also similar to a widened version of today’s configuration. It maintained the existing location of the Montlake



DEFINITION

Bascule Bridge

A bascule bridge is a drawbridge with a counterweight that balances the movable span throughout its upward swing. The bridge provides clearance for boat traffic. All existing bridges on the Lake Washington Ship Canal, except for the I-5 and Aurora bridges, are bascule bridges.