



# High Capacity Transit Plan

December 2008

**Prepared for:**

*The Washington State Legislature and  
The Joint Transportation Committee*

**Submitted by:**

*Paula J. Hammond  
Secretary of Transportation  
Washington State Department of Transportation*



*In cooperation with:*





*In cooperation with:*

---

# Transmittal Memo

*December 31, 2008*

**To:** Governor Christine Gregoire  
Senator Mary Margaret Haugen  
Senator Chris Marr  
Senator Ed Murray  
Senator Dan Swecker  
Representative Judy Clibborn  
Representative Doug Ericksen  
Representative Dennis Flannigan  
Representative Lynn Schindler

**From:** Ron Paananen, Deputy Administrator, Urban Corridors Office,  
Washington State Department of Transportation  
Greg Walker, Policy and Planning Officer, Sound Transit  
Kevin Desmond, General Manager, Metro Transit Division, King County Department of Transportation  
Theresa Doherty, Assistant Vice President, Regional Affairs, University of Washington

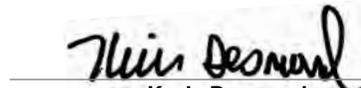
**Subject: SR 520 High Capacity Transit Plan**

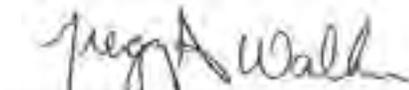
Pursuant to 2007's Engrossed Substitute Senate Bill 6099, WSDOT, Sound Transit and King County have worked in cooperation with the University of Washington to consider the region's interests in high capacity transit in the SR 520 corridor. The partners in this planning submitted a draft study in October 2007 and have spent the intervening year researching the many factors that could influence transit and opportunities to advance transit in the corridor in the coming years.

From that foundation we have outlined the likely approaches to high capacity transit services in the corridor, particularly bus rapid transit and improved connectivity in the area around the future light rail station near the University of Washington.

We expect to continue to work together and with you during the 2009 legislative session to address our recommendations for high capacity transit in the SR 520 corridor.

  
\_\_\_\_\_  
Ron Paananen

  
\_\_\_\_\_  
Kevin Desmond

  
\_\_\_\_\_  
Greg Walker

  
\_\_\_\_\_  
Theresa Doherty



## **Americans with Disabilities Act:**

Materials can be provided in alternative formats: large print, Braille, cassette tape, or on computer disk for people with disabilities by calling the Office of Equal Opportunity (OEO) at 360-705-7097. Persons who are deaf or hard of hearing may contact OEO through the Washington Relay Service at 7-1-1.

## **Title VI:**

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



# Table of contents

---

<b>Executive Summary.....</b>	<b>7</b>
What is the SR 520 High Capacity Transit Plan? .....	7
What are the next steps for the High Capacity Transit Plan? .....	9
Is the High Capacity Transit Plan compatible with other plans for the SR 520 corridor? .....	10
<b>Chapter 1</b>	
<b>Why is the High Capacity Transit Plan needed? .....</b>	<b>13</b>
Addressing transit constraints in the SR 520 corridor.....	16
The growing demand for transit .....	17
Supporting a regional strategy for high capacity transit .....	19
Goals and objectives .....	21
<b>Chapter 2</b>	
<b>Defining High Capacity Transit for SR 520 .....</b>	<b>23</b>
Key elements of the SR 520 high capacity transit plan.....	25
The SR 520 bus rapid transit concept .....	25
Bus rapid transit operation on SR 520 .....	27
Other measures to improve transit access and connections .....	28
Montlake Multimodal Center .....	30
How bus rapid transit complements other plans for improved transit .....	35
<b>Chapter 3</b>	
<b>What are the benefits of the SR 520 bus rapid transit concept? ...</b>	<b>39</b>
Demand, capacity and travel time.....	41
Reliability .....	43
Connectivity and accessibility .....	43
Expandability and infrastructure .....	43
Transit accessibility without the Montlake Flyer Stop .....	44
<b>Chapter 4</b>	
<b>How will the High Capacity Transit Plan be implemented?.....</b>	<b>47</b>
What transit service and capital investments are needed? .....	51
What are the next steps?.....	52
How will the High Capacity Transit Plan be funded?.....	53
What are potential funding sources? .....	54
How will local jurisdictions and the general public be involved in moving the High Capacity Transit Plan forward? .....	56



# Executive Summary

By the year 2030, our region is expected to grow by more than 1.3 million people and add 700,000 jobs. Forecasts predict that the population and employment growth will increase travel demand across SR 520 by 40,000 daily trips. SR 520 is a vital connection for major regional population and employment centers in downtown Seattle, the University District, downtown Bellevue, Overlake, Redmond and Kirkland.

The SR 520 High Capacity Transit Plan outlines a strategy for meeting the demand for cross-Lake Washington travel with an incremental implementation of bus rapid transit service that connects employment, residential areas and activity centers on both sides of Lake Washington.

Engrossed Substitute Senate Bill 6099 directed the Governor's Office to work with the Washington State Department of Transportation (WSDOT), Sound Transit, King County Metro (Metro), and the University of Washington (UW) to plan for high capacity transit in the SR 520 corridor. The legislation called for the partner agencies to jointly develop a multimodal transportation plan that ensures the coordination of bus and rail services throughout the SR 520 corridor, specifically calling out development of alternatives for a multimodal transit center in the Montlake interchange vicinity.

To accomplish the legislative directive, the partner agencies developed the following goals and objectives for a High Capacity Transit Plan:

- Define a phased program for bus rapid transit through 2030.
- Respond to projected increases in transit demand on the SR 520 corridor.
- Build on the strong transit market already in place.
- Build on speed and reliability benefits from proposed new HOV lanes.
- Expand ridership needed for future high capacity transit improvements in the corridor.

## What is the SR 520 High Capacity Transit Plan?

The High Capacity Transit Plan provides an outline for how transit can build on capital investments identified for the SR 520 Corridor Program by substantially increasing service and improving off-corridor transit facilities to help meet future growth in travel.

The High Capacity Transit Plan includes three major elements:

1. **Bus rapid transit service.** Consistent with the October 2007 Draft High Capacity Transit Plan, the near-term high capacity transit service in the SR 520 corridor will be bus rapid transit. The SR 520 bus rapid transit concept envisions improving bus speed and reliability by using shared facilities such as HOV lanes and supportive HOV direct-access ramp investments, transit bypass lanes, preferential treatments at intersections, intelligent transportation systems and limited stops, and greater efficiency with improved vehicle design, fare collection systems and high quality bus stations.

While the elements vary depending on the operating environment, bus rapid transit is more frequent, faster, and has higher capacity than regular bus service. Bus rapid transit must also have some sort of priority over general-purpose traffic.

The SR 520 bus rapid transit concept features up to five lines that build on the existing high-ridership routes that serve major transit markets on both sides of Lake Washington. These are:

- Redmond/Overlake to the University District.
- Redmond/Overlake to downtown Seattle.
- Eastgate/Bellevue to the University District.
- Totem Lake/Kirkland to downtown Seattle.
- Canyon Park/Woodinville to the University District.

The SR 520 bus rapid transit system will feature frequent all-day, two-way transit service, with at least 10-minute frequencies during peak hours, and 15-minute frequencies in the mid-day. The concept includes the performance elements mentioned above. The SR 520 Corridor Program infrastructure investments lay the foundation for the service. Other elements are a result of the service design, and smaller capital investments identified in the High Capacity Transit Plan such as real-time arrival information and ticket vending machines that allow for off-board fare payment. Finally, the bus rapid transit concept includes improvements that will help riders access the service on foot, by bicycle and by car.

2. **Montlake Multimodal Center.** The High Capacity Transit Plan includes the partner agencies' vision for developing a multimodal center adjacent to the UW campus, UW Medical Center and the planned UW Link Light Rail Station to accommodate the high concentration of people attracted to this area. Not only will the Montlake Multimodal Center improve access to the University District, it will also be a major transfer point between rail, the proposed SR 520 bus rapid transit lines and the existing local transit service.

The Montlake Multimodal Center is a central feature to transit and is compatible with all three Westside design options under consideration in the SR 520 Corridor Program.

- 3) **Light rail operation on dedicated facilities.** The Sound Transit 2 plan funds a planning study of light rail in the SR 520 corridor to evaluate potential alignments, stations and costs, and potential implementation strategy for light rail in the corridor.

Additionally, the High Capacity Transit Plan identifies replacement service to address the SR 520 Corridor Program's planned removal of the Montlake Flyer Stop.

Finally, the partner agencies identified the funding gap for service and capital improvements needed to implement the High Capacity Transit Plan. The identified gap is approximately \$16.5 million annually for operations and between \$84 and \$172 million for capital depending on the level of expenditure.

## **What are the next steps for the High Capacity Transit Plan?**

The partner agencies have developed a phased implementation approach for delivering high capacity transit service that will meet the growing demand in the SR 520 corridor through 2030, while responding to other plans for the corridor.

1. A program of phased service improvements and capital investments to provide the bus rapid transit service called for in the plan, including estimated costs and potential funding sources. This includes identifying the gaps in funding that will need to be addressed in order to bring bus rapid transit service to the SR 520 corridor.

The partner agencies selected 2016 as the target date for the start of bus rapid transit service to take immediate advantage the continuous HOV lanes proposed for the SR 520 Corridor program and Sound Transit's University Link station.

The three initial bus rapid transit lines identified for service on SR 520 are:

- Redmond/Overlake to downtown Seattle.
- Redmond/Overlake to the University District.
- Eastgate/Bellevue to the University District.

2. A schedule for a detailed financing and bus rapid transit development program and work program, integrated with other projects and improvements planned by WSDOT, Sound Transit, Metro and the UW.

Major milestones for the High Capacity Transit Plan include:

#### **2009-2011**

- Define the first phase of Montlake Multimodal Center improvements
- Develop short-term and long-term financial plan.
- Develop phased transit service plan, including construction mitigation plan.
- Begin Lake Washington Urban Partnership and Sound Transit service increases on SR 520.

#### **2012-2015**

- Add transit service to mitigate for eliminating the Montlake Flyer Stop.
- Operate construction-period transit.
- Complete SR 520 transit and HOV lanes.
- Complete the bus rapid transit financial strategy and detailed service plan.
- Complete revised Sound Transit SR 520 high capacity transit study.

#### **2016-2021**

- Implement SR 520 bus rapid transit service in 2016; adjust with service demand.
- Re-evaluate bus rapid transit service levels in preparation for 2021 East Link start-up Seattle/Overlake Transit Center.

#### **2022-Future**

- Expand SR 520 bus rapid transit lines and service levels as demand increases.
- Implement supporting investments.

## **Is the High Capacity Transit Plan compatible with other plans for the SR 520 corridor?**

The High Capacity Transit Plan builds on programs planned for the SR 520 corridor, including:

- **The SR 520 Corridor Program**, which will replace the Evergreen Point Bridge and replace the existing roadway with a “4+2” lane configuration consisting of two general-purpose lanes and one HOV/transit lane in each direction and complementary transit HOV investments.
- **Transit Now**, a Metro program that will add mid-day and weekend service to two cross-bridge routes, and create an Eastside RapidRide arterial bus rapid transit line serving downtown Bellevue, Crossroads, Overlake and downtown Redmond.

- **Sound Transit 2**, which will add 36 miles of light rail to the Sound Move investments that funded the initial SeaTac to downtown Seattle light rail segment scheduled to open July 3, 2009; and includes an extension to the UW by 2016, light rail across I-90 to Bellevue and Overlake by 2021, and significant service hour expansion for SR 520 Regional Express service and other ST Express routes on both sides of Lake Washington starting in 2009.
- **The Lake Washington Urban Partnership**, an agreement between the federal government, WSDOT, Metro and the Puget Sound Regional Council. If tolling is approved by the legislature in 2009, regional partners will receive \$139 million in federal funds to employ innovative traffic management tools along SR 520 and Interstate 90 between Seattle and the Eastside and to purchase 45 new buses for SR 520 routes, real-time schedule equipment and additional park and ride spaces. The grant does not, however, provide the needed funds to operate the new buses.



# Chapter 1

---

Why is the High Capacity  
Transit Plan needed?





By the year 2030, our region is expected to grow by more than 1.3 million people and add 700,000 jobs. Forecasts predict that the population and employment growth will increase travel demand across SR 520 by 40,000 daily trips. SR 520 is a vital connection for major regional population and employment centers in downtown Seattle, the University District, downtown Bellevue, Overlake, Redmond and Kirkland.

The SR 520 High Capacity Transit Plan outlines a strategy for meeting increasing demand for cross-Lake Washington travel that combines the planned improvements of the SR 520 Corridor Program with an incremental implementation of bus rapid transit that connects employment, residential areas and activity centers on both sides of Lake Washington.

In spring of 2007, the Washington State Legislature passed Engrossed Substitute Senate Bill (ESSB) 6099. The legislation identified the “4+2” lane configuration, with four general-purpose lanes and two HOV lanes, as the preferred alternative for the SR 520 corridor, and also stated that the HOV lanes must support bus rapid transit.

ESSB 6099 directed the Governor’s Office to work with the Washington State Department of Transportation (WSDOT), Sound Transit, King County Metro (Metro), and the University of Washington (UW) to plan for high capacity transit in the SR 520 corridor. The legislation called for the partner agencies to jointly develop a multimodal transportation plan that ensures the coordination of bus and rail services throughout the SR 520 corridor, specifically calling out development of alternatives for a multimodal transit center in the Montlake interchange vicinity in the University District.

The High Capacity Transit Plan responds to that legislation. It describes effective and efficient coordination of high capacity transit services in the SR 520 corridor, taking into account Metro’s Transit Now initiative, WSDOT’s SR 520 Corridor Program, the Sound Transit 2 (ST2) plan approved by voters in November 2008, and the potential Lake Washington Urban Partnership.

However, while the plan provides a vision for SR 520 bus rapid transit service, it does not include a funding plan to fill the significant level of resource needs (operating and capital) to fully implement the plan beyond those included in ST2 plan, Transit Now and potential Lake Washington Urban Partnership capital funds.

## Addressing transit constraints in the SR 520 corridor

SR 520 is one of the highest-volume transit corridors in the region. Metro, Sound Transit, and Community Transit provide 566 daily bus trips on 23 routes across the SR 520 bridge. On an average weekday in 2008, Metro and Sound Transit buses carried almost 15,000 riders across the SR 520 Bridge. That figure includes 5,000 people riding the bus during the morning peak period (6 to 9 a.m.) – equal to a freeway lane operating efficiently for the three-hour morning commute.

Travel time data collected by Metro indicates that actual bus travel times between NE 51st Street in Redmond and the Montlake Flyer Stop in Seattle can range from 10 to 40 minutes westbound in the morning peak period and 10 to 35 minutes eastbound in the afternoon peak period. These traffic delays make transit less reliable and less attractive as a travel choice while increasing the cost to provide the service.



Existing Transit and HOV Facilities  
Exhibit 1-1

The SR 520 HOV lane system is currently incomplete, as shown in **Exhibit 1-1**. The eastbound lane runs only from 124th Avenue NE to West Lake Sammamish Parkway. The westbound lane begins at West Lake Sammamish Parkway and terminates before I-405, starts again at 108th Avenue NE and ends just before the SR 520 bridge, requiring buses to merge with general-purpose traffic. There is no eastbound HOV lane between I-5 and I-405, nor is there a westbound lane between Evergreen Point Road and I-5. Additionally, the HOV lanes as they exist today are on the outside of the corridor, requiring other vehicle traffic to weave through HOV and transit traffic to reach the general-purpose lanes. This weaving and the intermittent HOV lanes cause increased traffic congestion as buses, vanpools and carpools merge in and out of general-purpose traffic.

The SR 520 Corridor Program proposes to complete an inside HOV lane system from I-5 to SR 202, new freeway stations within the center median, and direct-access ramps and transit bypass lanes at key interchanges. These improvements are designed to reduce congestion in the corridor, improve transit speed and reliability, and allow fast access for transit from the inside HOV lanes. **Exhibit 1-2** shows the location and key features of the major transit infrastructure investments proposed in the corridor.



*SR 520 Future HOV Facilities  
Exhibit 1-2*

Chapter 2 provides further details of the other conventional and high capacity transit improvements planned for the SR 520 corridor, including the SR 520 Corridor Program planned by WSDOT, Metro’s Transit Now program, the ST2 plan, and the potential Lake Washington Urban Partnership.

## The growing demand for transit

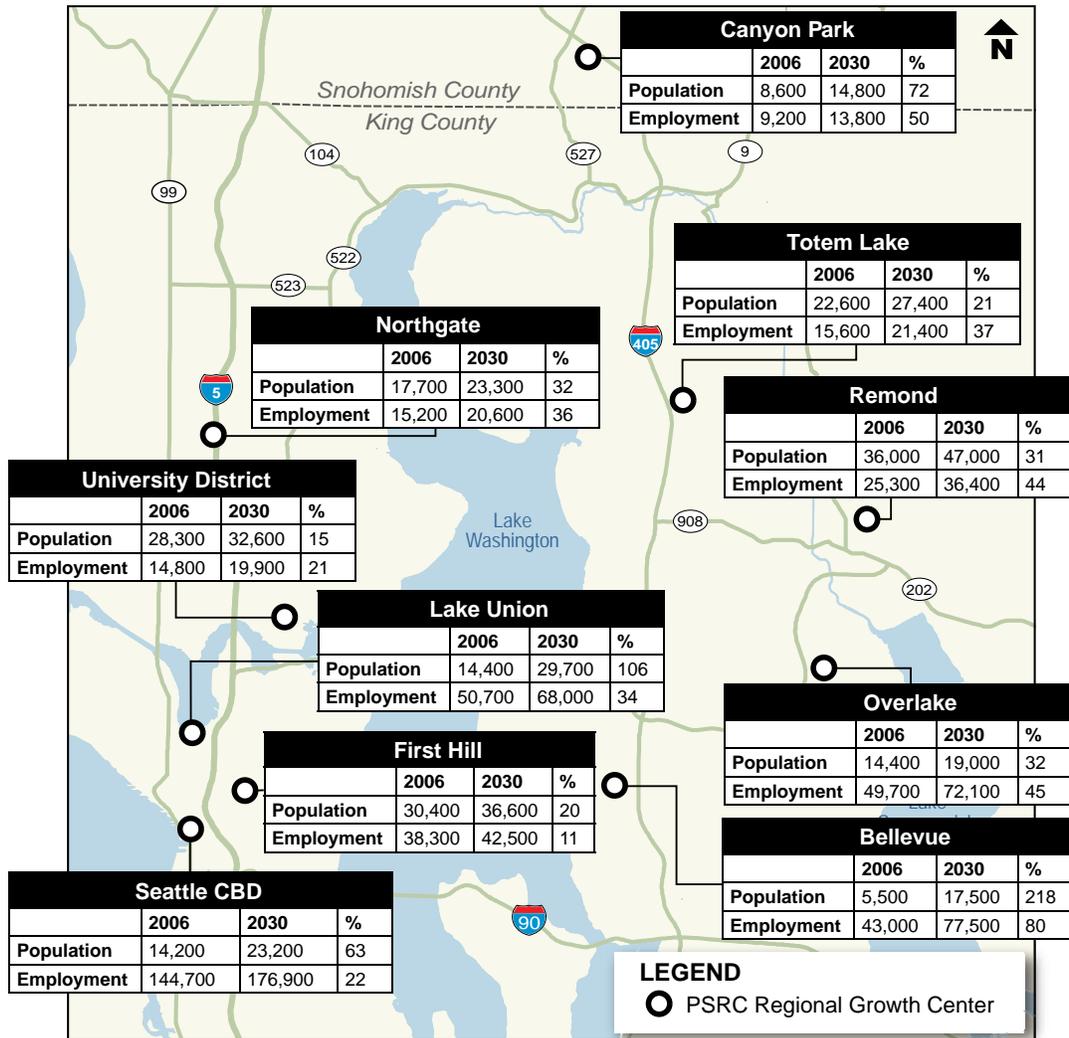
Transit ridership in the SR 520 corridor has increased by over 30 percent in the past five years. Most of this growth has been in bus travel to and from the University District and in commutes to job centers in downtown Seattle and on the Eastside. Twelve of the region’s largest growth centers are located near the SR 520 corridor. They include:

- Downtown Seattle.
- South Lake Union.
- SoDo.
- The University District.
- Capitol Hill.
- Seattle Center/Lower Queen Anne.
- Downtown Bellevue.
- Crossroads.
- Downtown Redmond.
- Overlake High Tech Center.

- Kirkland.
- Totem Lake.

In addition, several centers farther north are served by SR 520, including Northgate (along I-5), Woodinville, Bothell, the North Creek Business Park, Canyon Park and other growing areas along I-405 in north King County and south Snohomish County.

**Exhibit 1-3** – Regional growth centers shows the patterns and increases of population and employment growth expected through 2030. These maps and their related travel demand patterns identify the major markets that will be served by the bus rapid transit system described in Chapter 2. See **Exhibit 1-4** – What is bus rapid transit?



Source: PSRC vision 2040, Regional growth strategy, February 14, 2008  
 Population and employment forecast from PSRC "2006 Small-Area" Land use forecast

*Regional growth centers - Year 2030 population and employment changes*  
 Exhibit 1-3

Types of bus rapid transit		
<b>Convertible/ Bus rapid transit</b> 	<ul style="list-style-type: none"> <li>▶ Same exclusivity and access as busway bus rapid transit</li> <li>▶ Facilities built to light rail standards</li> <li>▶ Convertible to light rail without new right of way</li> </ul>	
<b>Busway/ Bus rapid transit</b> 	<ul style="list-style-type: none"> <li>▶ Exclusive right of way</li> <li>▶ Not affected by operations in adjacent general-purpose lanes</li> <li>▶ Direct access to transit facilities</li> </ul>	
 <b>HOV/ Bus rapid transit</b> 	<ul style="list-style-type: none"> <li>▶ Shares lane with HOV to bypass general-purpose traffic</li> <li>▶ With inside median lanes, buses bypass ramp weaving activity</li> <li>▶ Direct access to inside median or nearby transit facilities and park and rides</li> </ul>	
<b>Arterial/ Bus rapid transit</b> 	<ul style="list-style-type: none"> <li>▶ Operates on arterials with signals</li> <li>▶ Shares lane with HOV/business access</li> <li>▶ Gets priority at signals</li> </ul>	

✓ Selected by regional transit agencies for initial bus rapid transit service

*Types of Bus Rapid Transit  
Exhibit 1-4*

## Supporting a regional strategy for high capacity transit

The High Capacity Transit Plan builds on existing regional transit and transportation plans.

Sound Transit’s Regional Transit Long-Range Plan, adopted in 2005, represents Sound Transit’s goals, policies and strategies to guide the long-term development of a regional high capacity transit system. The plan identified SR 520 and I-90 as major travel corridors serving east-west travel in the Seattle area. These corridors connect to existing and planned major high capacity transit systems.

**Exhibit 1-5** – Sound Transit Long-Range HCT Plan shows how SR 520 high capacity transit plans fit within the larger regional high capacity transit vision.

The Puget Sound Regional Council’s (PSRC) Destination 2030 (2006) plan identifies SR 520 as a major multimodal corridor needing improvement, and emphasizes strategies to move more people using transit and ridesharing. The PSRC’s Vision 2040 (2008) plan identifies how the region can accommodate more people and jobs by focusing growth into urban centers that are connected by high quality transportation systems.

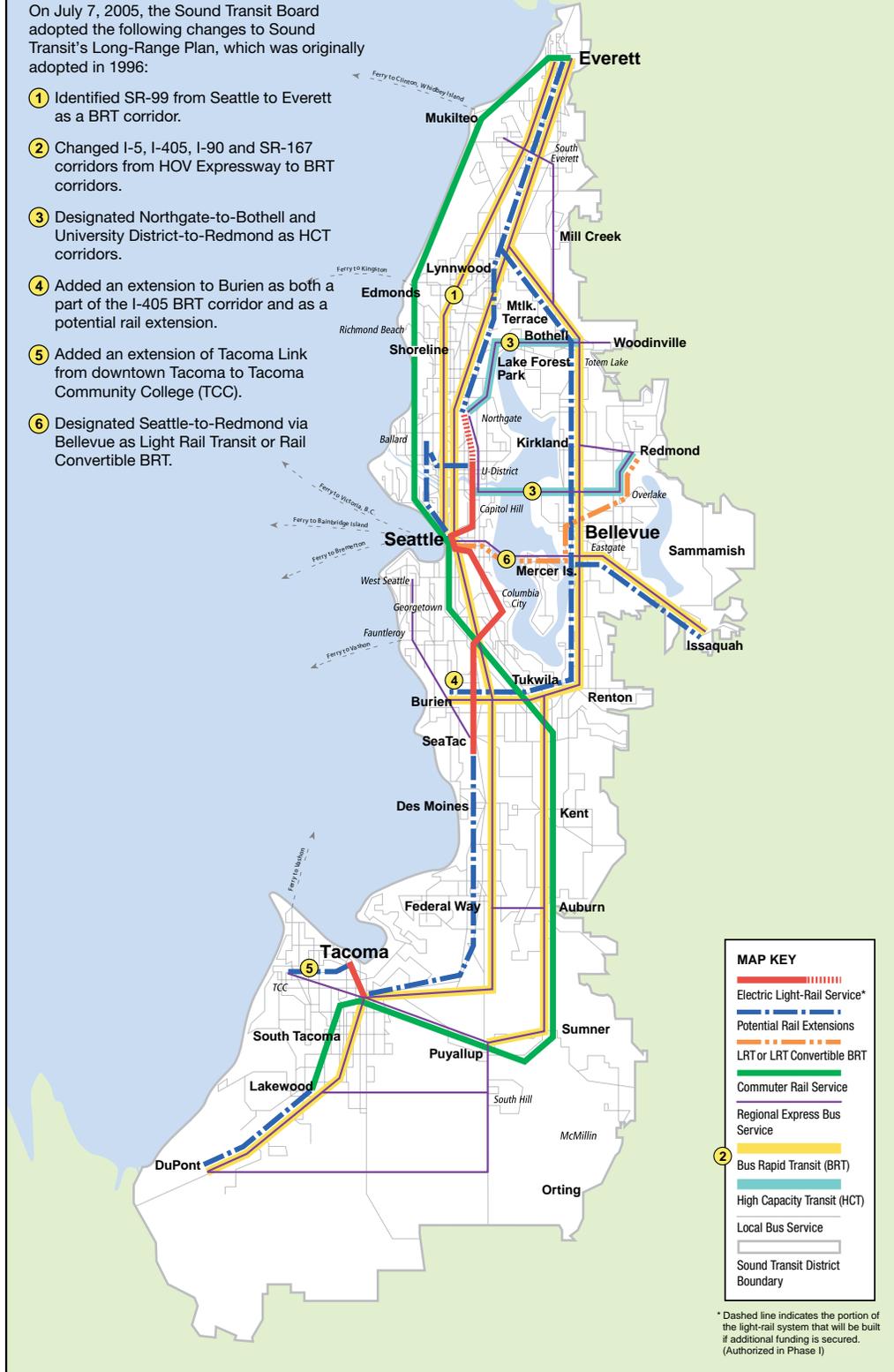
In the Draft SR 520 High Capacity Transit Plan released in October 2007, the partner agencies confirmed the need for high capacity transit in the corridor and that bus rapid transit is the preferred high capacity transit mode to serve expected travel demand in the foreseeable future.

# LONG-RANGE HCT PLAN



On July 7, 2005, the Sound Transit Board adopted the following changes to Sound Transit's Long-Range Plan, which was originally adopted in 1996:

- 1 Identified SR-99 from Seattle to Everett as a BRT corridor.
- 2 Changed I-5, I-405, I-90 and SR-167 corridors from HOV Expressway to BRT corridors.
- 3 Designated Northgate-to-Bothell and University District-to-Redmond as HCT corridors.
- 4 Added an extension to Burien as both a part of the I-405 BRT corridor and as a potential rail extension.
- 5 Added an extension of Tacoma Link from downtown Tacoma to Tacoma Community College (TCC).
- 6 Designated Seattle-to-Redmond via Bellevue as Light Rail Transit or Rail Convertible BRT.



Sound Transit Long-Range HCT Plan  
Exhibit 1-5

Voters agreed to fund a regional high capacity transit system through the approval of Sound Transit ballot measures in 1996 and 2008. The 1996 Sound Move package included light rail service connecting SeaTac to the University District. The SeaTac to downtown Seattle segment will open in 2009. The University Link extension to Capitol Hill and the UW will break ground early in 2009 and is scheduled to open in 2016. ST2 plan components are described in more detail in Chapter 2.

## Goals and objectives

To guide the work for improving transit across SR 520, the partner agencies developed a set of goals and objectives, which were included in the October 2007 Draft High Capacity Transit Plan.

The goals and objectives reflected direction provided by state legislation, and were designed to support the SR 520 Corridor Program's purpose and need statement, as well as regional plans for growth management and transportation discussed previously. The High Capacity Transit Plan is designed to create a phased program to address the following categorized goals:

1. **Demand and capacity.** Identify sufficient people-carrying capacity that will respond to projected transit travel demand forecasted for the design year 2030.
2. **Travel time.** Identify a vision for all-day bus rapid transit service in the SR 520 corridor operating on the realigned and continuous HOV lanes that is travel-time and cost competitive with other modes for cross-lake trips to major Seattle and Eastside activity centers.
3. **Reliability.** Provide cross-lake bus rapid transit service in the SR 520 corridor HOV lanes to major Seattle and Eastside activity centers that is reliable.
4. **Connectivity.** Provide cross-lake bus rapid transit service in the SR 520 corridor HOV lanes to major Seattle and Eastside activity centers that connects to existing and planned transit networks.
5. **Accessibility.** Improve the frequency and coverage of transit service throughout the day and reduce the time needed to transfer between modes.
6. **Expandability.** Identify a vision for the ultimate development of the SR 520 high capacity transit system which may include exclusive, dedicated lanes in the corridor.
7. **Infrastructure.** Identify other related improvements outside the SR 520 Corridor Program project limits that could enhance SR 520 high capacity transit service.



# Chapter 2

---

Defining High Capacity  
Transit for SR 520



## Key elements of the SR 520 High Capacity Transit Plan

The SR 520 High Capacity Transit Plan has three key elements:

- **Bus rapid transit operating in the HOV lanes:** Consistent with the October 2007 Draft High Capacity Transit Plan, the near-term high capacity transit service in the SR 520 corridor will be bus rapid transit. The SR 520 bus rapid transit concept envisions improving bus speed and reliability by using shared facilities such as HOV lanes and supportive HOV direct access ramp investments, transit bypass lanes, preferential treatments at intersections, intelligent transportation systems and limited stops, and greater efficiency with improved vehicle design, fare collection systems and high quality bus stations.

While the elements vary depending on the operating environment, bus rapid transit is more frequent, faster, and has higher capacity than regular bus service. Bus rapid transit must also have some sort of priority over general-purpose traffic.

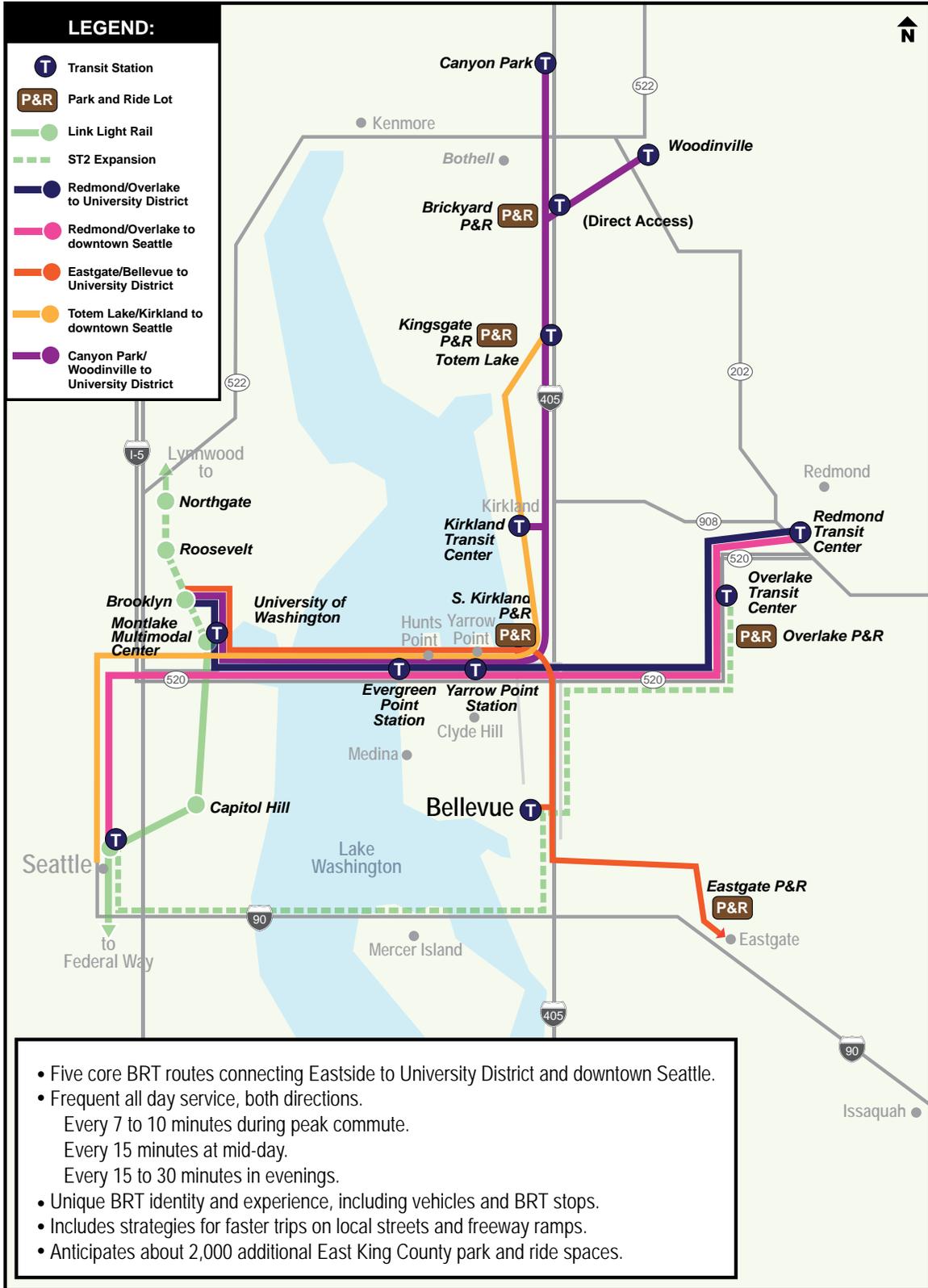
- **Montlake Multimodal Center:** The High Capacity Transit Plan includes the partner agencies' vision for developing a multimodal center adjacent to the UW campus, UW Medical Center and the planned UW Link Light Rail Station to accommodate the high concentration of people attracted to this area. Not only will the Montlake Multimodal Center improve access to the University District, it will also be a major transfer point between rail, the proposed SR 520 bus rapid transit lines and the existing local transit service.

The Montlake Multimodal Center is a central feature to transit and is compatible with all three Westside design options under consideration in the SR 520 Corridor Program.

- **High capacity transit operating on dedicated facilities:** Sound Transit's ST2 plan funds a planning study of light rail in the SR 520 corridor to evaluate potential alignments, stations and costs, and potential implementation strategy for light rail in the corridor.

### The SR 520 bus rapid transit concept

The SR 520 bus rapid transit concept calls for a network of up to five bus rapid transit lines selected based upon market demand in the areas they would serve and the potential for high growth rates, which would provide frequent all-day service in both directions, connecting downtown Seattle and the University District with Eastside activity centers. The network is shown in **Exhibit 2-1 – SR 520 Bus Rapid Transit Network**.



SR 520 Bus Rapid Transit Network  
Exhibit 2-1

The lines are:

- Redmond/Overlake to the University District.
- Redmond/Overlake to downtown Seattle.
- Eastgate/Bellevue to the University District.
- Totem Lake/Kirkland to downtown Seattle.
- Canyon Park/Woodinville to the University District.

With completion of the six-lane SR 520 bridge replacement, planned SR 520 HOV improvements and additional transit priority improvements described in this plan, the bus rapid transit system would increase all-day people-moving capacity and ridership across SR 520. The five core lines and the supporting transit network are designed to:

- Accommodate growth in travel across Lake Washington on SR 520.
- Serve an estimated 80 percent of the projected SR 520 ridership across Lake Washington.
- Provide peak period service every 7 to 10 minutes and off-peak service every 15 minutes.
- Connect downtown Bellevue, downtown Redmond, Overlake, downtown Kirkland, Totem Lake, Canyon Park, Bothell, Woodinville other Eastside areas to the University District and downtown Seattle.
- Integrate with other peak period, express and local routes and anticipated East Link light rail to expand the capacity, access and service levels of all cross-lake transit service.
- Take advantage of more efficient operations provided by HOV and direct access improvements on SR 520 and I-405.

Strategies that improve access to the high capacity transit system include:

- Expanding East King County park and ride capacity.
- Improving local transit service to connect frequently with bus rapid transit.
- Focusing capital investments and cooperative commitments to maintain fast and reliable transit operations on the freeway and on local arterials.

## **Bus rapid transit operation on SR 520**

The five bus rapid transit lines would primarily operate in the HOV lanes on SR 520 and I-405, but would use arterials to reach the activity centers and employment areas that are beyond the corridor. The partner agencies designed the route structure to be accessible and easy to use, with stations and transit centers near where people live and work. The system also connects to transit centers, park and rides and transit hubs to facilitate efficient transfers between local

and other regional transit services. With frequent all-day two-way service, riders will gain flexibility to more easily make regularly planned and spontaneous trips throughout the day and evening.

In downtown Seattle, the largest hub in the regional transit network, the bus rapid transit routes will connect with other major transit services including light rail, Washington State Ferries, King County Ferry District passenger ferries, local and regional buses, commuter rail and streetcars.

At the proposed Montlake Multimodal Center in the University District, riders will be able to access bus rapid transit and light rail or transfer to local bus routes.

On the Eastside, bus rapid transit lines using SR 520 and I-405 will connect with local and regional bus service at:

- South Kirkland Park and Ride.
- Overlake Transit Center.
- Bellevue Transit Center.
- Redmond Transit Center.
- Totem Lake Freeway Station.
- Brickyard Park and Ride.
- UW–Bothell Campus.
- Eastgate Park and Ride.

By 2021, SR 520 bus rapid transit lines would connect with East Link light rail in downtown Bellevue and at Overlake Transit Center.

## **Other measures to improve transit access and connections**

### **Park and ride capacity**

Park and ride lots connect transit to communities where land use patterns and roadway networks make it difficult and expensive to otherwise provide access through local connecting service. Since much of the Eastside has low housing density and arterial networks that provide only limited connectivity, park and rides have played, and will continue to play, an important access role for residents using transit on SR 520 and I-405.

As transit accommodates a larger percentage of cross-lake trips, the partner agencies expect the demand for park and ride spaces to grow as well. Preliminary estimates suggest that up to 2,000 more spaces are needed along SR 520 and I-405 to serve cross-lake as well as north/south transit routes.

## Improved local transit service

To reduce wait times for transfers to and from local routes, service on local routes may need to be improved to connect more frequently to the bus rapid transit stations and park and ride lots. These local service improvements would benefit both cross-lake travelers and the many other transit riders whose trips do not cross Lake Washington.

## Investing in facilities needed for effective transit operations

Additional new transit facilities are needed to operate the SR 520 bus rapid transit lines. Other speed and reliability investments along the SR 520 corridor and on arterial streets would enhance bus rapid transit performance and provide the necessary reliability improvements. These include:

- **Additional base capacity.** The higher service levels for bus rapid transit will involve larger transit fleets, requiring new or expanded maintenance bases. Further study is needed to address base capacity for full build-out of the SR 520 bus rapid transit concept.
- **Terminal facilities.** At the termini of the bus rapid transit lines, vehicles will need space for layover, driver breaks and recovery time to assure that the next trip starts on schedule. Layover spaces can be provided on public rights of way in some areas (like bus zones) but off-street layover areas may also be needed.
- **Freeway HOV operations, freeway connections and arterial improvements.** Fast and reliable transit service will depend on the ability to manage or bypass congestion both on and off of freeways. In addition to maintaining optimum travel times on freeway HOV lanes, strategies to avoid congestion will be needed when bus rapid transit lines cannot use the HOV lanes or when they travel local streets to serve employment and activity centers. These improvements involve measures such as transit signal priority, bus priority lanes or queue jumps, and other measures that help transit operate more reliably.

In some freeway locations where direct-access ramps for transit are not already planned or in place, additional transit lanes or ramp widening could improve transit performance. For example, marking the freeway shoulder for transit-use only during congested periods between NE 51st Avenue and East Lake Sammamish Parkway would allow bus rapid transit service to bypass traffic congestion after stopping at SR 520 freeway stops at NE 40th Street and NE 51st Street in the Overlake area. Bus rapid transit service would not be able to utilize the inside HOV lane for the short distance between NE 51st Avenue and East Lake Sammamish Parkway.

## **A unique identity and quality**

Transit operators often give bus rapid transit services unique identities to help customers distinguish them from other local or express bus services. Bus rapid transit on SR 520 is expected to employ a variety of characteristics to emphasize its essential qualities for providing fast, frequent transit service that is easy to use. These include:

- Low-floor, environmentally friendly hybrid buses.
- Distinct station and stop designs that clearly identify bus rapid transit service.
- Off-board fare collection to expedite boarding.
- Simplified route structure with fewer stops.
- Frequent, all-day service that allows riders to use bus rapid transit without referencing schedules.
- Real-time schedule information at stations to give riders details about routes and next-bus arrival times.

## **Montlake Multimodal Center**

### **Objectives for the Montlake Multimodal Center**

To guide the future development of the Montlake Multimodal Center (Center), the partner agencies identified planning and design principles to help shape individual projects and proposals in the area. The UW, WSDOT, Sound Transit, Metro and the City of Seattle all have plans, projects or services that affect Center siting and how travelers access transit. These include Sound Transit's University Link station, the UW's Rainier Vista Concept Plan, and the SR 520 Corridor Program's Westside interchange options for SR 520.

The overall vision for the Center outlines the importance of pedestrian and bicycle movements, fast and reliable transit service, connections between local, bus rapid transit and light rail service, and maintaining the open character and accessibility of the area.

The partner agencies determined that the best location for the Center would be to encompass the triangle-shaped property known as the Montlake Triangle across Montlake Boulevard from the University Link station and include bus stops located in front of the UW Medical Center and related pedestrian connections.

In 2008, more than half of the employees and students traveling to the UW across SR 520 traveled by bus. With improved bus rapid transit service, the share of all trips by transit is expected to increase. The Center will provide a focal point for bus rapid transit, local transit and light rail service from the south to the University District and the UW. While the Center provides a single point to transfer between transit services, most travelers are expected to

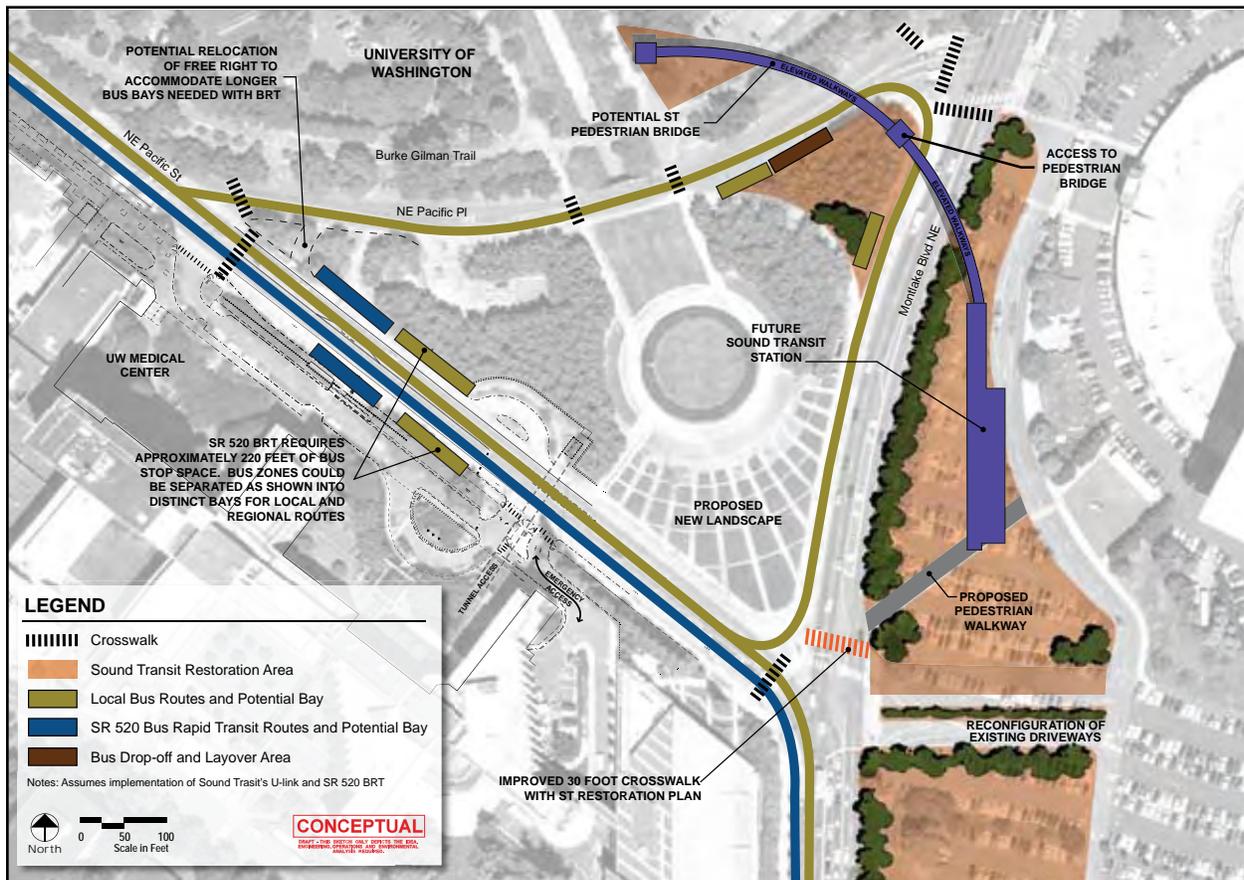
begin or end their trips there rather than transfer. For example, during peak periods, four out of five riders will likely be going directly to or from the UW. Further, the Center is not meant to provide park and ride capacity for those wishing to park on campus and take the train or bus elsewhere.

The design of the Center will improve pedestrian connections between light rail and bus, and destinations like the UW main campus, the UW Medical Center, Husky Stadium, the Bank of America Arena in Hec Edmondson Pavilion, and intra- and inter-collegiate athletic facilities.

### Montlake Multimodal Center concepts

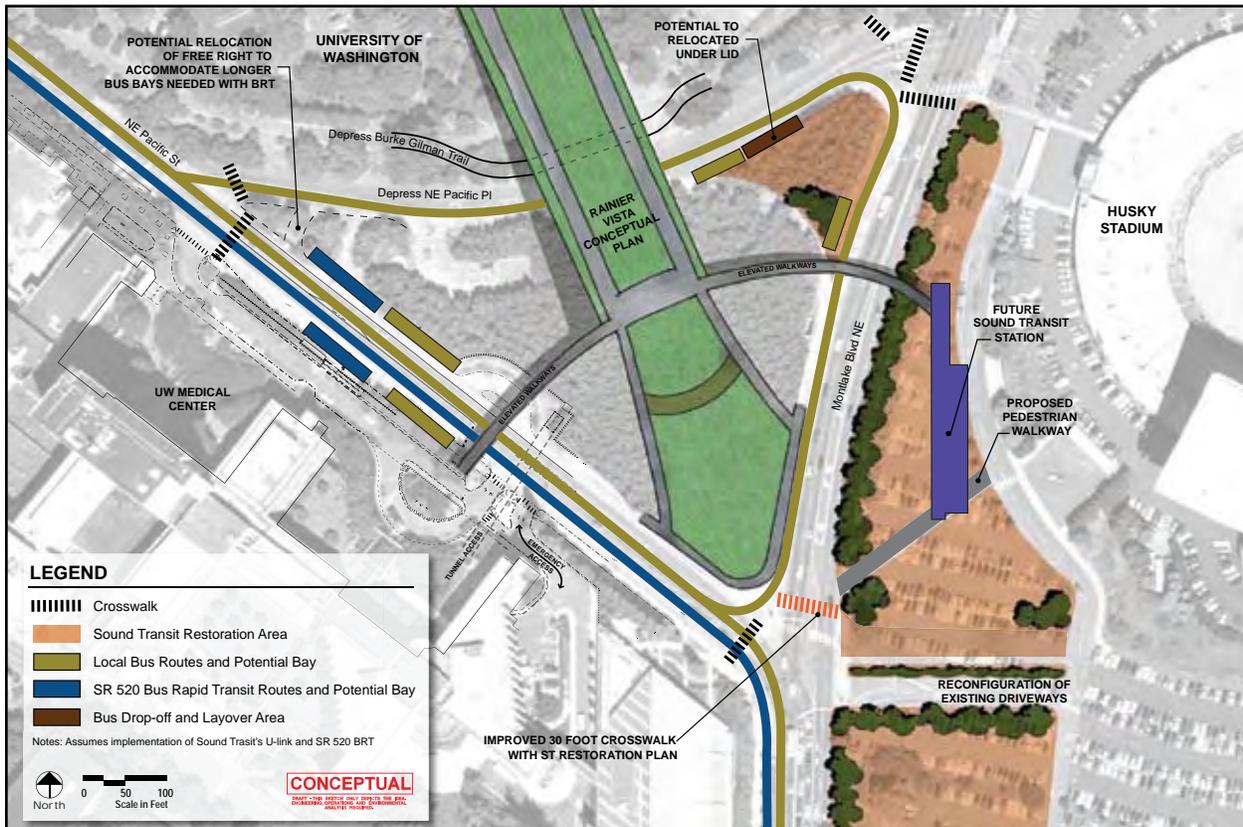
The UW, WSDOT, Sound Transit, Metro and the City of Seattle developed four initial design concepts to improve the Center. These design concepts will be used to guide how the partner agencies will develop and coordinate their plans in the area.

The concepts lay out several scenarios for Center development. The year 2016 is a major milestone for the Center because light rail and initial bus rapid transit service are proposed to start at that time. The concepts are:



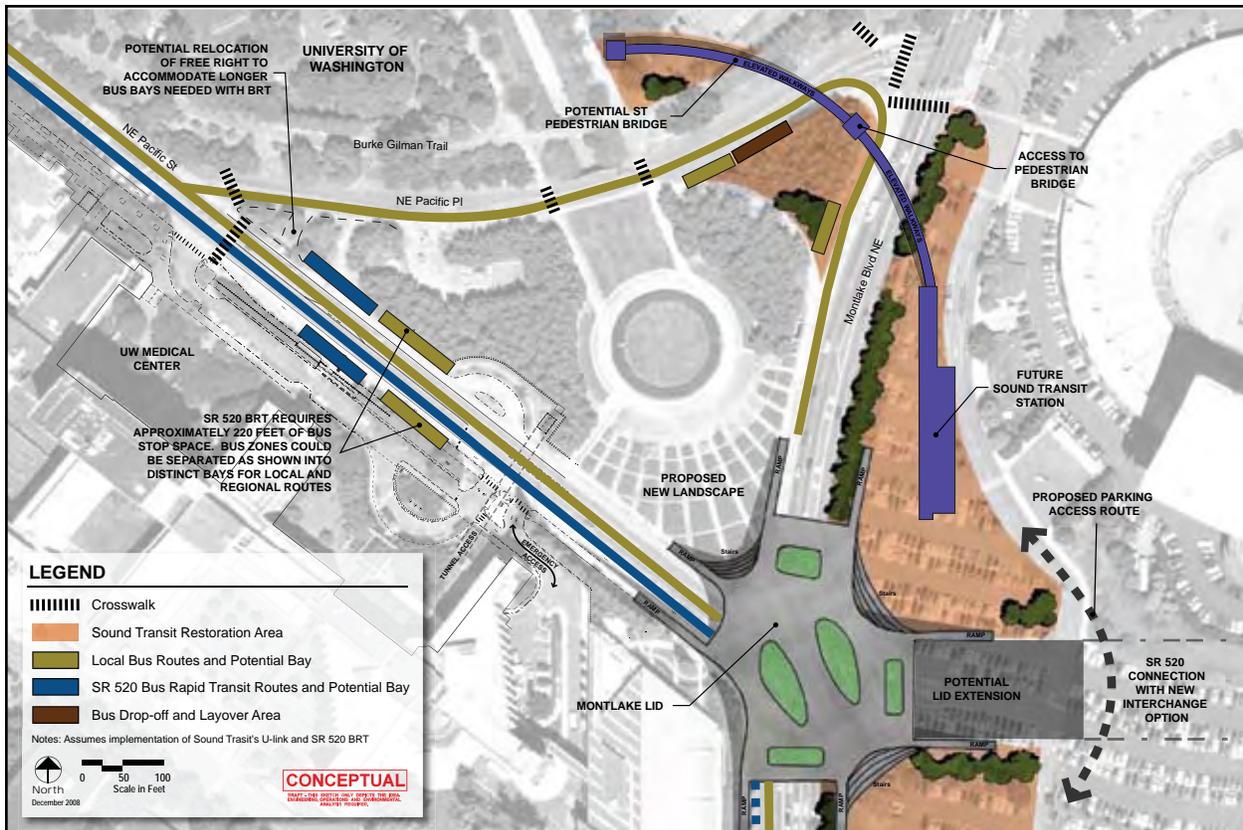
Montlake Multimodal Center Baseline Concept  
Exhibit 2-2

**Baseline (Exhibit 2-2):** This concept assumes the Sound Transit UW Link light rail station as currently planned and expansion of bus zones on NE Pacific Street to accommodate the higher volumes of transit vehicles and passenger activities expected with bus rapid transit. It identifies the key pathways and crossings for pedestrians to and from area destinations and connecting transit services. Sound Transit’s proposed pedestrian bridge is a key feature with grade-separated crossing for transit riders to have access to and from the UW campus. The baseline concept also notes the need for supporting facilities for transit, including layover areas. This concept would readily meet the Center’s functional needs for the advent of light rail in 2016 and allows for future improvements to accommodate bus rapid transit.



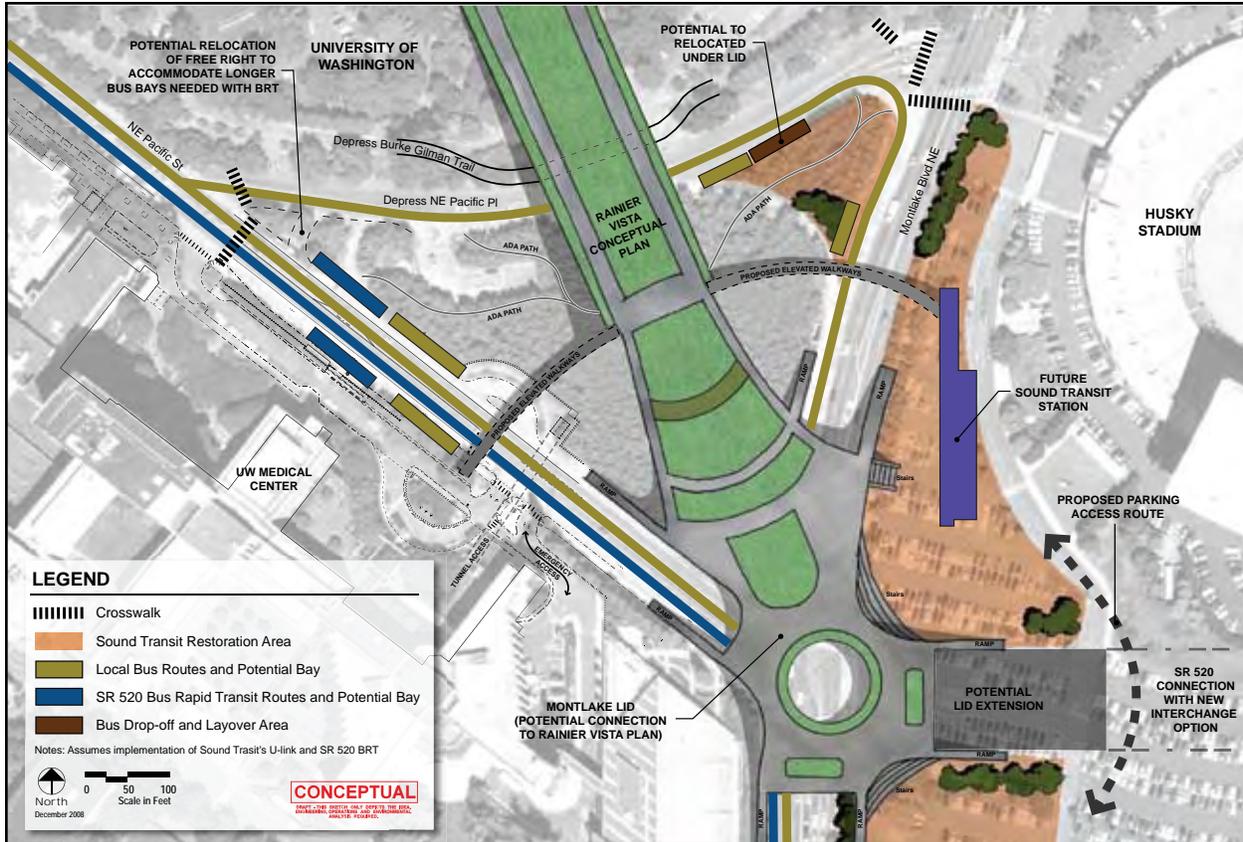
*Montlake Multimodal Center Baseline with the Rainier Vista Concept Plan  
Exhibit 2-3*

**Baseline with the Rainier Vista Concept Plan (Exhibit 2-3):** This concept would incorporate the Rainier Vista Concept Plan developed by the UW. The Center would include improvements needed to accommodate the increased bus activity – primarily on NE Pacific Place – and would add the Rainier Vista Concept Plan proposal to lower NE Pacific Place and the Burke Gilman Trail. The plan would add lids over NE Pacific Place and the Burke Gilman Trail to provide an at-grade level pedestrian/bicycle connection directly to Montlake Triangle. This would potentially add an opportunity to expand transit facilities on NE Pacific Place. Finally, the concept would construct pedestrian bridges across both NE Pacific Street and Montlake Boulevard NE.



*Montlake Multimodal Center with Grade-separated NE Pacific Street and Montlake Boulevard NE Intersection*  
 Exhibit 2-4

**Grade-separated NE Pacific Street and Montlake Boulevard NE intersection (Exhibit 2-4):** This concept assumes a lowering of the NE Pacific Street and Montlake Boulevard NE intersection, as proposed in SR 520 Corridor Program’s Westside interchange Option K. (However, it could also be implemented with any of the Westside interchange options under consideration.) The concept would lower the NE Pacific Street and Montlake Boulevard NE intersection and lid the intersection to grade-separate pedestrians and cars. It would allow movement between the bus zones, the light rail station, and the UW Medical Center without changing grades. This would improve traffic operations, as signal timing would not need to consider pedestrian crossing time. Sound Transit’s pedestrian bridge leading to the main UW campus could be retained as proposed under this concept.



*Montlake Multimodal Center with Grade-separated NE Pacific Street and Montlake Boulevard NE intersection with Rainier Vista Concept plan Exhibit 2-5*

**Grade-separated NE Pacific Street and Montlake Boulevard NE intersection with Rainier Vista concept plan (Exhibit 2-5):** This concept builds on the Rainier Vista concept plan that lowers NE Pacific Place and the Burke Gilman Trail, and provides a lid to establish an integrated landscape that can accommodate pedestrians and bicyclists moving to and from the main UW campus. The lid eliminates the need for pedestrian bridges over NE Pacific Street and Montlake Boulevard NE. This concept includes an option to expand transit facilities on NE Pacific Place.

### SR 520 and the Montlake Flyer Stop

The SR 520 bus rapid transit concept was developed to work with the three currently proposed Westside interchange options in Seattle. All of the current alternatives would remove the Montlake Flyer Stop.

Today, the Montlake Flyer Stop plays an important role in providing transfers for travelers to and from the University District, particularly in off-peak times when direct service is less frequent. Eliminating of the Montlake Flyer Stop will require that this function be replaced with transit service improvements.

The partner agencies concluded that the function of the Montlake Flyer Stop can be replaced by the addition of direct service from SR 520 to the University District connecting with the Montlake Multimodal Center. Improved service would have similar or better service characteristics than what is currently available at the Montlake Flyer Stop.

All current Westside interchange options provide improved transit time and reliability between SR 520 and the Montlake Multimodal Center when compared to the no-build scenario for the interchange.

## **How bus rapid transit complements other plans for improved transit**

The SR 520 High Capacity Transit Plan was developed to integrate with several other transit improvement programs being considered in the corridor and the region.

### **SR 520 Corridor Program**

As required by ESSB 6099, the SR 520 Corridor Program will replace the SR 520 bridge and highway structures with a “4+2” lane configuration of four general-purpose and two HOV lanes, and include other transit improvements such as direct-access ramps, median transit stations and a complete HOV lane from I-5 in Seattle to SR 202 in Redmond.

The design of the SR 520 floating bridge will accommodate future expansion for light rail in the future if that mode is selected and approved by voters.

### **Transit Now**

Metro’s Transit Now program adds increased mid-day and weekend service on Route 271 and Route 255. Under the SR 520 bus rapid transit concept, these two existing Metro routes would be modified and converted to bus rapid transit lines.

Transit Now will also create an Eastside RapidRide arterial bus rapid transit line serving downtown Bellevue, Crossroads, Overlake and downtown Redmond. The Bellevue-Redmond RapidRide route will connect to the SR 520 corridor with high-frequency transit service between Bellevue and Redmond seven days per week, approximately 18 hours per day or more. The route will also provide connections to SR 520 routes. With a projected initial ridership of 3,500 daily riders when the route is launched in 2011, the RapidRide line will provide fast, reliable connections to cross-lake services.

## **Sound Transit**

With voter approval of the ST2 plan in November 2008, Sound Transit was given the funding authority to implement the next phase of high capacity transit development in the region. Key investments include East Link light rail across I-90 to downtown Bellevue and Overlake Transit Center, as well as extensions of Link light rail north to Lynnwood and south to Federal Way. The ST2 plan also provides for 100,000 additional annual bus service hours for improved ST Express bus service in the region, including additional annual bus service hours in the SR 520 corridor that will be initiated in 2009. With funding now in place for the extension of North Link, the UW Link light rail station will be an interim northern terminus station for about four years until the extension to Northgate opens in 2020.

When the East Link light rail line is completed to Overlake in 2021 and ultimately to Redmond, it is expected to divert trips from some of the SR 520 bus rapid transit lines. The diversion will most likely occur from SR 520 bus rapid transit lines linking Overlake or Redmond to downtown Seattle. Service to the University District and on bus rapid transit lines between some areas of downtown Seattle and Kirkland and other areas along I-405 north of SR 520 would still offer benefits to riders after East Link is in operation.

As the East Link project approaches opening service to Overlake in 2021, the partner agencies will re-evaluate demand and adjust SR 520 bus rapid transit service levels before light rail service to Overlake Transit Center begins. From 2016 through 2021, the Redmond/Overlake bus rapid transit lines are expected to be among the system's most heavily used. They will be needed to serve ongoing increases in transit demand to and from the Redmond/Overlake area, helping to grow ridership for the future East Link light rail service. The lines will also provide additional cross-lake transit capacity while East Link construction is under way and will help mitigate for the loss of the Montlake Flyer Stop.

## **Lake Washington Urban Partnership**

The SR 520 corridor has been identified as an Urban Partnership Agreement project as part of a new federal program that encourages metropolitan areas to use variable pricing strategies to reduce traffic congestion. Through a \$139 million federal grant, the program would provide congestion reduction benefits to the traveling public as early as September 2010 through the implementation of four key strategies: tolling, technology, transit and telecommuting. In order to leverage the federal funds, the Legislature must approve tolling the SR 520 corridor during the 2009 legislative session and identify a method of funding the ongoing service cost of transit service related to the federal award. Under the Lake Washington Urban Partnership program, the region will then establish a variable tolling system across Lake Washington and undertake aggressive transit service improvements, transportation demand management programs, and traffic management technologies to improve the efficiency of the transportation system.

If the Legislature implements tolls on the existing SR 520 bridge, some current drivers will switch to transit due to the increase in the cost of driving. Forecasts estimate transit demand will increase 15 to 35 percent depending on the amount of the toll charged. Grants from the Lake Washington Urban Partnership will fund infrastructure to toll electronically, 45 new buses for the expansion of SR 520 service, and capital improvements such as new park and ride spaces, bus stop improvements and installation of real-time information signs at key transfer points and destinations in the corridor. The Lake Washington Urban Partnership grant will not, however, provide funding to operate the new buses. Funding to operate the new buses could come from toll revenue or other new revenue sources such as a transportation benefit district or other new local option revenue sources for transit.

The Lake Washington Urban Partnership service concept builds upon the existing all-day, two-way services and peak commuter routes provided by Metro and Sound Transit. The existing all-day service network connects the urban centers of Redmond, Overlake and Bellevue to downtown Seattle and the University District. Most of the current commute-oriented services connect eastside residential neighborhoods to downtown Seattle. The Lake Washington Urban Partnership service concept increases commute-oriented service from Seattle neighborhoods to Eastside employment, as well as improves commute services from Eastside communities to the Westside.

The plan makes peak transit service across Lake Washington a more attractive travel alternative for more people to more places and provides capacity to meet the expected increase in transit demand across the SR 520 bridge. The Lake Washington Urban Partnership would increase the current service hour investment in the corridor by almost 25 percent, adding 88 one-way trips across SR 520 each day: 22 westbound and 22 eastbound during both the morning and afternoon peak travel periods.

Below is a list of the connections that could receive service improvements:

- Renton to the University District.
- Issaquah/Eastgate/Bellevue to the University District.
- Kirkland to the University District.
- Madrona/Capitol Hill to Overlake (new).
- Ridgecrest/Northgate to Overlake.
- Downtown Seattle/Northrup to Overlake.
- Queen Anne/Wallingford/University District to Overlake (new).
- Kingsgate to downtown Seattle.
- Finn Hill/Juanita to downtown Seattle.

- Houghton to downtown Seattle.
- Redmond via 148th Avenue NE to downtown Seattle.
- Bear Creek/Redmond to downtown Seattle.
- Woodinville/Brickyard Park and Ride to downtown Seattle.
- Kirkland/Totem Lake to downtown Seattle.
- Redmond/Overlake to downtown Seattle.

## Chapter 3

---

What are the benefits of the SR 520 bus rapid transit concept?



The SR 520 bus rapid transit concept was developed to provide the following benefits:

- Meet the ridership demand expected in 2016 with the completion of improvements included in the SR 520 Corridor Program, in 2021 when East Link light rail opens to Overlake Transit Center, and future transit demand to 2030.
- Provide more all-day two-way routes and increased service frequencies between the major and secondary activity centers on both sides of Lake Washington, providing higher levels of rider service and carrying capacity.
- Provide direct service linking 12 of the region's growth centers.
- Provide service replacing the access and transfer functions of the Montlake Flyer Stop.

These and other benefits are described in greater detail below, categorized according to the corresponding High Capacity Transit Plan goals listed in Chapter 1.

## Demand, capacity and travel time

The partner agencies developed a bus rapid transit service concept that could be phased to meet ridership demand through the year 2030 and beyond. While ridership growth in cross-lake trips will be fueled by projected increases in population and employment, there are a number of other future actions that will affect ridership demand. This includes potential tolling, the completion of SR 520 improvements in 2016, and the start of East Link light rail service to Overlake in 2021.

The partner agencies found that ridership in the corridor increases in response to bus rapid transit service and its related savings in travel times, compared to ridership without improved transit service and no SR 520 improvements. For example, the bus rapid transit concept anticipates ridership of approximately 24,000 transit trips per weekday crossing the SR 520 bridge in 2020, provided the service and necessary capital improvements are fully funded. This compares to 15,000 weekday transit trips today, resulting in a ridership growth of 60 percent through 2020.

The partner agencies used several tools to help calculate the likely demand for bus rapid transit service over time and by area. One of the primary tools was the regional travel demand model being used for the SR 520 Corridor Program, which uses land use and transportation network changes to predict transportation demand through 2030. This helped the partner agencies identify which bus rapid transit lines had the most promising ridership potential, and also helped them outline how bus rapid transit service could be phased.

In 2021, when East Link light rail is to begin service to Overlake, area transit riders will have two frequent, reliable transit options between Overlake and downtown Bellevue to downtown Seattle and points north. With the availability of light rail across Lake Washington

---

*Identify sufficient people-carrying capacity that will respond to projected transit travel demand forecasted for the design-year 2030.*

*Identify a vision for an all-day bus rapid transit service in the SR 520 corridor operating on the realigned and continuous HOV lanes that is travel-time and cost competitive with other modes for cross-lake trips to major Seattle and Eastside activity centers.*

---

preliminary transit ridership forecasts with both bus rapid transit on SR 520 and light rail across I-90 (as described in the December 2008 East Link Draft Environmental Impact Statement) indicates overall, total cross-lake transit ridership markedly increases with the presence of both high capacity transit modes across the lake. The same modeling also shows that the existence of light rail on I-90 as a cross-lake option will be a more attractive choice for some transit riders. Clearly, the existence of both high capacity transit modes across the lake will create a larger transit mode shift than with bus rapid transit alone.

Tolling will also affect cross-lake travel demand and transit ridership. The Legislature has not yet decided whether or not tolling will occur only on SR 520 or on both SR 520 and I-90. The region and the state are working through this decision-making process and a decision is expected in 2009.

After considerable analysis and discussion, the partner agencies decided that the most reasonable approach to estimating long-range transit demand across SR 520 is to target 2020 as the planning year for this High Capacity Transit Plan, and defer planning for any period beyond 2020 until other decisions regarding cross-lake transportation management have been made. The partner agencies decided to use the previous project transit ridership projections for year 2030 and factor that projection to 2020, the year prior to the opening of East Link light rail to Overlake Transit Center. That methodology generates a 2020 ridership forecast of approximately 24,000 transit trips per weekday crossing the SR 520 bridge, as long as operations and necessary capital facilities are fully funded. Additional service planning for transit and SR 520 bus rapid transit routes will be necessary to maximize the potential benefits of having two high capacity transit corridors across Lake Washington after 2021.

A range of sources was used to help gauge this nearer-term ridership potential:

- Ridership on the facility over the past five years has increased approximately 6 percent per year. Projecting forward to 2020 at that level of ridership growth produces higher ridership than travel demand model forecasts through 2030, so that methodology was viewed as overly optimistic.
- Determining future rider demand by using historic growth trends from a ten year period, from 1998 to 2008, and extending the trend to 2020 shows SR 520 weekday ridership reaching 25,000 daily riders. This number assumes that investments in new service would continue at the rate of actual service growth between 1998 and 2008. Additional ridership could be expected when service levels are increased to represent the Lake Washington Urban Partnership investments in 2010 and the first three bus rapid transit lines identified as phase one in 2016. The forecast presumed that the new trips carry half of the average load for services that cross SR 520. This estimate

of just below 30,000 weekday riders does not consider speed and reliability improvements resulting from completion of the SR 520 Corridor Program's planned six-lane configuration and HOV improvements.

- The PSRC reports through the Transportation 2040 planning process that regional transit ridership has grown on average approximately 3.1 percent per year for the past 25 years. This is reasonable, but transit ridership across Lake Washington has been increasing on a steeper growth curve than the average of the entire region.
- Previous projections based on year 2030 transit demand and no light rail across I-90 averaged approximately 5 percent growth per year. This is higher than the regional average, but less than the past five years that have seen exceptional growth in transit demand across Lake Washington.

## Reliability

Completing the SR 520 HOV lane system will provide more reliable travel times. Other SR 520 and regional HOV system infrastructure elements would also support reliable transit service. These elements include HOV direct-access ramps, median freeway transit stations and HOV on-ramp bypass lanes.

---

*Provide cross-lake bus rapid transit service in the SR 520 corridor HOV lanes to major Seattle and Eastside activity centers that is reliable.*

---

## Connectivity and accessibility

SR 520 bus rapid transit would improve access to transit for riders to SR 520 and regional transit service by providing frequent all-day, two-way transit routes between the region's activity and transit centers. In addition, SR 520 bus rapid transit would improve accessibility to the UW and the University District, providing more frequent direct service than exists today. This would also support connections to Link light rail and other transit service at the Montlake Multimodal Center. SR 520 bus rapid transit would also introduce new lines and service to emerging and growing transit markets along the I-405 corridor in South Snohomish County and improve travel times to Woodinville and the UW-Bothell campus.

---

*Provide cross-lake bus rapid transit service in the SR 520 corridor HOV lanes to major Seattle and Eastside activity centers that connects to existing and planned transit networks.*

*Improve the frequency and coverage of transit service throughout the day and reduce the time needed to transfer between modes.*

---

## Expandability and infrastructure

Bus rapid transit has the flexibility to adjust service levels to meet emerging demands and changes to the transportation network. The bus rapid transit vision calls for phased development that adjusts service levels over time in response to demand. This is described in further detail in Chapter 4.

---

*Identify a vision for the ultimate development of the SR 520 high capacity transit system which may include exclusive, dedicated lanes in the corridor.*

---

The following improvements are being discussed by regional planners as a part of other projects. If implemented, they could provide additional benefits to bus rapid transit on SR 520 and other corridors.

---

*Identify other related improvements outside the SR 520 Corridor Program project limits that could enhance SR 520 high capacity transit service.*

---

**Transit-only shoulder lanes.** Transit-only shoulder lanes on SR 520 between NE 51st Street and West Lake Sammamish Parkway and on I-5 between Olive Way and SR 520 would allow buses to bypass heavily congested areas.

**Direct access improvements.** Buses can make better use of the HOV lanes if bus facilities included stops and HOV direct-access ramps in the median, thereby avoiding the need to move in and out of general-purpose lanes. While the region has already invested in a number of direct-access ramps and median transit stations, new facilities are proposed at several locations as part of the SR 520 Corridor Program, other potential facilities that could benefit transit include:

- At the SR 520 South Kirkland Park and Ride, direct-access ramps to and from the east to complement the ramps to and from the west included in the SR 520 Corridor Program, or a freeway station to serve the core bus rapid transit lines in both directions. This could provide further opportunities to focus local service and provide a central access point to the bus rapid transit lines, including those that travel further east on SR 520 or north on I-405. However, this could also require changes to the I-405 interchange, with much higher costs than the currently proposed ramps to and from the west at 108th Avenue NE. It would also require service enhancements on SR 520 routes serving point east on SR 520 to accommodate the demand.
- An inline freeway station at Overlake in the new median served directly from the SR 520 HOV lanes.
- A freeway station to serve the Houghton Park and Ride along I-405 or at NE 85th Street on I-405 with additional park and ride capacity at that location.

**Arterial speed and reliability improvements.** Many of the centers served by bus rapid transit lines have congested local streets that slow transit travel times and make trips unreliable. To operate most effectively, local traffic improvements are needed to help transit maintain reliable transit times. These improvements can include transit signal priority, transit priority lanes, queue bypass lanes or other measures to help transit avoid congestion.

## **Transit accessibility without the Montlake Flyer Stop**

The partner agencies agreed that if the Montlake Flyer Stop were to be removed, the function of the stop would need to be replaced. This would require increased transit service between the Eastside and the University District – particularly during the mid-day period when fewer direct routes serve the University District. This could be achieved with or without SR 520 bus rapid transit. In either case, bus service could be increased to allow those who currently use

the Montlake Flyer Stop to use the Montlake Multimodal Center instead. Options to address this need include providing longer hours of operation, and greater frequency for existing routes serving the University District, and a new route connecting the University District and Redmond.

SR 520 bus rapid transit would increase the frequency of service and proposes an additional University District route from Canyon Park, Bothell and Woodinville, where such direct service currently does not exist. Implementation of the SR 520 bus rapid transit concept would result in frequencies that are similar to today or better for most transit riders.



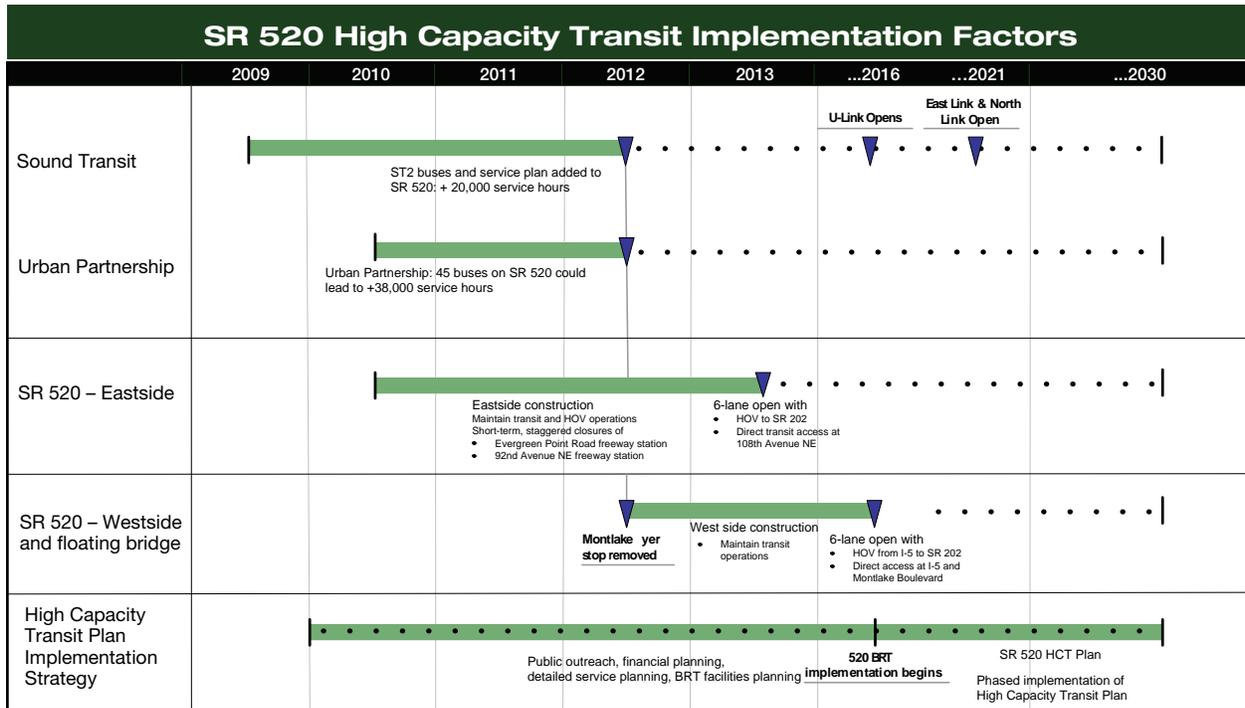
# Chapter 4

---

How will the  
High Capacity Transit Plan  
be implemented?



The partner agencies have developed a phased implementation approach for delivering high capacity transit service that will meet the growing demand in the SR 520 corridor through 2030, while responding to other plans for the corridor. **Exhibit 4-1** shows how the High Capacity Transit Plan relates to other projects in the SR 520 corridor.



**SR 520 High Capacity Transit Implementation factors**  
Exhibit 4-1

This approach includes two key elements:

1. A program of phased service improvements and capital investments to provide the bus rapid transit service called for in the plan, including estimated costs and potential funding sources. This includes identifying the gaps in funding that will need to be addressed in order to bring bus rapid transit service to the SR 520 corridor.
2. A schedule for a detailed financing and bus rapid transit development program and work program, integrated with other projects and improvements planned by WSDOT, Sound Transit, Metro and the UW.

**Exhibit 4-2** shows a timeline representing the major phases for implementing the High Capacity Transit Plan:

<b>2009 to 2011</b>	<ul style="list-style-type: none"> <li>• Define the first phase of Montlake Multimodal Center improvements.</li> <li>• Develop short-term and long-term financial plan.</li> <li>• Develop phased transit service plan, including construction mitigation plan.</li> <li>• Begin Lake Washington Urban Partnership and Sound Transit service increases on SR 520.</li> </ul>
<b>2012 to 2015</b>	<ul style="list-style-type: none"> <li>• Add transit service to mitigate for eliminating the Montlake Flyer Stop.</li> <li>• Operate construction-period transit.</li> <li>• Complete SR 520 transit and HOV lanes.</li> <li>• Complete the bus rapid transit financial strategy and detailed service plan.</li> <li>• Complete revised Sound Transit SR 520 high capacity transit study.</li> </ul>
<b>2016 to 2020</b>	<ul style="list-style-type: none"> <li>• Implement SR 520 bus rapid transit service in 2016; adjust with service demand.</li> <li>• Re-evaluate bus rapid transit service levels in preparation for 2021 East Link start-up Seattle/Overlake Transit Center.</li> </ul>
<b>2022 to future</b>	<ul style="list-style-type: none"> <li>• Expand SR 520 bus rapid transit lines and service levels as demand increases.</li> <li>• Implement supporting investments.</li> </ul>

*Implementation by year*  
Exhibit 4-2

The partner agencies selected 2016 as the target date for the start of bus rapid transit service to take immediate advantage the continuous HOV lanes proposed for the SR 520 Corridor program and Sound Transit’s University Link station.

The three initial bus rapid transit lines identified for service on SR 520 are:

- Redmond/Overlake to downtown Seattle.
- Redmond/Overlake to the University District.
- Eastgate/Bellevue to the University District.

In addition to these initial bus rapid transit routes, peak-only commuter service and regional express services will also be used to meet ridership demand. As corridor demand continues to grow over time, bus rapid transit service could increase to include two remaining core lines: Canyon Park/Woodinville to the University District and Kirkland/Totem Lake to downtown Seattle.

## What transit service and capital investments are needed?

### Operating investments

In 2008, transit service across Lake Washington featured approximately 160,000 hours of bus service on SR 520. The proposed bus rapid transit phased approach would increase service on SR 520 by approximately 130,000 service hours. In 2008 dollars, the new service is estimated to cost approximately \$16.5 million per year. This increase in the corridor's transit service exceeds available transit funding.

### Capital costs

Capital costs for the High Capacity Transit Plan include the physical elements needed for bus rapid transit service in the corridor beyond those already included in the SR 520 Corridor Program. The detailed phasing and prioritization of capital improvements remain to be determined. In 2008 dollars, additional capital investments ranging from approximately \$84 million to \$172 million would be needed to provide the transit service called for in Chapter 2.

The costs for the lowest end of the range reflect a phased approach to investments, focusing on capital costs related to the three initial bus rapid transit lines beginning service in 2016. The cost range also assumes that the Lake Washington Urban Partnership grant would provide 45 vehicles, or half of the total fleet needed for initial service. Costs for arterial improvements or other transit-priority improvements would also be more limited for the initial phase of bus rapid transit service.

The capital investments include:

- **Bus fleet requirements.** A bus rapid transit fleet of 90 vehicles by 2016, 45 of which could be funded by the federal government through the Lake Washington Urban Partnership.
- **Bus rapid transit stops and stations.** Bus rapid transit stops or stations along arterials and at transit centers will be needed as bus rapid transit service is implemented. Approximately 30 of these facilities would be needed in 2016. Some station facilities are in place and would only require signage to identify the service.
- **Maintenance base capacity.** Adequate maintenance capacity is needed to operate the bus rapid transit lines. For 2016 service, maintenance capacity for 45 to 90 vehicles would need to be available. More study is needed to determine the long-term operating capacity needs for bus rapid transit service.
- **Terminal facilities/stations.** Stations or terminal sites with the capacity for layover storage and bus bays will be needed to accommodate the higher volumes of buses at peak periods.
- **Access and transit speed improvements.** Capital

investments focused on improving bus rapid transit speed and reliability for bus rapid transit lines traveling to and from the freeway HOV lanes and along key arterials. Freeway transit access examples include shoulder transit lanes or transit lanes connecting to off-freeway transit centers and park and ride lots. Examples of arterial improvements include transit signal priority systems, queue jumps and bus-only lanes.

- **Bus rapid transit systems.** Underlying infrastructure and technologies help make bus rapid transit fast and easy to use. Examples include ticket vending machines, rider information systems, and security systems.
- **Montlake Multimodal Center.** Improvements will be needed to the existing Montlake Triangle area for bus bays and configuration of bus bays to support bus rapid transit, local transit and light rail service to the south University District and the UW.

## What are the next steps?

To continue the work necessary to deliver bus rapid transit service by 2016, the High Capacity Transit Plan partners have defined a collaborative work program to conduct detailed planning for system operations and capital project development, combined with financial planning and public and inter-jurisdictional outreach.

## Roles and responsibilities

The High Capacity Transit Plan partner agencies will continue to work together to help achieve the plan's ambitious timeline for bringing bus rapid transit service to the SR 520 corridor. The primary responsibilities for implementing the plan are based on the established authorities for the involved agencies. The major activities to be completed are listed below:

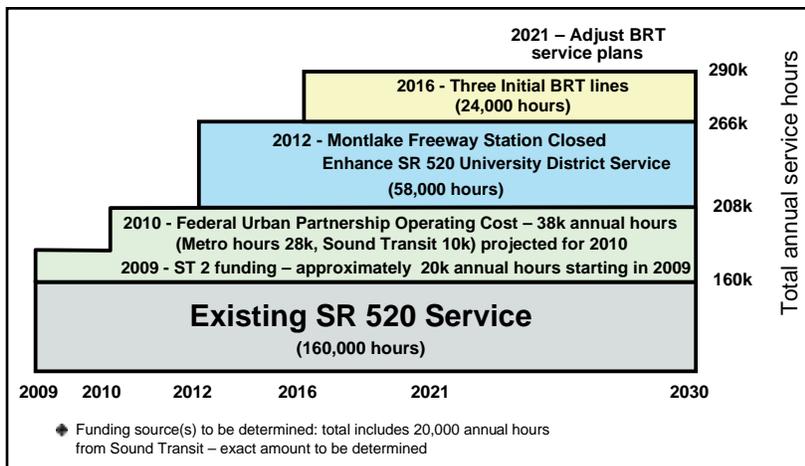
- **Interim service planning.** Near-term and construction period transit service plans: WSDOT, Sound Transit, Metro, and local jurisdictions.
- **Detailed high capacity transit service planning.** Metro and Sound Transit, working with local jurisdictions and the public.
- **High capacity transit element prioritization and phasing.** WSDOT, Metro, Sound Transit, the UW and local jurisdictions, with outreach to the public.
- **Montlake Multimodal Center implementation.** WSDOT, Metro, Sound Transit, the UW, City of Seattle, and the public.
- **Financial planning.** All stakeholders and local jurisdictions.
- **Operations.** Metro and Sound Transit.
- **Capital project delivery.** All stakeholders and local jurisdictions.

## How will the High Capacity Transit Plan be funded?

Securing needed funding is a primary challenge for both interim and long-term transit service improvements in the corridor. Existing transit service funding in the region is provided primarily through sales tax. Sales tax revenues historically have grown over time, but are unstable due to fluctuations in the economy. Additional funding sources and other strategies will be needed to meet the corridor's service needs.

## What additional funds are needed?

There are a number of grants and programs already being considered to help meet the rapid increases in transit demand along SR 520. These include the additional investments available from Sound Transit's ST2 plan and the Lake Washington Urban Partnership if tolling is approved by the Legislature in 2009. These would provide additional vehicles and operating improvements in the corridor. See **Exhibit 4-3 - SR 520 High Capacity Transit phasing 2009-2021**.



*SR 520 High Capacity Transit phasing 2009-2021*  
Exhibit 4-3

The additional investments available from Sound Transit's ST2 plan assume implementation of approximately 20,000 annual service hours as a planning number until the final allocation of ST2 service hours is approved by the Sound Transit Board.

The Lake Washington Urban Partnership investments will provide additional vehicles and operating improvements as well as funding to establish a variable tolling system across Lake Washington. If the Legislature approves tolling the SR 520 corridor and identifies a funding source for the ongoing cost of transit service, an additional 38,000 service hours may be invested in the corridor.

Even with these major contributions, there remains a substantial funding gap to be filled in order to replace the Montlake Flyer Stop function in 2012 or start bus rapid transit operations in 2016.

## What are potential funding sources?

The initial building blocks are in place to help meet the transit demand anticipated in the corridor, as discussed above. However, the remaining gap in funding needs to be addressed. Most of the local and federal funding sources available for transit are already supporting existing transit service and other major projects.

The major sources of funding and potential funding sources used for transit are briefly reviewed below.

### Local funding sources

Local committed funding sources provide most of the region's current transit funding. Sales tax provides the majority of the dedicated funding for capital and operating costs, and fare box revenue provides about 20 percent of funding for operations. The amount of local taxing authority available to transit agencies is set by state statute and requires voter approval. Both Metro and Sound Transit have maximized their local taxing authority. Additional operating and forecasting efforts will be needed to develop the detailed estimates needed for the financial plan. Potential options for increasing local funding sources for transit include:

- **Transit Commute Mobility Tax.** A fee or tax on businesses that benefit by improved transit commuting options for their employees, via a flat fee per employee or percentage of payroll. New authority would be required to implement a Transit Commute Mobility Tax.
- **Local Option Motor Vehicle Excise Tax.** Locally approved Motor Vehicle Excise Tax in a specified area or district deriving benefit from expenditure of the tax collected. It would require legislative authority similar to that given to the Seattle Monorail project.
- **Local Option Sales Tax.** Increment added on top of existing transit sales tax in specified area or district that derives benefit from expenditure of the tax collected. This would require new authority to be provided to King County by the Legislature.

### Toll revenue

In the 2008 legislative session, the Legislature passed Engrossed Substitute House Bill 1773, which established a statewide tolling policy. The bill included language identifying transit operations and capital as eligible expenditures for toll revenues. If the Legislature approves tolling on SR 520 in 2009, the Lake Washington Urban Partnership agreement allocates about \$41 million to purchase buses, improve transit stations and add park and ride spaces to the SR 520 corridor. However, the award does not include funding to operate transit services.

Toll revenue is a potential funding source for operating new buses from the Lake Washington Urban Partnership, for service required to mitigate for the elimination of the Montlake Flyer Stop and for funding future bus rapid transit service in the corridor, a step toward implementing the High Capacity Transit Plan. The use of tolling revenue for transit operation would need legislative approval.

## Federal funds

There is a range of federal funding sources that could be considered as part of a capital program to expand SR 520 transit facilities and services. For the most part, federal funds are restricted to capital improvements and are not available to fund operating costs. Some of the major funding programs to be considered in a more detailed financial strategy for the SR 520 High Capacity Transit Plan include:

- **FTA Section 5307** funds are also distributed to regions on urbanized area formula. In general, large urbanized area formula funds can be used for transit capital purposes only. Priorities for these funds in our region are defined through an inter-jurisdictional process managed by the PSRC.
- **FTA Section 5309 Bus and New Starts** funds are discretionary and approved by Congress, based on competitive rankings of projects from FTA. FTA Section 5309 Bus funds can be used for capital projects such as replacement or expansion of buses or bus facilities. FTA Section 5309 New Starts funds are used for building fixed guideway transit facilities, such as light rail and bus rapid transit.

Surface Transportation Program funds are managed by the Federal Highway Administration, and can be used to support transit capital projects. One of the key funding sources is the Congestion Mitigation and Air Quality program, which provides funding for surface transportation and other related projects that contribute to air quality improvements and reduce congestion. The most recent federal authorization, SAFETEA-LU, provided over \$8.6 billion dollars in funds to state transportation departments, metropolitan planning organizations, and transit agencies to invest in projects that reduce criteria air pollutants regulated from transportation-related sources. While most of the funding priorities have been focused on diesel retrofit programs, recent policy changes allow funds to be allocated for bus rapid transit projects using HOV lanes.

## **How will local jurisdictions and the general public be involved in moving the High Capacity Transit Plan forward?**

As the partners move ahead with a phased program to refine the service concept, project priorities and funding strategies needed for the High Capacity Transit Plan, they will be engaging the public and jurisdictions on an ongoing basis. Target audiences will include:

- Local jurisdictions.
- Existing transit riders.
- Chambers of commerce.
- Major employers along the corridor, including Microsoft.
- UW students, faculty, and employees.
- Neighborhoods.

Public involvement for the High Capacity Transit Plan will be incorporated into outreach events for the SR 520 Corridor Program as well as through Metro and Sound Transit outreach programs, including:

- Public meetings on route and network planning and service improvement planning.
- Community and business group briefings.
- Open houses.
- Mailings, emails and flyers.
- The SR 520 Corridor Program Web site.



# HIGH CAPACITY TRANSIT PLAN

December 2008

