

# Chapter 7—Nonmotorized Facilities

## What is in this chapter?

This chapter describes current and proposed pedestrian and bicycle facilities, also known as nonmotorized facilities, within or near the SR 520, I-5 to Medina project. In addition, this chapter identifies effects of the Preferred Alternative on nonmotorized facilities and routes in the study area.

Proposed project improvements would increase mobility options throughout the corridor by completing the SR 520 shared-use path across the Evergreen Point Bridge, creating new connections between local and regional trails, and by improving existing bicycle and pedestrian routes within and around the project site. Public comments on the project have emphasized the benefits of these features to residents in the project vicinity. Improving nonmotorized facilities would simultaneously increase opportunities for physical activity and social interaction, provide viable commuter and recreational alternatives to driving, and reduce greenhouse gas emissions and other air pollutants (Puget Sound Clean Air Agency and Public Health – Seattle & King County 2008).

Since publication of the SDEIS, WSDOT worked collaboratively with the City of Seattle, Seattle Pedestrian Advisory Board, and Seattle Bicycle Advisory Board to develop design refinements for pedestrian and bicycle facilities as a subgroup to the overall ESSB 6392 Workgroup process. This bicycle/pedestrian subgroup identified and evaluated seven key regional and local pedestrian and bicycle connections and corridors in the study area. This chapter includes a qualitative assessment of the effects of the No Build Alternative and Preferred Alternative on these identified routes. All existing and planned bicycle and pedestrian facilities and connections would be maintained in the Preferred Alternative. In some cases, new connections would be created, including links to the SR 520 regional bicycle/pedestrian path.

The SR 520, I-5 to Medina project provides connections to the City of Seattle Bicycle Master Plan routes. Bicycle traffic is expected to



increase to and from the Burke-Gilman Trail after construction of the SR 520 regional bicycle/pedestrian path.

## What are the nonmotorized design elements?

The project includes many design elements to provide the best possible nonmotorized connections. The following features are proposed at the Evergreen Point Bridge, Montlake Boulevard and 24th Avenue East lid, and 10th Avenue East and Delmar Drive East lid.

### Evergreen Point Bridge

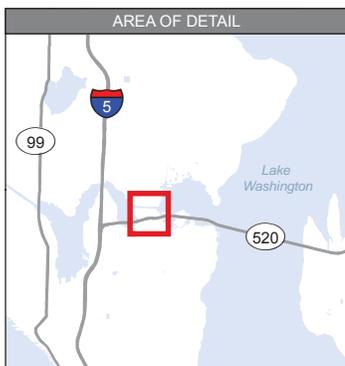
A 14-foot-wide bicycle/pedestrian path designed to comply with the Americans with Disabilities Act (ADA) would be built along the north side of SR 520 and follow the highway's grade, connecting with the existing regional path improved by the SR 520, Medina to SR 202 project. The SR 520 regional bicycle/pedestrian path would begin at the SR 520/Montlake Boulevard interchange and continue across the Union Bay Bridge, west approach, and Evergreen Point Bridge.

Five scenic vantage points with pull-outs would be spaced along the north side of the bicycle/pedestrian path. The bicycle/pedestrian path on the bridge structure would be illuminated by recessed lighting in the bridge barrier. All underpass trails would have a wall separating bicyclists and pedestrians from vehicular traffic.

### Montlake Boulevard and 24th Avenue East Lid

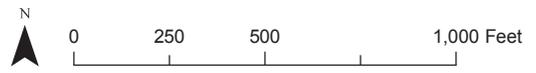
A large new lid would be built over SR 520 in the Montlake area configured for transit and nonmotorized connectivity. The 1,400-foot-long lid would extend from west of Montlake Boulevard to east of 24th Avenue NE near the Union Bay shoreline. The lid would provide vehicle and pedestrian crossings, landscaped open areas, and connections to regional trails. Exhibit 7-1 shows the details of the nonmotorized design features for the Preferred Alternative.





- Columns
- General-purpose lane
- HOV, direct access, and/or transit-only lanes
- Westbound managed shoulder
- Proposed bicycle/pedestrian path
- Proposed right-of-way
- Lid or landscape feature
- Pavement
- Stormwater treatment facility

Source: King County (2008) GIS Data (Streams, Streets and Waterbodies) and CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 7-1. Preferred Alternative Nonmotorized Design Features Montlake Interchange Area**  
 SR 520, I-5 to Medina: Bridge Replacement and HOV Project

The Preferred Alternative includes the following elements:

- Grade-separated connection under Montlake Boulevard to the Bill Dawson Trail
- Reconstruction of the Bill Dawson Trail within the SR 520 right-of-way
- Path along Lake Washington under SR 520 connecting to the Arboretum
- Improved connection along 24th Avenue East between Shelby Street and Lake Washington Boulevard
- Widened sidewalk across the new bascule bridge for use as a shared-use path
- Improved Foster Island pedestrian access under SR 520
- Improved sidewalks along Lake Washington Boulevard between Montlake Boulevard and the new path under SR 520 connecting to the Arboretum

### **10th Avenue East and Delmar Drive East Lid**

A lid would be constructed over SR 520 between 10th Avenue East and Delmar Drive East. This lid would connect with the new bridge crossings and reconnect the communities on both sides of the SR 520 corridor by providing walkways and open spaces above the highway. The proposed lid structure would be between 500 and 650 feet long and include a recreational meandering path from Bagley Viewpoint to Boyer Way, vista points to overlook Lake Union and Portage Bay, and views eastward and westward.

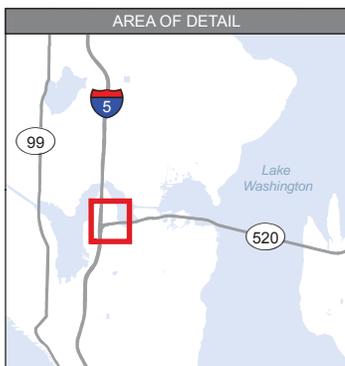
Exhibit 7-2 shows how a nonmotorized facility could be included in the design of the 10th and Delmar lid. Ongoing coordination among project staff, City of Seattle, and the neighborhoods would help to finalize the layout and connectivity.

### **I-5/Roanoke Crossing**

The Preferred Alternative includes nonmotorized improvements such as a path on the south side of the East Roanoke Street bridge over I-5.

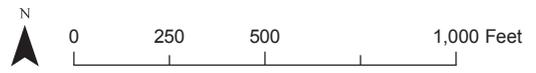
Exhibit 7-2 also shows how such a nonmotorized facility could be included in the design of the I-5/Roanoke crossing. Ongoing coordination between project staff, City of Seattle, and the neighborhoods would help to finalize the layout and connectivity.





- Columns
-  General-purpose lane
-  HOV, direct access, and/or transit-only lanes
-  Westbound managed shoulder
-  Proposed right-of-way
-  Lid or landscape feature
-  Pavement
-  Stormwater treatment facility

Source: King County (2008) GIS Data (Streams, Streets and Waterbodies) and CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 7-2. Preferred Alternative Nonmotorized Design Features I-5 Interchange Area**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## What are the existing nonmotorized characteristics of the study area?

The Cascade Bicycle Club counted 400 bicyclists crossing the Montlake Bridge during a weekday morning peak period in 2008 (WSDOT 2008b). This number closely compares with a count of 427 bicyclists on the Burke-Gilman Trail at Stone Way North in July 2001 documented by the Seattle Department of Transportation (SDOT) (City of Seattle 2007).

Metro provided quarterly manual counts in 2002, observing bicycles on buses during morning and afternoon peak periods (King County Metro 2002). The highest total daily bicycle volumes occurred in the summer, including 118 bicyclists at the Evergreen Freeway Transit Station, 90 at the Montlake Freeway Transit Station, and 50 at the Montlake Boulevard bus stop.

The Evergreen Point Bridge poses a considerable challenge for cyclists and pedestrians traveling between Seattle and the Eastside communities. Because of the limited shoulder widths, no pedestrian or bicycle traffic is allowed on the bridge. Bicyclists wishing to cross the lake via SR 520 must board a bus equipped with a bicycle-carrying rack. Bicyclists and pedestrians can reach the SR 520 corridor in Seattle via a combination of paths and on-street bicycle lanes.

To support additional bicycle crossings over the Evergreen Point Bridge, Metro implemented a bicycle demonstration program in 2008 that allowed bicyclists to load their bicycles onto out-of-service buses for free. This program increased the availability of bicycle racks for those crossing the bridge and has been continued through at least 2011 due to its success.

Additionally, Microsoft's Connector system runs a bicycle shuttle, which can transport 12 bicycles at a time across the bridge. No counts are currently available from this program.

Bicyclists who commute 3 or more days per week may park their bicycles in one of 54 reserved Metro locker spaces at the Montlake Freeway Transit Station on the north side of the bridge. This bicycle locker provides the largest number of spaces in the Metro system, and is likely used the most by weekday commuters. A Metro bicycle rack capable of holding 53 bicycles is



### Did you know?

**Class I bicycle facilities** are paved and have exclusive rights-of-way for the principal use of bicycles, pedestrians, and other nonmotorized means of travel. They are required to be at least 10 feet wide.

**Class II bicycle facilities** are established within the paved area of arterials for the preferential use of bicycles. These paved bicycle areas, or bike lanes, are striped in widths varying between 4 and 12 feet and are signed as designated bikeways.

**Class III bicycle facilities** are located along existing arterials (without striping) and are intended to provide continuity within the bikeway system.



also available at the Montlake Freeway Transit Station on a first-come/first-served basis. Bicycle parking information can also be found in the Social Elements Discipline Report (WSDOT 2009a).

The SR 520, I-5 to Medina project vicinity comprises steep terrain, a large water body (Portage Bay), and a dense urban grid of different street types. Residential communities, schools, parks, and commercial areas are adjacent to the highway. Both the I-5/SR 520 interchange and the bridge over the Montlake Cut are busy, important crossroads serving several transportation modes that link the Roanoke/Portage Bay, Capitol Hill, Eastlake, Montlake, and University District neighborhoods.

For more detailed information on regional trails, refer to the King County Bicycling Guide Map (King County Department of Transportation 2009), which provides a comprehensive overview of the region's bicycle system. For details regarding off-roadway trails in the study area, see the Recreation Discipline Report (WSDOT 2009b).

The Burke-Gilman Trail is the only Class I bicycle facility in the study area. Other Class I facilities in the region include the Elliott Bay Trail, the I-90 Trail, the SR 520 regional bicycle/pedestrian path, and the Sammamish River Trail. The Burke-Gilman Trail is a paved, shared-use path and extends 27 miles from west of Gas Works Park in Seattle, around the north end of Lake Washington, to Marymoor Park in the city of Redmond.

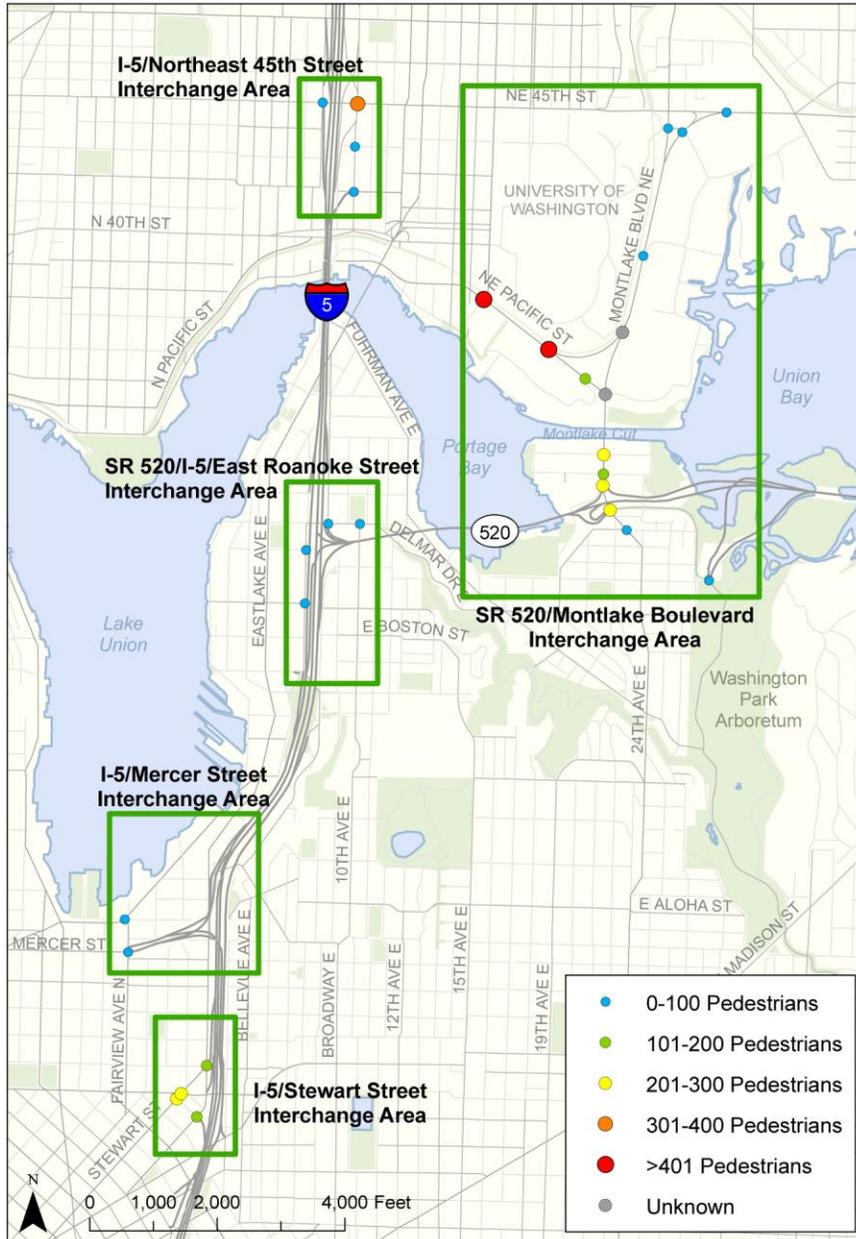
According to a 1995 user count, the Burke-Gilman Trail had 2,239 daily bicyclists in the vicinity of the UW. By 2005, the same portion of the Burke-Gilman Trail experienced an increase of 918 (41 percent) trail users.

Several other local trails in the study area may be affected by the project. At the Arboretum, the Waterfront Trail to Foster Island is 0.5 mile long and Azalea Way is 0.75 mile. The Waterfront Trail is less than 0.5 mile between the northern tip of Foster Island to the Graham Visitors Center and Azalea Way. Round trip from MOHAI to Azalea Way is approximately 3 miles.

Below are detailed descriptions of current nonmotorized locations, which are organized by interchange within the above-mentioned neighborhoods.



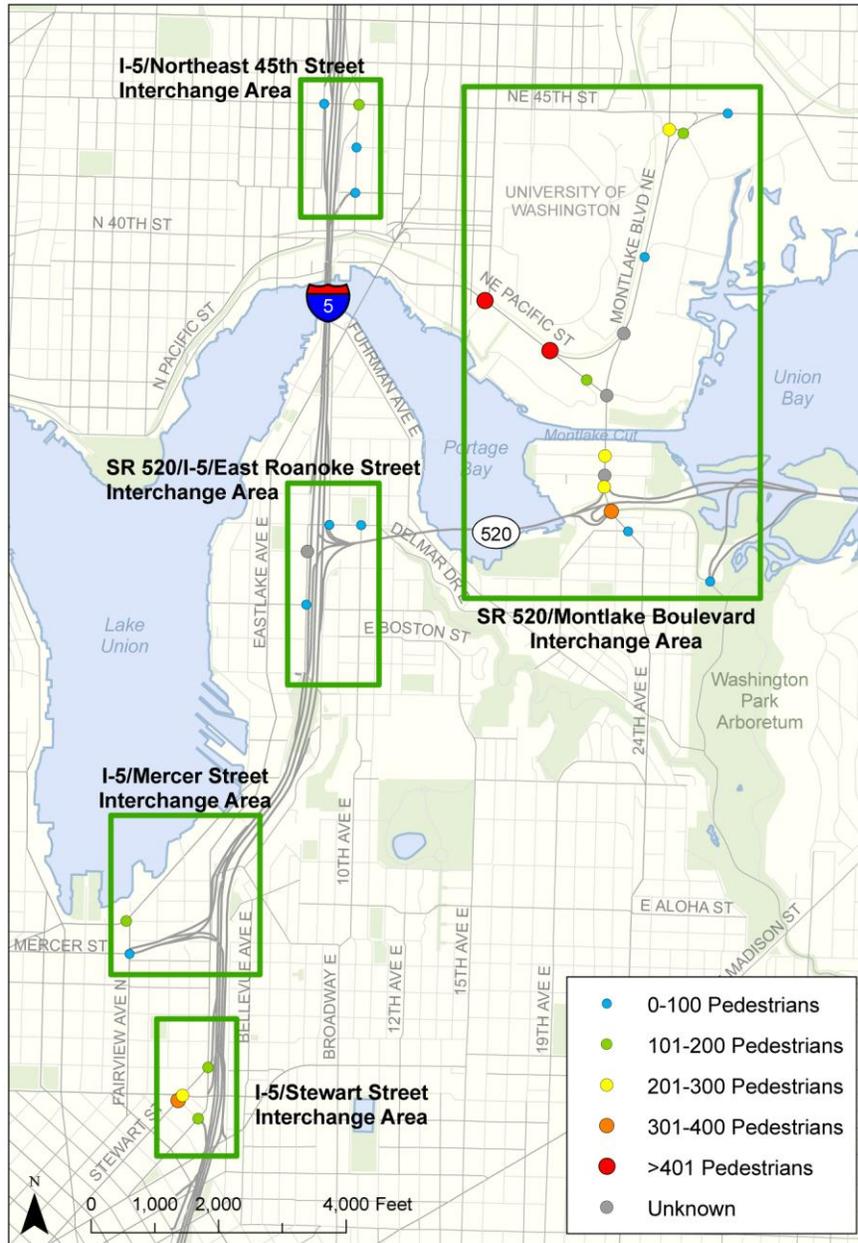
Exhibits 7-3 and 7-4 show pedestrian volumes at several key locations in the study area. The volumes indicate the relative amount of pedestrian activity between the intersection locations.



Sources: Traffic Data Gathering (TDG) and Traffic Counts Consultants (TC<sup>2</sup>), January 2007.

Exhibit 7-3. Pedestrian Volumes during Morning Peak Period





Sources: Traffic Data Gathering (TDG) and Traffic Counts Consultants (TC<sup>2</sup>), January 2007.

Exhibit 7-4. Pedestrian Volumes during Afternoon Peak Period

## SR 520/Montlake Boulevard Interchange

The Montlake Multimodal Center refers to the area near the triangular intersection of NE Pacific Street, NE Pacific Place, and Montlake Boulevard NE. There is currently substantial pedestrian and bicycle activity around the SR 520/Montlake Boulevard interchange as people travel to, from, or through the University District and the UW.



This interchange area currently provides the following functions for pedestrians and bicyclists:

- A key stop and transfer point for local and regional bus service to and from the University District, including the UW, via the NE Pacific Street bus stops. This point serves 3,500 riders per day based on a 2008 traffic count by WSDOT.
- A link between the Burke-Gilman Trail and Seattle destinations, especially those to the south.
- Access between the UW Medical Center, the Triangle parking garage, UW main campus, and the UW parking area.
- Pedestrians use a traffic island at the corner of the Montlake Boulevard NE/NE Pacific Street intersection to travel between the UW E11 parking lot east of Montlake Boulevard and the UW Medical Center. Pedestrians also cross the Montlake Multimodal Center to travel among the UW central campus, UW Medical Center, and Husky Stadium facilities.

There are six pedestrian facilities located north of the Montlake Multimodal Center:

- Two pedestrian bridges cross NE Pacific Street between Montlake Boulevard NE and 15th Avenue NE.
- Three pedestrian bridges cross Montlake Boulevard—one connects the UW main campus with the Bank of America Arena at Hec Edmundson Pavilion and two others reach the Montlake parking lot.
- One pedestrian tunnel under NE Pacific Street connects the Triangle parking garage to the UW Medical Center.

Bicyclists cross the Montlake Multimodal Center as they travel between areas south of the Montlake Bridge and the UW Medical Center to the main campus and the Burke-Gilman Trail.

The sidewalks, crosswalks, and asphalt path across the Montlake Multimodal Center are designated regional trail connections in the Seattle nonmotorized plan. Approximately 6 percent of UW students and staff bicycle to campus; many travel from the south and cross Montlake Boulevard NE, NE Pacific Street, and NE Pacific Place (UW 2001).



There are currently no dedicated bicycle facilities from north of the Montlake Bridge to the Burke-Gilman Trail and the Lake Washington Bike Loop. However, cyclists have been observed using sidewalks and arterial streets along this route to travel to the Montlake Freeway Transit Station and other destinations to the north and south. Pedestrian and bicycle trails in the vicinity of the SR 520/Montlake Boulevard interchange are shown on Exhibit 7-5.

Montlake Boulevard is one of three north-south connections across SR 520 in the Montlake interchange area. Another north-south connection is the Bill Dawson Trail, which runs under SR 520 along the west side of Montlake Boulevard and connects the Montlake Playfield (south of SR 520 on Portage Bay) and the NOAA Northwest Fisheries Science Center building (north of SR 520).

A third crossing is the 24th Avenue East bridge, which connects Lake Washington Boulevard to East Montlake Park. This crossing is part of a proposed City of Seattle Master Bicycle Plan that begins at East Shelby Street and East Hamlin Street along 24th Avenue East. The proposed bicycle boulevard continues south on 25th Avenue East and 26th Avenue East before connecting to the Lake Washington Loop and SR 520/Montlake Boulevard interchange area from the Lake Washington Loop, Arboretum, and Burke-Gilman trails.

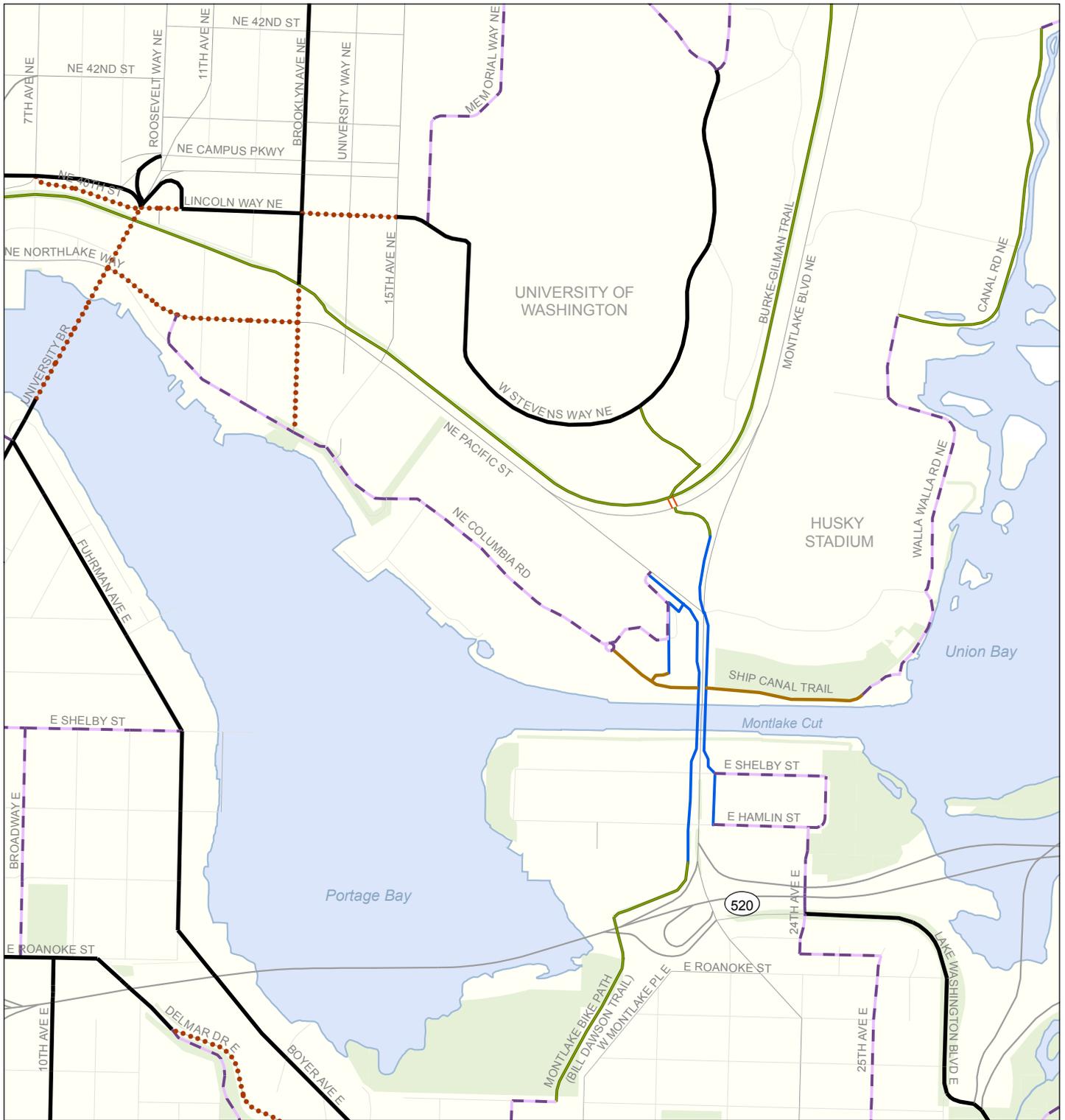
## **SR 520/I-5/East Roanoke Street Interchange**

Sidewalks are provided throughout the SR 520/I-5/East Roanoke Street interchange area. Boylston Avenue East, Harvard Avenue East, and East Roanoke Street have sidewalks on only one side of the street where they are adjacent to I-5, except in areas that provide access to bus stops. There are currently no marked pedestrian crossings on the north or west legs of the East Roanoke\Harvard Avenue East intersection, or the north or east legs of the East Roanoke\Boylston Avenue East intersection.

Bicyclists share the roads with vehicular traffic and there are no designated bicycle lanes in the immediate area. Harvard Avenue East, East Roanoke Street, and 10th Avenue East are identified in the Seattle Cycling Guide Map (City of Seattle 2008) as "arterial streets commonly used by bicyclists."

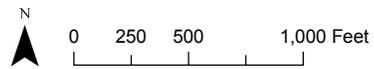
Pedestrian volumes along the SR 520/I-5/East Roanoke Street interchange intersections are shown in Exhibits 7-3 and 7-4.





- Sidewalk Connection
- Marked Crosswalk
- Pedestrian Pathway (Bicyclists Permitted)
- ⋯ Bicycle Path
- Non-Arterial Street (Commonly Used by Bicyclists)
- Arterial Street (Commonly Used by Bicyclists)
- Shared Use Path

Source: King County (2008) GIS Data (Streams, Streets and Waterbodies) and CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 7-5. SR 520/Montlake Interchange Area Bicycle and Pedestrian Paths**  
 SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## **I-5/Mercer Street Interchange**

Sidewalks are provided throughout the I-5/Mercer Street interchange area. Pedestrians using Fairview Avenue North must travel on the west side of the street between Roy and Mercer Streets because of the on-ramps and off-ramps from I-5. Pedestrians also cannot cross the west leg of the Valley Street\Fairview Avenue North intersection.

Bicyclists share the roads with vehicular traffic and there are no designated bicycle lanes in the immediate area. A dedicated pedestrian and bicycle pathway located just north of Valley Street connects to other streets commonly used by bicyclists to travel to the Fremont and University District neighborhoods.

Pedestrian volumes along the I-5/Mercer Street interchange intersections are shown in Exhibits 7-3 and 7-4.

## **I-5/Stewart Street Interchange**

Sidewalks are provided throughout the I-5/Stewart Street interchange area. Sidewalks are limited to the west side of Eastlake Avenue East between Mercer and Howell Streets.

Bicyclists share the roads with vehicular traffic and there are no designated bicycle lanes in the immediate area. Eastlake Avenue East and Howell Street are identified in the Seattle Bicycling Guide Map (City of Seattle 2008) as “arterial streets commonly used by bicyclists.”

Pedestrian volumes along the I-5/Stewart Street interchange intersections are shown in Exhibits 7-3 and 7-4.

## **I-5/NE 45th Street Interchange**

Sidewalks are provided throughout the I-5/NE 45th Street interchange area. A sidewalk is located on the west side of 5th Avenue NE within the interchange area. Pedestrians can use sidewalks on both sides of NE 45th Street within the interchange area. Sidewalks are on both sides of 7th Avenue NE except at the I-5 northbound off-ramp area. Pedestrians currently cannot cross the south leg of the NE 42nd Street\7th Avenue NE\I-5 express lanes ramp intersection.

Bicyclists share the roads with vehicular traffic; however, there are no designated bicycle lanes in the immediate area. West of I-5,



NE 45th Street is identified in the Seattle Bicycling Guide Map (City of Seattle 2008) as an “arterial street commonly used by bicyclists.”

Pedestrian volumes along the I-5/NE 45th Street interchange intersections are shown in Exhibits 7-3 and 7-4.

## How are the project’s nonmotorized facilities being designed?

Two of the primary considerations when designing a bicycle/pedestrian path are personal safety and comfort on the path. A few of the bicycle/pedestrian path attributes that determine safety and comfort are visibility, paving, grade or slope, signage, and protective barriers.

The WSDOT Design Manual (WSDOT 2009c) includes standards and specifications that address safety and comfort for all aspects of trail design. This project adheres to those standards, as do most regional trails throughout the Puget Sound. The WSDOT Design Manual defines a shared-use path as “...used by pedestrians and bicyclists” (Section 1025, p. 13).

Standards that specify sight distance, drainage, traffic signals, bollards, and structures (overpasses, underpasses, bridges, etc.) are established in the WSDOT Design Manual’s section on Bicycle Facilities and the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (AASHTO 1999).

During one of several community and stakeholder collaborative design events, representatives of communities along the SR 520 corridor declared that “the ability to walk and ride bicycles around the neighborhood to parks, community facilities, and commercial areas is important. Safety should be addressed and walkways and trails enhanced.” Additional information about existing and proposed bicycle/pedestrian facilities can be found in the SR 520 Bridge Replacement and HOV Project: Nonmotorized Planning and Design Report (WSDOT 2004). After hearing public concerns about the existing nonmotorized network, the state has worked to proactively address concerns for newly constructed nonmotorized facilities and thereby achieve maximum benefit as part of a planned interconnected system.



## How did project changes after the Supplemental Draft EIS influence the nonmotorized elements?

Input from the public, the City of Seattle, the UW, and environmental regulatory agencies led to a decision for the Preferred Alternative. Under the Preferred Alternative design, bicyclists and pedestrians would have increased connections to modes such as bus rapid transit and light rail in the future.

In the meantime, the ESSB 6392 Workgroup was conducted by managers from WSDOT, the City of Seattle, King County, UW, and Sound Transit. The workgroup was informed by two technical coordination teams established by WSDOT and SDOT to evaluate and discuss design refinements.

The workgroup recommended implementing components of the Montlake area bicycle/pedestrian network included in the Preferred Alternative, and supported the anticipated process to identify future network additions. Components of the recommended Montlake bicycle/pedestrian network include:

- A minimum 14-foot-wide shared-use path between SR 520 and the Burke-Gilman Trail, including an 18-foot path on the new bascule bridge. The project is assuming the implementation of the Rainier Vista Land Bridge project and a bicycle and pedestrian overcrossing of Montlake Boulevard to provide a connection between the east side of Montlake Boulevard and the Burke-Gilman Trail.
- Connection to an enhanced Bill Dawson Trail via a bicycle/pedestrian-only tunnel under Montlake Boulevard.
- The Arboretum Loop Trail Extension, which is a new recreational path under SR 520 connecting the Waterfront Trail to the Arboretum.
- Montlake Boulevard and Lake Washington Boulevard East intersection crossing improvements (i.e., remove the free right-turn slip ramps).
- Improved access to 24th Avenue East across the Montlake lid.



Additional workgroup recommendations require further analysis as well as SDOT-led community outreach in order to reach final decisions:

- Recommending either the Shelby Street two-way bicycle lanes or Montlake Boulevard sidewalk widening to connect the SR 520 regional path to the Burke-Gilman Trail.
- Recommending sidewalk widening or on-street improvements for the east and west sides of Montlake Boulevard.
- Conducting further study evaluating additional pedestrian and bicycle crossings and pathways (including in-street bicycle lanes), as well as traffic operations in the Roanoke Park/North Capitol Hill area.
- Continuing cooperation among WSDOT, the Seattle Bicycle Advisory Board, and the Seattle Pedestrian Advisory Board in decision-informing discussions about bicycle and pedestrian designs and amenities.

## How was the Montlake Multimodal Center considered?

The City of Seattle, Metro, Sound Transit, UW, and WSDOT are considering several options to improve connections for transit riders, pedestrians, and cyclists at the intersection of Montlake Boulevard NE and NE Pacific Street. WSDOT coordinated with these agencies during the ESSB 6392 Workgroup process as part of the Montlake Triangle Charrette. WSDOT would continue to coordinate with these agencies to ensure that the Preferred Alternative is compatible with other planned improvements at this location. Key projects that are planned for this area include the following:

- **Sound Transit University Link Light Rail Station**—The SR 520, I-5 to Medina project assumes that the Sound Transit University Link light rail station, improved Montlake Boulevard crosswalk, and a potential grade-separated pedestrian connection from the University Link light rail station to the main campus would be constructed separately (Exhibit 7-6). The University Link light rail station and associated features are part of the

### Montlake Triangle Charrette

The ESSB 6392 Workgroup team working on design refinements and transit connections developed a separate process, which evaluated opportunities to enhance pedestrian and bicycle connectivity in the Montlake Multimodal Center, while respecting the schedules for the Sound Transit University Link station and the University of Washington Rainier Vista project. The charrette members identified conceptual design options that would provide safe, efficient transfers for bicyclists, pedestrians, and transit users to connect to the Link light rail station near Husky Stadium. Participants in the Montlake Triangle Charrette included representatives from WSDOT, Seattle Department of Transportation, Seattle Design Commission, University of Washington, King County Metro, and Sound Transit.



University Link project. The station is scheduled to open in 2016.

- University of Washington Rainier Vista Project**—UW is also considering the Rainier Vista project, which could be integrated with the SR 520, I-5 to Medina project. The Rainier Vista project is expected to include improvements to NE Pacific Place and lowering of NE Pacific Place and the Burke-Gilman Trail. Lids would be built over NE Pacific Place and the Burke-Gilman Trail to provide an at-grade pedestrian/bicycle connection directly to the Montlake Multimodal Center.

These projects are independent of the Preferred Alternative and would proceed regardless of whether the Preferred Alternative is constructed.



**Exhibit 7-6. Rendering of Sound Transit’s University of Washington Station Entrance with Pedestrian Bridge (Opening in 2016) (Provided by Sound Transit November 25, 2008)**



## How will the project affect nonmotorized transportation?

The Preferred Alternative would provide transportation and livability benefits to the affected neighborhoods and to the region as a whole. Nonmotorized systems may offer connections and enhancements to communities that cannot come from other sources—specifically, from highway systems. Nonmotorized systems may, if carefully designed, reconnect communities that were isolated by construction of the highway. These features are part of a larger, comprehensive transportation system, including connections to the City of Seattle Bicycle Master Plan routes.

The following project features would increase mobility options, create new nonmotorized connections, and improve existing and planned bicycle and pedestrian routes within and around the study area:

- **Evergreen Point Bridge**—The bicycle/pedestrian path across the bridge is the most obvious improvement in connectivity among all benefits listed in this report. Bicyclists and pedestrians would have the ability to travel directly east and west, which is an option they do not have today.
- **Montlake Boulevard and 24th Avenue East Lid**—The Preferred Alternative would allow people to connect through several routes: via the Montlake Boulevard and 24th Avenue East lid to the Evergreen Point Bridge path to the east; Burke-Gilman Trail to the northeast and west; Bill Dawson Trail to the southwest; and Lake Washington Boulevard/ Arboretum trails to the southeast. This area would become a primary crossroad for nonmotorized routes and provide many transit connections for nonmotorized users.
- **Montlake Boulevard and NE Pacific Street Intersection**—The Preferred Alternative would improve connectivity for bicyclists and pedestrians with other modes of transportation via the Montlake Multimodal Center and University Link light rail station by expanding the pedestrian facilities across the Montlake Cut. A roadside bicycle/pedestrian path would be provided along the new bascule bridge constructed over the Montlake Cut. Compared to the No Build Alternative, bicyclists would experience fewer conflicts with traffic by using the roadside path.



- **10th Avenue East and Delmar Drive East Lid**—On the 10th Avenue East and Delmar Drive East lid, intersection connections would be improved to provide enhanced safety for bicyclists and pedestrians. The lid surface would offer a more aesthetic connection between neighborhoods adjacent to SR 520 and include a meandering pathway from east to west between 10th Avenue East and Delmar Drive East.
- **I-5/Roanoke Crossing**—The addition of a path on the south side of the Roanoke Street bridge over I-5 and new crosswalks at the Harvard Avenue East/Roanoke Street intersection would improve safety in an area where bicyclists typically share the roads with vehicular traffic.

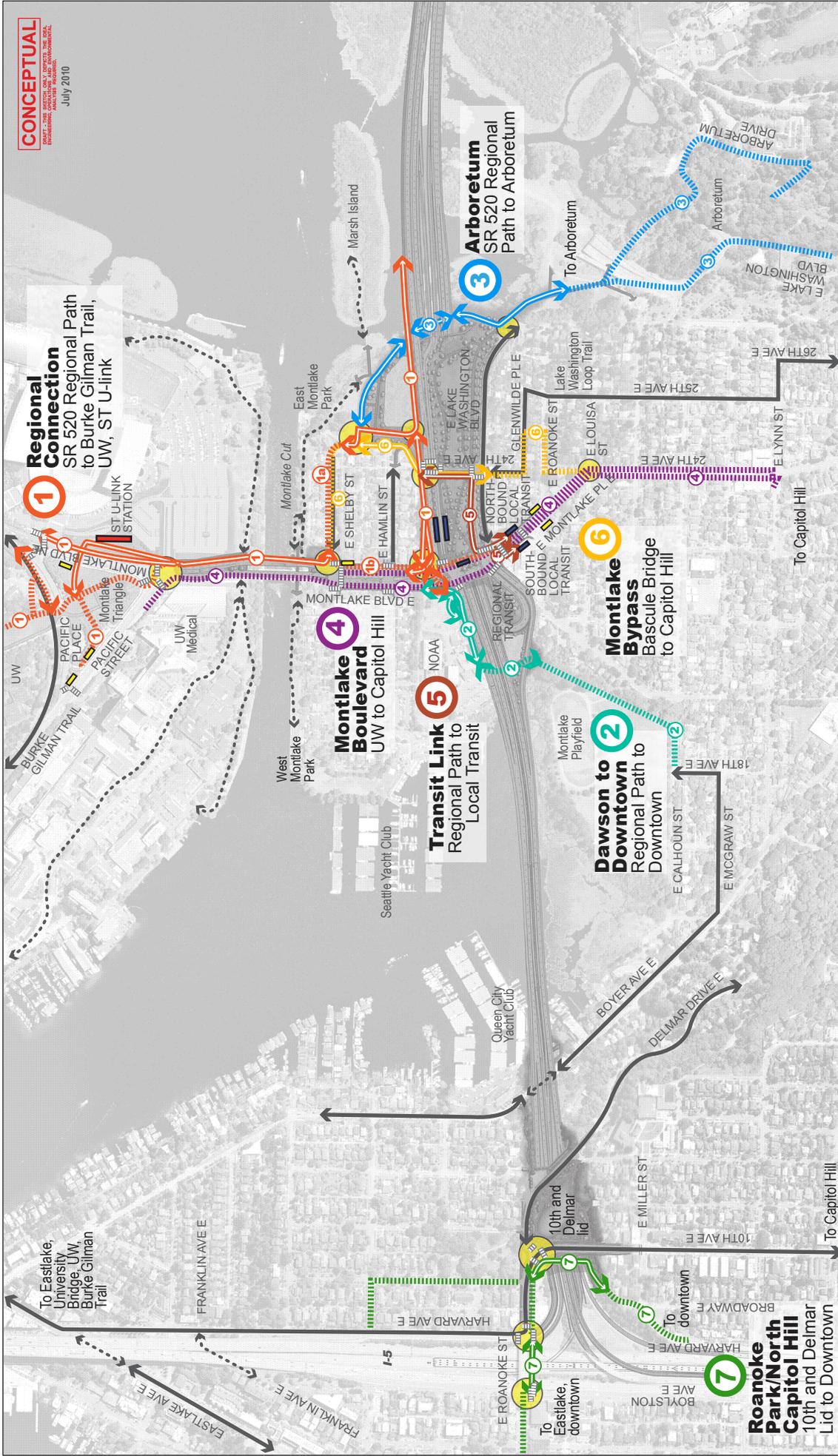
The Preferred Alternative would also result in the loss of 54 bicycle locker spaces and 53 bicycle rack spaces near the existing Montlake Freeway Transit Station. The area currently occupied by the bicycle lockers is needed during construction in order to widen Montlake Boulevard and build the westbound off-ramp and direct access ramps. WSDOT will relocate the bicycle facilities nearby, and is coordinating with Metro to identify a suitable location.

## Performance of Key Travel Routes

During the ESSB 6392 Workgroup process, a pedestrian/bicycle subgroup identified opportunities to enhance connections from the new SR 520 bicycle/pedestrian path to ensure its integration with other regional facilities. These regional facilities include the Sound Transit University Link station, the Burke-Gilman Trail, and other existing and planned City of Seattle bicycle and pedestrian networks.

Seven primary nonmotorized routes in and through the study area, shown in Exhibit 7-7, were identified and evaluated through this collaborative process involving SDOT, Seattle Design Commission, City of Seattle Pedestrian Advisory Board, and Seattle Bicycle Advisory Board. The primary bicycle and pedestrian routes were selected based on identified “desire lines.” Rather than depicting built facilities, they represent the general travel routes that most cyclists and pedestrians want to use through the area. The routes span multiple paths, sidewalks, and roadways.





**1 Regional Connection**  
 SR 520 Regional Path  
 to Burke Gilman Trail,  
 UW, ST U-link

**3 Arboretum**  
 SR 520 Regional  
 Path to Arboretum

**4 Montlake Boulevard**  
 UW to Capitol Hill

**5 Transit Link**  
 Regional Path to  
 Local Transit

**6 Montlake Bypass**  
 Bascule Bridge  
 to Capitol Hill

**2 Dawson to Downtown**  
 Regional Path to  
 Downtown

**7 Roanoke Park/North Capitol Hill**  
 10th and Delmar  
 Lid to Downtown

- WSDOT Improvement (solid color line)
- Connection for further evaluation (dashed color line)
- Crosswalks (existing and improved)
- Existing bicycle route
- Existing pedestrian route
- Transit stop (existing)
- Transit stop (proposed)
- Decision point for cyclist



**Exhibit 7-7. Primary Bicycle/Pedestrian Routes for Evaluation**  
 SR 520, I-5 to Medina: Bridge Replacement and HOV Project

The performance of these primary bicycle and pedestrian travel routes was assessed based on the following criteria:

- *Safety* was evaluated based on factors such as the quantity and quality of street crossing locations, low vehicular traffic volumes, and degree of separation between vehicles and nonmotorized uses and between bicycles and pedestrians.
- *Connectivity* was evaluated based on the ability of all users to fully utilize the facility and make desired connections to other routes or popular destinations.
- *Efficiency* was evaluated by determining if routes are direct and intuitive, or if connections are nearby and easily accessible.
- *Capacity* criteria focused on topics of ADA accessibility, separation of pedestrians and bicyclists, and the ability of the system to accommodate growth in nonmotorized use by providing multiple path options or wide multi-use paths.

Exhibits 7-8 through 7-14 summarize the results of the assessment for each route under the No Build Alternative and Preferred Alternative based on these criteria.

The seven primary nonmotorized routes in the study area are described below. These descriptions include a review of the route evaluation under No Build and Preferred Alternative scenarios.

### **Route 1: Regional Connection—SR 520 Regional Path to Burke-Gilman Trail, UW, and Sound Transit University Link Station**

This route forms a vital connection between Seattle and the communities on the east side of Lake Washington. Today, cyclists and pedestrians must use a bus to cross SR 520, detour to the north or south to use their bicycles, or travel on foot.

The Preferred Alternative would build a new section of the SR 520 regional trail system improved by the SR 520, Medina to SR 202 project across the new floating bridge span to Montlake Boulevard. At the Montlake interchange, the path joins the proposed network of sidewalks on the Montlake lid. Trail users have the choice of continuing to Montlake Boulevard and turning north to reach the Montlake Multimodal Center, or using either Shelby Street or



Hamlin Street to reach Montlake via a route with less vehicular traffic.

**Exhibit 7-8. Route 1: Regional Connection—SR 520 Regional Path<sup>a</sup> to Burke-Gilman Trail, UW, and Sound Transit University Link Station**

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Safety	1. Few vehicle conflicts or crossing locations		√
	2. Signal-protected crosswalk or grade-separated crossings	√	√
	3. Separate path or landscaping buffer/barriers		√
	4. Cyclists able to separate from pedestrians	√	√
	5. Low vehicle volumes/density in the area	√	√
	6. Pedestrian refuge islands or short crossings	√	√
Connectivity	1. Barrier-free route (ADA accessible)		√
	2. Connection to other modes of travel (transit, parking)	√	√
	3. Support facilities (bicycle storage or vehicle parking)	√	√
	4. Logical/intuitive route alignments		√
	5. Supports recreation areas and primary destinations		√
	6. Supports nonmotorized cross-lake trips		√
Efficiency	1. Direct or non-stop nonmotorized route (≥80% total length)		√
	2. Nearby connections to other modes (transit, parking)	√	√
	3. Direct route to popular destinations		√
	4. Moderate (ADA) grades		√
	5. Pedestrian-activated signals	√	√
	6. Multiple path options under/across interchange		
Capacity	1. Barrier-free route (ADA accessible)		√
	2. Meets design standards (e.g., path width)		√
	3. Cyclists able to separate from pedestrians	√	√
	4. Multiple path options under/across interchange		
	5. Unrestricted sight distance		√
	6. Accommodate future nonmotorized growth		√

<sup>a</sup> The SR 520 regional bicycle/pedestrian path on the floating span of the Evergreen Point Bridge does not exist under No Build conditions; however, cross-lake trips are possible via transit. There are nonmotorized connections among the Burke-Gilman Trail, Montlake Multimodal Center, and Montlake Boulevard under No Build conditions.



These facilities would connect trail users with an off-street nonmotorized path that would be completed as part of a new bascule bridge across the Montlake Cut. This connection would allow the regional trail to connect with the Burke-Gilman Trail, existing transit stops, and the future University Link light rail station in and around the Montlake Multimodal Center.

Because the Preferred Alternative provides a purely nonmotorized route, it performs much better in the evaluation and provides significant benefits in safety, connectivity, efficiency, and capacity for the nonmotorized network.

## Route 2: Dawson Trail to Downtown Seattle—SR 520 Regional Path to Downtown Seattle

The Bill Dawson Trail currently connects Montlake Boulevard to East Calhoun Street near the Montlake Playground and provides connections to Capitol Hill and downtown Seattle. The trail passes under SR 520 on the east side of Portage Bay much as it would in the Preferred Alternative.

The Preferred Alternative would add a tunnel underneath Montlake Boulevard just north of the eastbound ramps that would provide a continuous connection to the SR 520 regional trail. Short connector trails would maintain trail connections to Montlake Boulevard at both ends of the new tunnel alignment. As Exhibit 7-9 indicates, the Preferred Alternative would improve each performance measure, but especially its connectivity to the regional trail and other destinations through the interchange improvements.

Exhibit 7-9. Route 2: Dawson Trail to Downtown Seattle—SR 520 Regional Path to Downtown Seattle

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Safety	1. Few vehicle conflicts or crossing locations	√	√
	2. Signal-protected crosswalk or grade-separated crossings	√	√
	3. Separate path or landscaping buffer/barriers	√	√
	4. Cyclists able to separate from pedestrians		
	5. Low vehicle volumes/density in the area	√	√
	6. Pedestrian refuge islands or short crossings		



## Exhibit 7-9. Route 2: Dawson Trail to Downtown Seattle—SR 520 Regional Path to Downtown Seattle

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Connectivity	1. Barrier-free route (ADA accessible)	√	√
	2. Connection to other modes of travel (transit, parking)		√
	3. Support facilities (bicycle storage or vehicle parking)		
	4. Logical/intuitive route alignments	√	√
	5. Supports recreation areas and primary destinations		√
	6. Supports nonmotorized cross-lake trips	√	√
Efficiency	1. Direct or non-stop nonmotorized route (≥80% total length)	√	√
	2. Nearby connections to other modes (transit, parking)		√
	3. Direct route to popular destinations		√
	4. Moderate (ADA) grades		√
	5. Pedestrian-activated signals		
	6. Multiple path options under/across interchange		
Capacity	1. Barrier-free route (ADA accessible)	√	√
	2. Meets design standards (e.g., path width)	√	√
	3. Cyclists able to separate from pedestrians		
	4. Multiple path options under/across interchange		
	5. Unrestricted sight distance		
	6. Accommodate future nonmotorized growth		√

### Route 3: Arboretum—SR 520 Regional Path to Arboretum

The route from the Arboretum to the Montlake interchange ends in the vicinity of 24th Avenue East. In the No Build Alternative, the route follows Lake Washington Boulevard to Montlake Boulevard. In the Preferred Alternative, a new trail is constructed that crosses under the freeway and connects to 24th Avenue East between Shelby Street and Hamlin Street and is served by a trailhead parking lot. The new trail would greatly enhance the safety of this route for both pedestrians and cyclists by providing an exclusive path separated from the flow of vehicles on Lake Washington Boulevard. Nonmotorized users would still have the option to use 24th Avenue East to cross SR 520. The Preferred Alternative simply increases the number of connection options across SR 520 with the addition of the



Montlake lid, adding capacity and improving efficiency for nonmotorized users.

Exhibit 7-10. **Route 3: Arboretum—SR 520 Regional Path to Arboretum**

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Safety	1. Few vehicle conflicts or crossing locations		√
	2. Signal-protected crosswalk or grade-separated crossings		√
	3. Separate path or landscaping buffer/barriers	√	√
	4. Cyclists able to separate from pedestrians		√
	5. Low vehicle volumes/density in the area		√
	6. Pedestrian refuge islands or short crossings	√	
Connectivity	1. Barrier-free route (ADA accessible)	√	√
	2. Connection to other modes of travel (transit, parking)		√
	3. Support facilities (bicycle storage or vehicle parking)		
	4. Logical/intuitive route alignments	√	√
	5. Supports recreation areas and primary destinations	√	√
	6. Supports nonmotorized cross-lake trips		√
Efficiency	1. Direct or non-stop nonmotorized route (≥80% total length)		√
	2. Nearby connections to other modes (transit, parking)	√	√
	3. Direct route to popular destinations	√	√
	4. Moderate (ADA) grades	√	√
	5. Pedestrian-activated signals		
	6. Multiple path options under/across interchange		√
Capacity	1. Barrier-free route (ADA accessible)	√	√
	2. Meets design standards (e.g., path width)		√
	3. Cyclists able to separate from pedestrians		√
	4. Multiple path options under/across interchange		√
	5. Unrestricted sight distance		
	6. Accommodate future nonmotorized growth		√



## Route 4: Montlake Boulevard—UW to Capitol Hill

This route follows Montlake Boulevard southbound from NE Pacific Street to the neighborhoods south of Roanoke Street and northbound to the Shelby Street/Hamlin Street neighborhood.

The No Build scenario requires cyclists to use the sidewalk or board a bus to cross the historic bascule bridge because the steel-grated road surface is not safe for bicycles. Even if shared-lane markings, or “sharrows,” are added to other stretches of Montlake Boulevard, many cyclists would choose to continue using the sidewalk for the majority of this route. As bicycle traffic increases on Montlake Boulevard, this could become a safety concern for pedestrians. Northbound cyclists must make a similar decision; either ride in-lane with motor traffic or share the sidewalk.

The Preferred Alternative would not add bicycle lanes to Montlake Boulevard, but the City of Seattle may decide to add sharrows to the curb lanes to indicate the shared use of the lane with bicycles. In addition, pedestrians using Montlake Boulevard would have improved crossing locations that would be signal protected and would not expose pedestrians to higher speed free-flow right-turn movements.

Exhibit 7-11. Route 4: Montlake Boulevard—UW to Capitol Hill

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Safety	1. Few vehicle conflicts or crossing locations		√
	2. Signal-protected crosswalk or grade-separated crossings		√
	3. Separate path or landscaping buffer/barriers		√
	4. Cyclists able to separate from pedestrians		√
	5. Low vehicle volumes/density in the area		√
	6. Pedestrian refuge islands or short crossings	√	
Connectivity	1. Barrier-free route (ADA accessible)		√
	2. Connection to other modes of travel (transit, parking)	√	√
	3. Support facilities (bicycle storage or vehicle parking)	√	
	4. Logical/intuitive route alignments	√	√
	5. Supports recreation areas and primary destinations	√	√
	6. Supports nonmotorized cross-lake trips		√



Exhibit 7-11. **Route 4: Montlake Boulevard—UW to Capitol Hill**

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Efficiency	1. Direct or non-stop nonmotorized route ( $\geq 80\%$ total length)		
	2. Nearby connections to other modes (transit, parking)	√	√
	3. Direct route to popular destinations	√	√
	4. Moderate (ADA) grades	√	√
	5. Pedestrian-activated signals	√	√
	6. Multiple path options under/across interchange		
Capacity	1. Barrier-free route (ADA accessible)	√	√
	2. Meets design standards (e.g., path width)		
	3. Cyclists able to separate from pedestrians	√	√
	4. Multiple path options under/across interchange		
	5. Unrestricted sight distance		√
	6. Accommodate future nonmotorized growth		

**Route 5: Transit Link—Regional Path to Local Transit**

This route represents the transit connections that riders make every day between local and regional routes at the Montlake Boulevard interchange. This is also an area where local transit would connect riders to the regional trail system under the Preferred Alternative.

Under No Build conditions, local transit stops are located on Montlake Boulevard just south of Roanoke Street. Transfers to or from the freeway station stops require riders to walk between 600 and 1,300 feet and navigate stairs to transfer. The Preferred Alternative would reduce the walking distances to between 200 and 700 feet with no stairs or ADA barriers.

The Preferred Alternative would move the southbound local transit stops for Routes 43 and 48 to just north of Roanoke Street; moreover, the northbound stop would use its own lane on the new Montlake lid between the eastbound and westbound ramp intersections.

Relocating the regional stops to the lid removes the need to navigate stairs and provides a more central location for route transfers.



## Exhibit 7-12. Route 5: Transit Link—Regional Path to Local Transit

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Safety	1. Few vehicle conflicts or crossing locations	√	√
	2. Signal-protected crosswalk or grade-separated crossings	√	√
	3. Separate path or landscaping buffer/barriers	√	√
	4. Cyclists able to separate from pedestrians		
	5. Low vehicle volumes/density in the area		
	6. Pedestrian refuge islands or short crossings	√	
Connectivity	1. Barrier-free route (ADA accessible)		√
	2. Connection to other modes of travel (transit, parking)	√	√
	3. Support facilities (bicycle storage or vehicle parking)	√	
	4. Logical/intuitive route alignments		√
	5. Supports recreation areas and primary destinations	√	√
	6. Supports nonmotorized cross-lake trips		√
Efficiency	1. Direct or non-stop nonmotorized route (≥80% total length)		
	2. Nearby connections to other modes (transit, parking)	√	√
	3. Direct route to popular destinations	√	√
	4. Moderate (ADA) grades		√
	5. Pedestrian-activated signals	√	√
	6. Multiple path options under/across interchange		√
Capacity	1. Barrier-free route (ADA accessible)		√
	2. Meets design standards (e.g., path width)	√	√
	3. Cyclists able to separate from pedestrians		√
	4. Multiple path options under/across interchange		√
	5. Unrestricted sight distance	√	√
	6. Accommodate future nonmotorized growth		√

## Route 6: Montlake Bypass—Bascule Bridge to Capitol Hill

With the No-Build Alternative, 24th Avenue East provides a safer alternative to the high traffic volumes of Montlake Boulevard for bicycles and pedestrians. Crossing the freeway at 24th Avenue East maintains close and convenient connections to transit stops at the interchange.



Under the Preferred Alternative, traffic volumes would increase on 24th Avenue East between the westbound off-ramp and Lake Washington Boulevard, reducing the level of safety for cyclists sharing the street and the comfort of pedestrians on the sidewalk. The Preferred Alternative also adds one intersection (with signalized crossings) at the westbound direct access off-ramp intersection with 24th Avenue East that nonmotorized users must negotiate.

Despite these drawbacks, the Preferred Alternative does provide additional paths across the Montlake lid, accommodating more pedestrians and bicyclists and facilitating north-south travel through the Montlake neighborhoods. It also creates more convenient transit connections, and signalizes the intersection of 24th Avenue East and Lake Washington Boulevard.

**Exhibit 7-13. Route 6: Montlake Bypass—Bascule Bridge to Capitol Hill**

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Safety	1. Few vehicle conflicts or crossing locations	√	
	2. Signal-protected crosswalk or grade-separated crossings		√
	3. Separate path or landscaping buffer/barriers		
	4. Cyclists able to separate from pedestrians		√
	5. Low vehicle volumes in the area	√	
	6. Pedestrian refuge islands or short crossings	√	√
Connectivity	1. Barrier-free route (ADA accessible)	√	√
	2. Connection to other modes of travel (transit, parking)		√
	3. Support facilities (bicycle storage or vehicle parking)		
	4. Logical/intuitive route alignments		
	5. Supports recreation areas and primary destinations	√	√
	6. Supports nonmotorized cross-lake trips		
Efficiency	1. Direct or non-stop nonmotorized route (≥80% total length)		
	2. Nearby connections to other modes (transit, parking)		√
	3. Direct route to popular destinations		
	4. Moderate (ADA) grades	√	√
	5. Pedestrian-activated signals		√
	6. Multiple path options under/across interchange		√



**Exhibit 7-13. Route 6: Montlake Bypass—Bascule Bridge to Capitol Hill**

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Capacity	1. Barrier-free route (ADA accessible)	√	√
	2. Meets design standards (e.g., path width)		
	3. Cyclists able to separate from pedestrians	√	√
	4. Multiple path options under/across interchange		√
	5. Unrestricted sight distance		
	6. Accommodate future nonmotorized growth		√

**Route 7: Roanoke Park/North Capitol Hill—10th and Delmar Lid to Downtown Seattle**

Today and with the No Build Alternative, the crossings of I-5 and SR 520 make this route serve high traffic volumes and form important connections in the Seattle city grid. The area is also the crossroads of several bicycle routes in the city.

The Preferred Alternative would build a lid between 10th Avenue East and Delmar Drive East, which would provide multiple paths across the lid and a separate trail west of 10th Avenue East. A separate nonmotorized bridge would also be built on the south side of Roanoke Street that would complete a nonmotorized path loop from Boylston Avenue along 10th Avenue East to Harvard Avenue, providing connections to the Capitol Hill neighborhood and downtown Seattle.

**Exhibit 7-14. Route 7: Roanoke Park/North Capitol Hill—10th and Delmar Lid to Downtown Seattle**

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Safety	1. Few vehicle conflicts or crossing locations		√
	2. Signal-protected crosswalk or grade-separated crossings	√	√
	3. Separate path or landscaping buffer/barriers	√	√
	4. Cyclists able to separate from pedestrians		√
	5. Low vehicle volumes/density in the area	√	√
	6. Pedestrian refuge islands or short crossings	√	√



Exhibit 7-14. Route 7: Roanoke Park/North Capitol Hill—10th and Delmar Lid to Downtown Seattle

Performance Measures	Evaluation Criteria	No Build	Preferred Alternative
Connectivity	1. Barrier-free route (ADA accessible)	√	√
	2. Connection to other modes of travel (transit, parking)	√	√
	3. Support facilities (bicycle storage or vehicle parking)		
	4. Logical/intuitive route alignments	√	√
	5. Supports recreation areas and primary destinations	√	√
	6. Supports nonmotorized cross-lake trips		
Efficiency	1. Direct or non-stop nonmotorized route (≥80% total length)		√
	2. Nearby connections to other modes (transit, parking)	√	√
	3. Direct route to popular destinations		
	4. Moderate (ADA) grades	√	√
	5. Pedestrian-activated signals	√	√
	6. Multiple path options under/across interchange		√
Capacity	1. Barrier-free route (ADA accessible)	√	√
	2. Meets design standards (e.g., path width)		√
	3. Cyclists able to separate from pedestrians		√
	4. Multiple path options under/across interchange		√
	5. Unrestricted sight distance	√	√
	6. Accommodate future nonmotorized growth		√

## Summary Effects on Nonmotorized Users

Aside from minor tradeoffs, the Preferred Alternative provides many benefits to the nonmotorized transportation system. The project increases the level of safety, provides more connections and travel options, improves system efficiency, and provides capacity for future growth. In short, the overall effect of the project on nonmotorized users and their travel experience is a benefit.





# Chapter 8—Transit Operations

## What is in this chapter?

This chapter describes existing and forecasted transit service and facilities on the SR 520 corridor without and with the project. It describes how improving the SR 520 HOV lane system and transit facilities could support WSDOT's goal of moving more people along the SR 520 corridor and across Lake Washington. The SR 520, I-5 to Medina project would also provide the infrastructure to support Metro's and Sound Transit's efforts to meet the region's growing demand for transit service.

## What is the existing infrastructure that supports transit on SR 520?

The transit system consists of built features, or infrastructure, in addition to the buses and other vehicles that carry riders from place to place. At a minimum, buses need roadways and trains need rails to move around the city. Transit has several basic design requirements to operate due to the vehicle sizes, the need for frequent access by riders, and other special considerations. The speed and efficiency of transit operations can be improved by constructing dedicated facilities in addition to the basic requirements needed for operation. Typically, these facilities give priority to transit vehicles so they can keep moving through traffic signals or congested conditions. On a regionally significant highway like SR 520, the most effective built features for transit are HOV lanes.

### HOV Lanes

The existing HOV lane system on the SR 520 corridor is shown in Exhibit 8-1. While HOV lanes are provided in a number of locations, they are discontinuous, limiting their effectiveness in providing a reliable transit travel time.

Westbound SR 520 currently has an outside shoulder HOV lane (three or more people) on the Eastside between 108th Avenue NE and Evergreen Point Road. There is no eastbound HOV lane in this section of SR 520.



Between 124th Avenue NE and West Lake Sammamish Parkway, there are outside HOV lanes in both directions of SR 520. HOV lanes are also provided in both directions along I-405, both north and south of the SR 520/I-405 interchange.

In Seattle, an HOV lane is located along short sections of NE Pacific Street (eastbound only) and Montlake Boulevard (southbound only) leading to the Montlake Bridge to help HOVs bypass congestion related to Montlake Bridge openings. The NE Pacific Street HOV lane is for carpools with three or more passengers and transit; the southbound Montlake Boulevard HOV lane is transit only. In addition, the eastbound on-ramp at the SR 520/Montlake interchange includes an HOV bypass lane.

HOV lanes are also provided in some sections on the I-5 main line and express lanes. While useful to existing transit services for bypassing congestion points, these HOV facilities are not continuous and transit vehicles are forced to interact with congested general-purpose traffic.

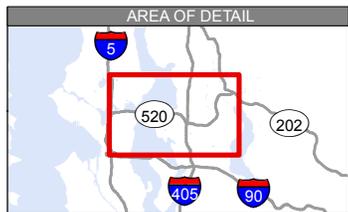
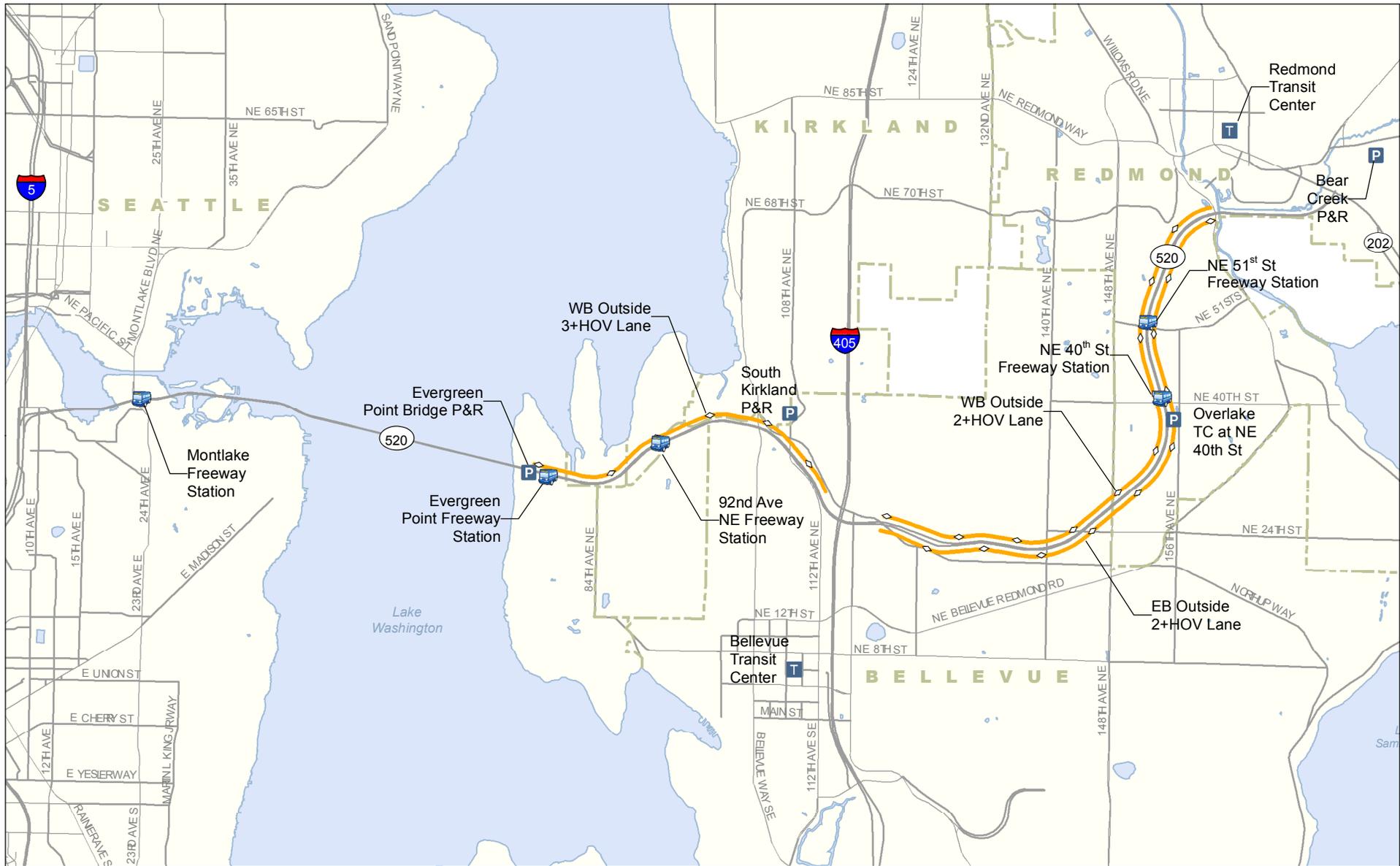
### **Other Transit Facilities**

Within the study area, there are transit layover spaces at the Montlake Triangle on the southeast curb of NE Pacific Place and a driver comfort station. These facilities are integral to transit operations and serve to keep buses on time and provide mandatory driver breaks.

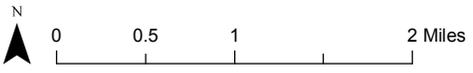
Overhead electric bus wires (trolley wires) are located around the Montlake Triangle along NE Pacific Street, the eastbound lane of NE Pacific Place, and the southbound outside lane of Montlake Boulevard (between NE Pacific Place and NE Pacific Street). There are also trolley wires on Montlake Boulevard NE south of NE Pacific Street, across the Montlake Bridge, 24th Avenue East, and 10th Avenue East (in Capitol Hill/Roanoke neighborhood). Trolley wire power substations are located in these areas.

Preferential signalization on the eastbound leg of the NE Pacific Street/Montlake Boulevard intersection allows buses and carpools to bypass congestion approaching the north end of the Montlake Bridge. When buses reach the Montlake Boulevard/Lake Washington Boulevard intersection, they are able to make a signal-protected right turn directly into the HOV bypass lane on the eastbound SR 520 on-ramp. These applications have proven helpful in reducing congestion-related delays and improving reliability for eastbound SR 520 bus routes and carpools.





-  Transit Stop
-  Park & Ride and Transit Center
-  Transit Center
-  HOV Lane



Source: King County (2008) GIS Data (Streams, Streets, Water Bodies). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

**Exhibit 8-1. Existing HOV and Transit Facilities Along SR 520**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## What is SR 520 transit service like today?

Data from Metro show that 24 bus routes serve daily cross-lake demand on the Evergreen Point Bridge—18 Metro routes, 5 Sound Transit Express routes, and 1 Community Transit route. These bus routes are shown in Exhibit 8-2.

Fourteen routes provide service to Eastside communities and downtown Seattle and 10 routes connect to the University District and north Seattle. All-day service is provided by 4 of these 24 routes:

- Metro Route 255 between Kirkland and downtown Seattle
- Metro Route 271 between Issaquah and the University District
- Sound Transit Route 540 between Kirkland and the University District
- Sound Transit Route 545 between downtown Redmond and downtown Seattle

The remaining routes provide peak period service with connections to the University District, downtown Seattle, and other areas to the north and south. One route (Metro Route 280) provides late-night eastbound service across SR 520.

In addition to Metro and Sound Transit routes, Microsoft operates its Microsoft Connector service on SR 520, which provides transportation for Microsoft employees between the company's facilities and Seattle, Bothell, Mill Creek, Issaquah, and Sammamish. The UW Medical Center, Children's Hospital, and the Fred Hutchinson Cancer Research Center all operate shuttles that travel through Montlake and the University District to other Seattle neighborhoods.



### Did you know?

A **bus route** is the established path a bus follows between two points.

A **bus trip** is the time a bus travels from one end of the route to the other while carrying passengers.

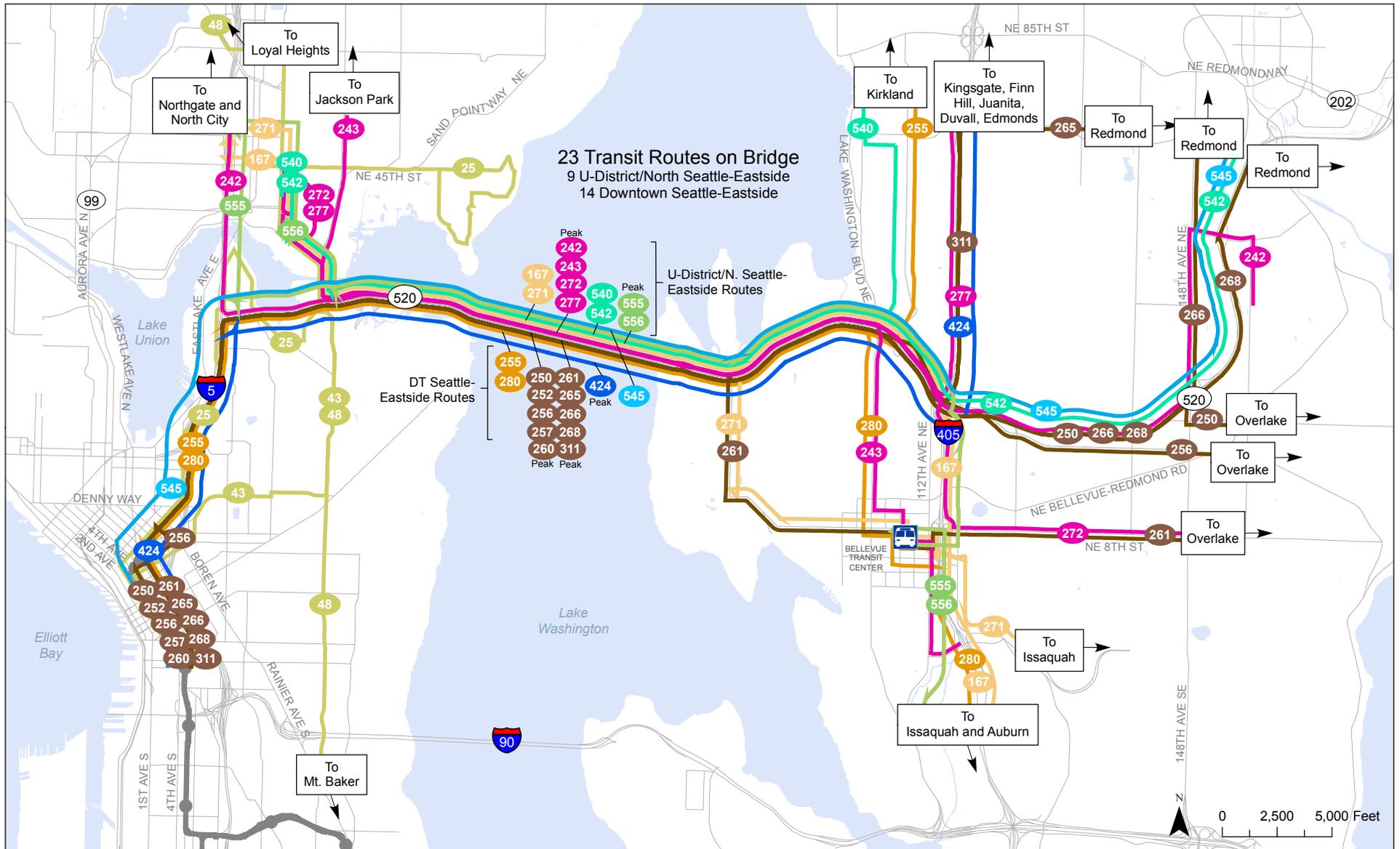
**Number of buses** refers to the number of buses required to provide the scheduled number of bus trips on each bus route. The factors that influence the number of required buses are the frequency (number of trips in a given time period), round-trip length (in minutes), and recovery time at each end for the bus to return to schedule and provide a driver break. Some buses may provide service on multiple bus routes (see example below).

#### Example of the difference between number of buses and bus trips

One bus leaves the bus base, and provides a single trip on Route 252 from Kingsgate to Seattle (across SR 520). The bus then drives out of service to Issaquah and provides a bus trip on Route 214 from Issaquah to Seattle (across I-90).

One bus provides two bus trips: one trip on Route 214 and one trip on Route 252.





**Metro Transit**

- North Seattle to Downtown
- North Seattle/Eastside
- Peak Hour North Seattle/Eastside
- Limited Service North Seattle/Eastside
- Downtown Seattle/Eastside
- Peak Hour Downtown Seattle/Eastside

**Sound Transit**

- North Seattle/Eastside
- Peak Hour North Seattle/Eastside
- Downtown Seattle/Eastside

**Community Transit**

- Peak Hour Downtown Seattle/Snohomish County

**Link Light Rail**

- Link Light Rail

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 8-2. Existing Bus Routes Serving the SR 520 Study Area**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## Service Frequencies

Frequencies for individual routes serving SR 520 are shown in Exhibit 8-3. The frequencies for these 24 routes combine to provide a high level of bus frequency for transit riders who need to cross the Evergreen Point Bridge. Exhibit 8-4 shows combined bus headways for Eastside-downtown Seattle and Eastside-University District/north Seattle routes across the Evergreen Point Bridge.

Transit riders traveling between the Eastside and the Montlake/University District can use buses bound for downtown Seattle or the University District by using the Montlake Freeway Transit Station. As shown in Exhibit 8-4, the ability to use both downtown Seattle and Montlake/University District buses results in a bus arriving, on average, every 1 to 3 minutes during the peak period and every 4 to 5 minutes during the midday. Between 6:00 a.m. and 6:15 p.m., approximately 540 SR 520 buses travel between the Montlake interchange area and the Evergreen Point Freeway Transit Station each weekday.

In October 2010, Sound Transit implemented a new extended peak period route, Route 542, serving Redmond, the University District, and Ravenna/Green Lake. The route travels between the Redmond Town Center and the I-5/65th Street Park-and-Ride near Green Lake. It serves the SR 520/NE 51st Street freeway station, the Overlake Transit Center at NE 40th Street, Yarrow Point Freeway Transit Station, Evergreen Point Freeway Transit Station, and six on-street stops in the University District (Sound Transit 2010b). Bus service is every 15 minutes between 6:00 a.m. and 10:00 a.m. and 2:00 p.m. to 7:00 p.m.

Service on this route helps to address overcrowding on Sound Transit Route 545 and will also accommodate expected increases in ridership when vehicle tolls associated with the Urban Partnership Agreement are implemented on the bridge in 2011 (Sound Transit 2010b). This route will also help to address future construction-related traffic effects when construction begins on the SR 520, I-5 to Medina project. As a part of the Urban Partnership Agreement, buses used for Route 542 are being purchased with grant funds from the U.S. Department of Transportation (Sound Transit 2010b).



Exhibit 8-3. SR 520 Existing Transit Routes and Route Headways

Route	Service Provider	Name	Peak Headways (minutes)	Midday Headways (minutes)
167	King County Metro	Auburn-Kent-UW (NB)	45	-
242	King County Metro	North City-Overlake (EB)	30	-
243	King County Metro	Jackson Park-Lake City-Bellevue (EB)	60	-
250	King County Metro	Redmond-Overlake-Downtown Seattle (WB)	36	-
252	King County Metro	Kingsgate-Downtown Seattle (WB)	26	-
255	King County Metro	Kingsgate-Kirkland-Downtown Seattle (WB/EB)	13/36	30
256	King County Metro	Overlake-Downtown Seattle (EB)	36	-
257	King County Metro	Brickyard-Downtown Seattle (WB)	30	-
260	King County Metro	Kenmore-Juanita-Downtown Seattle (WB)	60	-
261	King County Metro	Overlake-Bellevue-Downtown Seattle (WB)	45	-
265	King County Metro	Redmond-Houghton-Downtown Seattle (WB)	30	-
266	King County Metro	Redmond-Downtown Seattle (WB)	30	-
268	King County Metro	Redmond-Downtown Seattle (WB)	45	-
271	King County Metro	Issaquah-Bellevue-UW (WB/EB)	26/36	30
271	King County Metro	Eastgate-Bellevue-UW (WB/EB)	45/60	
272	King County Metro	Eastgate-Crossroads-UW	30	90
277	King County Metro	Juanita-Kingsgate-UW (WB)	30	-
311	King County Metro	Duvall-Woodinville-Downtown Seattle (WB)	36	-
424	Community Transit	Snohomish-Monroe-Downtown Seattle (SB)	60	-
540	Sound Transit	Express: Kirkland-UW (WB/EB)	17/45	30
542	Sound Transit	Express: Redmond-UW	15	
545	Sound Transit	Express: Redmond-Downtown Seattle (WB/EB)	10/12	15/14
555	Sound Transit	Express: Northgate-Issaquah	30	-
556	Sound Transit	Express: Northgate-Issaquah	30	-

Route 280 is a night-owl route with one departure and was not included in this exhibit.

Route 542 was not included in the existing conditions travel demand model for the Final EIS.

“-“ indicates route is a peak only route; NB = northbound, EB = eastbound, WB = westbound



Exhibit 8-4. Combined Bus Headways across the Evergreen Point Bridge Today (between Evergreen Point and Montlake Freeway Transit Stations)

	AM Peak Period (6 to 9 a.m.)		PM Peak Period (3:15 to 6:15 p.m.)		Midday (9 a.m. to 3:15 p.m.)	
	Bus Trips	Average Headway (minutes)	Bus Trips	Average Headway (minutes)	Bus Trips	Average Headway (minutes)
<b>Westbound</b>						
Downtown Seattle–Eastside <sup>a</sup>	78	2.3	25	7.2	39	9.6
University District/North Seattle–Eastside <sup>b</sup>	53	3.4	37	4.9	33	11.4
<b>Combined</b>	131	1.4	62	2.9	72	5.2
<b>Eastbound</b>						
Downtown Seattle–Eastside <sup>a</sup>	29	6.2	80	2.3	42	8.9
University District/North Seattle–Eastside <sup>b</sup>	33	5.5	48	3.8	41	9.1
<b>Combined</b>	62	2.9	128	1.4	83	4.5

Notes:

Downtown Seattle–Eastside Bus Routes: Peak—242, 250, 252, 256, 257, 260, 261, 265, 266, 268, 311; All day—255, 545

University District/North Seattle–Eastside Bus Routes: Peak—167, 243, 272, 277, 542, 556; All day—271, 540

Based on King County Metro Spring 2010 Data for Evergreen Point; does not include Community Transit Route 424

<sup>a</sup> These buses serve the Montlake Freeway Transit Station.

<sup>b</sup> These buses exit at Montlake with the first west side stop on Montlake Boulevard/East Shelby Street.



## Ridership and Destinations

According to Metro’s spring 2010 automated ridership counts and including Sound Transit’s Route 542 schedule, Metro and Sound Transit currently provide approximately 660 bus trips across the Evergreen Point Bridge on an average weekday, and carry almost 16,000 riders.

Morning and evening peak period bus trips and ridership are shown in Exhibit 8-5. Bus trip data includes Sound Transit Route 542, which was implemented in October 2010 and operates between downtown Redmond and the University District/Green Lake. Ridership data for Route 542 were not available.

Exhibit 8-5. Existing Peak Period SR 520 Bus Trips and Ridership

	AM Peak Period (6:00 to 9:00 a.m.)		PM Peak Period (3:15 to 6:15 p.m.)	
	Bus Trips	Riders	Bus Trips	Riders
Westbound	131	3,200	62	1,500
Eastbound	62	1,500	128	3,000

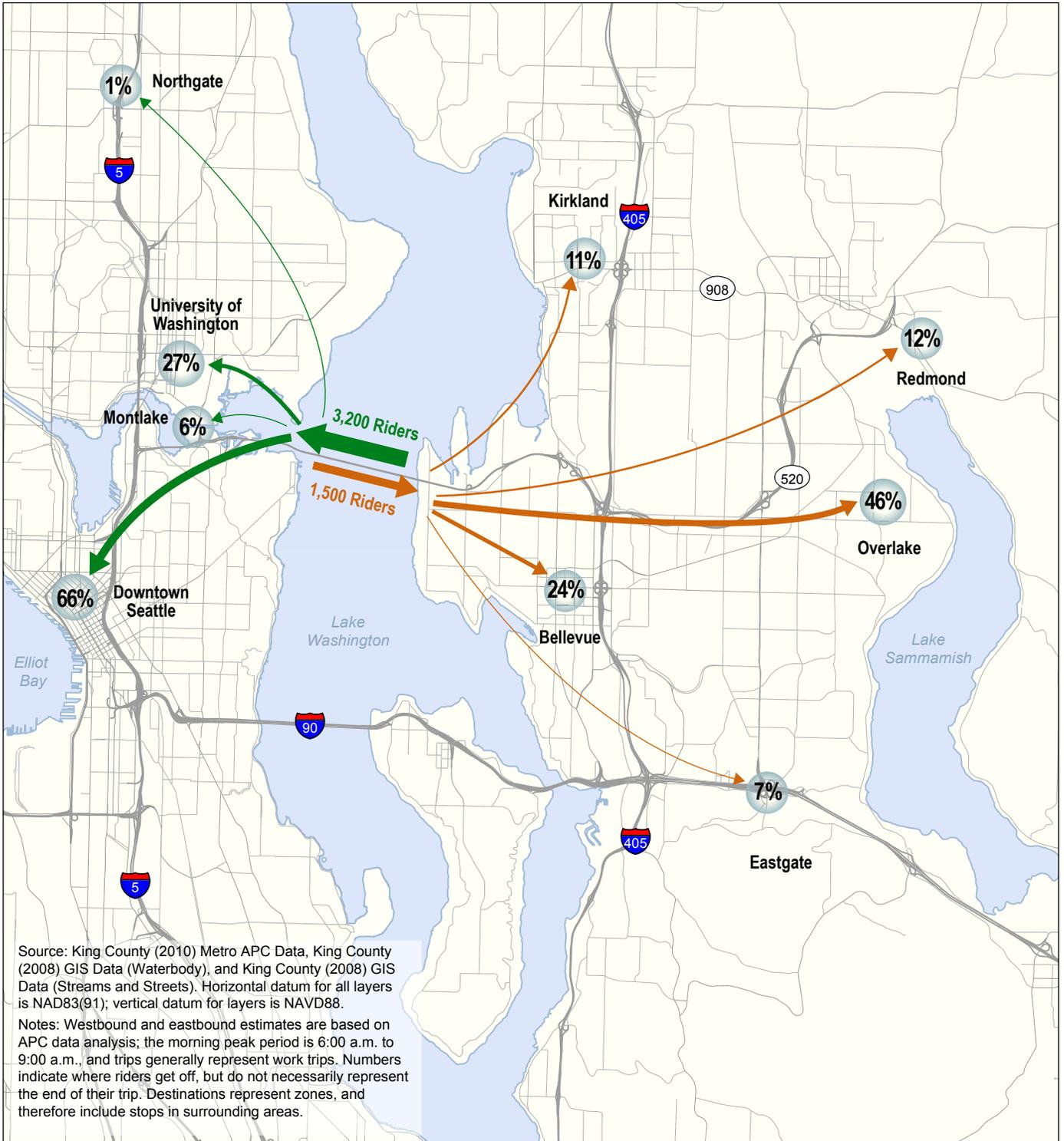
Source: Metro Spring 2010 Automated Passenger Count data and Sound Transit online schedule for Route 542

During the morning peak period (6:00 to 9:00 a.m.), there are approximately 4,700 riders crossing the bridge in both directions in approximately 190 bus trips (not including Community Transit service and school bus routes provided by Metro). Seventy percent of riders are traveling westbound and 30 percent are traveling eastbound.

During the afternoon peak period (3:00 to 6:00 p.m.), there are approximately 4,500 riders crossing the bridge in both directions in approximately 190 bus trips. Thirty percent of riders are traveling westbound and 70 percent are traveling eastbound.

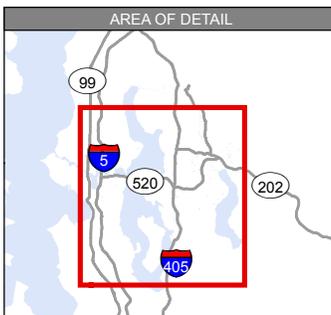
Morning and evening peak period destinations are shown in Exhibits 8-6 and 8-7. In the morning, the two primary Seattle destinations are downtown Seattle and UW. The two primary Eastside destinations are Overlake and downtown Bellevue. In the evening, the primary Seattle destinations are downtown Seattle, UW, and Northgate. The two primary Eastside destinations are Kirkland and downtown Redmond. The Montlake location represents those bus riders that use the Montlake Freeway Transit Station. Bus riders that use the East Shelby Street stop are included in the UW percentage.





Source: King County (2010) Metro APC Data, King County (2008) GIS Data (Waterbody), and King County (2008) GIS Data (Streams and Streets). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

Notes: Westbound and eastbound estimates are based on APC data analysis; the morning peak period is 6:00 a.m. to 9:00 a.m., and trips generally represent work trips. Numbers indicate where riders get off, but do not necessarily represent the end of their trip. Destinations represent zones, and therefore include stops in surrounding areas.

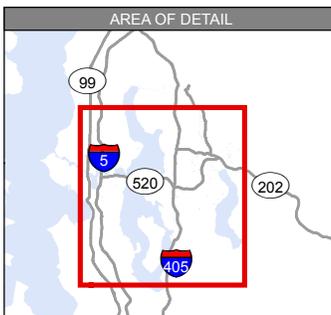
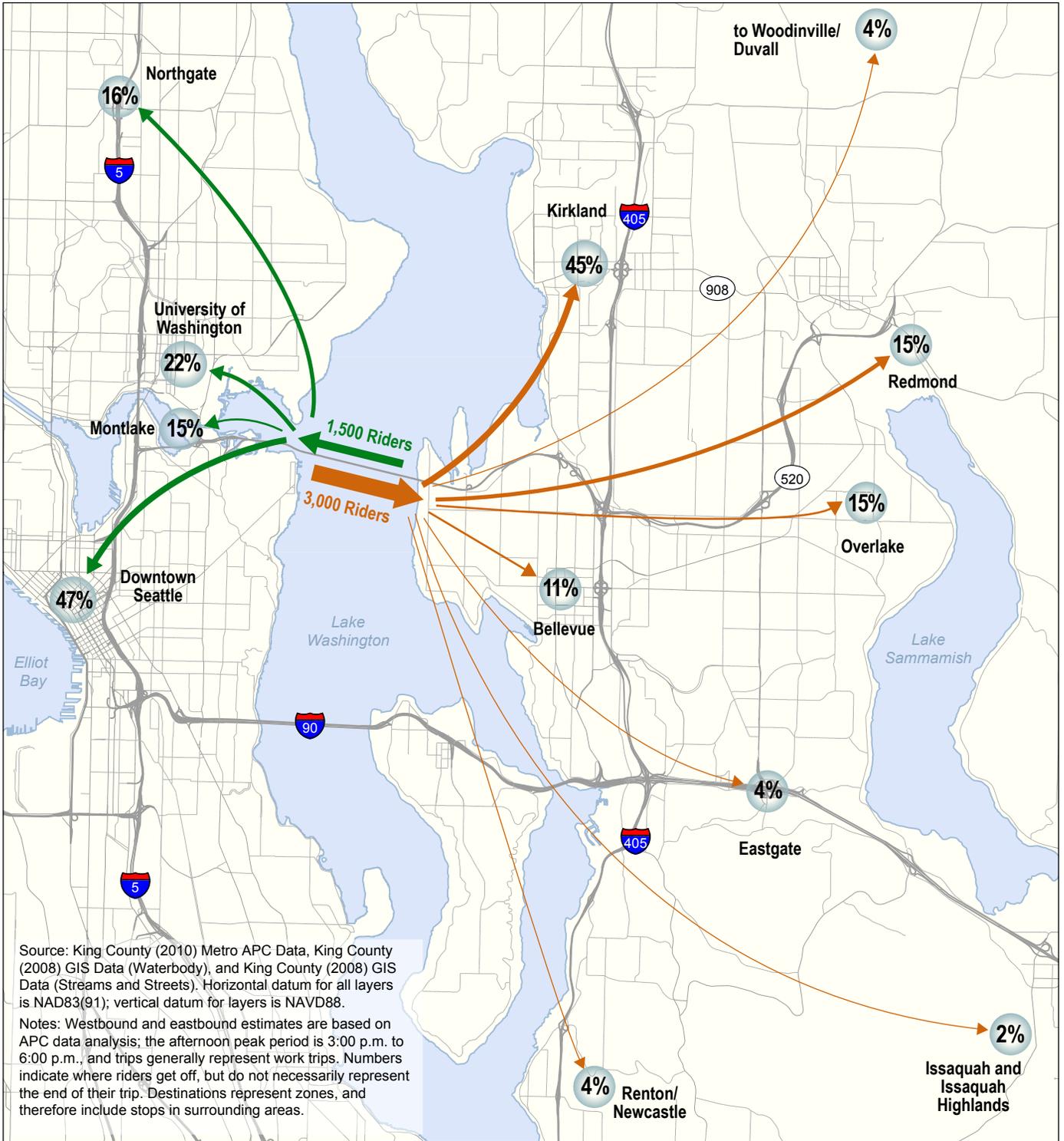


█ Westbound  
█ Eastbound



### Exhibit 8-6. Morning Peak Transit Ridership Destinations

SR 520, I-5 to Medina: Bridge Replacement and HOV Project



█ Westbound  
█ Eastbound



### Exhibit 8-7. Afternoon Peak Transit Ridership Destinations

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## Travel Times and Reliability

General traffic congestion along the SR 520 corridor, combined with frequent and highly unpredictable delays caused by traffic accidents and minor incidents, result in widely varying travel times in both directions throughout much of the day and day-to-day. Recent travel time data reviewed by Metro indicate that bus travel times between NE 51st Street in Redmond and the Montlake Freeway Transit Station (10 miles) during the morning commute can range from 10 to 30 minutes for westbound as well as eastbound trips, with most trips (more than 90 percent) taking an average of 16 minutes in either direction.

During the afternoon commute, eastbound transit travel times are similar to the morning, taking an average of 16 minutes. However, westbound travel times between the Montlake Freeway Transit Station and NE 51st Street can range from 10 to 55 minutes, with an average of approximately 22 minutes. Approximately 20 percent of the westbound transit trips take over 30 minutes to make this trip (King County Metro 2008).

This high variability means that travelers needing to keep a regular schedule must plan for the worst conditions and expect a relatively long travel time. Highly variable travel times make transferring between routes and services difficult and add substantially to the cost of providing bus service. Transit operators must also plan for this variability by operating more buses to maintain schedules.

## How do riders access transit service in the Montlake interchange area today?

Exhibit 8-8 shows the existing transit facilities in the Montlake area. The Montlake Freeway Transit Station is the only freeway transit station on SR 520 between I-5 and the Evergreen Point Bridge. It is located at the SR 520/Montlake interchange in Seattle.

The two primary arterials used by transit in this interchange area are Montlake Boulevard and NE Pacific Street, which have been identified in the City of Seattle's Transit Plan as links in the Urban Village Transit Network. This network represents the backbone of the Seattle transit network, carrying the majority of Seattle transit system riders.



As shown in Exhibit 8-8, there are five transit stops located along Montlake Boulevard that are within the study area. There are also bus stops adjacent to the Montlake Triangle on NE Pacific Street/NE Pacific Place in front of the UW Medical Center. These stops provide neighborhood access to transit and allow transit riders to transfer between local and SR 520 bus service. Walk distances between these stops and the Montlake Freeway Transit Station are shown in Exhibit 8-8. Bus and passenger activity for each stop is described in the following section.

## Montlake Freeway Transit Station

The Montlake Freeway Transit Station consists of westbound and eastbound bus platforms and shelters on the shoulders of SR 520 near the SR 520/Montlake interchange. Bus riders access the eastbound platform via stairs from Montlake Boulevard NE, while passengers using the westbound platform access the station using a sidewalk.

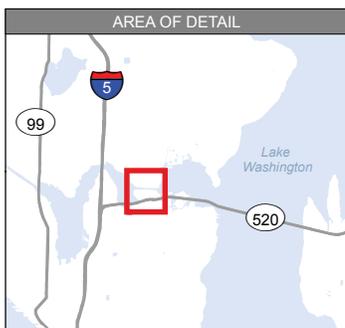
Of the 16,000 daily transit riders crossing the Evergreen Point Bridge, approximately 1,700 riders (11 percent) use the Montlake Freeway Transit Station. Transit service at this station is provided by Metro, Sound Transit, and Community Transit.

Exhibits 8-9 and 8-10 show the bus routes that serve the Montlake station, and the passenger boardings (ons) and alightings (offs) by route. Sound Transit Route 545 accounts for 60 percent (1,000) of the boarding and alighting activity at the Montlake Freeway Transit Station (total of westbound and eastbound stops). The exhibits also show that the primary activity at the westbound station is riders getting off the bus, while the primary activity at the eastbound station is riders getting on the bus.



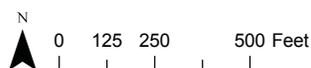
**Local buses traveling over SR 520 on the Montlake Boulevard undercrossing**





- Bus Stop (Local Route)
- Bus Stop (SR 520 Route)
- Bus Stop (Local and SR 520 Route)
- ◆ HOV Lane
- Layover Area
- Pedestrian Walk Path
- Local Route
- SR 520 Route

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



### Exhibit 8-8. Existing Transit and HOV Facilities within the Montlake Area

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

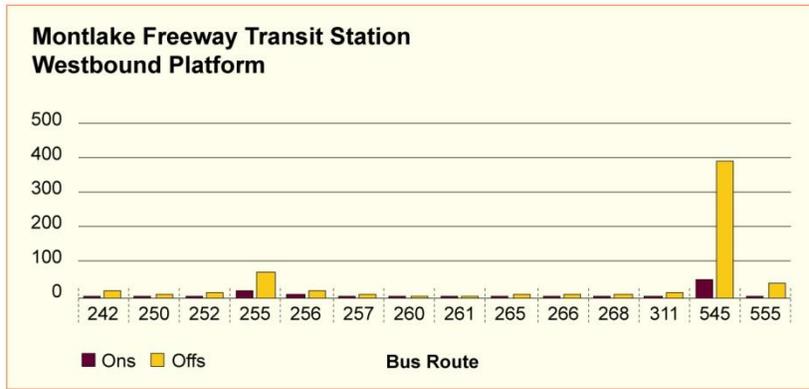


Exhibit 8-9. Year 2010 Daily Boardings and Alightings by Route at the Montlake Freeway Transit Station—Westbound

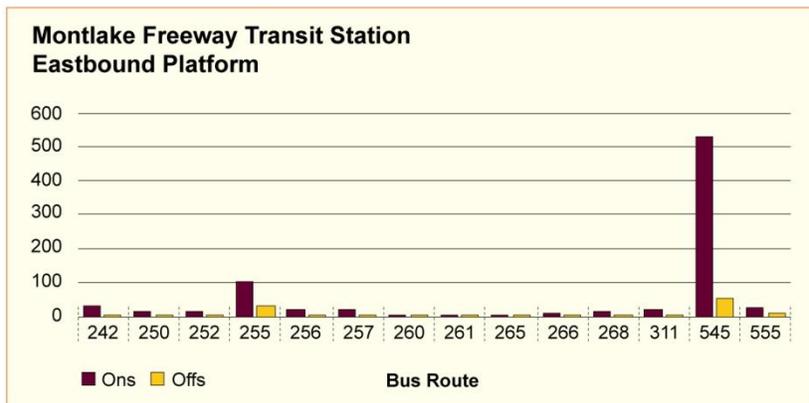


Exhibit 8-10. Year 2010 Daily Boardings and Alightings by Route at the Montlake Freeway Transit Station—Eastbound

The existing Montlake Freeway Transit Station serves four functions:

1. It allows westbound riders to use downtown Seattle-bound buses to access the University District, Montlake area, or other neighborhoods via a transfer to local buses, walking, or bicycling.
2. It allows westbound riders to access downtown Seattle buses by transferring from local buses, walking, bicycling, or being dropped off at the Montlake Freeway Transit Station.



3. It allows eastbound riders (from the University District, Shelby Street-Hamlin Street neighborhood, Capitol Hill, Rainier Valley) to access Eastside destinations by transferring from local buses, walking, bicycling, or being dropped off at the Montlake Freeway Transit Station.
4. It allows eastbound downtown Seattle riders to access the Montlake area and transfer to local bus service, walk, or bicycle to other destinations.

More specific information for each stop is described below.

### Westbound Station

Exhibit 8-11 shows the number of bus trips and passenger boardings (ons) and alightings (offs) throughout the day at the westbound station. The two most used routes, Sound Transit 545 and Metro 255, are shown in separate colors to indicate how much of the total activity they support.

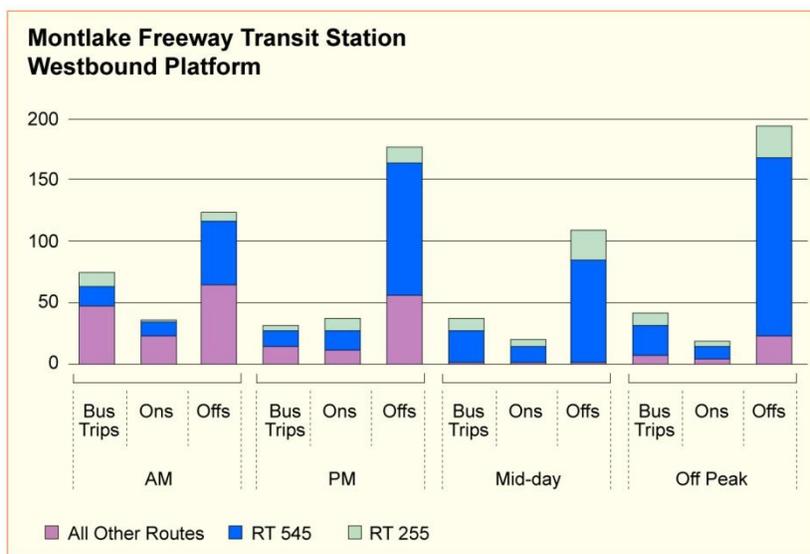


Exhibit 8-11. Year 2010 Boardings and Alightings by Time of Day at the Montlake Freeway Transit Station—Westbound

During the morning peak period, there are approximately 40 passenger boardings and 120 passenger alightings over a 3-hour period. The alightings represent Eastside residents traveling to Montlake/UW or other nearby neighborhoods by riding downtown-bound SR 520 buses. These riders then transfer to local bus service on Montlake Boulevard NE, walk, or bike to their destination (EnviroIssues 2005).



The westbound station is not as busy as the eastbound station during the midday. There are more alightings (110 over a 6-hour period or 18 per hour) than boardings and Sound Transit Route 545 accounts for approximately 75 percent of them.

Passenger activity is greatest in the evening (peak and off-peak periods). In the evening peak period, there are approximately 40 passenger boardings and 180 alightings, with most riders using Sound Transit Route 545. It is during the off-peak hours that this station has the most alightings (195), with most (160 or 83 percent) occurring between 6:15 and 9:30 p.m. Sound Transit Route 545 accounts for 77 percent of these alightings.

### Eastbound Station

Exhibit 8-12 shows the number of bus trips and passenger boardings (ons) and alightings (offs) throughout the day at the eastbound station. The two most used routes, Sound Transit 545 and Metro 255, are shown in separate colors to indicate how much of the total activity they support. In the morning, the eastbound station is the busier of the two stations, with approximately 235 passenger boardings and 40 passenger alightings over a 3-hour period.

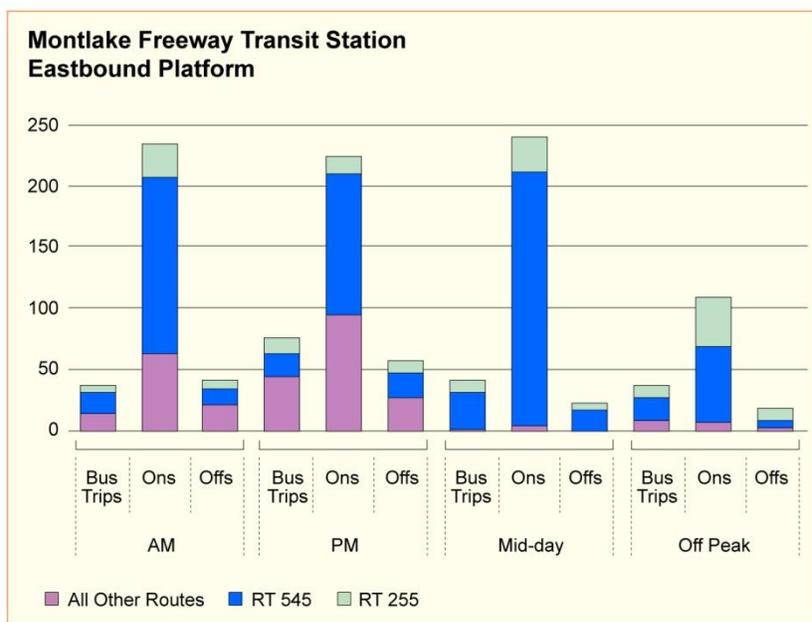


Exhibit 8-12. Year 2010 Boardings and Alightings by Time of Day at the Montlake Freeway Transit Station—Eastbound

Approximately 90 percent of the people using the eastbound Montlake Freeway Transit Station in the morning are traveling to work. Approximately 60 percent of these people arrive by bus while another



20 percent arrive by bicycle (EnviroIssues 2005). They transfer to SR 520 buses for the trip to the Overlake area (Route 545), the Kirkland area (Route 255), or other Eastside destinations.

The eastbound stop remains busy during the midday with 240 boardings (ons) over a 6-hour period (or 40 per hour). Sound Transit Route 545 account for 86 percent of these boardings. In the afternoon, 220 passengers board and 60 passengers get off the buses at the eastbound stop. Approximately 65 percent or 140 people arrive from the UW. Approximately 60 percent of these people, or 85 passengers, arrive by bus while almost the entire remaining 40 percent, or 55 passengers, walk to the station (EnviroIssues 2005).

### Montlake Boulevard Overpass Bus Stops

The Montlake Boulevard overpass bus stops allow transit riders to transfer between SR 520 and local transit services. The northbound bus stop is located just south of the SR 520 westbound off-ramp and the southbound stop is located at the entrance to the SR 520 eastbound on-ramp.

The northbound bus stop serves three local bus routes with approximately 190 daily bus trips, 230 daily passenger boardings, and 120 daily passenger alightings. Exhibit 8-13 shows that Metro Route 48 is the most used route, followed closely by Metro Route 43.

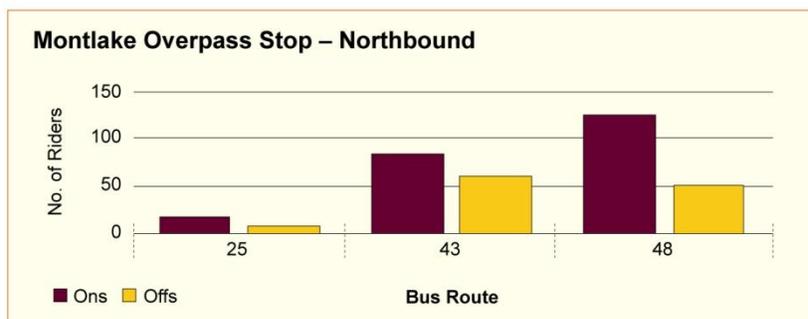
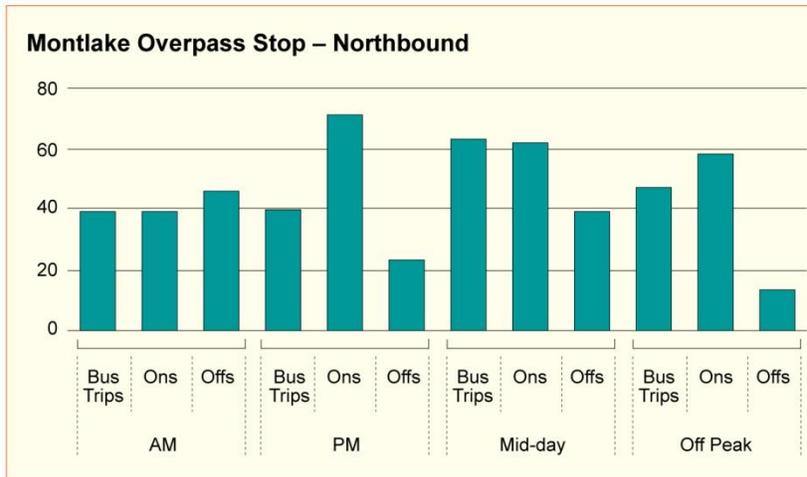


Exhibit 8-13. Year 2010 Daily Boardings and Alightings by Route at the Montlake Boulevard Overpass Stop—Northbound

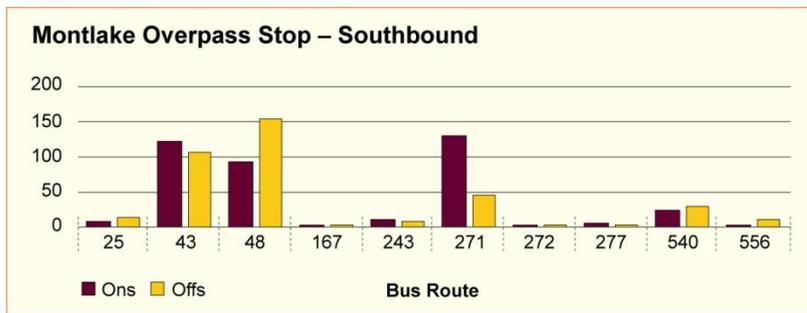
Exhibit 8-14 shows that activity at the northbound stop is fairly evenly distributed throughout the day, with slightly more activity during the evening peak period when many people transfer from SR 520 buses to local routes to complete their trip home.





**Exhibit 8-14. Year 2010 Boardings and Alightings by Time of Day at the Montlake Boulevard Overpass Stop—Northbound**

Exhibit 8-15 shows that the southbound bus stop serves three local and seven SR 520 bus routes with 300 daily bus trips, approximately 400 daily passenger boardings, and 380 daily passenger alightings. On a daily basis, passenger boardings and alightings are highest for the local bus routes (Metro Routes 25, 43, and 48). Metro Route 271 is the busiest of the SR 520 routes, providing all-day service connecting the University District, downtown Bellevue, Eastgate, and Issaquah.



**Exhibit 8-15. Year 2010 Daily Boardings and Alightings by Route at the Montlake Boulevard Overpass Bus Stop—Southbound**



Exhibit 8-16 shows how bus trips and passenger boardings and alightings are distributed throughout the day. Local buses (Metro Routes 43 and 48) account for most of the bus and passenger volumes at this stop, with the exception of the morning peak period and midday boardings. At these times, SR 520 buses account for more of the passenger boarding activity.

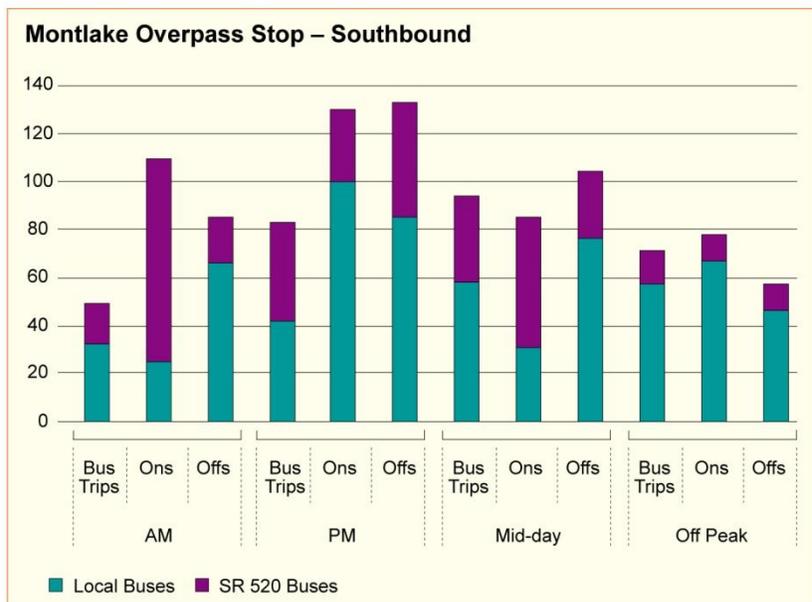
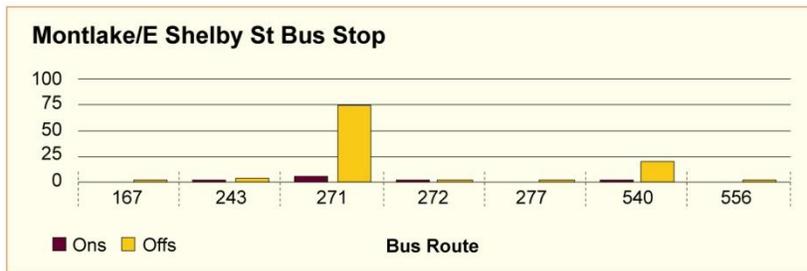


Exhibit 8-16. Year 2010 Boardings and Alightings by Time of Day at the Montlake Boulevard Overpass Bus Stop—Southbound

### Montlake Boulevard Northbound at East Shelby Street Bus Stop

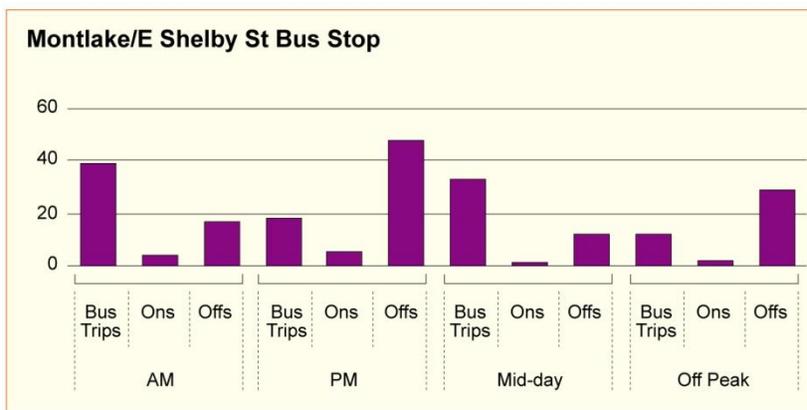
Exhibit 8-17 shows that the bus stop at East Shelby Street serves seven SR 520 bus routes with 100 daily bus trips that have approximately 10 passenger boardings and 100 passenger alightings per day. Metro Route 271 accounts for most of the passenger activity at this stop. Exhibit 8-18 shows how bus trips and passenger boardings and alightings are distributed throughout the day. This stop is the busiest during the evening peak period.





Note: Sound Transit Route 542 was not included because ridership data were not available.

**Exhibit 8-17. Year 2010 Daily Boardings and Alightings by Route at the Montlake Boulevard/East Shelby Street Bus Stop**



Note: Sound Transit Route 542 was not included because ridership data were not available.

**Exhibit 8-18. Year 2010 Boardings and Alightings by Time of Day at the Montlake Boulevard/East Shelby Street Bus Stop**

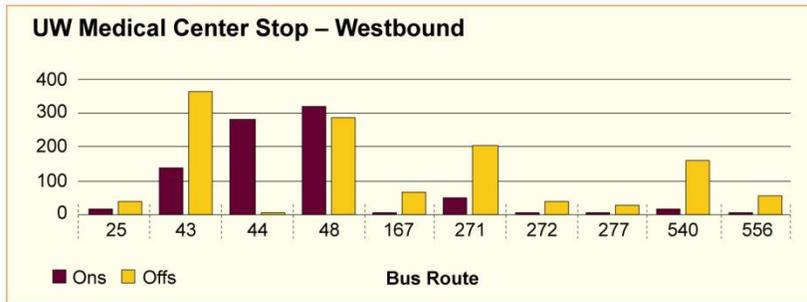
### Montlake Triangle Area

Bounded by Montlake Boulevard NE, NE Pacific Street, and NE Pacific Place, the Montlake Triangle is the southeastern entry to the UW campus. The transit facilities located at the Montlake Triangle were shown previously in Exhibit 8-8. The UW Medical Center stops (one eastbound and one westbound) are located on NE Pacific Street and are the busiest in the Montlake Triangle area.

The UW Medical Center stops provide access to the UW Medical Center, UW medical and health sciences academic buildings, the main UW campus, Husky Stadium, and associated parking areas. Transit service is provided by Metro and Sound Transit with 3,800 boardings and alightings (combined) at these stops every weekday. In addition to providing access to the UW, these stops also serve riders transferring between SR 520 and local bus service.

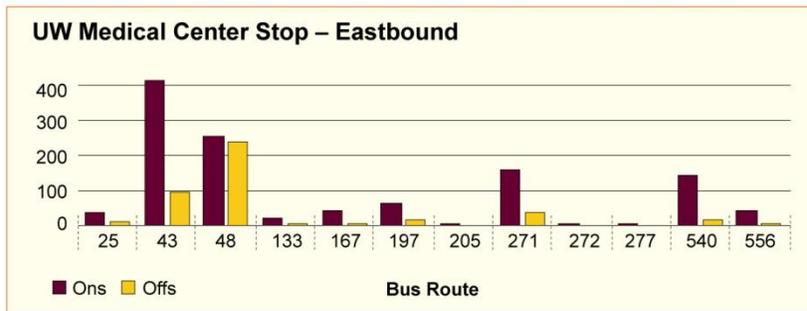


The westbound stop is served by 11 routes (3 local and 8 SR 520 bus routes) and the eastbound stop is served by 13 routes (4 local and 9 SR 520 bus routes). Exhibits 8-19 and 8-20 show which specific routes serve these stops as well the number of passenger ons/offs by route. These exhibits also show that local buses (Metro Routes 43, 44, and 48) account for 70 percent of passenger activity at both stops.



Note: Sound Transit Route 542 was not included because ridership data were not available.

**Exhibit 8-19. Year 2010 Daily Boardings and Alightings by Bus Route at the UW Medical Center Bus Stop—Westbound**



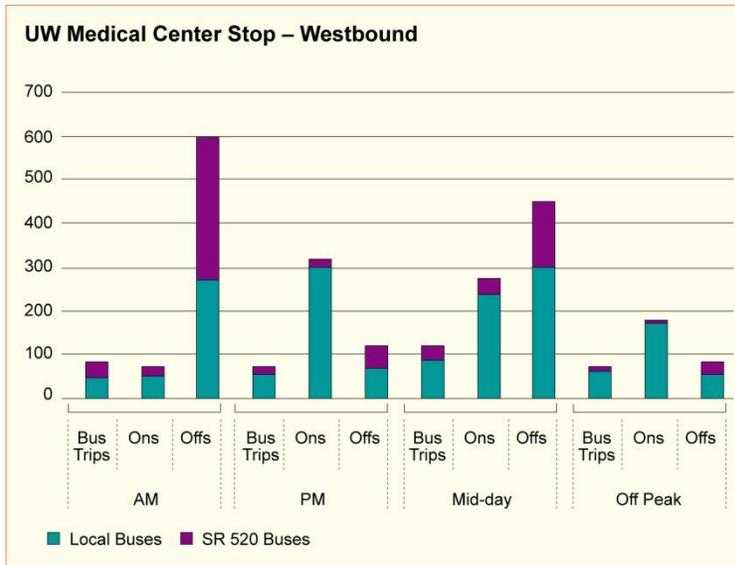
Note: Sound Transit Route 542 was not included because ridership data were not available.

**Exhibit 8-20. Year 2010 Daily Boardings and Alightings by Route at the UW Medical Center Bus Stop—Eastbound**

SR 520 bus routes, especially all-day Routes 271 and 540, account for approximately 30 percent of daily on/off activity at the westbound stop. At the eastbound stop, SR 520 bus routes account for slightly more with approximately 36 percent of daily on/off activity.

Exhibits 8-21 and 8-22 show how passenger boardings and alightings are distributed throughout the day. At the westbound bus stop, SR 520 bus trips and on/off activity are generally lower than local buses, with the exception of alightings during the morning peak period.

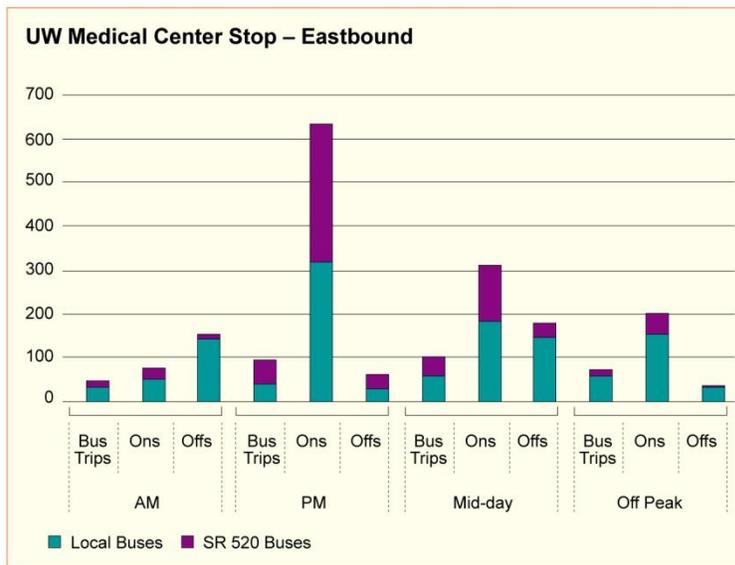




Note: Sound Transit Route 542 was not included because ridership data were not available.

**Exhibit 8-21. Year 2010 Boardings and Alightings by Time of Day at the UW Medical Center Bus Stop—Westbound**

Exhibit 8-22 shows that similar to the westbound bus stop, SR 520 bus trips and on/off activity at the eastbound bus stop are generally lower than local buses, with the exception of boardings at the evening peak period.



Note: Sound Transit Route 542 was not included because ridership data were not available.

**Exhibit 8-22. Year 2010 Boardings and Alightings by Time of Day at the UW Medical Center Bus Stop—Eastbound**



## What SR 520 transit services and facilities were assumed in the No Build Alternative?

The SR 520, Medina to SR 202 project is under construction and expected to be completed by 2016; therefore, it was included in the No Build Alternative definition for the SR 520, I-5 to Medina project Final EIS. The following elements of the SR 520, Medina to SR 202 project were assumed to be in place:

- Inside HOV lanes in both directions between Lake Washington and SR 202
- HOV direct access ramps to and from the west at the 108th Avenue NE interchange
- Inside median transit stops at 92nd Avenue NE and Evergreen Point Road
- A regional bicycle and pedestrian path between 108th Avenue NE and Evergreen Point Road
- New interchange configurations at 84th Avenue NE, 92nd Avenue NE, Bellevue Way, and 108th Avenue NE

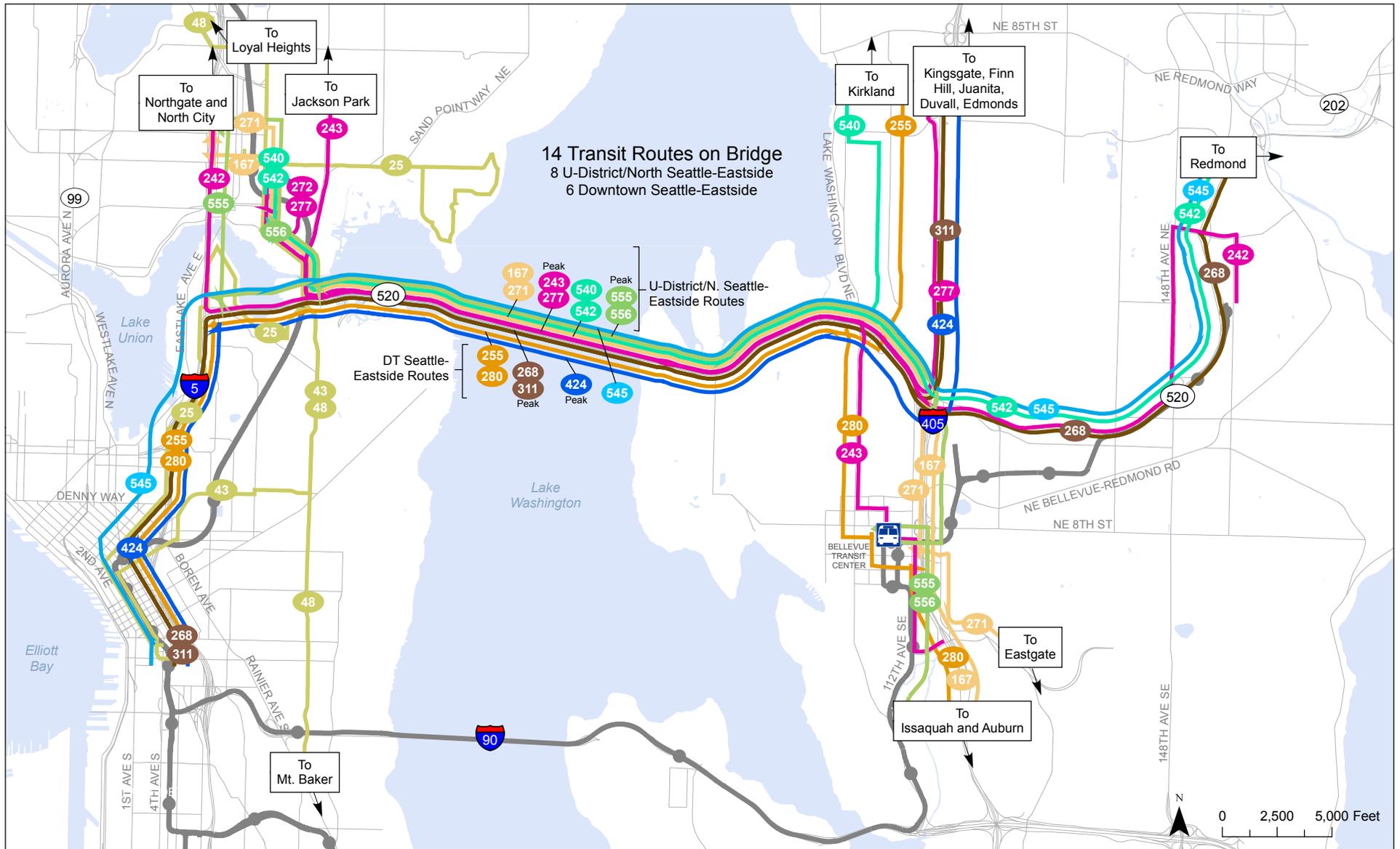
The No Build Alternative was assumed to be untolled for all vehicles.

### Transit Service Network

The transit network and operating plan assumptions for the 2030 No Build Alternative were provided by Metro and Sound Transit and are consistent with those identified for other corridor projects in the region (see Exhibit 8-23). Key transit network assumptions for the SR 520, I-5 to Medina project include (but are not limited to):

- Sound Transit light rail service between Federal Way (Redondo/Star Lake) and Lynnwood
- Sound Transit light rail service across I-90 between downtown Seattle, downtown Bellevue, and Overlake (Redmond)
- Metro Transit Now/RapidRide programs (Aurora, Ballard, West Seattle, Eastside, and Pacific Highway Bus Rapid Transit)
- Metro and Sound Transit service changes proposed as part of the Urban Partnership Agreement and Sound Transit ST2 plan.
- Seattle streetcar—South Lake Union and First Hill lines





**Metro Transit**

- North Seattle to Downtown
- North Seattle/Eastside
- Peak Hour North Seattle/Eastside
- Limited Service North Seattle/Eastside
- Downtown Seattle/Eastside
- Peak Hour Downtown Seattle/Eastside

**Sound Transit**

- North Seattle/Eastside
- Peak Hour North Seattle/Eastside
- Downtown Seattle/Eastside

**Community Transit**

- Peak Hour Downtown Seattle/Snohomish County

**Link Light Rail**

- Link Light Rail

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 8-23. SR 520 Transit Service Assumed with the No Build Alternative**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

The transit service provided by these projects will allow for new transit travel options and change transit travel patterns throughout the region and within the SR 520 corridor. The biggest change in the year 2030 transit network assumptions between the SDEIS and Final EIS analysis is the inclusion of a greater light rail system. It was assumed that the North Link and East Link light rail systems would be operational and connected, providing transit riders with a “one seat” transit trip between Lynnwood, Northgate, and Seattle on the west side of Lake Washington and Mercer Island, Bellevue, and Overlake on the east side. With these changes, some transit riders that today use SR 520 bus service are forecasted to use East Link light rail service across I-90.

Sound Transit plans to begin construction of East Link by 2013. The project may be constructed in stages, with the segment to Bellevue opening by 2020, and to Overlake Transit Center by 2021. The last segment to downtown Redmond would be constructed after 2021.

With this light rail service in place, Metro and Sound Transit would revise bus service to facilitate bus-light rail connections and create transit service efficiencies. These transit agency revisions are included in the Final EIS transit network and those directly related to SR 520 bus service are described below. For a complete list of all transit service revisions that were included in the Final EIS travel demand model, please see the Final No Build Alternative Definition Technical Memorandum (WSDOT 2010e).

With relocation of the HOV lanes and freeway transit stations to the inside of SR 520, Metro has indicated that Route 271 could be re-routed to the 108th Avenue NE HOV direct access ramp that would be constructed as a part of the SR 520, Medina to SR 202 project. This change would allow Route 271 to serve the 92nd Avenue NE and Evergreen Point Freeway Transit Stations and provide midday, off-peak, and weekend service to the Montlake and University District neighborhoods.

## Transit Service Frequencies

Metro and Sound Transit assumptions for the No Build Alternative include discontinuing several SR 520 peak period routes by the year 2030 in response to new light rail connections and/or low ridership. As a result, there would be 13 rather than 24 transit routes operating across Lake Washington on SR 520 in the No Build Alternative. Seven of these routes would provide downtown Seattle to Eastside service and six would provide University District/North Seattle to Eastside service. These changes are summarized in Exhibit 8-24.



## Exhibit 8-24. Changes in No Build Alternative SR 520 Bus Service Compared to Existing Conditions

Bus Routes	Existing		No Build Alternative	
	Number of Routes	Route Numbers	Number of Routes	Route Numbers
Downtown Seattle to Eastside (Serve Montlake Freeway Transit Station)	15	Peak: 242, 250, 252, 256, 257, 260, 261, 265, 266, 268, 311, 424, 555 <sup>a</sup> All day: 255, 545	7	Peak: 242, 268, 311, 424, 555 All day: 255, 545
University District/North Seattle to Eastside	8	Peak: 167, 243, 272, 277, 542, 556 All day: 271, 540	6	Peak: 167, 243, 277, 542 All day: 271, 540

<sup>a</sup> Route 555 serves Northgate/University District via I-5 and therefore serves the Montlake Freeway Transit Station.

All-day service across SR 520 would continue to be provided by the four routes that are doing so today (downtown Seattle Routes 255 and 545 and University District Routes 271 and 540).

The specific effects on riders boarding and alighting at the westbound and eastbound Montlake Freeway Transit Station stops are discussed below.

### Westbound

- Using Metro's spring 2010 Automated Passenger Count data, the discontinuation of Metro Routes 250, 252, 256, 257, 260, 261, 265, and 266 would affect 40 percent (22 riders per hour) of Montlake Freeway Transit Station users in the morning peak period and 11 percent (8 riders per hour) in the evening peak period.
- As shown previously in Exhibit 8-9, Sound Transit Route 545 accounts for the majority of the remaining passenger boardings and alightings. It is anticipated that some of these riders would switch to new Sound Transit Route 542, East Link light rail, or to other SR 520 University District/North Seattle bus routes, thereby reducing the number of boardings and alightings at this stop.

### Eastbound

- The discontinuation of Metro Routes 250, 252, 256, 257, 260, 261, 265, and 266 would affect 8 percent (7 riders per hour) of Montlake Freeway Transit Station users in the morning peak period and 30 percent (27 riders per hour) in the evening peak period.



- As with the westbound stop, Route 545 accounts for the majority of the remaining passenger boardings and alightings (see previous Exhibit 8-10). It is anticipated that some of these passengers would also switch to new Sound Transit Route 542, East Link light rail, or to other SR 520 University District/North Seattle bus routes, thereby reducing the number of boardings at this stop.

It is also anticipated that ridership could decrease on some of the local Metro routes traveling through the Montlake area as transit riders switch to light rail. For example, transit riders traveling between Capitol Hill and the University District on Route 43 might choose to take light rail via the John Street, UW, and Brooklyn stations. Or, transit riders who are traveling between Capitol Hill and Overlake via SR 520 could also choose to take East Link.

Exhibit 8-25 compares existing and projected (year 2030) headways for SR 520 routes in the year 2030 for the No Build Alternative. Individual route frequencies would be substantially improved on all-day Routes 255, 271, and 545. East Link would also provide all-day light rail service between the Eastside, downtown Seattle, and the University District (with service continuing north to Lynnwood).

Exhibit 8-26 shows the estimated combined bus headways for Eastside to downtown Seattle buses and Eastside to University District buses. While there would be eight fewer bus routes operating on SR 520 in the year 2030 No Build Alternative, combined bus headways across the bridge would be similar to or better than today during the peak and midday periods.

## Transit Service Hours

Transit service hours are represented by the transit service, routes, and headways provided to WSDOT by Metro and Sound Transit. This information represents transit agency revisions to the transit network based on the East Link implementation plan.



Exhibit 8-25. Comparison of Existing and Year 2030 No Build Alternative Transit Routes and Route Headways

Route	Name	Peak Headways (minutes)		Midday Headways (minutes)		Comments on Year 2030 Service
		2008	2030 NB	2008	2030 NB	
Light rail	East Link	NA	7.5	NA	10	Hours of operation would be 5 a.m. to 1 a.m.
Light rail	Central/North Link (Lynnwood-Redondo)	7.5	7.5	10	10	Hours of operation would be 5 a.m. to 1 a.m.
167	University-Renton	45	30	-	-	Peak only
242	Ridgecrest-Overlake	30	20	-	-	Peak only
243	Bellevue-Jackson Park	60	30	-	-	Would use 108th Avenue NE direct access ramp
250	Downtown Seattle-Redmond	36	NA	-	NA	Discontinued due to low ridership
252	Downtown Seattle-Kinggate	26	NA	-	NA	Discontinued due to low ridership—riders to connect with Route 311
255	Kinggate-Kirkland-Downtown Seattle (WB/EB)	13/36	10	30	15	
256	Downtown Seattle-Overlake	36	NA	-	NA	Discontinued and replaced by upgraded service on Route 255
257	Downtown Seattle-Kinggate	30	NA	-	NA	Discontinued—riders to connect with Route 311
260	Downtown Seattle-Finn Hill	60	NA	-	NA	Discontinued due to low ridership
261	Downtown Seattle-Overlake	45	NA	-	NA	Route discontinued for RapidRide
265	Downtown Seattle-Redmond	30	NA	-	NA	Discontinued due to low ridership
266	Express: Downtown Seattle-Redmond Transit Center	30	NA	-	NA	Discontinued due to low ridership—riders to connect with Route 545
268	Seattle-Redmond/Fall City	45	30	-	-	Peak only
271	Issaquah-Bellevue-UW (WB/EB)	26/36	NA	-	NA	Route no longer travels to Issaquah
271	Eastgate-Bellevue-UW (WB/EB)	45/60	10	30	10	Re-routed to 108th Avenue NE direct access ramp
272	Express: University District-Bellevue	30	NA	90	NA	Route discontinued for RapidRide



## Exhibit 8-25. Comparison of Existing and Year 2030 No Build Alternative Transit Routes and Route Headways

Route	Name	Peak Headways (minutes)		Midday Headways (minutes)		Comments on Year 2030 Service
		2008	2030 NB	2008	2030 NB	
277	University District-Juanita	30	30	30	NA	Low ridership—riders to connect with Route 255
311	Downtown Seattle-Duvall/Woodinville	36	12	-	-	Peak only
424	Seattle-Snohomish/Monroe	60	45	-	-	Peak only
540	Express: Kirkland-UW (WB/EB)	17/45	15	30	30	
542	Express: Redmond-University District-Green Lake	NA	15	30	30	Extended peak
545	Express: Redmond-Downtown Seattle (EB)	12	8	14	10	
545	Express: Redmond-Downtown Seattle (WB)	10	8	15	10	
555	Express: Northgate-Issaquah	30	15	-	-	Route 555 would be truncated to Bellevue
556	Express: Northgate-Issaquah	30	NA	NA	NA	Route 556 discontinued

WB = westbound, EB = eastbound, NB = northbound, NA = not applicable

Peak headways represent 6:00 to 9:00 a.m. and 3:15 to 6:15 p.m. and midday headways represent 9:00 a.m. to 3:15 p.m.

Route 280 is a night-owl route with one departure.



Exhibit 8-26. Combined Bus Headways across the Evergreen Point Bridge for the No Build Alternative (between Evergreen Point and Montlake Freeway Transit Stations)

	AM Peak Period (6 to 9 a.m.)				PM Peak Period (3:15 to 6:15 p.m.)				Midday (9 a.m. to 3:15 p.m.)			
	Bus Trips		Headways (minutes)		Bus Trips		Headways (minutes)		Bus Trips		Headways (minutes)	
	EX <sup>a</sup>	NB <sup>b</sup>	EX	NB	EX	NB	EX	NB	EX	NB	EX	NB
<b>Westbound at the Evergreen Point Freeway Transit Station</b>												
Downtown Seattle–Eastside <sup>b</sup>	78	62	2.3	2.9	25	50	7.2	3.6	39	62	9.6	6.0
University District/North Seattle–Eastside <sup>c</sup>	53	54	3.4	3.3	37	48	4.9	3.8	33	51	11.4	7.4
Combined	131	116	1.4	1.6	62	98	2.9	1.8	72	113	5.2	3.3
Light rail <sup>c</sup>	NA	24	NA	7.5	NA	24	NA	7.5	NA	36	NA	10.4
Total with light rail	NA	140	NA	1.3	NA	122	NA	1.5	NA	149	NA	2.5
<b>Eastbound in the Montlake Interchange Area</b>												
Downtown Seattle–Eastside <sup>b</sup>	29	50	6.2	3.6	80	62	2.3	2.9	42	62	8.9	6.0
<b>University District/North Seattle–Eastside<sup>c</sup></b>	<b>33</b>	<b>48</b>	<b>5.5</b>	<b>3.8</b>	<b>48</b>	<b>54</b>	<b>3.8</b>	<b>3.3</b>	<b>41</b>	<b>56</b>	<b>9.1</b>	<b>6.7</b>
Combined	62	98	2.9	1.8	128	116	1.4	1.6	83	118	4.5	3.2
Light rail	NA	24	NA	7.5	NA	24	NA	7.5	NA	38	NA	10.0
Total with light rail	NA	122	NA	1.6	NA	140	NA	1.3	NA	156	NA	2.4

EX = existing; NB = No Build; NA = not applicable

Notes:

<sup>a</sup> Existing frequencies estimated using bus trip information from Metro spring 2010 Automated Passenger Count data and Sound Transit online schedule information for Route 542

<sup>b</sup> No Build Alternative frequencies estimated using year 2030 headways shown in Exhibit 8-25, which were provided by Metro and Sound Transit as a part of the No Build Alternative definition process

<sup>c</sup> While East Link will operate on I-90, it will provide an alternative to SR 520 bus service for travel between the Eastside south of SR 520 and downtown Seattle/University District



## How would the No Build Alternative affect SR 520 transit demand?

With the implementation of East Link light rail across I-90 serving downtown Seattle, Mercer Island, Bellevue, and Overlake (Redmond), SR 520 transit ridership under the No Build Alternative would decrease 38 percent to approximately 9,900 daily riders compared to 16,000 daily riders today (Exhibit 8-27). During both commute periods, SR 520 ridership would decrease by approximately 50 percent. Transit riders are anticipated to shift from SR 520 buses to East Link to take advantage of a “one-seat ride” and more reliable travel times between Seattle and Eastside destinations. Under the No Build Alternative, East Link travel times between Overlake and UW are estimated to be 40 to 45 minutes while HOV travel times on SR 520 are forecasted to be 20 to 25 minutes during peak periods.

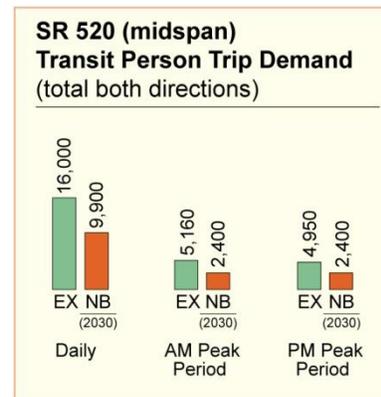


Exhibit 8-27. SR 520 Transit Person Trip Demand with the No Build Alternative

This combination of a decrease in ridership with improved bus headways suggests there would be available seat capacity in the SR 520 corridor with the No Build Alternative. Seat capacity and ridership demand is discussed in more detail in the section: *Would there be enough bus service to meet Preferred Alternative demand?*

## How would the No Build Alternative affect the Montlake Freeway Transit Station?

In the No Build Alternative, bus service to downtown Seattle would be restructured to support East Link and other Metro transit service changes. These changes would result in fewer bus routes across SR 520 and, therefore, fewer bus routes serving the Montlake Freeway Transit Station. As shown in Exhibit 8-24, the number of downtown Seattle bus routes would be reduced from 15 to 7 by the year 2030, requiring riders to find new routes between Seattle and the Eastside. Riders could switch to other SR 520 bus routes, East Link, or bus routes outside of the SR 520 corridor. On a daily basis, these bus route changes would affect approximately 13 percent of current Montlake Freeway Transit Station users, specifically those on discontinued Metro Routes 250, 252, 256, 257, 260, 261, 265, and 266.

Today, 11 percent of SR 520 transit ridership uses the Montlake Freeway Transit Station. Applying this assumption to the No Build Alternative would result in approximately 1,000 boardings and



alightings at the Montlake Freeway Transit Station compared to 1,700 today. However, it is likely that this is a conservative (i.e., high) estimate. The implementation of East Link and Sound Transit Route 542 between Redmond and the University District is anticipated to decrease boardings and alightings at the Montlake Freeway Transit Station. These transit routes provide the option of direct service to the University District, compared to using Route 545 and walking or transferring to another bus at the Montlake Boulevard bus stops.

## **Montlake Triangle Transit Facilities with the No Build Alternative**

Transit stops at the Montlake Multimodal Center under the No Build Alternative would be similar to today, except for the addition of a light rail station near UW's Husky Stadium (Exhibit 8-28). Sound Transit initiated construction of the University Link, or U-Link, segment of light rail between downtown Seattle and the UW Station near Husky Stadium in 2009. University Link and the UW Station are expected to open in 2016. The UW Station will provide access to the UW campus, the UW Medical Center, nearby sports venues, and surrounding neighborhoods.

Sound Transit forecasts that there will be approximately 23,000 total boardings and alightings per day at the light rail station near UW's Husky Stadium in the year 2030. This is compared to the 3,000 total boardings and alightings today at the UW Medical Center bus stops on NE Pacific Street. The new Sound Transit pedestrian bridge over Montlake Boulevard will help to accommodate the additional pedestrian traffic.

The proposed pedestrian bridge over Montlake Boulevard would facilitate connections to the UW Medical Center bus stops on NE Pacific Street by improving safety, user experience, and walk times. Since the publication of the SDEIS, the proposed pedestrian connection associated with Sound Transit's UW Station has changed. The new design includes a pedestrian bridge over Montlake Boulevard between the station and the Montlake Multimodal Center (known today as the Montlake Triangle). This design was evaluated and selected as a part of the ESSB 6392 Workgroup.





**Exhibit 8-28. Rendering of Sound Transit's University of Washington Station (opening in 2016) with Proposed Pedestrian Bridge over Montlake Boulevard NE**

The walk distance between the UW Medical Center bus stops and the Sound Transit station would be approximately 950 feet and take approximately 4 minutes.

The number of routes serving the UW Medical Center would be reduced from seven to six routes (peak Routes 167, 243, 277, 542, and all-day Routes 271 and 540); however, headways would improve as shown in Exhibit 8-25.

In addition to the current Sound Transit station area plan that is shown in Exhibit 8-28, the UW recently completed the Rainier Vista Concept Plan. Rainier Vista is already a primary gateway to the UW and the addition of the UW light rail station will only make it more so. This southern portion of Rainier Vista would unite the light rail and bus transit operations of the Montlake Multimodal Center with pedestrian and bike paths, and function as a user-friendly gateway between the campus and the surrounding community. This transportation hub would serve daily commuters to UW, as well as Husky Stadium and Hec Edmundson Pavilion event traffic.



In response to ESSB 6099, WSDOT, Sound Transit, and Metro worked in cooperation with UW to prepare the 2008 SR 520 High Capacity Transit Plan (WSDOT 2008c). This plan recommended developing the Montlake Triangle into a multimodal transit hub, referred to as the Montlake Multimodal Center. With the introduction of light rail service, the Montlake Triangle will serve multiple transportation modes—buses, bicycles, pedestrians, and light rail. Several Triangle-area projects are in the planning and design or construction phases, and the SR 520, I-5 to Medina project provides an opportunity to leverage existing plans and projects to maximize investment in the area.

In the summer of 2010, a series of Montlake Triangle Charrettes were held over 5 weeks in response to the work conducted by the ESSB 6392 Workgroup. ESSB 6392 legislation requested that the workgroup evaluate alternative recommendations for transit connections in the SR 520/Montlake interchange vicinity with a distance of less than 1,200 feet. The Montlake Triangle Charrettes included representatives from WSDOT, SDOT, Seattle City Council, UW, Metro, Sound Transit, and the Seattle Design Commission. The charrette participants recommended further design and evaluation of a pedestrian bridge between the Sound Transit UW station and the Montlake Triangle and a number of at-grade pedestrian and bicycle improvements. WSDOT, Sound Transit, Metro, UW, and SDOT are working together at the staff and executive level to advance the Montlake Triangle Charrette recommendations in coordination with the Sound Transit, UW, and SR 520, I-5 to Medina projects. For more information, please refer to the Montlake Triangle Charrette Technical White Paper (WSDOT 2010f).

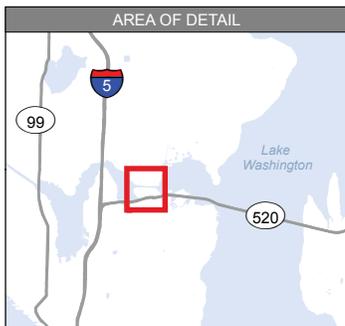
### **Montlake Interchange Transit Connections**

With the No Build Alternative, transit connections between local bus service on Montlake Boulevard NE and SR 520 bus service at the Montlake Freeway Transit Station would be the same as they are today (Exhibit 8-29). The Montlake Boulevard and East Shelby Street bus stops would be in the same locations as today. The transit agencies indicated that SR 520 Routes 272 and 556 would be discontinued in the No Build Alternative and therefore would no longer serve these stops. This would reduce boardings and alightings at the East Shelby Street and Montlake Boulevard southbound bus stops by less than 1 percent at each stop on a daily basis (these buses do not serve the Montlake Boulevard northbound stop).





Walk distances and times between bus stops		
No Build Alternative		
Bus stops	Distance (ft)	Time (mins)
A-C	920	4-5
A-D	400	2-3
B-C	300	1-2
B-D	360	2-3
A/B-ST	2200	9-12
E-ST	950	4-5
F-ST	1000	4-6



- Bus Stop (Local Route)
- Bus Stop (SR 520 Route)
- Bus Stop (Local and SR 520 Route)
- Layover Area
- Pedestrian Walk Path
- Local Route
- SR 520 Route

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies), CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

**Exhibit 8-29. No Build Alternative Transit and HOV Facilities within the Montlake Area**  
 SR 520, I-5 to Medina: Bridge Replacement and HOV Project

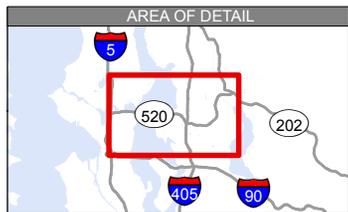
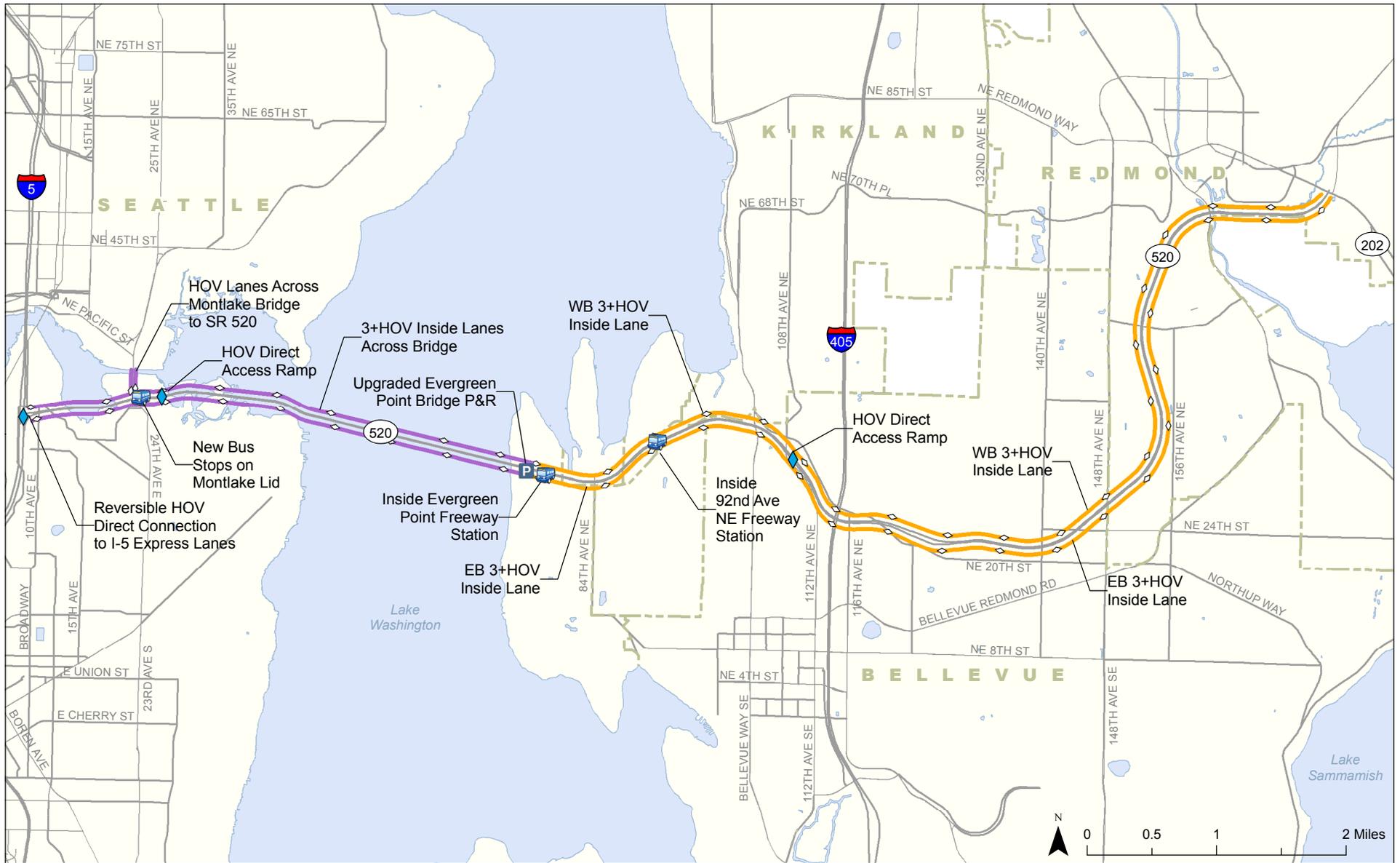
# What transit facilities and services were assumed in the Preferred Alternative?

## Transit Facilities

The Preferred Alternative would result in the following changes to transit and HOV facilities in the SR 520 corridor and Montlake interchange area (Exhibit 8-30):

- Completion of inside HOV lanes in both directions across the Evergreen Point Bridge to I-5
- Addition of an HOV (transit and carpools) direct connection to I-5 express lanes that would operate westbound to southbound in the morning and northbound to eastbound in the afternoon
- Removal of the Montlake Freeway Transit Station
- Addition of a transit and HOV direct access ramp connection between 24th Avenue East and SR 520 to and from the east
- Addition of eastbound and westbound transit stops on the Montlake lid
- Addition of new traffic signal controller equipment compatible with transit signal priority at five intersections:
  1. Direct access ramp/24th Avenue East
  2. Direct access ramp/Montlake Boulevard NE
  3. East Shelby Street/Montlake Boulevard NE (southbound)
  4. East Hamlin Street/Montlake Boulevard NE (northbound)
  5. NE Pacific Street/Montlake Boulevard NE (eastbound)
- Addition of an inside HOV lane on Montlake Boulevard northbound from SR 520 across the Montlake Bridge
- Addition of an outside HOV lane on Montlake Boulevard southbound from NE Pacific Street to across the Montlake Bridge





- Transit Stop
- Park & Ride and Transit Center
- HOV Direct Access Ramp
- I-5 to Medina: Bridge Replacement and HOV Project
- Medina to SR 202: Eastside Transit and HOV Project

Source: King County (2008) GIS Data (Streams, Streets, Water Bodies). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 8-30. HOV and Transit Improvements Along SR 520 with the Preferred Alternative**  
 SR 520, I-5 to Medina: Bridge Replacement and HOV Project

Based on ongoing discussions with Montlake area residents and the 2008 mediation process, it was decided that the Montlake Freeway Transit Station would not be rebuilt in order to narrow the footprint of SR 520 through the Montlake neighborhood. The effects of this change are discussed in detail in the section: *How would removing the Montlake Freeway Transit Station change transit connections?*

## Transit Service Frequencies

Bus routes and frequencies provided by Metro and Sound Transit for the Preferred Alternative were the same as for the No Build Alternative (refer to Exhibit 8-25).

## Transit Service Hours

The transit service network and service hours provided by Metro and Sound Transit for the Preferred Alternative were the same as for the No Build Alternative.

## How would the Preferred Alternative affect transit demand?

Transit demand for the Preferred Alternative was compared with the No Build Alternative to determine the effects of removing the Montlake Freeway Transit Station, completing the HOV lanes, improving corridor and interchange design, and implementing tolls. Transit person trip demand for the year 2030 No Build Alternative and Preferred Alternative is shown in Exhibit 8-31.

The Preferred Alternative would increase transit person-trip demand over the No Build Alternative by approximately 3,300 people per day, or 33 percent, from 9,900 with the No Build Alternative to 13,200 with the Preferred Alternative. Transit person demand would increase by 41 percent during the morning and evening peak periods.

This increase in transit demand reflects the benefit of completing the HOV lanes in both directions across the bridge, the effect of tolls on mode choice, the addition of a reversible connection to the I-5 express lanes, and HOV improvements in the Montlake interchange area.

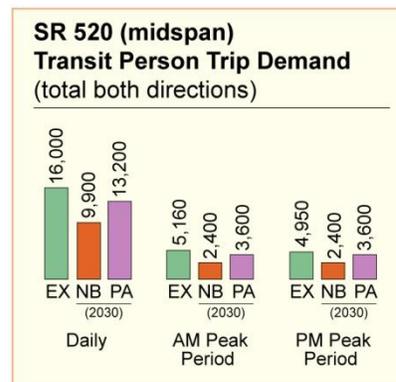


Exhibit 8-31. SR 520 Transit Person Trip Demand with the Preferred Alternative



## Would there be enough bus service to meet Preferred Alternative demand?

Using the destination percentages shown earlier in Exhibits 8-6 and 8-7, an estimate was prepared to determine seat capacity versus ridership demand for SR 520 Eastside to downtown Seattle buses and Eastside to University District buses. SR 520 travel demand model forecasts show a slight reduction in ridership to the University District compared to today via SR 520 buses because some riders would choose to use East Link. Therefore, the percentages shown in Exhibits 8-6 and 8-7 provide a conservative estimate for the Eastside to University District buses.

Exhibit 8-32 illustrates the seat capacity and ridership demand to and from downtown Seattle and the University District. The purpose of Exhibit 8-32 is to help determine the effects of removing the Montlake Freeway Transit Station, which will increase ridership on the SR 520 Eastside to University District routes. It does not represent capacity on specific routes. The assumption is that most riders would be able to take any University District bus and, therefore, combined capacity and ridership demand could be considered.

Exhibit 8-32 shows that Eastside to downtown Seattle and Eastside to University District buses would be able to accommodate the transit demand associated with the Preferred Alternative. These estimates indicate that there is sufficient capacity for ridership demand to nearly triple. During the busiest times of the morning and evening commutes, some routes could be close to capacity (i.e., standing room only). As the environmental process proceeds, the SR 520 Bridge Replacement and HOV Program will continue to coordinate with the transit providers in order to understand the effects of the Preferred Alternative on transit service along the SR 520 corridor.



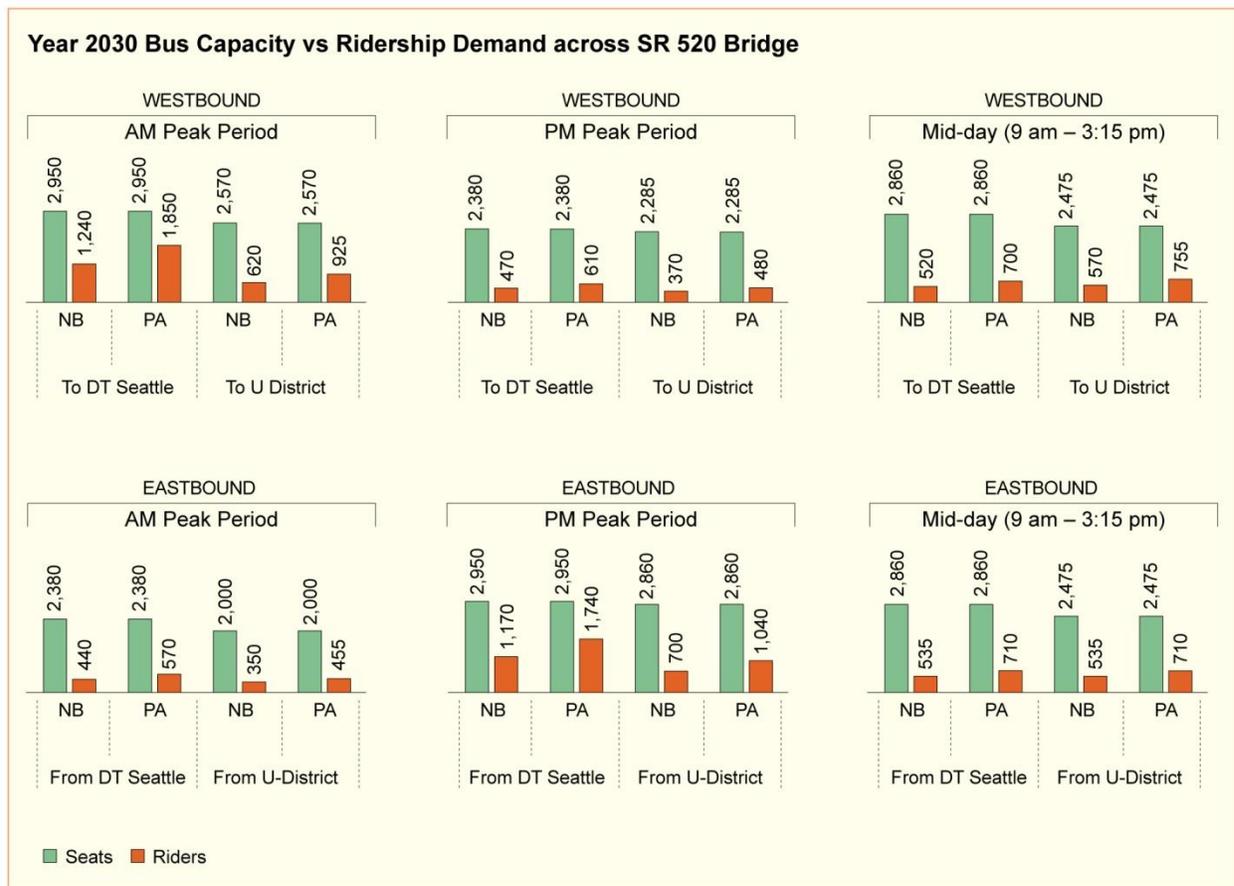


Exhibit 8-32. SR 520 Year 2030 Transit Seats vs. Riders

## How would the Preferred Alternative affect transit connections?

Because of the reconstruction of the Montlake interchange area, a number of bus stops would be relocated compared to the No Build Alternative (Exhibit 8-33) as described below.

- The Montlake Freeway Transit Station stops would be removed and westbound and eastbound bus stops would be provided on the new Montlake lid. SR 520 buses traveling between the University District and the Eastside would serve this stop during the peak hours. During the midday, evening, and weekend hours, both University District and downtown Seattle SR 520 buses would serve these stops. This would provide the same level of service to the Montlake area as in the No Build Alternative (which includes the Montlake Freeway Transit Station).

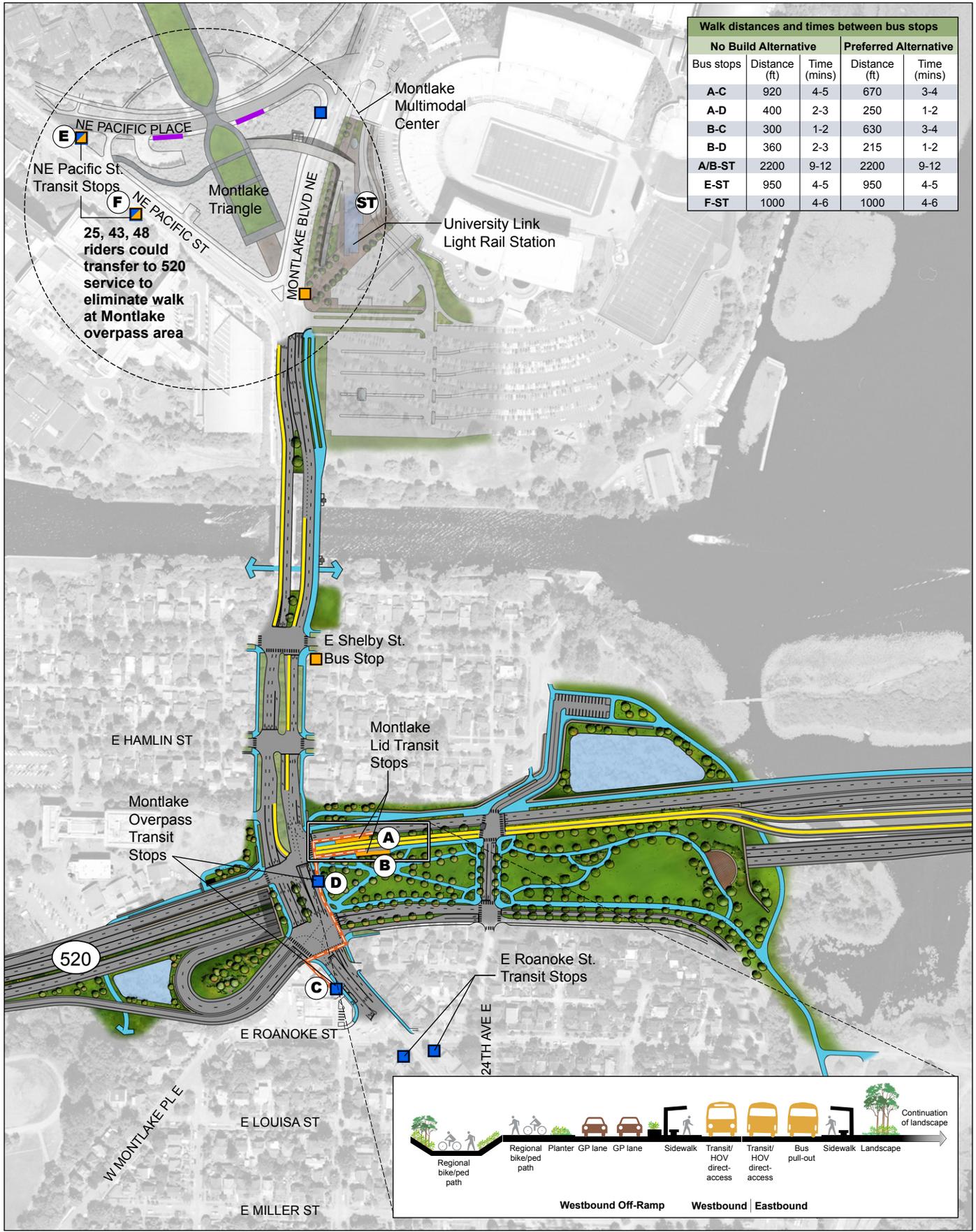


- The Montlake Boulevard southbound bus stop at the SR 520 eastbound on-ramp would be relocated 270 feet to the south to near East Roanoke Street. The stop, as currently configured, would be closed because the City of Seattle requested that the project design refinements include elimination of all free right-turn lanes (slip ramps) from the interchange. The existing bus stop is located on a traffic island created by the free right-turn condition from southbound Montlake Boulevard onto the eastbound on-ramp to SR 520. This decision was an outcome of the ESSB 6392 Workgroup design refinement process.
- The Montlake Boulevard northbound bus stop at the SR 520 westbound off-ramp would be relocated 100 feet to the south on the Montlake Boulevard undercrossing. The new bus stop would be designed as a pull-out bus stop to allow buses to stop without affecting local traffic operations.
- The HOV lane on the SR 520 eastbound on-ramp would not be replaced but the function would be replaced with the bus and HOV direct access ramp to and from the east on the Montlake lid.

The effect of these changes on walk distances between transit stops is shown in Exhibit 8-33.



Walk distances and times between bus stops				
Bus stops	No Build Alternative		Preferred Alternative	
	Distance (ft)	Time (mins)	Distance (ft)	Time (mins)
A-C	920	4-5	670	3-4
A-D	400	2-3	250	1-2
B-C	300	1-2	630	3-4
B-D	360	2-3	215	1-2
A/B-ST	2200	9-12	2200	9-12
E-ST	950	4-5	950	4-5
F-ST	1000	4-6	1000	4-6



- Bus Stop (Local Route)
- Bus Stop (SR 520 Route)
- Bus Stop (Local and SR 520 Route)
- Layover Area
- HOV Lanes



**Exhibit 8-33. Preferred Alternative Transit and HOV Facilities within the Montlake Area**  
 SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## How would removing the Montlake Freeway Transit Station change access to the Montlake/University District area?

With the removal of the Montlake Freeway Transit Station, bus riders would no longer be able to use the six downtown Seattle bus routes to travel between the Montlake interchange area and the Eastside during the morning and evening peak periods. This would decrease bus service from the Eastside by approximately 220 bus trips for both peak periods and both directions compared to the No Build Alternative. These SR 520 bus riders would need to use Eastside to University District/North Seattle bus routes (Metro Routes 167, 243, 271, and 277 and Sound Transit Routes 540 and 542). Combined, these routes would provide approximately 200 bus trips during the morning and evening peak periods.

The Montlake Freeway Transit Station westbound and eastbound bus stops would be closed and new westbound and eastbound bus stops would be provided on the new Montlake lid (Exhibit 8-33). This configuration would allow the transit agencies to maintain SR 520 bus service to the Montlake interchange area. SR 520 transit travel patterns would not be substantially affected by this change. Downtown Seattle to Eastside bus routes would have one less stop on their route during the morning and evening peak periods and the University District/North Seattle to Eastside bus routes would continue to exit at the Montlake interchange as they would in the No Build Alternative. They would then stop at the new Montlake lid bus stops. Because downtown Seattle to Eastside bus routes would not serve the Montlake lid bus stops during the AM and PM peak periods, riders would lose access to approximately 320 to 340 bus trips. As a result, transit riders using these stops would have to find alternative stops and/or routes.

As a way to maintain bus access to the Montlake interchange area during the off-peak periods, transit agencies would have the option of routing SR 520 buses through the Montlake interchange. Westbound buses would be able to exit via the new HOV direct access ramps, serve the stop on the Montlake lid, and then continue on westbound SR 520 to downtown Seattle or other destinations via I-5. Eastbound buses would be able to exit SR 520 at the Montlake off-ramp, turn left onto Montlake Boulevard, and then turn right onto the direct access ramps to pick up



or drop off passengers. As result, riders would have access to both downtown Seattle to Eastside and University District to Eastside bus routes during midday, evenings, and weekends. The differences in bus trips serving the Montlake interchange area as a result of removing the Montlake Freeway Transit Station are shown in Exhibit 8-34.

Riders who currently transfer between routes at the Montlake Freeway Transit Station could transfer at the Evergreen Point Road or 92nd Avenue NE freeway station.

**Exhibit 8-34. Changes in SR 520 Bus Service to the Montlake Interchange Area with the Preferred Alternative**

Transit Element	Existing	No Build Alternative	Preferred Alternative
Number of SR 520 bus trips serving Montlake interchange (6 a.m. to 6:15 p.m.)	575 bus trips <ul style="list-style-type: none"> <li>• 320 Eastside-downtown Seattle bus trips</li> <li>• 255 Eastside-University District bus trips<sup>c</sup></li> </ul>	660 bus trips <sup>a</sup> <ul style="list-style-type: none"> <li>• 350 Eastside-downtown Seattle bus trips</li> <li>• 310 Eastside-University District bus trips</li> </ul> <i>*increases due to improved headways</i>	435 bus trips <sup>b</sup> <ul style="list-style-type: none"> <li>• 120 Eastside-downtown Seattle bus trips (9 a.m. to 3:15 p.m. only)</li> <li>• 310 Eastside-University District bus trips (6 a.m. to 6:15 p.m.)</li> </ul>
Bus frequency across Evergreen Point Bridge (Evergreen Point to Montlake interchange)	<ul style="list-style-type: none"> <li>• AM/PM peak: every 1 to 3 minutes</li> <li>• Midday: every 4 to 5 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• AM/PM peak: every 1 to 2 minutes</li> <li>• Midday: every 2 to 34 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• AM/PM peak: every 2 to 3 minutes</li> <li>• Midday: same as No Build</li> </ul>

<sup>a</sup> The No Build and Preferred Alternative bus trips were calculated using 2030 headways provided by Metro and Sound Transit, which were assumed to be the same for both alternatives.

<sup>b</sup> The change in bus trips is due to downtown Seattle-Eastside bus trips not serving Montlake lid bus stops during the peak periods.

<sup>c</sup> Includes Sound Transit Route 542

## Westbound Montlake Freeway Transit Station Users

### Boardings

During the morning and evening peak periods, riders accustomed to using the westbound Montlake Freeway Transit Station to board downtown Seattle buses would have to find alternative routes, such as light rail at the UW Station or local bus service. During midday, evenings, and weekends, westbound riders would be able to board downtown Seattle buses at the new Montlake lid stops.

Today, there are approximately 100 riders per day who use this stop. It is anticipated that this number would decrease with the implementation of University Link and East Link. Light rail service is



expected to run every 5 to 15 minutes (Sound Transit 2006). Connecting to light rail service at the UW Station would either lengthen or shorten a rider's trip by a half mile, depending on whether the rider is traveling from the north or south.

## Alightings

During the morning and evening peak periods, the riders who currently use this stop to alight from downtown Seattle buses would also have to find alternative routes, such as one of the seven University District routes or East Link light rail. During midday, evenings, and weekends, riders would be able to alight from downtown Seattle buses at the new Montlake lid stops, should transit agencies choose to route buses through the Montlake interchange.

Today, there are approximately 600 riders per day who use this stop. It is anticipated that this number would decrease with the implementation of Sound Transit Route 542 and East Link. As shown in Exhibits 8-9 and 8-10, Sound Transit Route 545 accounts for 65 percent of these riders.

During the peak periods, riders could transfer at the Evergreen Point Freeway Transit Station to University District bus routes or change their trip to take East Link. For riders transferring at the Evergreen Point station, the average wait for a University District bus would be 3 to 4 minutes between 6:00 a.m. and 6:15 p.m. in the year 2030 (Exhibit 8-35).

The first stop for westbound riders would be on the new Montlake lid just east of Montlake Boulevard as shown on Exhibit 8-33. From this stop, it would be a walk of approximately 200 feet to the new northbound local bus stop and approximately 500 feet to the new southbound local bus stop on Montlake Boulevard NE (refer to Exhibit 8-33).



## Eastbound Montlake Freeway Transit Station Users

### Boardings

During the morning and evening peak periods under the No Build Alternative, the riders using this stop to board downtown Seattle buses would need to change their trip with the Preferred Alternative. Riders would instead need to board a University District bus direct to their destination (if available) or would need to take a University District bus to the Evergreen Point Freeway Transit Station to transfer to a bus to their final destination. Riders could board SR 520 University District buses at the eastbound bus stop on the new Montlake lid, which would arrive every 3 to 4 minutes throughout the day (6:00 a.m. to 6:15 p.m.). Some riders may use alternative routes to the Eastside, such as light rail from the UW Station.

Today, there are approximately 800 riders per day who board SR 520 buses at the eastbound transit station. Sound Transit Route 545 accounts for 65 percent of these riders who could use Sound Transit Route 542 (during the peak periods) or East Link. It is anticipated that this number would decrease with the No Build Alternative due to the addition of Sound Transit Route 542, discontinuation of Metro peak period routes, and the implementation of East Link.

### Alightings

The riders who currently use this stop to alight from downtown Seattle buses would also have to find alternative routes during the morning and evening peak periods, such as light rail from downtown Seattle to the UW Station. From there, riders could transfer to local bus service at the UW Medical Center bus stops on NE Pacific Street, and walk or bike to their final destinations. During midday, evenings, and weekends, riders could use downtown Seattle buses, which are assumed to serve the Montlake interchange. Today, there are approximately 140 riders per day who use this stop. It is anticipated that this number would decrease with the implementation of East Link.



In the No Build Alternative, riders arriving at the Evergreen Point Freeway Transit Station would have to wait for 1 to 2 minutes during the peak periods and 3 to 4 minutes during the midday periods to board either a downtown Seattle or University District/North Seattle bus to the Montlake Freeway Transit Station. In the Preferred Alternative, wait time at the Evergreen Point Freeway Transit Station would increase to 3 to 4 minutes during the peak periods and would be the same as the No Build Alternative during midday.

The combined bus frequencies shown in Exhibit 8-35 were calculated by combining year 2030 headways for Eastside-downtown Seattle and Eastside-University District SR 520 routes. These frequencies represent the average time between buses destined to each of these two areas and, therefore, the average wait time riders would experience at the Evergreen Point or 92nd Avenue NE freeway stations.

These wait times are based on the assumption that most riders whose trip origin or destination is the Montlake/University District would be able to take any University District bus to and from the Eastside. Once on the Eastside, some riders, such as those traveling to areas other than Bellevue, Kirkland, and Redmond on routes from downtown Seattle, may have to transfer to their specific route at the Evergreen Point Freeway Transit Station. Some riders could wait up to 45 minutes if they do not consult transit schedules.



**Exhibit 8-35. Combined Bus Headways across the Evergreen Point Bridge for the Preferred Alternative (between Evergreen Point and Montlake Freeway Transit Stations)**

	AM Peak Period (6 to 9 a.m.)				PM Peak Period (3:15 to 6:15 p.m.)				Midday <sup>a</sup> (9 a.m. to 3:15 p.m.)			
	Bus Trips		Ave. Headway (minutes)		Bus Trips		Ave. Headway (minutes)		Bus Trips		Ave. Headway (minutes)	
	NB	PA	NB	PA	NB	PA	NB	PA	NB	PA	NB	PA
<b>Westbound at the Evergreen Point Freeway Transit Station</b>												
Downtown Seattle-Eastside	62	NA	2.9	NA	50	NA	3.6	NA	62	62 <sup>a</sup>	6.0	6.0
University District/North Seattle-Eastside <sup>b</sup>	54	54	3.3	3.3	48	48	3.8	3.8	51	51	7.4	7.4
Buses Combined	116	54	1.6	3.3	98	48	1.8	3.8	113	113	3.3	3.3
Light rail (East Link) <sup>c</sup>	24	24	7.5	7.5	24	24	7.5	7.5	36	36	10.4	10.4
Total with light rail	140	78	1.3	2.3	122	72	1.5	2.5	149	149	2.5	2.5
<b>Eastbound in the Montlake Interchange Area</b>												
Downtown Seattle-Eastside	50	NA	3.6	NA	62	NA	2.9	NA	62	62 <sup>a</sup>	6.0	6.0
University District/North Seattle-Eastside	48	48	3.8	3.8	54	54	3.3	3.3	56	56	6.7	6.7
Buses Combined	98	48	1.8	3.8	116	54	1.6	3.3	118	118	3.3	3.3
Light rail (East Link) <sup>c</sup>	24	24	7.5	7.5	24	24	7.5	7.5	38	38	10.0	10.0
Total with light rail	122	72	1.5	2.5	140	78	1.3	2.3	150	150	2.5	2.5

NB = northbound, PA = Preferred Alternative

NA indicates that these buses will no longer provide access to the Montlake interchange area/University District due to the removal of the Montlake Freeway Transit Station with the Preferred Alternative; they will continue to stop at the Evergreen Point Freeway Transit Station (westbound and eastbound).

<sup>a</sup> During the midday period, transit agencies would have the option to route downtown Seattle-Eastside buses through the Montlake interchange area to serve the new Montlake lid stops constructed as a part of the Preferred Alternative. In that case, bus trips and headways would be the same as the No Build Alternative.

<sup>b</sup> The first/last stop for University District/North Seattle buses would be at the new bus stops on the new Montlake lid.

<sup>c</sup> While East Link will use I-90 to cross the lake, it will provide service from the Eastside (downtown Redmond, Overlake, downtown Bellevue, South Bellevue, and Mercer Island) to downtown Seattle and the University District (continuing to Northgate and Lynnwood). This service would likely shift transit patterns for some SR 520 bus users.



# How would the project affect bus travel times and reliability in the SR 520 corridor?

The SR 520, I-5 to Medina project would complete the SR 520 HOV system and corridor upgrade, which would improve traffic operations for all users in the corridor, especially for buses and HOV lane users. The project would provide the necessary infrastructure to:

- Meet more of the regional cross-lake travel demand
- Improve travel time and reliability for buses and HOV lane users on SR 520 and Montlake Boulevard NE
- Improve cross-lake connectivity between major Seattle and Eastside activity centers and existing and proposed transit networks
- Expand the transit network to include the ultimate development of an SR 520 HCT transit system, which may include exclusive, dedicated transit facilities in the corridor

## Freeway Travel Times

These infrastructure improvements would improve freeway and local bus travel times compared to the No Build Alternative. HOV travel times on SR 520 without and with the project are shown in Exhibits 8-36 and 8-37. These exhibits show that the project would keep HOV lane speeds consistently operating at or near free-flow conditions, even during the peak hour of the peak period. As result, HOV travel times would reliably be an average of 14 to 16 minutes between I-5 and SR 202, helping buses to stay on schedule.

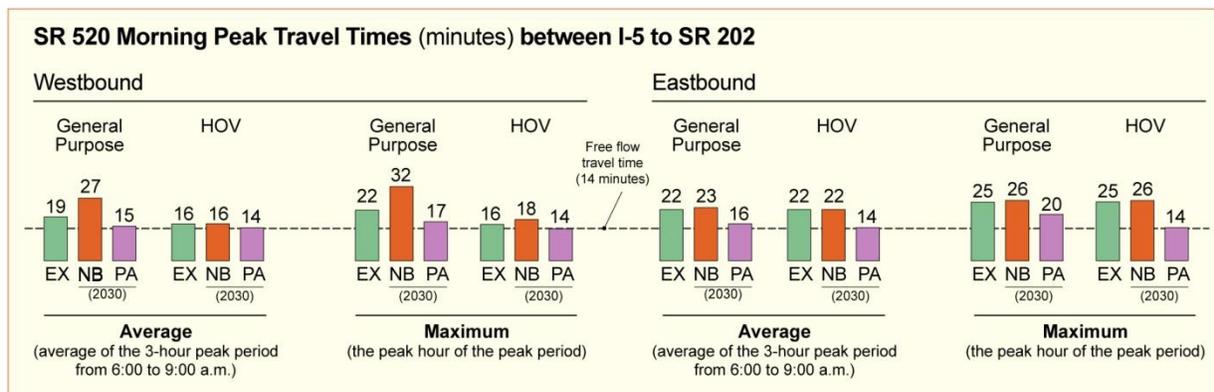


Exhibit 8-36. SR 520 Morning Peak Travel Times between I-5 and SR 202



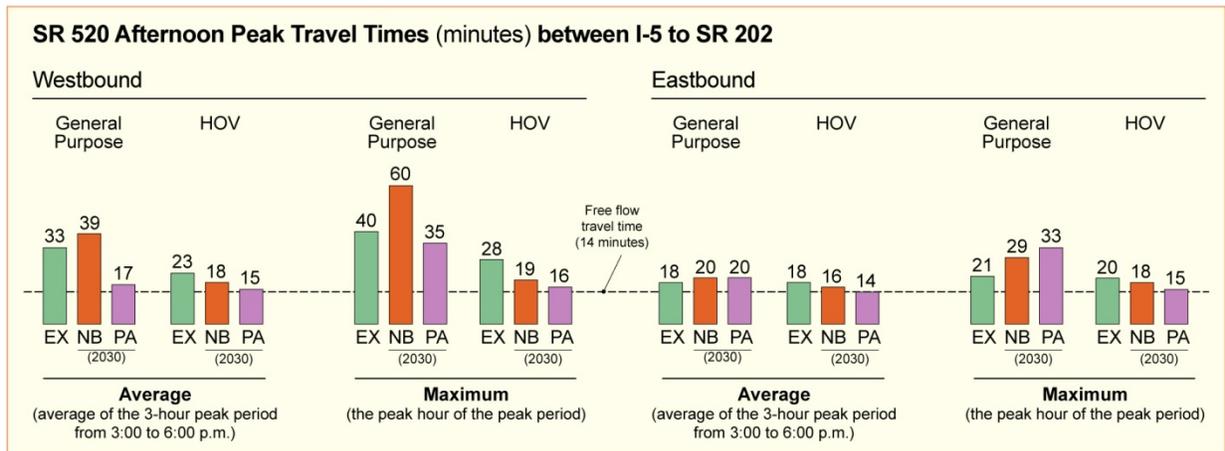


Exhibit 8-37. SR 520 Afternoon Peak Travel Times between I-5 and SR 202

For an explanation of the changes in freeway HOV travel times between the No Build Alternative and Preferred Alternative, please see Chapter 5—Freeway Volumes and Operations.

### Local Arterial Travel Times

Under the No Build Alternative and Preferred Alternative, travel times were estimated for buses using Montlake Boulevard NE and NE Pacific Streets to determine how adding a new bascule bridge over the Montlake Cut and implementing Montlake HOV improvements would affect local buses. These travel times are shown in Exhibit 8-38.

Exhibit 8-38. Travel Times for Buses Traveling on Montlake Boulevard NE and NE Pacific Street through the Montlake Interchange Area

Direction of Travel	Peak <sup>a</sup> (minutes)			Off Peak <sup>b</sup> (minutes)			Bridge Opening "worst case" <sup>c</sup> (minutes)		
	EX	NB	PA	EX	NB	PA	EX	NB	PA
Southbound	12	16	11	13	24	15	21	32	20
Northbound	7	19	14	8	19	12	11	28	20

<sup>a</sup> Peak represents average travel time during the AM or PM peak period

<sup>b</sup> Off peak represents average travel time for any vehicle in the system between 3 and 4 p.m.

<sup>c</sup> Bridge opening "worst case" represents those vehicles near or at the back of the queue.

As shown in Exhibit 8-38, the Preferred Alternative would improve travel times for local buses by approximately 5 minutes during the peak period, 7 to 9 minutes during the off-peak period, and 8 to 12 minutes during the worst-case bridge openings. With the project, buses would be able to reliably bypass congestion related to Montlake Bridge openings due to the project's addition of a new Montlake bridge,



HOV lanes on Montlake Boulevard NE from SR 520 to across the Montlake Bridge, and an HOV direct access ramp at the Montlake interchange.

These differences in travel times between the No Build Alternative and Preferred Alternative reflect the local street capacity and level of service improvements associated with the Preferred Alternative that are described in Chapter 6. They also reflect improvements that would be made to the SR 520 corridor, because much of the congestion on local streets today and in the 2030 No Build Alternative is caused by congestion from SR 520 that spills onto the Montlake corridor. Transit travel times were estimated based on the VISSIM micro-simulation models used for the No Build and Preferred Alternatives. The models used a typical weekday evening peak hour and an off-peak hour with a Montlake Bridge opening. Please see Chapter 4—Transportation Forecasts and Operations Analysis Methodology – for a more detailed discussion of the modeling methodologies used for the project’s transportation analysis.

## Bus Travel Times

Freeway and local arterial travel times are just two components of overall bus travel times. For SR 520 bus passengers, bus travel times can include the following components:

- Bicycle or walk time to the Montlake Freeway Transit Station or other Montlake interchange area stop
- Wait time at the bus stop
- Transfer wait time(s), if any
- In-vehicle time on the freeway and/or local street
- Drive, bicycle, or walk time to a destination

Because the Preferred Alternative would remove the Montlake Freeway Transit Station, some passengers would have a change in mode for a portion of their transit trip that occurs within the Montlake interchange area. In other words, some people who would walk to the Montlake Freeway Transit Station in the No Build Alternative would instead use bus service for the entire trip in the Preferred Alternative.

For example, westbound bus passengers taking Route 545 to the Montlake Freeway Transit Station in the No Build Alternative would need to use University District service, such as Route 542, in the



Preferred Alternative (during the morning and evening peak periods). As a result, a rider's walk time between the Montlake station and the UW would be replaced with in-vehicle time on the local street.

Transit trip times on SR 520 buses could change in many ways as a result of the Preferred Alternative. Exhibits 8-39 and 8-40 illustrate some of these changes for Sound Transit Route 545 and Metro Route 255. These routes account for the majority of boardings and alightings at the Montlake Freeway Transit Station.

### **Transit Travel Time Changes between the University District and Overlake**

Sound Transit Route 545, which provides transit service between Redmond and the University District, accounts for most of the boardings and alighting at the Montlake Freeway Transit Station. There are currently 480 riders using this route that would be affected by the removal of the Montlake Freeway Transit Station during the morning and evening commute periods (total number of boardings and alightings for both westbound and eastbound stops for AM and PM peak periods). With the Preferred Alternative, westbound riders (160 alightings) would need to transfer to a University District bus at the Evergreen Point Freeway Transit Station. Eastbound riders (260 boardings) would need to take a University District bus to the Evergreen Point Freeway Transit Station to transfer to Route 545. Some riders could also switch to Sound Transit Route 542, which provides direct service between Redmond and the University District during the peak periods. The effects of these transfers on transit trip times are shown in Exhibits 8-39 and 8-40.

In Exhibits 8-39 and 8-40, the travel components for an Overlake-to-University District bus trip on Sound Transit Route 545 with the No Build Alternative were represented by the following factors:

- SR 520 freeway travel time between NE 40th Street/NE 51st Street interchange and the Montlake Freeway Transit Station. Travel times were calculated between these two points because the project does not directly affect a rider's travel time outside of these points.
- Walk time to the UW (distance measured to the westbound UW Medical Center bus stop on NE Pacific Street to allow a comparison between bus and light rail trips).



- In-vehicle travel time on Montlake Boulevard NE between SR 520 and the UW Medical Center stops on NE Pacific Street adjacent to the Montlake Triangle.

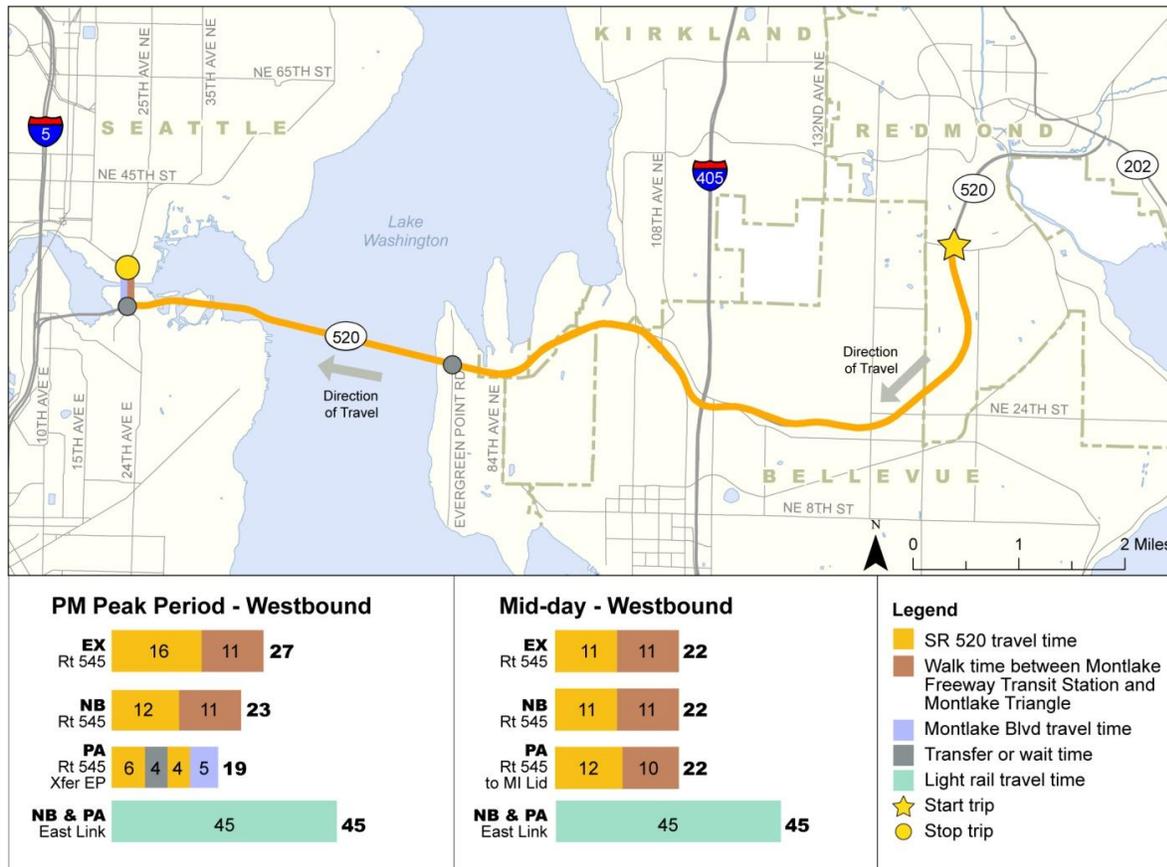


Exhibit 8-39. Changes in Transit Trip Times with the No Build and Preferred Alternatives—NE 40th/51st Street Interchange to University District

As shown in Exhibit 8-39, bus trip times would be the same or better with the Preferred Alternative during the evening peak period and midday. The East Link trip time represents travel through Bellevue, across I-90, and through downtown Seattle before arriving at the Montlake Triangle (University Link light rail station).

With the Preferred Alternative, riders using Route 545 (or other downtown Seattle routes) during the peak periods would have to transfer to University District service at the Evergreen Point Freeway Transit Station. Even so, their travel time would also likely improve over (or be similar to) the No Build Alternative from 23 to 19 minutes. This benefit would occur due to improvements in freeway travel times and because their walk time between the Montlake interchange and the Montlake Triangle would be replaced with in-vehicle time.



During the evening peak period, University District routes would arrive every 3 to 4 minutes at the Evergreen Point Freeway Transit Station, resulting in short wait times between buses. All Eastside to University District routes would serve the UW Medical Center stop on NE Pacific Street, making it possible for most riders to board any University District route. Some westbound riders might be able to switch to Route 542 for their entire trip, eliminating the transfer at the Evergreen Point Freeway Transit Station.

During midday, Eastside to downtown Seattle buses would be able to exit at the Montlake interchange and serve the Montlake lid stops, resulting in similar travel times with the No Build Alternative.

As shown in Exhibit 8-40, bus trip times are the same or better with the Preferred Alternative for eastbound trips during the evening peak and midday periods. The East Link travel time represents travel through downtown Seattle, across I-90, and through Bellevue before arriving at Overlake.

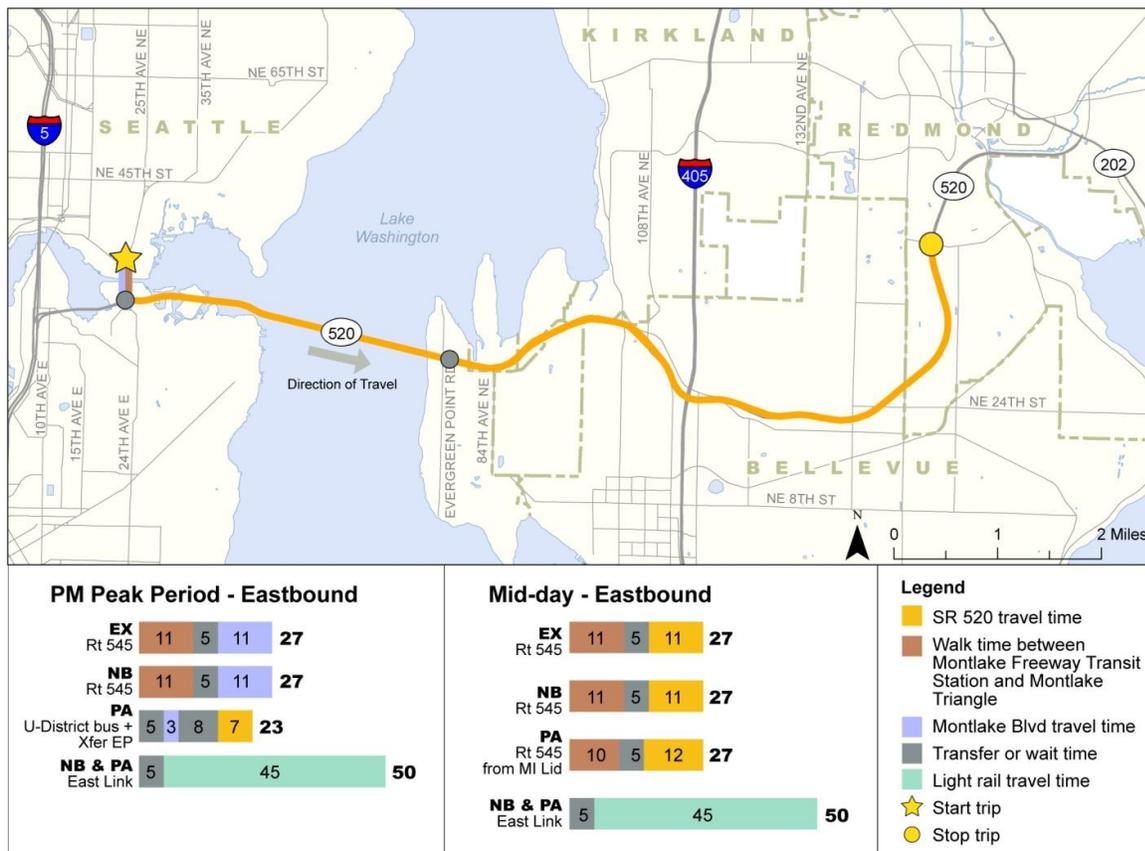


Exhibit 8-40. Changes in Transit Trip Times with the No Build and Preferred Alternatives—University District to NE 40th/51st Street Interchange



During the evening peak period, eastbound riders who ultimately need a downtown Seattle route to reach their final destination could board any University District-Eastside bus at the Montlake lid stop (or at the UW Medical Center stop) and transfer at the Evergreen Point Freeway Transit Station. University District-Eastside buses would arrive every 3 to 4 minutes. If transferring to Route 545, the average transfer time at the Evergreen Point Freeway Transit Station would be 8 minutes. Transfer times for other downtown Seattle-Eastside routes would range between 10 and 45 minutes. These transfer times are based on year 2030 headway information for these routes provided by Metro and Sound Transit. Some eastbound riders may also choose to take East Link.

During midday, downtown Seattle-Eastside buses would be able to exit at the Montlake interchange and serve the Montlake lid stops, resulting in similar travel times with the No Build Alternative. Metro Route 255, which provides transit service between Kirkland and the University District, is the route that accounts for the next greatest number of boardings and alighting at the Montlake Freeway Transit Station (second to Sound Transit Route 545). There are currently 90 riders using this route that would be affected by the removal of the Montlake Freeway Transit Station during the morning and evening commute periods (total number of boardings and alightings for both westbound and eastbound stops for AM and PM peak periods). With the Preferred Alternative, westbound riders (30) would need to transfer to a University District bus at the Evergreen Point Freeway Transit Station. Eastbound riders (60) would need to take a University District bus to the Evergreen Point Freeway Transit Station to transfer to Route 255. Some riders could also switch to Sound Transit Route 540, which provides direct service between Kirkland and the University District. The effect of this transfer on transit trip times is shown in Exhibits 8-41 and 8-42.

During midday, transit riders would be able to use Metro Route 255 as they would in the No Build Alternative because downtown Seattle buses would serve the Montlake lid stops during this time period (9:00 a.m. to 3:15 p.m.).

In Exhibits 8-41 and 8-42, the travel components for a Kirkland-to-University District bus trip on Metro Route 255 with the No Build Alternative were represented by the following factors:

- SR 520 freeway travel time between 108th Avenue NE on-ramp and the Montlake Freeway Transit Station. Travel times were calculated



between these two points because the project does not directly affect a rider's travel time outside of these points.

- Walk time to the UW (distance measured to the westbound UW Medical Center bus stop on NE Pacific Street).
- In-vehicle travel time on Montlake Boulevard NE between SR 520 and the UW Medical Center stops on NE Pacific Street adjacent to the Montlake Triangle.

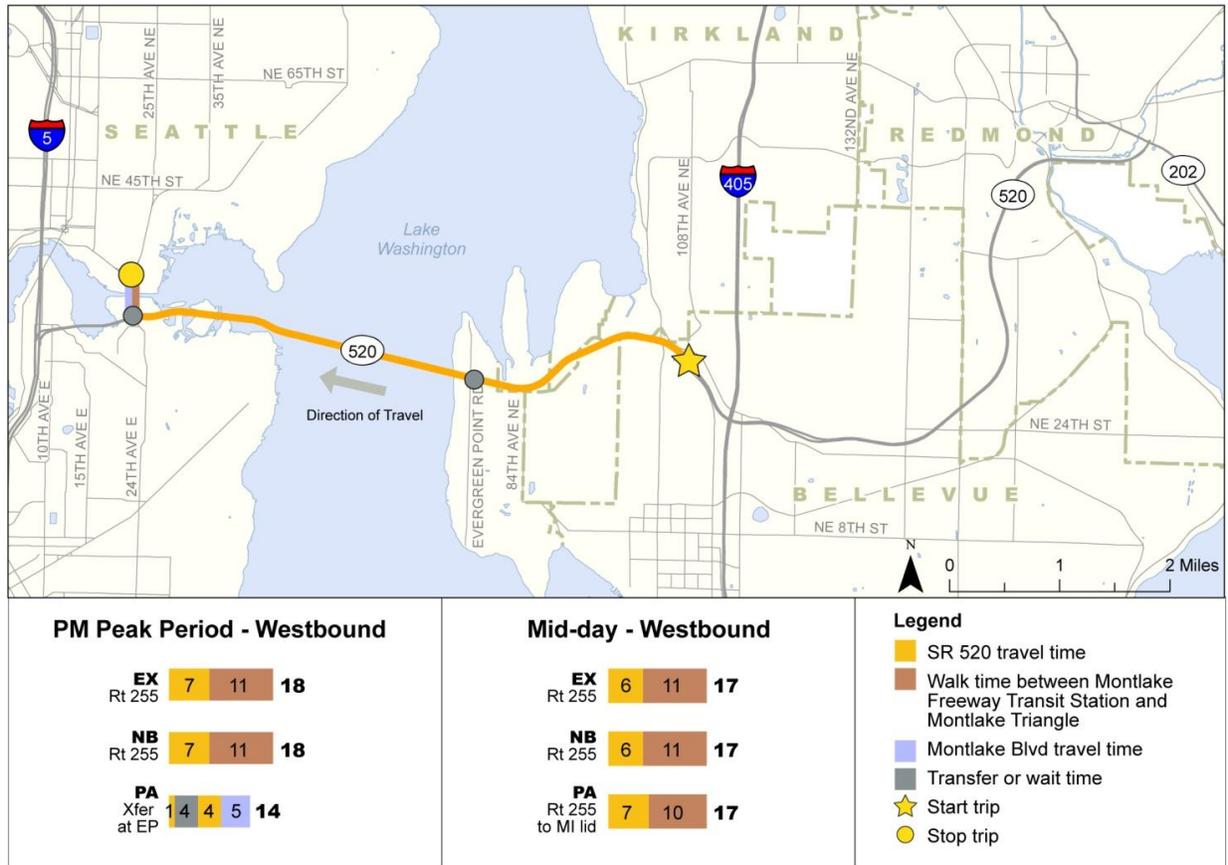


Exhibit 8-41. Changes in Transit Trip Times with the No Build and Preferred Alternatives—108th Avenue NE Interchange to University District



As shown in Exhibit 8-41, transit trip times are the same or better with the Preferred Alternative for westbound transit trips for midday and evening peak period. During the evening peak period, riders on Route 255 (or other downtown Seattle routes) would have to transfer to University District service at the Evergreen Point Freeway Transit Station. Even so, their travel time could improve over the No Build Alternative from 18 to 14 minutes (or stay the same) because buses would be arriving frequently and walk times between the Montlake Freeway Transit Station and the Montlake Triangle would be replaced with in-vehicle time. During the evening peak period, a University District route would arrive every 3 to 4 minutes, which is represented by the 4-minute wait time used in Exhibit 8-41.

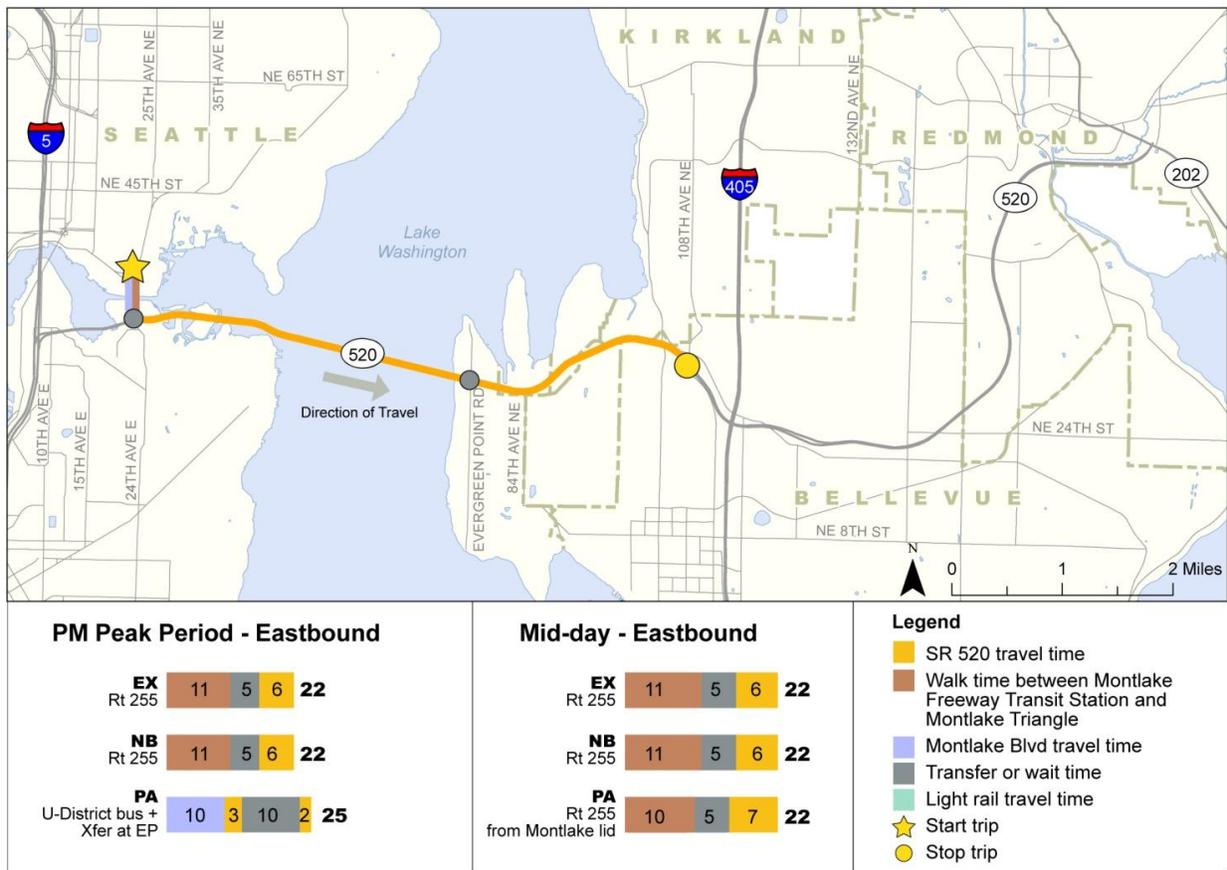


Exhibit 8-42. Changes in Transit Trip Times with the No Build and Preferred Alternatives—University District to 108th Avenue NE Interchange

As shown in Exhibit 8-42, transit trip times between the Montlake Triangle and the 108th Avenue NE interchange could be longer with the Preferred Alternative for riders who continue to use Route 255 during the peak period.



All Eastside to University District routes serve the UW Medical Center stop on NE Pacific Street, making it possible for most riders to board any University District route at this location and then transfer to Route 255 at the Evergreen Point Freeway Transit Station. An Eastside to University District route would arrive every 3 to 4 minutes. Based on year 2030 service information provided by Metro, Route 255 would have 10-minute headways during the evening peak period, which would be the maximum wait time at the Evergreen Point station. With the completion of the HOV lane across the Evergreen Point Bridge and the HOV direct connection to the I-5 express lanes, reliability would improve for buses, thereby improving the on-time performance.

Some riders might be able to replace this trip by switching to South Transit Route 540 for their entire trip, which provides direct service between the University District and Kirkland.

During midday, Route 255 buses would be able to exit at the Montlake interchange and serve the Montlake lid stops, resulting in similar travel times to the No Build Alternative.

## **How does the project affect nonmotorized access to transit?**

Some bus riders who use the Montlake Freeway Transit Station are also bicycle riders. With the project, bicycle riders would have the option of riding across the Evergreen Point Bridge, which is likely to reduce their overall travel time. According to Metro's 2002 ridership counts, bicycle riders are often delayed because of full bicycle racks, sometimes waiting up to 30 to 40 minutes for a bus with bicycle rack space. The project would make bicycle trips more reliable by providing a cross-lake bicycle path and eliminating the need to take a bus. For more discussion on project effects on pedestrian and bicycle travel not associated with transit, please see Chapter 7 – Nonmotorized Facilities.





# Chapter 9—Parking Supply

## What is in this chapter?

This chapter describes the current parking supply, demand, and utilization, including how the Preferred Alternative would affect parking supply in the study area. The study area includes designated public and private parking lots adjacent to the SR 520, I-5 to Medina project. Exhibit 9-1 shows the location of these lots, including existing parking supply and potential parking effects of the Preferred Alternative.

This parking analysis updates the Transportation Discipline Report for the SR 520 Final EIS (WSDOT 2009d) based on the Preferred Alternative design. Affected parking facilities addressed in this analysis include:

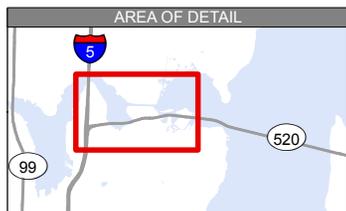
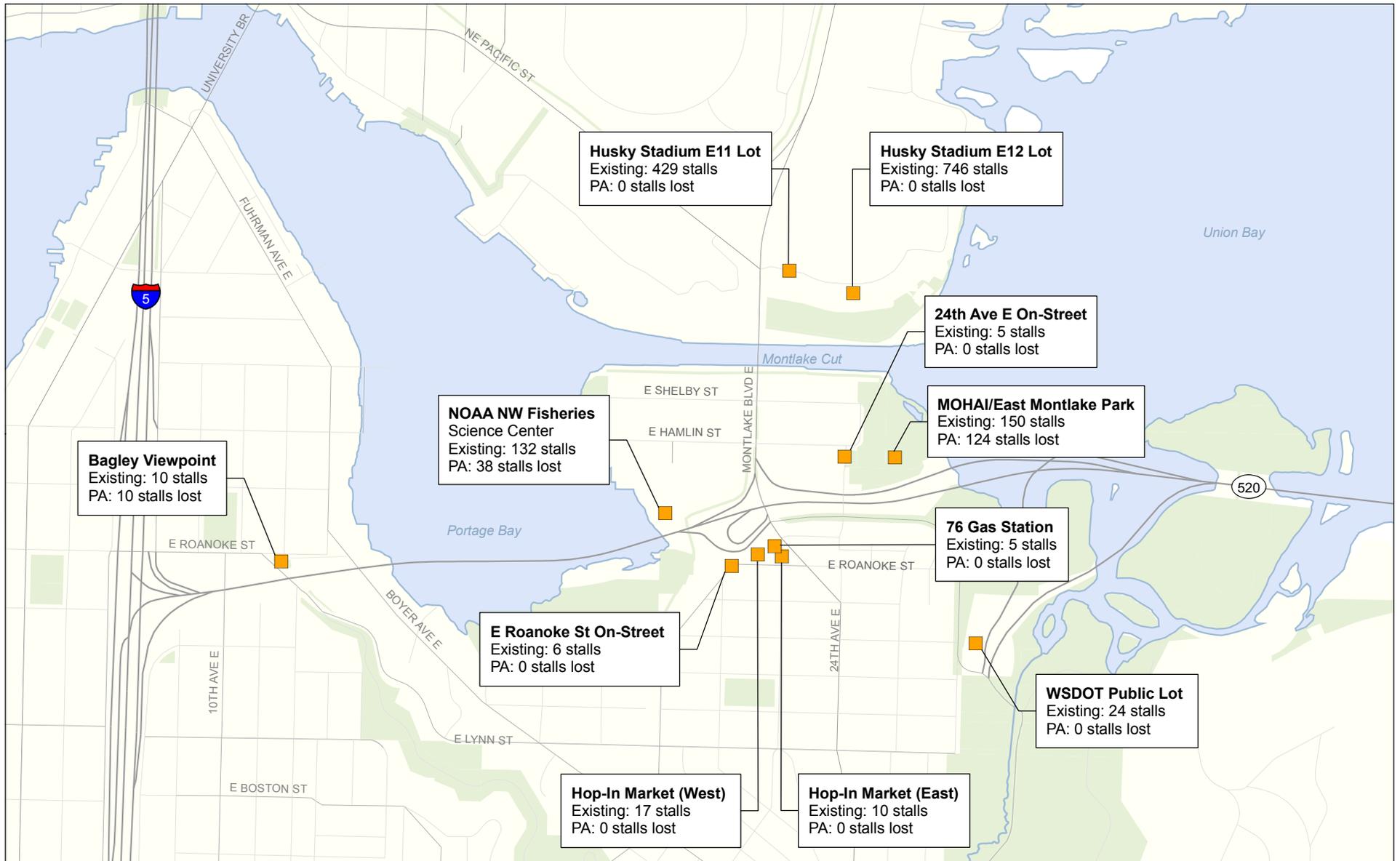
- Bagley Viewpoint Lot
- NOAA Northwest Fisheries Science Center
- MOHAI

The following sections discuss these parking lots, potential changes to each lot, and effects of these changes on parking supply. Other parking facilities in the project vicinity that were previously evaluated are also described at the end of the chapter. Those facilities would not be affected by the Preferred Alternative.

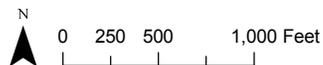
## How was parking supply information collected?

The Final EIS analysis considered existing parking supply, planning-level design, field observations, and discussions with the project designers to estimate the number of affected parking spaces and new parking for the Preferred Alternative. WSDOT collected supply and demand field data for each parking area that would be affected. Parking demand was determined based on a field survey that measured parking utilization several times at each location during 2 consecutive days in October 2010.





■ Parking Area



Source: King County (2008) GIS Data (Streams, Streets and Waterbodies) and CH2M HILL (2008) GIS Data (Parks). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.

### Exhibit 9-1. Potentially Affected Parking Areas

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

The SDEIS parking results were based on data collected in 2004 and did not include field verification, although some supply and utilization rates were verified from other sources or estimated using aerial photography. For the Final EIS, the utilization rates and supply were verified during the October 2010 field survey and were comparable to the Draft EIS utilization rates.

## How would the project affect parking in the corridor?

This section describes the existing condition of parking lots that would be affected and summarizes how the Preferred Alternative would affect the parking supply. Most of the affected parking is in the Montlake area, with the exception of the lot at Bagley Viewpoint near I-5. Exhibit 9-2 lists the existing parking supply, average number of spaces in use, estimated utilization rate, and the number of spaces expected to remain after the Preferred Alternative is constructed.

Exhibit 9-2. Estimated Effects on Parking Supply in the Study Area

Location	Existing/ No Build Parking Supply	Average Number of Spaces in Use	Utilization Rate	Preferred Alternative Parking Supply
Lot at Bagley Viewpoint	10	1	10%	0
NOAA Northwest Fisheries Science Center	132 <sup>a</sup>	119	90%	94
MOHAI and East Montlake Park	150	59	39%	26

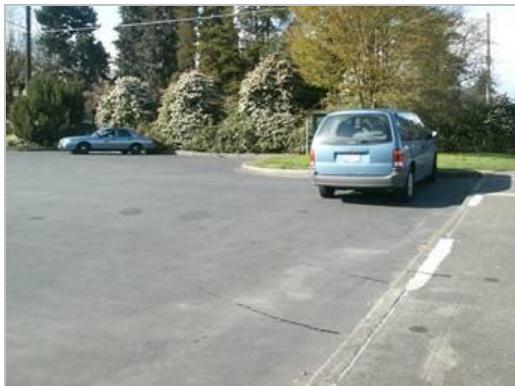
<sup>a</sup> Parking supply includes 38 spaces located on WSDOT right-of-way under the existing Portage Bay Bridge.



## **Lot at Bagley Viewpoint (Delmar Drive East and East Roanoke Street)**

### **Existing and No Build Conditions**

This lot, located at Bagley Viewpoint, is just east of the Delmar Drive overcrossing and north of SR 520. It currently has 10 parking stalls, but only one is used on average. Exhibit 9-3 shows the existing parking area, looking north.



**Exhibit 9-3. Bagley Viewpoint Parking Lot—  
Looking North**

### **Parking Effects**

The Preferred Alternative would remove the existing lot in its entirety. However, the parking supply could be replaced on the 10th and Delmar lid. WSDOT is coordinating with the City of Seattle to further develop design details for the lid. Project plans include a park space and new parking on the proposed lid, but the number of spaces has not yet been identified. Utilization of the 10 parking spaces at the viewpoint is low, so their removal would not have a substantial effect on park access for the community.



## NOAA Northwest Fisheries Science Center (2725 Montlake Boulevard East)

### Existing and No Build Conditions

NOAA Fisheries has a parking lot containing approximately 132 marked spaces on the south side of its NOAA Northwest Fisheries Science Center building, located south of East Hamlin Street and west of Montlake Boulevard East. The majority of this lot is located within the NOAA property limits, but a portion of the lot is located on WSDOT right-of-way under the Portage Bay Bridge structure. The area within the NOAA property has 94 striped parking spaces (not including lawn parking on the northwest portion of the property). The area located within the WSDOT right-of-way has approximately 38 parking spaces under the bridge. Exhibit 9-4 shows current parking beneath the bridge structure, looking southeast.



Exhibit 9-4. NOAA Fisheries Lot, Section Under Portage Bay Bridge—Looking Southeast

### Parking Effects

The Preferred Alternative would keep the north edge of the bridge in approximately the same location as it exists today. The current design for the Preferred Alternative will remove all 38 parking spaces located under the existing Portage Bay Bridge. Some parking adjacent to the construction zone would be temporarily lost during construction. Refer to Chapter 10 for details.

None of the parking on NOAA Fisheries property will be affected by the Preferred Alternative. The remaining parking supply at this location would be 94 spaces when the project is complete. The average demand is 119 parking spaces, so alternative parking would be needed for 25 vehicles.



## **Museum of History and Industry (2700 24th Avenue East)**

### **Existing and No Build Conditions**

MOHAI's parking lot surrounds the museum on all but the south side. The museum is located in both McCurdy Park and East Montlake Park, just east of 24th Avenue East. The lot currently has 150 parking stalls, which are used for both the MOHAI facility and park visitors. Exhibit 9-5 shows the lower parking lot at MOHAI.



Exhibit 9-5. MOHAI Lower Parking Lot

### **Parking Effects of the Preferred Alternative**

The Preferred Alternative would eliminate all 150 parking spaces in this lot due to construction of stormwater detention ponds on the site.

Because of the right-of-way needed to construct the stormwater facilities and roadway, MOHAI and its parking lot would need to be moved to a different location. MOHAI has identified a site for relocation and is in the planning stages of developing the site for its use.

Access from this area to East Montlake Park and the Arboretum would be maintained, and parking would be provided for park users. WSDOT has identified a location for a new parking lot with approximately 26 parking stalls just north of the planned stormwater facilities. However, the final number of replaced spaces depends on negotiations with the Seattle Parks and Recreation Department.



## Previously Evaluated Parking Facilities

This section describes the existing and no build conditions for the following seven facilities that were previously evaluated in the SDEIS. Parking effects were previously identified for these facilities, but they will not be permanently affected by the Preferred Alternative.

- East Roanoke Street (on-street parking)
- Montlake 76 Gas Station
- Montlake Boulevard Market (parking on west side)
- Montlake Boulevard Market (parking on east side)
- 24th Avenue East (on-street parking)
- Husky Stadium
- WSDOT Public Lot on East Lake Washington Boulevard

### East Roanoke Street On-Street Parking (East Roanoke Street and West Montlake Place East)

#### Existing and No Build Conditions

There are six parking spaces on the north side of East Roanoke Street as it meets West Montlake Place East. Between these six spaces is a fire hydrant, where no parking is allowed. Exhibit 9-6 shows the on-street parking.



Exhibit 9-6. East Roanoke Street On-Street Parking—Looking West



## **Montlake 76 Gas Station (2645 East Montlake Place)**

### **Existing and No Build Conditions**

The Montlake 76 gas station on 22nd Avenue East and East Lake Washington Boulevard currently has five parking spaces located on the north side of the Montlake Boulevard Market building.

## **Montlake Boulevard Market (West Side) (2605 22nd Avenue East)**

### **Existing and No Build Conditions**

The back parking lot on the west side of the Montlake Boulevard Market, previously known as the Hop-In Market, is situated southwest of East Lake Washington Boulevard, north of East Roanoke Street, and west of 22nd Avenue East. The lot currently has 17 parking stalls. Exhibit 9-7 shows the existing parking area, looking south.



**Exhibit 9-7. West Side of Montlake Boulevard Market—Looking South**



## **Montlake Boulevard Market (East Side) (2605 22nd Avenue East)**

### **Existing and No Build Conditions**

Parking is available in the front lot on the east side of the Montlake Boulevard Market, located southwest of East Lake Washington Boulevard, north of East Roanoke Street, and on both sides of 22nd Avenue East. There are currently 10 parking spaces at this location. Exhibit 9-8 shows the existing parking area, looking west.



**Exhibit 9-8. East Side of Montlake Boulevard Market—Looking West**

## **24th Avenue East On-Street Parking (East Hamlin Street and 24th Avenue East)**

### **Existing and No Build Conditions**

There are five on-street parking spaces located just west of MOHAI on the west side of 24th Avenue East, just south of East Hamlin Street. Exhibit 9-9 shows a portion of the parking area looking south.



**Exhibit 9-9. 24th Avenue East On-Street Parking—Looking South**



## Husky Stadium (3800 Montlake Boulevard)

### Existing and No Build Conditions

Parking spaces on the south and west sides of Husky Stadium are separated into two lots, with an access road from NE Pacific Place running between the two. The lots on the west side of the access road contain 398 parking spaces and are grouped into lot E11. The lots to the east of the access road (south of the stadium) contain 882 parking spaces and form lot E12. Both lots are used 100 percent. Lots E11 and E12 are shown in Exhibit 9-10, looking southwest.



Exhibit 9-10. **Husky Stadium Lots E11 and E12—  
Looking Southwest**

It is expected that Sound Transit's University Link Station (which will be constructed prior to the SR 520, I-5 to Medina project) will affect parking in these lots. Current plans for final restoration after construction of the light rail station would have the following effects:

- The access drive between the two lots will be moved to the east, effectively expanding lot E11 and reducing the size of lot E12.
- Lot E11 will also expand southward, gaining an additional 31 parking spaces to contain a total of 429 spaces.
- Lot E12 will lose approximately 136 parking spaces due to relocation of the access road to the east and will be reduced to approximately 746 spaces.

Overall, the final effects of the light rail station will result in removal of approximately 105 parking spaces between the two lots. This restored condition serves as the No Build condition for the SR 520, I-5 to Medina project.



## **WSDOT Public Lot (Lake Washington Boulevard East)**

### **Existing and No Build Conditions**

This parking lot contains 24 spaces and is located just east of Lake Washington Boulevard East at East Miller Street. The lot accesses a trail that connects to the Arboretum. Exhibit 9-11 shows this lot looking northeast.



**Exhibit 9-11. WSDOT Public Lot—Looking Northeast**



