

Chapter 3

Transportation Impacts and Mitigation

This chapter describes the existing regional transportation system and the system in Sound Transit 2 (ST2). It then analyzes the impacts to those systems resulting from the Current Plan Alternative and the Potential Plan Modifications Alternative. Potential mitigation measures for those impacts are also discussed. The analysis of impacts involves an assessment of the two plan scenarios for a future (2040) baseline transportation system. Further information on transportation-related impacts is located in Appendix K of this Final Supplemental Environmental Impact Statement (SEIS).

3.1 Background

When possible, information in this chapter is presented for the Plan area, which consists of those portions of Snohomish, King, and Pierce Counties within the Sound Transit district boundary. For some items presented in this section, the data is not available except at the county level and will include information for areas in Snohomish, King, and Pierce Counties that are beyond the Sound Transit district boundary. For other items in this section, information reflects the four-county central Puget Sound region (Snohomish, King, Pierce, and Kitsap Counties).

Travel demand in the region, including within the Plan area, has been influenced by road congestion, trends in employment, housing, development patterns, the economy, transportation options, and the cost of fuel. The following sections further identify these trends.

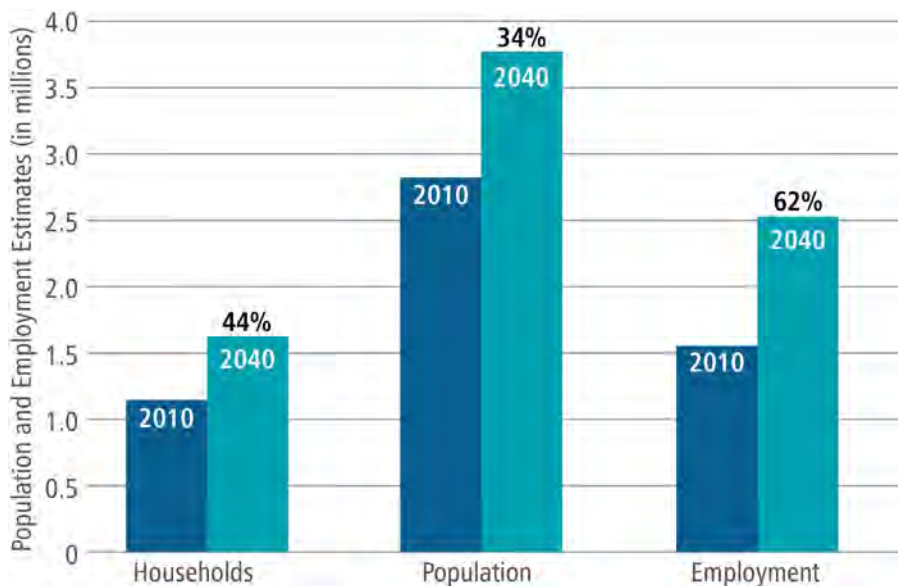
3.1.1 Highway system congestion and vehicle operating cost

The region's existing highway system is at capacity on key corridors such as I-5, I-405, SR 520, and I-90 for multiple hours of the a.m. and p.m. peak-period commutes. These conditions have resulted in greater incentives to use alternative travel modes, such as public transit. Similarly, the rising cost of fuel also has motivated some drivers to consider public transit.

3.1.2 Growth in population, households, and employment

Growth trends for the Plan area are shown in Figure 3-1 and include the following:

- Between 2010 and 2040, households in the Plan area are expected to grow by 44 percent, from approximately 1.13 million to 1.63 million.
- Population is estimated to increase by 34 percent, from 2.81 million in 2010 to approximately 3.77 million people in 2040.



Source: PSRC 2013a, 2013b

Figure 3-1. Households, population, and employment growth rate in the Plan area, 2010 to 2040

- Employment in the Plan area will grow at a higher rate than population and households. By 2040, employment will grow by 62 percent, from approximately 1.55 million in 2010 to 2.52 million in 2040.

According to the Puget Sound Regional Council (PSRC) forecasting model, all of these new households, people, and jobs are expected to boost demand for travel within and through the Plan area by about 25 percent in terms of vehicle miles traveled between 2012 and 2040. Transit ridership results that were included in the Final SEIS reflect 2013 population, employment, and household information as provided by PSRC.

3.1.3 Changes in demographics

Changes in demographics and lifestyle preferences affect transit use. For example, the number of people reaching retirement age and those with disabilities are increasing. The growing preference by many younger people is to live in urban areas. Many people are also choosing transit for quality of life factors or concern for the environment. The combined result of these changing demographic patterns could affect demand for public transit services beyond what would result from estimated growth in population, households, and employment described above.

3.1.4 Effect of growth on the highway and arterial system

The growth in population, households, and employment is projected to exceed the planned capacity improvements on the regional highway and arterial system. Overall, future congestion and delay will exceed today’s conditions, even with investments in key transportation corridors (PSRC 2010a). Travel-time reliability will also be worse as accidents, disabled vehicles, and severe weather impacts are magnified by increased traffic volumes.

3.1.5 Regional growth strategy

In PSRC's *VISION 2040*, the Regional Growth Strategy focuses the majority of the four-county central Puget Sound region's employment and housing growth into Regional Growth Centers that include Metropolitan Cities (Bellevue, Bremerton, Everett, Seattle, and Tacoma) and Core Cities (Auburn, Bothell, Burien, Federal Way, Kent, Kirkland, Lakewood, Lynnwood, Puyallup, Redmond, Renton, SeaTac, Silverdale, and Tukwila). All these cities, except Bremerton and Silverdale, are located in the Plan area.

The Regional Growth Centers located in the Plan area are shown in Figure 1-1 in Chapter 1 of this Final SEIS. As a regional transit provider, Sound Transit focuses its services on providing connections between the Regional Centers located within the Plan area. Of the regional growth that is projected to occur between 2010 and 2040, 32 percent will occur in the five Metropolitan Cities and 22 percent will occur in the Core Cities.

3.2 Ridership forecasting methodology and assumptions

Information in this section updates the transportation analysis conducted for the 2005 Final SEIS on the Regional Transit Long-Range Plan. The methodology for the ridership forecasting included in this analysis generally follows that used in the 2005 Final SEIS. The Sound Transit ridership forecasting model has been updated and revalidated twice since the 2005 Long-Range Plan—once in 2006 for ST2, and most recently in 2012 for the Lynnwood Link Extension EIS. Likewise, PSRC has updated its regional population and employment forecasts, most recently in April 2014.

For purposes of this Final SEIS, the Sound Transit ridership forecasting model was used to compare transit ridership for Year 2040 between ST2, the Current Plan Alternative, and the Potential Plan Modifications Alternative. ST2 is the funded program of high-capacity transit (HCT) expansion approved for financing by the voters in 2008, which in this analysis includes subsequent amendments made through Board actions.

The year 2035 is the most distant future year for which regionally adopted population and employment forecasts are available. These forecasts were extrapolated to determine 2040 estimates. This extrapolation matches the horizon year for PSRC's adopted Metropolitan Transportation Plan, known as *Transportation 2040*. There is not an expected completion date for any potential elements of the existing or updated Long-Range Plan.

The Sound Transit ridership model methodology is described in more detail in the *Transit Ridership Forecasting Methodology Report* (Sound Transit 2014d). For several key inputs, the methodology relies on the PSRC regional travel demand forecasting model currently in use on major projects by the Washington State Department of Transportation (WSDOT). The model also relies on transit passenger counts and survey data from the region's transit operators as well as data from the employer Commute Trip Reduction surveys (WSDOT) and the American Community Survey (U.S. Census).

The ridership model methodology must include the adopted PSRC population and employment forecasts. Accordingly, while new transit infrastructure can, over the long-term, affect land use and travel patterns and development density, the Sound Transit ridership forecasting model assumes that land use, travel patterns, and overall travel demand remain constant when comparing alternative 2040 scenarios. The methodology approach, therefore,

does not allow for a comparison of how different transit options may contribute to possible changes in land use and travel patterns. Similarly, assumptions regarding future transit fares, parking prices, regional incomes, and regional highway tolling (as assumed in PSRC’s *Transportation 2040*) are held constant when comparing the Current Plan Alternative and the Potential Plan Modifications Alternative.

The methodology used for the ridership forecast is in accordance with Sound Transit’s standard practice when preparing forecasts in cooperation with the Federal Transit Administration (FTA) for major transit investments. FTA guidelines are described in its *New and Small Starts Evaluation and Rating Process: Final Policy Guidance* (FTA 2013b).

3.3 Affected environment

3.3.1 Transit service and infrastructure

A variety of regional and local public transit services and agencies operate in the Plan area, as shown in Table 3-1. Information on services and facilities presented in this Final SEIS represent operations in 2014. Ridership information is the most recent available from the American Public Transportation Association’s *Public Transportation Ridership Report* (APTA 2013) and the National Transit Database administered by FTA (FTA 2014).

Table 3-1. Public transit services operating in the Sound Transit service area

Transit agency	Types of transit service							
	Light rail	Commuter rail	Express bus/bus rapid transit	Local bus	Streetcar	Ferry	Monorail	Paratransit
Sound Transit	✓	✓	✓					✓
Community Transit			✓	✓				✓
Everett Transit			✓	✓				✓
King County Metro			✓	✓				✓
King County Marine Division						✓		
City of Seattle					✓		✓	
Pierce Transit			✓	✓				✓
Washington State Ferry System						✓		

Integration of regional and local transit services

As indicated in Table 3-1, numerous transit agencies operate in the region, and coordination among these agencies is essential to delivering efficient transit services to the public. While coordination has been ongoing over many years, Sound Transit and King County Metro have recently taken steps to plan and implement a higher degree of transit system integration in the region. These efforts were initiated through two directives in June 2014 (Sound Transit Board Motion #2014-44 and King County Executive Order ACO-9-1) that led to the publication of *Getting There Together Transit Integration Report* (Sound Transit and King County Metro 2014).

The Transit Integration Report provides a blueprint for ongoing planning of service integration between Sound Transit and the other transit agencies in the Sound Transit service area. Primary goals of the integration effort, as reflected in Sound Transit Board Motion No. M2014-44, are:

- Plan and implement a higher degree of transit system integration in the near and longer terms to maximize the performance of all transit modes for the public
- Achieve a higher level in the delivery of transit service and infrastructure
- Provide a higher quality, more seamless experience for transit customers

As indicated in Motion M2014-44, these goals would be achieved in the following ways:

- Develop plans and proposals to integrate bus and rail over time to fully utilize the significantly greater operating speeds, reliability, and capacity of Link light rail and RapidRide investments
- Optimize efficiency by increasing and improving coordinated operations, maintenance, administration, transparency, and accountability measures that Sound Transit and King County Metro currently take
- Deploy savings from Sound Transit operating costs to improve service or complete voter-approved transit plans
- Jointly plan high-capacity transit facilities to best integrate access for all transportation modes

Regional (Sound Transit)

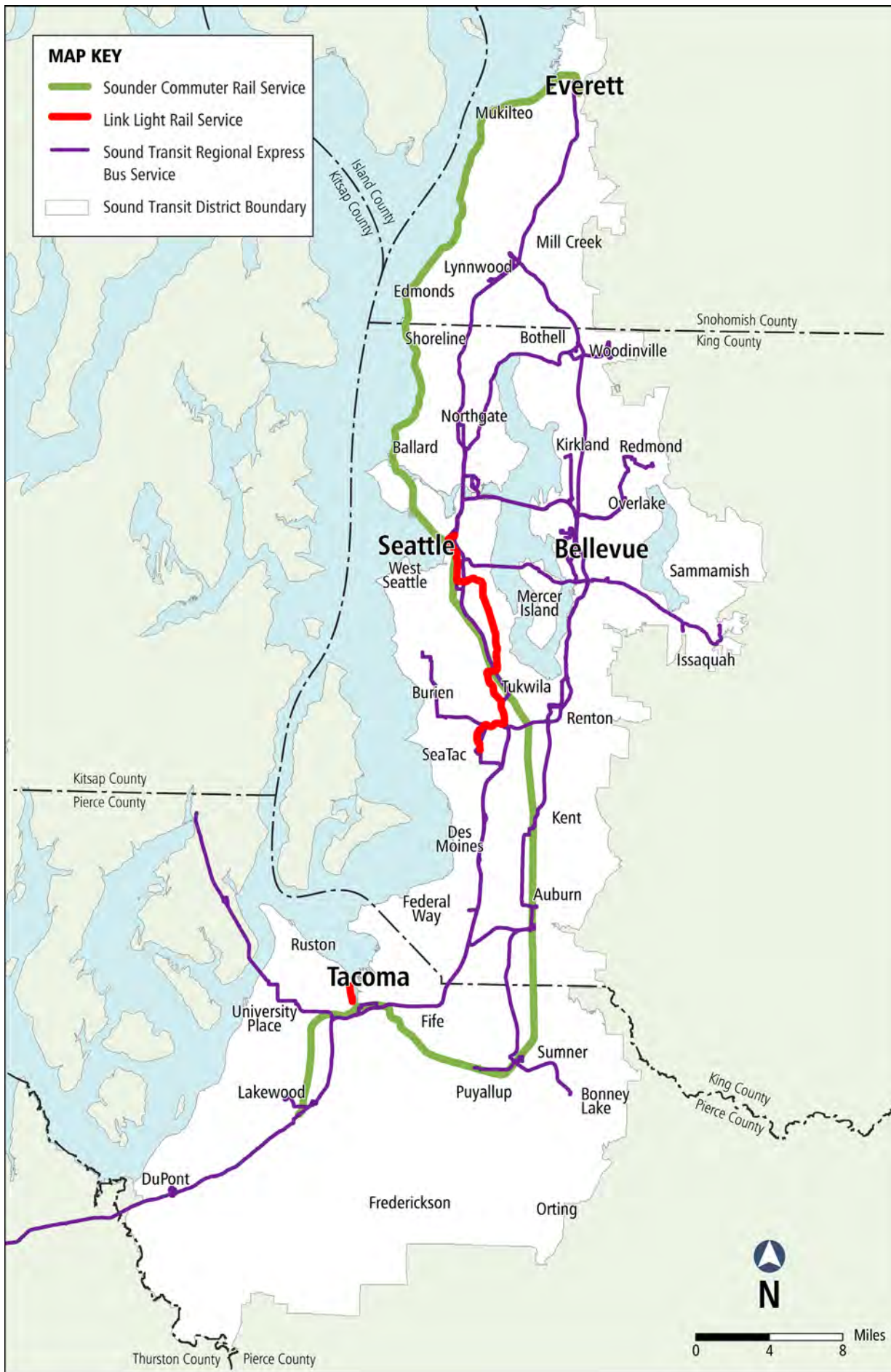
Sound Transit currently provides three modes of regional HCT service or interim HCT services—light rail transit (Central Link and Tacoma Link), commuter rail (Sounder), and regional bus (ST Express). Figure 3-2 shows the existing Sound Transit HCT services, and Figure 3-3 shows the 2008 adopted ST2. Updated elements of ST2 are noted as follows:

- The light rail extension from Overlake Transit Center to Redmond is identified as “In Planning/Planned”; however, the rail network in the ridership estimates for ST2 is extended only to the Overlake Transit Center since that was the East Link terminus identified in ST2.
- The light rail extension from S 200th Street to Federal Way is identified as “In Planning/Planned”; however, the rail network in the ridership estimates for ST2 is extended from Kent/Des Moines to the Federal Way Transit Center.
- The light rail extension from Sea-Tac Airport to S 200th, shown as “In Design,” is now under construction.
- Further definition on a potential extension of light rail in Tacoma was addressed in the Tacoma Link Expansion project. The preferred alternative is a 2.4-mile, five-station extension of rail within Tacoma.

In 2013, Sound Transit HCT services had approximately 30.3 million boardings. These boardings included:

- 10.7 million on light rail (Central Link and Tacoma Link)
- 3.0 million on commuter rail
- 16.6 million on regional express bus routes

Source: Sound Transit Ridership Report, 4th Quarter 2013



Source: Sound Transit 2014

Figure 3-2. Existing Sound Transit high-capacity transit services



Source: Sound Transit 2008

Figure 3-3. Sound Transit 2 (ST2), as adopted in 2008

Light rail service and facilities

Service

Link light rail service operates between downtown Seattle and Sea-Tac Airport (Central Link), and between the Tacoma Dome Station and downtown Tacoma (Tacoma Link). In 2013, there were 9.7 million boardings on Central Link and another 1.0 million

Most of Sound Transit's light rail service currently operates in exclusive rights-of-way located in tunnels, on aerial guideways, and on surface streets. For surface streets, light rail trains cross side streets and are affected by traffic signals and cross-traffic conditions.

boardings on Tacoma Link. Sound Transit also has a complementary paratransit obligation in connection with light rail service. In 2013, 27,000 paratransit trips were provided.

Central Link light rail operates 20 hours per day Monday through Saturday and 19 hours per day on Sunday between the Westlake Station at the north end of downtown Seattle and Sea-Tac Airport. It also serves communities in Beacon Hill, the Rainier Valley, and Tukwila. The total travel time for the full length of the Central

Link line is 38 minutes. Weekday time between trains, or *headways*, are 7.5 minutes during the morning and afternoon peak commute, 10 minutes mid-day, and 15 minutes early morning and late evening.

Tacoma Link light rail is a 1.6-mile segment that serves downtown Tacoma, with headways approximately every 12 minutes. The majority of this service operates in exclusive rights-of-way.

Light rail service between downtown Seattle and Sea-Tac Airport operates along a variety of guideway types, including the Downtown Seattle Transit Tunnel (DSTT), the Beacon Hill Tunnel, and elevated guideways. Light rail also operates on exclusive right-of-way on surface streets such as Martin Luther King Jr. Way. Light rail operations on these surface streets also cross surface streets and are affected by traffic signals and cross-traffic conditions.

The DSTT is 1.3 miles long and includes four light rail stations: Westlake, University Street, Pioneer Square, and International District/Chinatown. A turnback track for light rail trains is provided in the tunnel located north of the Westlake Station. Currently, transit operations in the DSTT involve a mix of buses and light rail trains. The Convention Place Station is served by buses only. Station platform length for the existing system limits trains to a maximum of four cars.

Several light rail projects identified in *Sound Move* and ST2 are currently under construction. As part of *Sound Move*, University Link is being constructed via a tunnel alignment from downtown Seattle to Capitol Hill and Husky Stadium at the University of Washington. Light rail service on this extension will open in 2016. Several projects included in ST2 are also under construction. These projects include the extension of University Link north from Husky Stadium to the Northgate Transit Center. This extension, which will open in 2021, will be mostly underground except just south of the Northgate Transit Center. ST2 also includes construction of the Central Link extension from Sea-Tac Airport south to the Angle Lake Station. This extension will be on an elevated guideway and will include one additional elevated station at Angle Lake that will open in 2016.

ST2 also includes an extension of light rail north from the Northgate Transit Center to the Lynnwood Transit Center, east from downtown Seattle to Overlake/Redmond, and south from Sea-Tac Airport to Kent/Des Moines. These extensions will begin operation in 2023. In Pierce County, ST2 identified expansion of Tacoma Link and included funding for a partnership to explore options for expanding Tacoma Link. A project-level environmental study is currently underway to continue project development of this extension. The light rail extension projects under ST2 are shown in Figure 3-3.

As rail headways increase to every 4 minutes by 2023, it is Sound Transit’s planning assumption that only rail service will operate within the tunnel, with rail services equally divided between north to east operations (Lynnwood Transit Center to Overlake) and north to south operations (Lynnwood Transit Center to Kent/Des Moines). Meeting fire/life safety standards with 4-car light rail operation limits headways to no less than 3 minutes (Core Light Rail System Plan Review, Sound Transit 2012). This limit would be met by the service pattern referred to as the “spine”. It has been the assumed policy that once the system requires 3-minute headways in the tunnel, there will be no operational capacity to add more lines from outside the core system.

The “spine” of the light rail system will extend north-south from Everett to Tacoma, and east-west from Redmond to Seattle.

Support facilities

All light rail vehicles are owned by Sound Transit. Maintenance and storage facilities for Central Link light rail cars are located at Forest Street in the SODO district. This facility is owned by Sound Transit. Both Link operations and maintenance services are provided by King County Metro under contract to Sound Transit. The SODO operations and maintenance facility will not be large enough to accommodate the additional light rail vehicles as light rail service expands under ST2. Accordingly, Sound Transit plans to build an operations and maintenance satellite facility.

The site alternatives for this facility are being evaluated in the *Link Light Rail Operations and Maintenance Satellite Facility Environmental Impact Statement* (Sound Transit 2014f). In July 2014, following issuance of the Draft EIS, the Sound Transit Board of Directors identified a preferred alternative for evaluation in the Final EIS along with other alternatives. The preferred alternative identified is the Burlington Northern Santa Fe (BNSF) site located south of SR 520 and north of Northeast 12th Street on the east side of the former BNSF railway corridor in Bellevue. A final decision on the operations and maintenance satellite facility site will be made after completion of the Final EIS in 2015.

Sound Transit also owns a rail maintenance facility in Tacoma for Tacoma Link. Maintenance staff at this facility are Sound Transit employees. The Link maintenance facility will be expanded to support the Tacoma Link 2.4 mile expansion currently in project development.

Support facilities for light rail also include park-and-ride lots or garages and access improvements for pedestrians and bicyclists. For pedestrian and bicycle access, support facilities include bicycle parking at rail stations. Bicycles can be accommodated on light rail vehicles. Access for pedestrians has been accommodated through sidewalks and signage at stations. At some stations such as Sea-Tac Airport, pedestrian bridges have been provided.

Sound Transit regional express bus service and support facilities

Service

Sound Transit has ST Express bus service on 26 routes and provides frequent regional service to major urban centers using major arterials, freeways, and high-occupancy vehicle (HOV) lanes. Local transit agencies operate the routes under contract to Sound Transit. Community Transit currently operates 6 ST Express routes; King County Metro operates 8 ST Express routes; and Pierce Transit operates 12 ST Express routes. Typical weekday peak-period headways are 5 to 15 minutes and range from 15 to 60 minutes off peak.

Most of Sound Transit's regional express routes operate within the agency's service area. Exceptions include two routes that extend outside of the Plan area and are partially funded by partner agencies. One is Route 592, which provides peak-period service between Olympia and downtown Seattle with connections at the Lakewood commuter rail station, DuPont, the SR 512 park-and-ride facility, and the Tacoma Dome. The operational costs for the service outside of the Plan area are partially paid for by Intercity Transit. In addition, Route 595 provides peak-period service between Gig Harbor in Pierce County and downtown Seattle with a connection at the Tacoma Community College Transit Center. The operational costs for this service are partially paid for by Pierce Transit. In 2013, regional express bus services had approximately 16.6 million boardings.

Currently, several regional express bus services operate in the DSTT. The routes serve the five stations in the tunnel: Convention Place, Westlake, University Street, Pioneer Square, and International District/Chinatown. For buses operating in the DSTT, staging areas are located at each end of the DSTT. The tunnel has bi-directional access to the reversible, one-way I-5 express lanes at the north end. For buses traveling to and from the east, bus-only ramps connect the south entrance of the DSTT to the I-90 express lanes, which are HOV-only from Fifth Avenue to Rainer Avenue S. For buses traveling to and from the south, the SODO Busway is available.

Support facilities

Support facilities for regional express bus service include park-and-ride lots, transit centers, operations and maintenance facilities, bicycle and pedestrian amenities, and access improvements such as direct access ramps.

HOV lanes provide semi-exclusive right-of-way for Sound Transit regional express bus routes. However, these buses operate in mixed traffic in general purpose lanes located between HOV lanes and freeway ramps.

Many regional express bus routes operate in the region's HOV and general-purpose lanes as well as arterials. While the HOV lanes provide semi-exclusive operations along a portion of their routes, buses also operate in mixed traffic including traffic in general purpose lanes located between HOV lanes and freeway on- and

off-ramps. HOV lanes are available on most segments of I-5, I-405, I-90, and SR 167. In addition, SR 522 has bus-only shoulder or BAT lanes for certain segments.

In general, the region's HOV lanes are currently designated as 2+ carpools, except at the westbound approach to the SR 520 floating bridge, which is designated for 3+ carpools. These designations are assumed to continue in the future until the limited access highway network becomes tolled, as assumed in PSRC's *Transportation 2040* plan.

A network of park-and-ride facilities in the Plan area also provides access for regional express bus services. Several of these facilities existed prior to implementation of Sound Transit regional express service. However, as part of *Sound Move*, funding was provided for new and expanded park-and-ride facilities. Examples of new facilities include the Federal Way Transit Center park-and-ride garage and expansion of park-and-ride capacity at the Lynnwood Transit Center. Funding for expanded facilities was provided for the Burien Transit Center park-and-ride garage, the Mercer Island park-and-ride, and for parking at Everett Station.

For pedestrian and bicycle access, support facilities include bicycle parking at transit centers and park-and-ride lots. Storage racks for bicycles have been provided on all regional express vehicles. Access for pedestrians has been provided through sidewalks and signage. At some facilities pedestrian bridges have been provided.

Sound Transit does not currently own operations and maintenance facilities for regional express bus service. Instead, the fleet is operated and maintained under contract with Sound Transit's transit partners: Community Transit, King County Metro, and Pierce Transit. Community Transit has two maintenance bases and contracts with Snohomish County Senior Services to run a third base for Dial-A-Ride Transit service vehicles. King County Metro has seven storage and maintenance facilities. Everett Transit and Pierce Transit each have one maintenance base.

Sound Transit is designing a midday bus storage facility near downtown Seattle that will be used to store regional express buses that operate between Tacoma and Seattle during off-peak periods. ST2 also allocated funding for planning, design, and construction of Sound Transit's own operations and maintenance facilities to support regional express bus service.

Sound Transit commuter rail service and support facilities

Service

In 2013, Sound Transit's commuter rail service (Sounder) had approximately 3.0 million boardings. Sounder operates on two lines, the South Line and the North Line. The South Line connects Lakewood in Pierce County and downtown Seattle with stations at Lakewood, South Tacoma, Tacoma, Puyallup, Sumner, Auburn, Kent, Tukwila, and King Street in Seattle. Ten round trips per day are provided between King Street Station on the south end of downtown Seattle and the Tacoma Dome Station on the south end of downtown Tacoma, with six of these trips extending to the Lakewood Station south of Tacoma. Service expansion as part of ST2 will increase the number of round trips to a total of 13 in 2017, with 9 of these serving Lakewood. In addition, commuter rail

service is provided between Pierce County and Seattle during selected weekend events, such as Seahawks and Mariners games and Sounders matches.

ST2 identified four additional commuter rail round trips between downtown Seattle and Pierce County. One of these trips was implemented in 2013 and the remaining three will be in place by 2017 assuming completion of the Tacoma Trestle replacement project. Of the trips to be added, at least one will provide reverse commute service to Lakewood—southbound in the AM peak and northbound in the PM peak. Some of the added commuter rail trips will operate to Lakewood; however, final determination regarding these trips will be affected by WSDOT plans for track capacity expansion south of Tacoma.

On the North Line, commuter rail operates between downtown Seattle and Everett, with stops at King Street, Edmonds, Mukilteo, and Everett. There are four trains southbound for the morning commute and four trains northbound for the afternoon commute. Each station, except for King Street, includes park-and-ride facilities.

Commuter rail operations are provided under contract with BNSF, and fleet maintenance is provided under contract by Amtrak at its facility south of downtown Seattle. For both the South and North Lines, Sound Transit purchased easements from BNSF to use its main line and invests in track and signal improvements. Sound Transit has separate operating agreements with BNSF for Seattle-Tacoma (Freighthouse Square), Seattle- Everett, and Tacoma-Lakewood operations.

For the next phase of the Sounder Yard Expansion in Tacoma, Sound Transit is determining the feasibility of building a new yard and shop facility. The facility would support in-house maintenance of existing and future Sounder train service.

The region includes a large network of active rail freight lines, as shown in Figure 3-4. Some of the rail lines shown in Figure 3-4 are also used by passenger trains. Both the Sounder North Line and South Line commuter rail operate on a BNSF rail line from Tacoma to Everett and on a triple-track segment south of downtown Seattle that is shared between BNSF and Union Pacific. Sound Transit owns and operates track between Tacoma (Freighthouse Square) and Lakewood, and owns track south to Nisqually (11 miles south of Lakewood) where Amtrak has plans to operate by 2017.

Amtrak intercity rail service operates on several active rail lines in the Plan area and beyond. Amtrak will shift operations to Sound Transit-owned right-of-way between the Thurston County line and Tacoma when the WSDOT Point Defiance Bypass project is completed. The Point Defiance Bypass project proposes to reroute passenger trains to an existing rail line along the west side of I-5 through south Tacoma, Lakewood, and DuPont to provide faster, more reliable passenger service.



Figure 3-4. Existing active rail freight lines

The Eastside Rail Corridor at one time included a network of active freight rail lines. It is a 42-mile rail corridor from north Renton to Snohomish. It was owned by BNSF but now is in ownership by several public entities including Sound Transit, King County, the Port of Seattle, the City of Kirkland, and the City of Redmond. Sound Transit has a high-capacity transit easement on the Eastside Rail Corridor within the Sound Transit district from Woodinville to North Renton and the spur between Woodinville and Redmond. The portion of the Eastside Rail Corridor from Renton to Woodinville, and the entirety of the Redmond Spur, was “railbanked” under the federal National Trails Act, which is also known as the Rails to Trails Act.

Railbanking preserves disused portions of interstate rail lines by allowing them to be used for trails for an indefinite but interim period. All interim uses of railbanked corridors are subject to reactivation of potential interstate freight rail service. BNSF retained five miles of the corridor from the BNSF mainline to Coulon Park in Renton to serve the Boeing Plant.

Support facilities

Commuter rail stations at Lakewood, South Tacoma, Tacoma, Puyallup, Sumner, Auburn, Kent, and Tukwila have park-and-ride facilities. Additional support facilities include bicycle parking at stations. Access for pedestrians has been provided through sidewalks and signage. At the Auburn, Lakewood, and Kent Stations, pedestrian bridges that span the tracks have been provided. There is an underpass for pedestrians at the Tukwila Station.

Local transit

Several agencies provide public transportation in the Plan area. Sound Transit provides regional high-capacity transit service, stations, and supporting facilities. The agencies’ partners, Community Transit, Everett Transit, King County Metro, and Pierce Transit, provide local or countywide service, paratransit service, and express bus service. The City of Seattle currently operates monorail and streetcar service. The City of Seattle has initiated streetcar service in South Lake Union, and an additional streetcar line funded by Sound Transit to connect the Capitol Hill Link station with the International District Station is expected to start service in 2015. Local and countywide transit services are described below.

Community Transit

Community Transit operates within Snohomish County and to Bothell, the University of Washington (Seattle and Bothell campuses), and downtown Seattle. Community Transit operates local, subscription or paratransit, Swift BRT, and commuter express bus service. Commuter service operates to destinations in King County weekdays in the peak period and peak direction with typical headways of 30 minutes. In 2013, Community Transit had 8.2 million boardings.

Everett Transit

Everett Transit provides local and paratransit service within the City of Everett and to some locations just outside the city limits. Typical weekday headways are from 20 to 60 minutes. Everett Transit offers limited service on weekends. Everett Transit had 2.1 million boardings in 2013.

King County Metro

King County Metro provides transit service within King County. Service includes local and express bus service, RapidRide, and paratransit. Paratransit services (ACCESS) and Dial-A-Ride Transit (DART) using vans or smaller vehicles are operated on fixed routes or with advance reservations. RapidRide service is a frequent, limited stop bus service operating on 10- to 15-minute headways. Six RapidRide lines are currently operating in King County. Metro had 118.6 million boardings in 2013.

City of Seattle

The City of Seattle constructed the South Lake Union streetcar line, which operates between Lake Union and Westlake Center. The service operates every 15 minutes except during weekday PM peak periods when 10-minute service is provided. This streetcar line, which is operated under contract by King County Metro, was funded by the City of Seattle and a local improvement district. The South Lake Union streetcar had approximately 761,000 boardings in 2013.

The First Hill Streetcar, funded as part of ST2, is under construction with operations expected to begin in 2015. ST2 included funding for the First Hill Streetcar as a mitigation measure because a First Hill Link light rail station did not move forward due to constructability risks. A First Hill light rail station was initially identified for the University Link extension from downtown Seattle to the University of Washington. The streetcar service will provide a rail connection between the Sound Transit Capitol Hill light rail station, First Hill, and regional HCT services at the International District/Chinatown Station and King Street Station.

The Seattle Center Monorail is owned by the City of Seattle and operated by Seattle Monorail Services. The monorail had approximately 2.1 million boardings in 2012.

Pierce Transit

Pierce Transit provides local bus service, paratransit service, vanpools, and commuter express bus service within Pierce County. Service is also provided to Federal Way in King County and Olympia in Thurston County. Peak headways range from 15 to 60 minutes. Off-peak and weekend headways range from 15 minutes to 2 hours. Pierce Transit had 10.3 million annual boardings in 2013.

Ferry service

Washington State Ferries provides vehicle and passenger service from Seattle and Tacoma to Vashon Island; from Mukilteo to Whidbey Island; from Edmonds and Vashon Island to Kitsap County; and from downtown Seattle to Bainbridge Island and Bremerton, also in Kitsap County. Some loading docks include HOV lanes to give priority to buses and carpools at peak commute periods. The routes listed above had 19.7 million boardings in 2013 (WSF 2014).

The King County Marine Division operates ferry service known as *water taxis* to West Seattle and Vashon Island from Pier 50 in downtown Seattle. Water taxis currently serve West Seattle during peak periods seven days a week. The service to Vashon Island is provided during peak periods on weekdays only. The water taxi had 445,000 boardings in 2013.

In Pierce County, the Pierce County Ferry links Steilacoom to Ketron Island and Anderson Island. This service, which is available seven days a week, is operated by the Pierce County Public Works and Utilities Department and had 183,000 boardings in 2013.

Other transit services connecting to service area

Some bus services originate outside of the Plan area but serve locations in the area. Service is provided from:

- **Island County**—Island Transit provides service to the Everett Station where it connects with Sound Transit commuter rail, Community Transit express bus service, and Everett Transit local bus routes. Schedules are designed to meet start and finish times for Everett Boeing employees.
- **Skagit County**—Skagit Transit provides service to the Everett Station where it connects with Sound Transit commuter rail, Community Transit express bus service, and Everett Transit local bus routes.
- **Kitsap County**—Several Kitsap Transit routes serve Gig Harbor where connections are available to Sound Transit regional express bus service to Tacoma and downtown Seattle.
- **Thurston County**—Several Intercity Transit routes serve downtown Olympia where connections are available to Sound Transit regional express bus service to DuPont and downtown Seattle.

3.3.2 Transit fares

Fares for Sound Transit’s services operating in the Plan area are paid using the ORCA card or cash. The ORCA card is read by devices located at light rail and Sounder stations, some King County RapidRide stations, as well as on buses. The cards can also be used to pay fares on Community Transit, Everett Transit, King County Metro, the South Lake Union Streetcar, Kitsap Transit, Pierce Transit, King County Water Taxis, and Washington State Ferries. A monthly pass is available with payment based on the trip length and time-of-day the trip was taken.

3.3.3 Transit ridership

Table 3-2 presents transit ridership trends for Snohomish, King, and Pierce Counties, as well as population trends between 2008 and 2013 (PSRC 2013b). This information reflects the three-county area; however, most of this population and transit ridership occurred in Sound Transit’s district. The numbers below reflect transit boardings from all transit providers in these counties.

Transit ridership in the Plan area continues to increase. This increase reflects added services and overall population and employment growth.

Table 3-2. Transit ridership and population trends in Snohomish, King, and Pierce Counties, 2008 to 2013

Year	Annual boardings for King, Sound Transit, Pierce, Community, and Everett Transit ¹	Population ²				Ridership (boardings) per capita
		Snohomish	King	Pierce	Three-county total	
2008	163,437,952	699,330	1,891,125	794,330	3,384,785	48.3
2009	157,723,596	705,894	1,909,205	796,900	3,411,999	46.2
2010	158,042,986	713,335	1,931,249	795,225	3,439,809	45.9
2011	161,117,997	717,000	1,942,600	802,150	3,461,750	46.5
2012	164,463,944	722,900	1,957,000	808,200	3,488,100	47.2
2013	176,340,000	730,500	1,981,900	814,500	3,526,900	50.0

Sources:

¹ PSRC, *Puget Sound Trends May 2014*

² *Puget Sound Trends October 2013, Appendix B; U.S. Census 2010; OFM 2011, 2012, 2013*

Along with job losses during the recession from late 2007 to mid-2009, total annual boardings declined by 3.7 percent—from approximately 163.4 million in 2008 to 157.7 million in 2009. Since 2009, transit boardings have gradually increased, with 2013 transit boardings well above 2008 levels. In 2013, approximately 176.3 million annual boardings occurred, with King County Metro accounting for about 70 percent of these boardings. Sound Transit combined rail and bus services contributed about 17 percent; Pierce Transit, Community Transit, and Everett Transit accounted for the remaining 13 percent.

Although population in the three-county area grew between 2008 and 2013, transit ridership increased at a higher rate. This resulted in a higher level of boardings per capita (50.0) than during the pre-recession (48.3 in 2008).

3.3.4 Transit travel times

Table 3-3 shows estimated (2012) AM peak-period transit travel times between selected activity centers in the region. Transit travel time includes all transit trips from one point to another, but only includes in-vehicle time and does not include time spent waiting for and transferring between routes. A range of travel times is presented since they represent estimates based on the Sound Transit ridership forecasting model.

Table 3-3. Estimated AM peak transit travel times, 2012

Origin \ Destination	Seattle CBD travel time (minutes)	Bellevue CBD travel time (minutes)	Kent CBD travel time (minutes)	Everett CBD travel time (minutes)	Tacoma CBD travel time (minutes)
Everett	65–70	60–65	110–115		120–125
Paine Field	45–50	40–45	90–95	30–35	120–125
Edmonds	30–35	60–65	50–55	45–50	90–95
Lynnwood	30–35	45–50	95–100	35–40	100–105
Bothell	40–45	10–15	65–70	45–50	115–120
Woodinville	40–45	10–15	65–70	45–50	110–115
Kirkland	35–40	10–15	60–65	45–50	105–110
Overlake	35–40	15–20	65–70	75–80	105–110
Redmond	45–50	10–15	70–75	70–75	115–120
Bellevue	35–40		50–55	60–65	95–100
Issaquah	35–40	25–30	75–80	85–90	95–100
Northgate	20–25	30–35	85–90	80–85	90–95
Ballard	20–25	50–55	85–90	70–75	95–100
U District	10–15	30–35	80–85	50–55	85–90
Capitol Hill	5–10	30–35	75–80	60–65	80–85
Seattle CBD		30–35	65–70	70–75	70–75
West Seattle	20–25	55–60	80–85	95–100	85–90
Renton	20–25	45–50	40–45	100–105	65–70
Burien	35–40	25–30	15–20	85–90	70–75
Tukwila	40–45	40–45	20–25	100–105	50–55
SeaTac	35–40	55–60	25–30	115–120	55–60
Federal Way	55–60	75–80	20–25	130–135	25–30
Kent	25–30	50–55		110–115	40–45
Tacoma CBD	65–70	90–95	40–45	145–150	
Puyallup	50–55	70–75	20–25	130–135	25–30
Lakewood	85–90	115–120	60–65	165–170	40–45
DuPont	85–90	110–115	55–60	165–170	20–25

Source: Sound Transit Ridership Forecasting Model

CBD = central business district

3.3.5 Roadway infrastructure

Express bus service provided by Sound Transit and its transit partners operates on a network of highways that include general-purpose lanes, HOV lanes, high-occupancy toll (HOT) lanes, and Business Access and Transit (BAT) lanes on arterials. The following section further describes these elements.

HOV lanes

HOV lanes can improve transit, carpool and vanpool speed and reliability compared to vehicles traveling in adjacent general-purpose lanes. However, HOV lanes can and do experience congestion along travel corridors. Congested conditions occur where HOV demand exceeds capacity or where speeds in adjacent lanes are so slow that drivers in the HOV lane will not travel at the posted speed limit. The slower speeds are due to concerns

over potential merging traffic from a slow-moving adjacent lane. Some regional HOV facilities do not meet WSDOT performance standards during peak commute hours. These standards are further described in Section 3.3.6.

Sound Transit has invested in HOV direct access ramps that connect HOV lanes with transit stations, park-and-rides, and other transit facilities.

HOV projects completed and open to traffic, or that are being implemented as part of ST2, are as follows:

- Downtown Bellevue HOV Access (serving Bellevue Transit Center)—opened 2004
- Lynnwood HOV Access (serving Lynnwood Transit Center)—opened 2004
- Ash Way Transit Access (serving Ash Way Park-and-Ride)—opened 2005
- Eastgate HOV Access (serving Eastgate Park-and-Ride)—opened 2006
- Federal Way HOV Access (serving Federal Way Transit Center)—opened 2006
- Totem Lake Freeway Station and HOV Direct Access (serving Kingsgate Park-and-Ride)—opened 2007
- Downtown Everett HOV Access—opened 2008
- I-90 Two-Way Transit and HOV Operations, Stage 1 (serving Mercer Island and South Bellevue Park-and-Rides)—opened 2008
- South Everett Freeway Station—opened 2008
- Mountlake Terrace Freeway Station (serving Mountlake Terrace Transit Center)—opened 2011
- I-90 Two-Way Transit and HOV Operations, Stage 2 (serving Mercer Island and South Bellevue Park-and-Rides): (2012), Stage 3 (part of ST2)—in final design

High occupancy toll lanes

WSDOT has begun implementing HOT lanes (also called express toll lanes) in the Plan area. The initial project is the development of HOT lanes along SR 167, which are used by drivers in single-occupant vehicles who pay a toll. Carpools/vanpools and buses can use the HOT lanes without paying a toll. The toll varies by level of congestion in the HOT lane to manage demand and maintain operational performance.

The next planned managed lane project will be on I-405. The first phase of I-405 express toll lanes is currently being constructed between Bellevue and Lynnwood, with a planned opening date of mid-2015. Similar to the SR 167 HOT lanes, the I-405 express toll lanes would give drivers the choice to use the carpool lanes by paying a toll while allowing toll-free trips for transit and vanpools. WSDOT is conducting an assessment to determine the potential environmental, social, and economic effects of tolling I-90 between I-5 and I-405.

Business access and transit (BAT) lanes are located on several arterials in the Plan area. These facilities, located in the right-hand lanes, are restricted to buses and drivers accessing businesses located along the arterial. While preferred elements for these facilities include easy boarding and enhanced bus stops, these features are not provided along all BAT lanes.

BAT lanes

BAT lanes on arterials can also provide improved speed and reliability for bus routes. BAT lanes currently exist on SR 99 in South and North King County and Snohomish County, on Elliott Avenue/15th Avenue W in Seattle, and on SR 522 in north King County. Preferred design elements for transit facilities to accompany BAT lanes include enhanced transit stops with easy boarding and transit signal priority systems. King County Metro RapidRide service on 15th Avenue W in

Seattle is an example of this type of treatment. SR 522, as an example, is a BAT lane with few of these types of treatments.

3.3.6 Regional travel conditions

Vehicle miles of travel

Vehicle miles of travel (VMT) represents a measure that quantifies the total number of miles traveled each day by drivers in the region. In 2011, there were 79.4 million VMT daily in the four-county Puget Sound region (PSRC model).

Traffic volumes on the urban interstate and highway system are at capacity for multiple hours of the day on many segments of the highway system. Many arterials are over capacity during the morning and evening commutes, on weekends, and during large special events.

Travel time reliability

Travel time reliability for buses is affected by conditions on the highway systems. These conditions involve general-purpose and HOV facilities. While a large number of express bus routes operate in HOV lanes, they must still use general-purpose lanes for some of their service and some HOV lanes can become congested at times.

The following sections summarize these general-purpose and HOV conditions.

A 95th percentile travel time represents the amount of time a person would have to allow to guarantee arriving on time 19 out of 20 times. For the 21 evening high-demand commutes, the average of the 95th percentile travel time is about 3 times greater than the travel time would be if a driver could travel at the posted speed limit.

General-purpose facilities

During the peak commute periods, congestion exists on many freeways, highways, and arterials within the four-county region. Congestion and reduced speeds result in unreliable travel times throughout the region.

As a measure of congestion and travel time reliability, WSDOT has identified 19 morning and 21 evening high-demand commutes on Puget Sound regional highways. WSDOT calculates both travel time variability, as shown by the 95th percentile travel time, and

delay, as evidenced by the frequency of speeds slower than 85 percent of the posted speed limit. For the 19 morning high-demand commutes, the average of the 95th percentile travel time is about 2.6 times greater than the travel time would be if a driver could travel at the posted speed limit. For the 21 evening high-demand commutes, the travel time is even greater, with the average of the 95th percentile travel time 3.0 times longer than the travel time would be if a driver could travel at the posted speed limit.

For example, a trip from Federal Way to Seattle during the morning commute should take about 22 minutes at the posted speed. However, due to the high levels of conges-

tion and speed variability on that section of I-5 during peak periods, one would have to allow 69 minutes for the trip in order to have a high reliability of arriving on time.

HOV facilities

Although WSDOT guidelines state that HOV lanes should operate with a volume-to-capacity ratio no greater than 0.7 and speeds of at least 45 mph for at least 90 percent of the time during the morning and afternoon rush hour, conditions on several HOV lane segments are below these guidelines. As indicated in Table 3-4, most of the major corridor segments operate below the speed goal of 45 mph.

In addition, for WSDOT's planned I-405 Express Toll Lanes, WSDOT is directed to ensure that average vehicle speeds in toll lanes remain above 45 mph at least 90 percent of the time during peak hours (RCW 47.56.880).

Table 3-4. AM Peak-hour high-occupancy vehicle lane operations, 2013

Route	Route description	Percent of time HOV lane speed maintained at 45 mph or better
Morning peak-direction commutes		
I-5	Everett to Seattle	42%
I-5	Federal Way to Seattle	43%
I-405	Lynnwood to Bellevue	54%
I-405	Tukwila to Bellevue	65%
I-90	Issaquah to Seattle	100%
SR 520	Redmond to Bellevue	50%
SR 167 ¹	Auburn to Renton	94%
Evening peak-direction commutes		
I-5	Seattle to Everett	66%
I-5	Seattle to Federal Way	53%
I-405	Bellevue to Lynnwood	46%
I-405	Bellevue to Tukwila	41%
I-90	Seattle to Issaquah	99%
SR 520	Redmond to Bellevue	52%
SR 167 ¹	Renton to Auburn	98%

Source: WSDOT 2014 Corridor Capacity Report, Appendix p. 20

Red = below guideline of 90%

White = meets guideline

¹ SR 167 is a HOT lane

3.4 Long-term impacts

Potential changes to the HCT system as a result of either alternative would affect transportation characteristics such as travel times and transit demand levels. The changes could also impact the transportation system in the region, including existing public transit service and facilities, roadways, and the bicycle and pedestrian network.

Long-term impacts on the characteristics of the regional transit system, including transit travel times, are affected by potential levels of investments that could be made. Accordingly, this section describes impacts to the transportation system for the Current Plan Alternative

and compares results with the adopted ST2. In addition, the analysis in this section presents the net effects of changes to the HCT system with the Potential Plan Modifications Alternative as compared to the Current Plan Alternative. Potential mitigation measures for these impacts are also presented in this section.

The long-term impact analysis is based on forecasting of travel demand and additional data analysis. More detailed information on travel demand forecasting is provided in the *Transportation Technical Report* (Appendix K). The *Transportation Technical Report* also briefly summarizes the HCT corridor studies being conducted to help further inform the Board prior to updating the Long-Range Plan.

3.4.1 Impacts on transit ridership

The transit ridership changes that result from the Current Plan and Potential Plan Modifications Alternatives will be influenced by several factors. These include future conditions of the roadway system and how various corridors identified in the Current Plan and Potential Plan Modifications Alternatives would affect transit travel times. These factors are further described below.

Future transportation conditions

Changes in roadway system

The forecasting of transit ridership and performance measures for the Current Plan Alternative and the Potential Plan Modifications Alternative in 2040 includes changes to the roadway system as adopted in the *Transportation 2040* plan using the financially constrained system. Major elements of that plan influencing transit speed, reliability, and ridership are listed below.

- Completion of the new SR 520 Bridge, including connections with I-5 and Eastside improvements
- Completion of the I-90 two-way transit and HOV lanes
- The funded I-405 program and ramp improvements at I-90
- I-5 northbound peak-period transit lane from Olive Way to SR 520
- Systemwide tolling on all limited access facilities (freeways)

Tolling of lanes

A key difference between the roadway system assumed for the 2005 Long-Range Plan SEIS and the current Final SEIS is the potential system of tolling that would affect traffic conditions in the Plan area. PSRC's *Transportation 2040* assumes tolling all lanes (including HOV lanes) on all limited access facilities (freeways). The intent is to set tolls by time of day and direction of travel to levels sufficient to minimize congestion and maintain good traffic flow without unnecessarily diverting traffic to other facilities, thereby minimizing overall network travel times (PSRC 2000). This procedure, also known as congestion pricing, was implemented in a version of the current PSRC travel demand model that has been used for WSDOT's project level planning and tolling/revenue analysis.

Current Plan Alternative—transit travel times

Transit travel time is a key service characteristic that affects transit ridership. The various HCT corridors and services included in the Current Plan Alternative would have a range of impacts on transit services operating in the Plan area. In some locations, there would be no impacts or very low impacts on transit travel times. For others, moderate travel time changes would occur. For several other locations, there would be substantial changes, such as faster transit travel times.

This section describes the estimated changes in transit travel times with the Current Plan Alternative for the origin-destination pairs identified in Table 3-5. One major change under the Current Plan Alternative is reduced transit travel times as compared to the transit travel times under ST2. Figure 3-5 shows the changes in 2040 transit travel times between selected origins and destinations in the Plan area. The changes shown in the figure involve 20 percent or more variations in transit travel times and the changes in transit travel times between central business districts (CBD).

With the Current Plan Alternative, substantial transit travel time savings would occur for several markets as a result of new HCT corridors. These corridors include new light rail service to downtown Tacoma, which would decrease transit travel times to the Tacoma CBD from locations such as SeaTac, Federal Way, and Bellevue. As a result of higher-level bus service, including improved freeway access to and from bus lanes, transit travel times also would be affected by bus rapid transit (BRT) service on I-5 between Federal Way and DuPont. Along SR 167, BRT would be operating along its full length, from Renton to Puyallup.

With HCT on the Eastside Rail Corridor, which would include features to improve transit travel times for BRT on I-405, several markets in South King and East King County would have substantial transit time savings. These markets include trips to the Bellevue CBD from Tukwila, Burien, Federal Way, and Lynnwood.

Extension of light rail service from downtown Seattle to Ballard would result in substantially reduced transit travel times along the affected corridor. In addition, trips between Ballard and Edmonds, Lynnwood, Kirkland, Northgate, and the Everett CBD would also have reduced transit travel times. For three origin-destination pairs, Edmonds to Seattle CBD, DuPont to Seattle CBD, and Tukwila to Seattle CBD, there would be increases in transit travel times. These increases would result from additional rail stations being added in the Current Plan Alternative as compared to ST2.

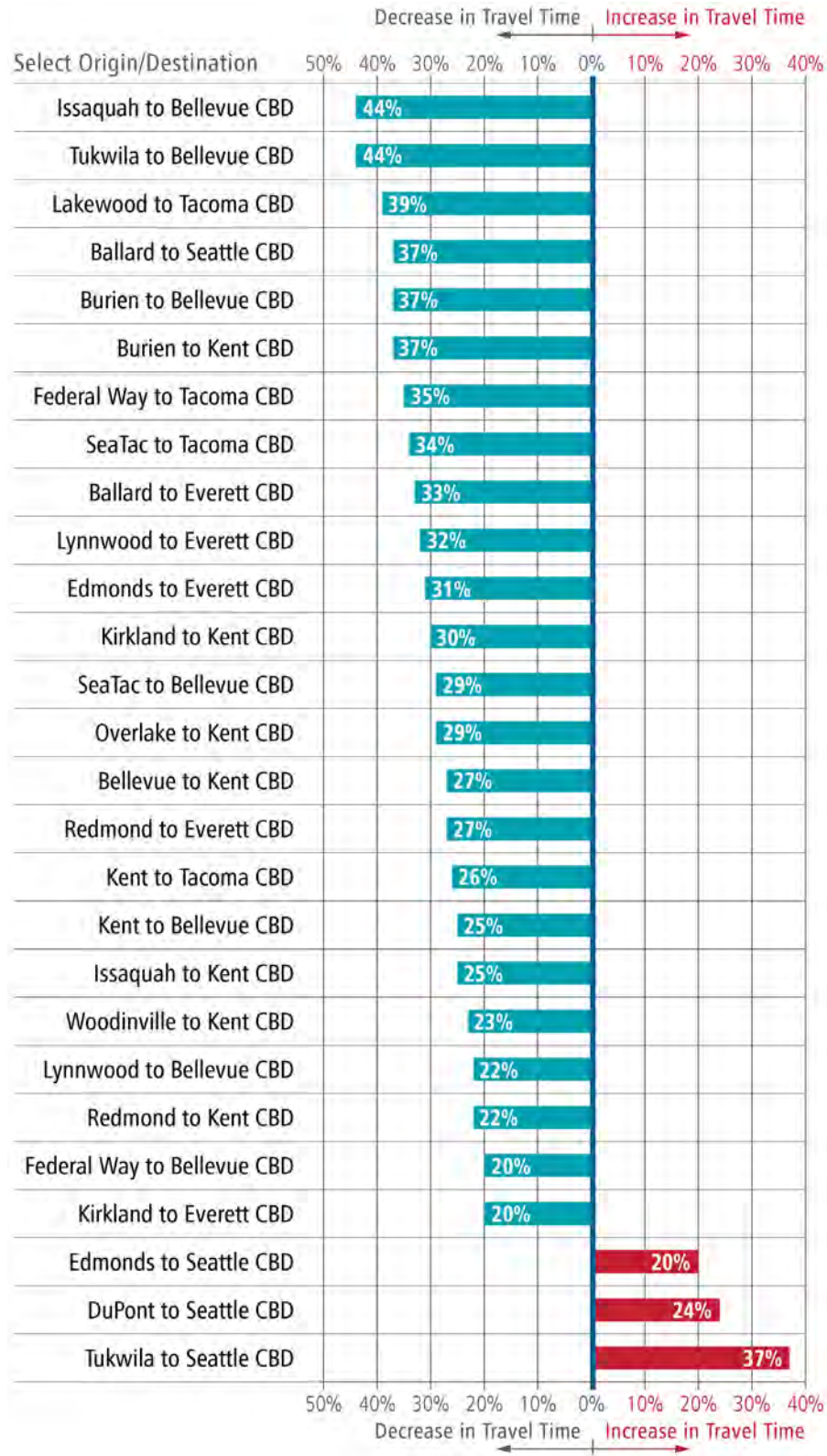
Table 3-5. AM peak travel times—2040 Current Plan Alternative vs. 2040 ST2

Destination Origin	Seattle CBD		Bellevue CBD		Kent CBD		Everett CBD		Tacoma CBD	
	ST2 travel time (minutes)	Change with Current Plan Alternative	ST2 travel time (minutes)	Change with Current Plan Alternative	ST2 travel time (minutes)	Change with Current Plan Alternative	ST2 travel time (minutes)	Change with Current Plan Alternative	ST2 travel time (minutes)	Change with Current Plan Alternative
Everett CBD	55—60	-8%	60—65	-9%	75—80	9%			120—125	4%
Paine Field	50—55	-14%	40—45	0%	80—85	9%	20—25	0%	120—125	-4%
Edmonds	30—35	20%	45—50	12%	50—55	14%	50—55	-31%	90—95	5%
Lynnwood	25—30	4%	50—55	-22%	55—60	12%	35—40	-32%	95—100	5%
Bothell	35—40	0%	10—15	0%	70—75	-10%	40—45	-13%	95—100	5%
Woodinville	35—40	0%	10—15	-7%	70—75	-23%	45—50	-1%	95—100	-4%
Kirkland	30—35	0%	10—15	0%	65—70	-30%	60—65	-20%	95—100	-8%
Overlake	35—40	0%	10—15	0%	65—70	-29%	75—80	-8%	95—100	5%
Redmond	40—45	4%	15—20	-4%	70—75	-22%	80—85	-27%	100—105	5%
Bellevue CBD	20—25	0%			55—60	-27%	60—65	-8%	85—90	-11%
Issaquah	30—35	0%	30—35	-44%	65—70	-25%	95—100	-10%	90—95	5%
Northgate	10—15	0%	35—40	0%	80—85	0%	45—50	-15%	80—85	6%
Ballard	20—25	-37%	45—50	-14%	85—90	0%	80—85	-33%	100—105	-6%
U District	5—10	0%	30—35	2%	75—80	0%	50—55	-13%	75—80	6%
Capitol Hill	<5	0%	25—30	0%	70—75	0%	55—60	-12%	70—75	7%
Seattle CBD			20—25	0%	65—70	0%	60—65	-12%	75—80	3%
West Seattle	25—30	0%	40—45	0%	85—90	0%	90—95	-9%	75—80	6%
Renton	20—25	3%	35—40	2%	40—45	3%	85—90	-8%	60—65	-17%
Burien	35—40	0%	30—35	-37%	20—25	-37%	90—95	-7%	60—65	-9%
Tukwila	15—20	37%	50—55	-44%	20—25	0%	85—90	0%	45—50	10%
SeaTac	30—35	5%	50—55	-29%	30—35	0%	95—100	-6%	55—60	-34%
Federal Way	50—55	3%	65—70	-20%	25—30	0%	110—115	-4%	30—35	-35%
Kent CBD	25—30	14%	40—45	-25%			90—95	-7%	40—45	-26%
Tacoma CBD	65—70	11%	85—90	-9%	40—45	2%	125—130	3%		
Puyallup	45—50	14%	65—70	-11%	20—25	13%	110—115	-1%	15—20	0%
Lakewood	75—80	9%	90—95	-8%	50—55	6%	140—145	-1%	45—50	-39%
DuPont	75—80	24%	90—95	4%	50—55	18%	140—145	7%	25—30	0%

Source: Sound Transit Ridership Forecasting Model

Transit travel times only include in-vehicle travel times.

CBD = central business district



Includes travel time changes for major markets and where there are changes exceeding 20%.

Figure 3-5. Changes in transit travel times—Current Plan Alternative vs. ST2

Potential Plan Modifications Alternative—transit travel times

This section describes the estimated changes in transit travel times with the Potential Plan Modifications Alternative within the Plan area for the origin-destination travel markets indicated in Table 3-6. Destinations consist of five CBDs in the Plan area. Four of these CBDs—Seattle, Bellevue, Everett, and Tacoma—comprise a substantial portion of daily transit demand in the Plan area. Kent is also included given its proximity to major employment centers in South King County and current concentrations of both regional express bus and commuter rail services. The 27 origins addressed in the transit travel time analysis represent a cross-section of locations along corridors in the Current Plan and Potential Plan Modifications Alternatives.

Table 3-6 describes the estimated transit travel time changes of the Potential Plan Modifications Alternative compared to the Current Plan Alternative for selected origin-destination pairs. For travel between the five CBDs, the transit travel time reduction for the most part will be 15 percent or less. The one exception is between Bellevue and Kent at 23 percent less travel time. Figure 3-6 provides an overview of the more notable changes (20 percent decrease or increase) in transit travel times for selected origins and destinations. In most cases, the changes in transit travel times reflect added rail service under the Potential Plan Modifications Alternative. For three origin-destination pairs, Northgate to Everett CBD, Bothell to Everett CBD, and Lynnwood to Everett CBD, there would be increases in transit travel times. These increases would result from substituting a Lynnwood-Paine Field-Everett light rail line for a more direct Lynnwood to Everett light rail line.

The following text presents key findings of the transit travel time analysis. For key outcomes relating to travel times, major elements of the Potential Plan Modifications Alternative are presented to help explain the results. Corridors referenced by number in the sections below are described in Chapter 2.

Seattle CBD

As indicated by Table 3-6, there would be no major differences between the Current Plan Alternative and the Potential Plan Modifications Alternative for many transit trips to the Seattle CBD. These include trips from north of downtown Seattle, such as the University District and Capitol Hill; some Eastside communities, including Bellevue and Overlake; and locations along the I-405 corridor, such as Woodinville.

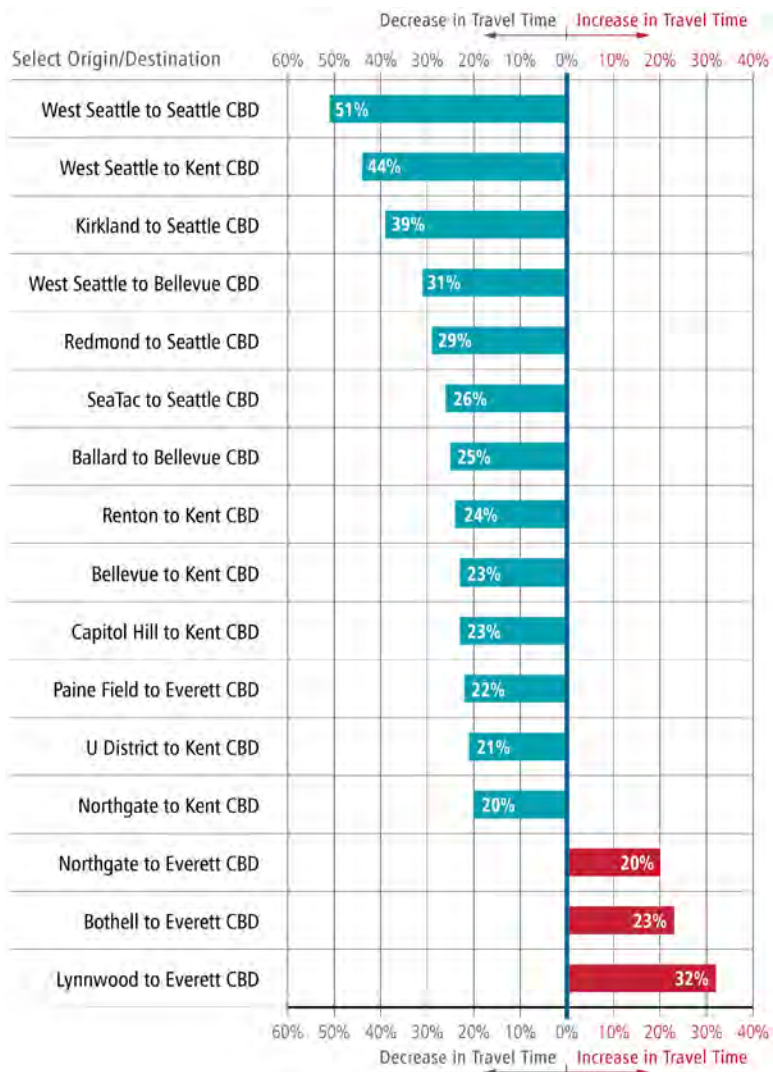
Trips from other Eastside origins to the Seattle CBD would have major transit travel time reductions as a result of corridors in the Potential Plan Modifications Alternative. These origins include Kirkland and Redmond, which would benefit from light rail on corridor 14 (UW to Sand Point to Kirkland to Redmond). Another corridor contributing to travel time reductions is 41 (North Kirkland to downtown Seattle via SR 520). In addition, reduced transit travel times from Bothell and Kirkland to the Seattle CBD would occur with corridor 10 (Bothell/Kirkland to Northgate).

Table 3-6. AM peak travel times—2040 Potential Plan Modifications Alternative vs. Current Plan Alternative

Destination Origin	Seattle CBD		Bellevue CBD		Kent CBD		Everett CBD		Tacoma CBD	
	Current Plan Alternative travel time (minutes)	Change with Potential Plan Modifications Alternative	Current Plan Alternative travel time (minutes)	Change with Potential Plan Modifications Alternative	Current Plan Alternative travel time (minutes)	Change with Potential Plan Modifications Alternative	Current Plan Alternative travel time (minutes)	Change with Potential Plan Modifications Alternative	Current Plan Alternative travel time (minutes)	Change with Potential Plan Modifications Alternative
Everett CBD	50–55	9%	55–60	14%	85–90	7%			125–130	4%
Paine Field	45–50	-13%	40–45	-3%	85–90	-2%	20–25	-22%	115–120	0%
Edmonds	35–40	0%	50–55	0%	55–60	0%	35–40	-12%	95–100	0%
Lynnwood	30–35	0%	40–45	0%	60–65	0%	20–25	32%	100–105	-2%
Bothell	35–40	-18%	10–15	0%	60–65	-5%	35–40	23%	100–105	-1%
Woodinville	35–40	0%	10–15	0%	55–60	-6%	45–50	17%	95–100	0%
Kirkland	30–35	-39%	10–15	0%	45–50	-9%	50–55	16%	85–90	0%
Overlake	35–40	0%	10–15	0%	45–50	-8%	65–70	0%	100–105	-3%
Redmond	40–45	-29%	15–20	0%	55–60	-13%	55–60	0%	105–110	-7%
Bellevue CBD	20–25	0%			40–45	-23%	55–60	14%	75–80	0%
Issaquah	30–35	0%	15–20	0%	50–55	-7%	85–90	9%	95–100	0%
Northgate	10–15	0%	35–40	0%	80–85	-20%	40–45	20%	85–90	-3%
Ballard	15–20	0%	40–45	-25%	85–90	-12%	50–55	-1%	95–100	-6%
U District	5–10	0%	30–35	0%	75–80	-21%	45–50	17%	80–85	-4%
Capitol Hill	<5	0%	25–30	0%	70–75	-23%	50–55	15%	75–80	-4%
Seattle CBD			20–25	0%	65–70	-11%	50–55	15%	75–80	-8%
West Seattle	25–30	-51%	40–45	-31%	85–90	-44%	80–85	-8%	80–85	-18%
Renton	20–25	0%	35–40	0%	45–50	-24%	75–80	10%	50–55	0%
Burien	35–40	1%	15–20	0%	10–15	-6%	85–90	9%	55–60	0%
Tukwila	25–30	0%	25–30	0%	20–25	0%	85–90	8%	50–55	0%
SeaTac	35–40	-26%	35–40	0%	30–35	0%	90–95	9%	35–40	0%
Federal Way	50–55	-18%	50–55	0%	25–30	0%	110–115	-1%	20–25	0%
Kent CBD	25–30	0%	30–35	0%			85–90	9%	30–35	0%
Tacoma CBD	75–80	-12%	75–80	0%	40–45	0%	130–135	-1%		
Puyallup	55–60	-18%	55–60	0%	25–30	0%	110–115	-2%	15–20	0%
Lakewood	80–85	-8%	85–90	-2%	50–55	0%	135–140	-1%	25–30	0%
DuPont	95–100	-2%	95–100	-2%	60–65	0%	150–155	-1%	25–30	0%

Source: Sound Transit Ridership Forecasting Model
 Transit travel times only include in-vehicle travel times.
 CBD = central business district

The increases in transit travel times affecting the Everett CBD would occur if an alternative light rail alignment between Lynnwood and Everett that serves the Southwest Everett Industrial Area (including Paine Field and Boeing) is substituted for the Lynnwood to Everett light rail alignment in the Current Plan Alternative.



Includes travel time changes for major markets and where there are changes over 20%.

Figure 3-6. Changes in AM peak transit travel times—Potential Plan Modifications Alternative vs. Current Plan Alternative

Although the Potential Plan Modifications Alternative includes HCT elements north of Seattle (e.g., corridor 3—light rail from Ballard to North Everett via Shoreline Community College, Aurora Village, and Lynnwood) and on the Eastside (e.g., corridor 32—regional express bus/BRT south of I-90 along I-405, Tacoma to Bellevue), they would not reduce travel time to the Seattle CBD as compared to operating conditions in the Current Plan Alternative. For example, direct light rail service between downtown Seattle, Bellevue, and Overlake would be provided under the Current Plan Alternative, and no HCT elements in the Potential Plan Modifications Alternative would result in lower transit travel times between the Seattle CBD and these locations.

Corridor 9 (light rail from Tukwila to SODO via Duwamish industrial area) in the Potential Plan Modifications Alternative is an alternative corridor for light rail service operating between SODO and Tukwila that does not go through the Rainier Valley

(refer to Figure 2-7). This corridor would provide substantial transit travel-time savings for those traveling directly between SODO and Tukwila. For those riders traveling to or from the Rainier Valley, this corridor would not affect transit travel times. Also, maintaining the desired service headways of light rail with this rail corridor also could result in the reduction of light rail service frequencies in the Rainier Valley or the introduction of a new transfer to reach downtown Seattle.

Corridor 9 (Tukwila to SODO via Duwamish industrial area) would also provide some transit travel savings for trips from Tukwila and locations to the south. Although, for some trips to downtown Seattle, the savings would represent relatively small percentages of transit travel time reductions.

As shown in Table 3-6, major improvements in transit travel times to the Seattle CBD would occur from West Seattle, SeaTac, and Federal Way. Travel time savings from these areas, particularly West Seattle, to the Seattle CBD range from 10 to 15 minutes. For West Seattle to the Seattle CBD, this represents a 51 percent reduction in travel time. These savings would result from the new light rail connection in the Potential Plan Modifications Alternative with corridor 2 (downtown Seattle to West Seattle and Burien).

Bellevue CBD

Rail service under the Current Plan Alternative includes light rail from Seattle to Bellevue and Redmond, and potential rail along the entire Eastside from Burien to Lynnwood (for example corridor E along either I-405 or in the Eastside Rail Corridor). BRT service could include Renton to Lynnwood along I-405 (corridor Q). These elements affect travel to the Bellevue CBD from other locations on the Eastside, most Seattle locations, and South King County communities. As indicated by Table 3-6, transit travel times to the Bellevue CBD from most of the selected locations would have relatively small decreases in transit travel times as a result of the Potential Plan Modifications Alternative.

Exceptions to the small decreases in transit travel times include transit travel times from Ballard and West Seattle to the Bellevue CBD. The Potential Plan Modifications Alternative would reduce travel time to or from West Seattle as a result of a new light rail connection from West Seattle to downtown Seattle (corridor 2) with a one-transfer connection to light rail serving Bellevue. Travel time from Ballard to downtown Bellevue would also benefit by light rail from UW to Sand Point to Kirkland to Redmond (corridor 14).

Kent CBD

For several locations in South King and Pierce Counties, there would be relatively small decreases in transit travel times as a result of the Potential Plan Modifications Alternative. These locations include Tukwila, SeaTac, the Tacoma CBD, and Lakewood.

However, with the Potential Plan Modifications Alternative, major reductions in travel times would occur from origins in Seattle, such as downtown Seattle, Capitol Hill, the University District, and Northgate. As indicated by Table 3-6, improvements in travel times to the Kent CBD would also occur from origins along the I-405/I-5 corridors (e.g., the Bellevue CBD, Renton, Kirkland, and Everett). These reduced transit travel

times would result from direct light rail service operating under the Potential Plan Modifications Alternative between Kent and locations to the north. The light rail station would be adjacent to the Kent CBD; however, rail travel times and frequent service under the Potential Plan Modifications Alternative would still provide benefits to riders. The line could operate through downtown Seattle while also providing transfer opportunities to other light rail lines in downtown Seattle, downtown Renton, and the existing Tukwila International Boulevard light rail station.

With the Potential Plan Modifications Alternative, relatively low levels of travel-time savings would occur between locations in South King County and Pierce County. These relatively small changes in transit travel times would be due in part to operating characteristics of a new light rail line along the SR 167 corridor from Puyallup/Sumner to Renton (corridor 7). This line would include more stations in the corridor compared to what would be served by commuter rail under the Current Plan Alternative. These include added light rail stations between Puyallup and Sumner, Sumner and Auburn, and Tukwila and downtown Seattle. Serving these additional light rail stations would result in longer transit travel times as compared to the Current Plan Alternative.

Several elements of the Potential Plan Modifications Alternative would reduce transit travel times affecting Everett CBD. However, substituting a potential Lynnwood to Everett via Paine Field light rail line for a more direct Lynnwood to Everett light rail line would result in additional transit travel times for some travel pairs.

Everett CBD

The Potential Plan Modifications Alternative includes HCT elements serving Everett from several communities in the region (e.g., a new light rail line from Ballard to Everett Station via Shoreline Community College, Aurora Village, and Lynnwood (corridor 3) and a new regional express route between Woodinville and Everett (corridor 43). The Potential Plan Modifications Alternative also realigns light rail between Lynnwood and Everett so it serves the Southwest Everett Industrial Area including Paine Field and Boeing (corridor 13).

The alignment of corridor 13 has an overall effect of increasing travel time between most origins and Everett, as compared to the Current Plan Alternative due to serving additional stations along a longer corridor (approximately 3.0 additional miles compared to the light rail corridor under the Current Plan Alternative). The added travel time would also result from slower speeds associated with curves along the alignment. Compared to the Current Plan Alternative, only three origins—West Seattle, Paine Field, and Edmonds—would realize faster transit travel-time to the Everett CBD under the Potential Plan Modifications Alternative.

While the potential new light rail corridor to Paine Field would increase transit travel times, it would also provide direct HCT access to a major employment area from several locations in the Plan area. Any specific alignments that could serve this corridor would be examined in subsequent project development, including any project-level environmental review.

Tacoma CBD

As described below, for travel from some communities in the region to the Tacoma CBD, there would be no travel time savings with the Potential Plan Modifications Alternative, while for others there would be modest savings. One location would experience substantial travel time savings.

The greatest transit travel time savings affecting the Tacoma CBD involves trips from downtown Seattle and North Seattle. These savings would be attributable to new light rail service and more express bus connections to the airport.

As shown in Table 3-6, with the Potential Plan Modifications Alternative there would be no transit time savings for trips to the Tacoma CBD from Puyallup, Lakewood, and DuPont in Pierce County. No transit travel savings would occur for several locations in South King County, including Federal Way, Kent, and Puyallup. Most new light rail lines in Pierce County, as identified in the Potential Plan Modifications Alternative, would be located along corridors outside of the Tacoma CBD or they would use similar alignments as current ST Express bus service.

With the Potential Plan Modifications Alternative, the greatest transit-time reduction (18 percent) would occur for trips from West Seattle to the Tacoma CBD. This time saving would be a direct result of a new light rail line (corridor 2) that would connect West Seattle with downtown Seattle and Burien. This corridor would facilitate transfers to the light rail corridor between Seattle and Tacoma.

For several locations, including the Seattle CBD and Northgate, there would be some transit travel-time reductions from the Tacoma CBD under the Potential Plan Modifications Alternative. As indicated previously, these travel-time reductions would be due to a new, more direct light rail line located between the south area of downtown Seattle and Tukwila, which would connect with potential rail service to downtown Seattle.

Systemwide transit ridership estimates

Table 3-7 shows estimated 2040 transit ridership for ST2 and changes with the Current Plan Alternative and the Potential Plan Modifications Alternative. Ridership in this context is defined as all public transit systems operating in Snohomish, King, and Pierce Counties. This table also shows the breakdown of transit ridership changes by Sound Transit services—light rail, commuter rail, and regional express as well as by local transit services.

For the Current Plan Alternative and Potential Plan Modifications Alternative, ridership information is presented in ranges since corridors in these alternatives do not have detailed characteristics for station locations, right-of-way, and operations plans. There are also uncertainties relating to future tolling. For ST2, even though more detailed system characteristics are known, a range of transit ridership results is still necessary to reflect uncertainties relating to estimated long-term ridership forecasts.

Since the Sound Transit Plan area includes most of the developed areas of these counties, it is likely that most of the transit demand would occur in the Plan area. Information is presented for annual boardings by light rail, bus (regional express/BRT), commuter rail, streetcar, and local bus service. In addition, annual service hours are presented for all transit systems.

Table 3-7. Transit ridership estimates in 2040 and incremental changes for alternatives— Snohomish, King, and Pierce Counties

	2040 ST2	Incremental change		
		2040 Current Plan Alternative relative to ST2	2040 Potential Plan Modifications Alternative relative to Current Plan Alternative	2040 Potential Plan Modifications Alternative relative to ST2
Annual total transit boardings (in millions)	330 to 370	+25 to +40	+40 to +65	+65 to +105
Annual light rail boardings (in millions)	100 to 110	+40 to +65	+60 to +100	+100 to +165
Annual Sound Transit bus ¹ boardings (in millions)	20 to 30	+10 to +20	-15 to -10	< +5
Annual local bus boardings (in millions)	180 to 200	-35 to -20	-45 to -25	-80 to -50
Annual commuter rail boardings (in millions)	10 to 20	< -5	< -5	< -5
Annual streetcar boardings (in millions)	<10	< +5	+20 to +30	+20 to +30
Annual service hours (in millions)	5.7	+0.4	+0.8	+1.2

¹ ST Bus mode includes ST Express buses, BRT, and HCT.

Annual transit demand in Table 3-7 includes a variety of transit modes. However, in the Potential Plan Modifications Alternative, light rail transit boardings exceed bus transit boardings with the addition of about 100 miles of light rail transit beyond that provided by the Current Plan Alternative.

With the Current Plan Alternative, annual service hours (all bus and light rail systems) would increase by 7 percent, and total ridership in 2040 would increase by approximately 9 percent as compared to ST2. With the Potential Plan Modifications Alternative, annual service hours (bus and light rail) would increase by 13 percent, and total ridership in 2040 would increase by approximately 13 percent as compared to the Current Plan Alternative. Since a range is presented, actual projected results could vary, including the extent of growth for both bus and rail ridership.

While all transit service is included in the ridership estimates, Sound Transit services would account for all the net increases in demand. As compared to ST2, forecasted annual light rail boardings under the Current Plan Alternative would grow by almost 52 percent. Also, for Sound Transit regional express bus service, the growth would be 60 percent while ridership for local bus service would decrease by 15 percent. Relatively small decreases in commuter rail ridership would occur. Annual streetcar boardings would remain about the same between the Current Plan Alternative and ST2 because the Current Plan Alternative does not include new streetcar corridors.

As compared to the Current Plan Alternative, annual light rail boardings under the Potential Plan Modifications Alternative would grow by almost 50 percent. Annual bus boardings would decline by 38 percent, and annual streetcar boardings would increase considerably from less than 10 million to over 30 million. The decline in bus ridership reflects a major

shift in Sound Transit service supply from bus to light rail and to streetcar services with the Potential Plan Modifications Alternative as compared to the Current Plan Alternative. While the Current Plan Alternative would include a substantial network of rail service, the Potential Plan Modifications Alternative would add substantially more to this network. This additional rail service would result in added transit ridership as well as a shift in demand from buses to rail.

System productivity, measured by boardings per service hour, would generally be similar between ST2, the Current Plan Alternative, and the Potential Plan Modifications Alternative. These productivity levels represent a mix of bus and rail operations and resulting ridership.

Screenline transit ridership estimates

This section shows the ridership increases for the Current Plan Alternative as compared to ST2 and the increases with the Potential Plan Modifications Alternative as compared to the Current Plan Alternative.

Background

Screenlines provide an effective method of portraying the effects of the alternatives with greater geographic specificity, as compared to transit ridership information for the region as a whole. A typical method of measuring the effects of transportation projects is to estimate the average weekday ridership crossing a screenline at key locations throughout the Plan area. For this Final SEIS, 24 locations were selected as screenlines to show estimated changes in ridership associated with the proposed corridors crossing that screenline.

Key considerations regarding screenline volume changes

The screenline data for the Current Plan Alternative and the Potential Plan Modifications Alternative are shown in ranges that represent a ± 20 percent variation for the results generated by the ridership forecasting model. There are several reasons why this range is appropriate for a programmatic SEIS:

- The level of project definition at this stage of analysis is much more general than at either a planning-level study or at the project level. For example, alignments and station locations have not been defined or evaluated.
- Ridership forecasting requires the development of systemwide operating plans. At the Long-Range Plan level of analysis, corridors have not been assembled and optimized as a package as they would be at the system planning level.
- PSRC's *Transportation 2040* adopted plan calls for region-wide tolling on limited access highways and proposes that tolls are implemented in phases over the next 30 years. However, there is no definite schedule for the phasing in of region-wide tolling at this time.
- Some screenline results could be affected by the performance of bus/BRT corridors that operate on limited access highways. How buses would actually perform on these managed facilities depends on how successfully WSDOT is able to maintain managed lane speeds of 45 mph at least 90 percent of the time during peak hours without diverting significant traffic to arterials and other local streets.

Screenline volume changes

Screenline volumes represent the number of transit trips from all transit services, not just Sound Transit, crossing that line. Hence, the model output shown in the screenlines takes into account shifts that could occur from existing service (e.g., a current bus line) to a proposed light rail line. Changes in transit volumes at any given screenline reflect many factors, including reduced transit travel times and the potential for multiple HCT elements to affect a single screenline.

The following sections discuss the transit ridership changes shown in Table 3-8 and the likely associated contributing elements.

Table 3-8. Difference in daily screenline transit rider volumes—2040 ST2 and 2040 Current Plan Alternative

Location number	Screenline	Direction of travel	2040 ST2	2040 Current Plan Alternative relative to 2040 ST2	
				Change ¹	Percent change ²
1	Ship Canal	North/South	172,000 to 190,000	+ 10,000	5%
2	North of Spokane Street	North/South	162,000 to 179,000	*	*
3	West Seattle Bridge	East/West	24,000 to 26,000	*	*
4	King/Snohomish Line: East	North/South	4,000	+ 5,000	125%
5	North of SR 526	North/South	23,000 to 25,000	+ 5,000	25%
6	King/Snohomish Line: West	North/South	65,000 to 72,000	+ 10,000	15%
7	SR 522, West of 68th Ave NE	North/South	5,000	*	*
8	Across Lake Washington	East/West	52,000 to 58,000	*	*
9	West of 148th Ave NE	East/West	38,000 to 42,000	*	*
10	North Kirkland/Woodinville	North/South	6,000 to 7,000	+ 5,000	55%
11	Sammamish	North/South	< 1,000	*	*
12	North of Renton: East	North/South	6,000 to 7,000	+ 5,000	115%
13	North of SeaTac	North/South	5,000 to 6,000	*	*
14	West of SR 167/Rainier Avenue	East/West	12,000 to 13,000	+ 10,000	80%
15	South of Renton	North/South	39,000 to 43,000	*	*
16	King/Pierce Line: West	North/South	25,000 to 27,000	+ 15,000	55%
17	King/Pierce Line: East	North/South	28,000 to 31,000	*	*
18	North of S 72nd Street	North/South	18,000 to 20,000	*	*
19	East of Canyon Road E	East/West	18,000 to 20,000	*	*
20	Wallingford	East/West	11,000 to 12,000	+15,000	135%
21	Bellevue	North/South	12,000 to 13,000	*	*
22	West of SR 900	North/South	7,000 to 8,000	*	*
23	West of S Yakima Avenue	North/South	25,000 to 28,000	+5,000	20%
24	North of S 128th Street	East/West	102,000 to 113,000	+10,000	10%

¹ Calculated absolute change using midpoints of ranges then rounded to the nearest 5,000

² Calculated percent change using absolute change prior to rounding; then rounded the percent change to the nearest 5%

* Less than 3,000 daily transit riders

Ridership changes—Current Plan Alternative compared to ST2

Ridership increases shown in Table 3-8 represent net increases in the daily volume of transit riders resulting from the Current Plan Alternative as compared to ST2. Figure 3-7 shows locations and associated changes in ridership levels at each screenline.

The changes in transit volumes at a screenline reflect a variety of factors, including reduced transit travel times, market conditions influencing transit ridership, and the potential for multiple HCT elements to affect a single screenline. Table 3-9 identifies the estimated increases in transit ridership volumes at screenlines affected by corridors included in the Current Plan Alternative and the likely related corridors that are affecting these ridership volumes. The corridor letters are also included in the map presented in Figure 2-7 in Chapter 2 of the SEIS.

Screenlines with increases of 15,000 or more daily riders

The highest absolute levels of transit ridership increases (approximately 15,000) would occur at:

- **King/Pierce Line West (screenline 16)**—The increases in ridership associated with the Current Plan Alternative would result from light rail from Federal Way to downtown Tacoma (corridor A) and BRT on I-5 between DuPont and Federal Way (corridor M).
- **Wallingford (screenline 20)**—The increases in ridership associated with the Current Plan Alternative would result from light rail between Ballard and the University District (corridor G).

Screenlines with increases greater than 10,000 daily riders

Increases in daily screenline volumes of approximately 10,000 transit trips associated with the Current Plan Alternative would occur at the following locations:

- **Ship Canal (screenline 1)**—The increase in transit rider volumes at this screenline is primarily associated with a new direct light rail connection between downtown Seattle and Ballard (corridor F) and a light rail connection between Lynnwood and Everett (corridor H). In addition, and to a smaller degree, the added transit ridership would be affected by BRT between Seattle and Everett on SR 99 (corridor R).
- **King/Snohomish Line West (screenline 6)**—The increase in rider volumes at this screenline is primarily associated with the light rail extension between Lynnwood and Everett (corridor H) and BRT on SR 99 between Seattle and Everett (corridor R).
- **West of SR 167/Rainier Avenue (screenline 14)**—The increase in rider volumes at this screenline is associated with rail between Burien and Renton (corridor B). Added ridership at screenline 14 would also be influenced by highly developed mixed land uses as well as connection to other HCT services.

SELECTED SCREENLINES

1. Ship Canal
2. North of Spokane St
3. West Seattle Bridge
4. King/Snohomish Line—East
5. North of SR 526
6. King/Snohomish Line—West
7. SR 522, West of 68th Ave NE
8. Across Lake Washington
9. West of 148th Ave NE
10. North Kirkland/Woodinville
11. Sammamish
12. North of Renton—East
13. North of SeaTac
14. West of SR 167/Rainier Ave
15. South of Renton
16. King/Pierce Line—West
17. King/Pierce Line—East
18. North of S 72nd St
19. East of Canyon Rd E
20. Wallingford
21. Bellevue
22. West of SR 900
23. West of S Yakima Ave
24. North of S 128th St

5,000 Volume Increase

***** A volume difference of + 3,000 or less



Figure 3-7. Daily transit ridership changes at selected screenlines—Current Plan Alternative vs. ST2

Table 3-9. Estimated added screenline transit volumes and key contributing elements of the Current Plan Alternative ordered by largest increase in transit volume

Screenline	Added transit volumes	Related corridors in the Current Plan Alternative (Chapter 2, Figure 2-7)	Key factors affecting relative changes in transit volumes
16 King/Pierce Line West	15,000	A Light rail between Tacoma and Federal Way M BRT between Federal Way and DuPont on I-5	Faster transit travel times to Tacoma from locations primarily in King County Availability of service with light rail vs. commuter rail
20 Wallingford	15,000	G Light rail between Ballard and the University of Washington (UW)	Faster transit travel times between Ballard and UW High-density travel corridors; serves UW Connecting with University Link
1 Ship Canal	10,000	F Light rail between downtown Seattle and Ballard H Light rail between Lynnwood and Everett R BRT between Seattle and Everett along SR 99	Faster transit travel times to Seattle from Everett, Paine Field, and Ballard High-density travel corridors
6 King/Snohomish Line West	10,000	H Light rail between Lynnwood and Everett R BRT between Seattle and Everett along SR 99	Faster transit travel times between Seattle and Everett Expanded availability of service with light rail vs. commuter rail
14 West of SR 167/ Rainier Avenue	10,000	B Light rail between Burien and Renton	Faster transit travel times between Burien and the east side of Lake Washington High-density travel corridors; serves Southcenter (Tukwila Center) Connecting with light rail at Tukwila International Boulevard
24 North of S 128th Street	10,000	A Light rail between Tacoma and Federal Way B Light rail between Burien and Renton M BRT between Federal Way and DuPont on I-5	Faster transit travel times between Seattle and Tacoma
4 King/Snohomish Line East	5,000	D Light rail between Renton and Lynnwood along I-405 Q BRT between Renton and Lynnwood along I-405	Multiple light rail, BRT and regional express bus elements serving one screenline Faster transit travel times from Lynnwood to Bellevue and Kirkland to Everett
5 North of SR 526	5,000	H Light rail between Lynnwood and Everett R BRT between Seattle and Everett along SR 99 S BRT between Lynnwood and Everett along I-5 Y Regional express bus between North Bothell, Mill Creek and Mukilteo	Faster transit travel times to downtown Everett from Lynnwood, Seattle, Bellevue, Renton, and Kent Expanded availability of service with light rail vs. commuter rail Light rail, BRT and regional express bus elements serving one screenline

Table 3-9. Estimated added screenline transit volumes and key contributing elements of the Current Plan Alternative ordered by largest increase in transit volume (continued)

Screenline	Added transit volumes	Related corridors in the Current Plan Alternative (Chapter 2, Figure 2-7)	Key factors affecting relative changes in transit volumes
10 North Kirkland/Woodinville	5,000	D Light rail between Renton and Lynnwood along I-405 E Light rail between Renton and Woodinville along Eastside Rail Corridor J Rail extension (assumed commuter rail) between Renton and Woodinville along Eastside Rail Corridor P BRT between Renton and Woodinville along Eastside Rail Corridor Q BRT between Renton and Lynnwood along I-405	Multiple light rail, commuter rail and BRT elements serving one screenline Faster transit travel times from Lynnwood to Bellevue and Kirkland to Everett
12 North of Renton: East	5,000	D Light rail between Renton and Lynnwood along I-405 E Light rail between Renton and Woodinville along Eastside Rail Corridor J Rail extension (assumed commuter rail) between Renton and Woodinville along Eastside Rail Corridor P BRT between Renton and Woodinville along Eastside Rail Corridor Q BRT between Renton and Lynnwood along I-405	Multiple light rail, commuter rail and BRT elements serving one screenline Faster transit travel time from Renton to Everett
23 West of S Yakima Avenue	5,000	I Rail extension (assumed commuter rail) between DuPont and Lakewood M BRT between Federal Way and DuPont on I-5	Multiple rail and BRT elements serving one screenline
2 North of Spokane Street	Low additional demand	A Light rail between Tacoma and Federal Way	Did not increase ridership notably beyond transit service already provided
3 West Seattle Bridge	Low additional demand	None	No additional transit service provided across this screenline
7 SR 522, West of 68th Ave NE	Low additional demand	L HCT between Northgate and Bothell	Corridor is served by express bus service in ST2
8 Across Lake Washington	Low additional demand	C Light rail between Bellevue and Issaquah along I-90 K HCT between UW and Redmond via SR 520	Does not increase ridership beyond service already provided, for example express bus service in ST2 between the UW and Redmond and light rail along the I-90 corridor
9 West of 148th Avenue NE	Low additional demand	C Light rail between Bellevue and Issaquah along I-90 K HCT between UW and Redmond via SR 520 O BRT between Bellevue and Issaquah along I-90 X Regional express bus between Redmond and Kirkland	Does not increase ridership notably beyond service already provided along Bellevue-Issaquah corridor, which is served by express bus service provided in ST2 HCT between the UW and Redmond does not increase ridership notably beyond existing express bus service
11 Sammamish	Low additional demand	None	No additional transit service provided across this screenline
13 North of SeaTac	Low additional demand	W Regional express bus between SeaTac and West Seattle	Corridor is served by express bus service in ST2

Table 3-9. Estimated added screenline transit volumes and key contributing elements of the Current Plan Alternative ordered by largest increase in transit volume (continued)

Screenline	Added transit volumes	Related corridors in the Current Plan Alternative (Chapter 2, Figure 2-7)	Key factors affecting relative changes in transit volumes
15 South of Renton	Low additional demand	N BRT between Renton and Puyallup along SR 167	Low-density development along corridor that is currently served by Sounder commuter rail
17 King/Pierce Line East	Low additional demand	N BRT between Renton and Puyallup along SR 167	Low-density development along corridor that is currently served by Sounder commuter rail
18 North of S 72nd Street	Low additional demand	I Rail extension (assumed commuter rail) between DuPont and Lakewood M BRT between Federal Way and DuPont on I-5	Corridor is served by express bus service in ST2
19 East of Canyon Road E	Low additional demand	T Regional express bus between Puyallup and DuPont via Cross Base Highway U Regional express bus between Puyallup and Lakewood V Regional express bus between Puyallup and Tacoma	Relatively minor changes in transit service provided across this screenline
21 Bellevue	Low additional demand	D Light rail between Renton and Lynnwood along I-405 E Light rail between Renton and Woodinville along I-405 J Rail extension (assumed commuter rail) between Renton and Woodinville along Eastside Rail Corridor P BRT between Renton and Woodinville along Eastside Rail Corridor Q BRT between Renton and Lynnwood along I-405	Corridor is served by express bus service in ST2
22 West of SR 900	Low additional demand	C Light rail between Bellevue and Issaquah along I-90 O BRT between Bellevue and Issaquah along I-90	Does not increase ridership notably along Bellevue-Issaquah corridor, which is served by express bus service provided in ST2 Light rail from Issaquah Highlands would operate along the Eastside Rail Corridor and would directly serve downtown Bellevue

- **North of S 128th Street (screenline 24)**—The increase in rider volumes at this screenline is associated with light rail from Federal Way to downtown Tacoma (corridor A) and light rail between Burien and Renton (corridor B) due to its effect on the rail network at this screenline. Ridership increases would also be attributable to BRT on I-5 between Federal Way and DuPont (corridor M).

Screenlines with increases greater than 5,000 daily riders

Increases in daily screenline volumes of approximately 5,000 transit trips associated with the Current Plan Alternative would occur at the following locations:

- **King/Snohomish Line East (screenline 4)**—The increase in ridership associated with the Current Plan Alternative would result from light rail between Renton and Lynnwood (corridor D) and BRT along I-405 between Renton and Lynnwood (corridor Q).
- **North of SR 526 (screenline 5)**—The increase in ridership associated with the Current Plan Alternative would result from several items, including light rail extension from Lynnwood to Everett (corridor H), BRT along SR 99 between Seattle and Everett (corridor R), BRT between Lynnwood and Everett along I-5 (corridor S), and regional express bus between North Bothell, Mill Creek, and Mukilteo (corridor Y).
- **North Kirkland/Woodinville (screenline 10)**—The increase in ridership associated with the Current Plan Alternative would result from several items, including light rail between Renton and Lynnwood along I-405 (corridor D), light rail between Renton and Woodinville along the Eastside Rail Corridor (corridor E), rail extension (assumed commuter rail) between Renton and Woodinville along the Eastside Rail Corridor (corridor J), BRT between Renton and Woodinville along the Eastside Rail Corridor (corridor P), and BRT between Renton and Lynnwood along I-405 (corridor Q).
- **North of Renton (screenline 12)**—The increase in transit ridership would be attributable to light rail between Renton and Lynnwood along I-405 (corridor D), light rail between Renton and Woodinville along the Eastside Rail Corridor (corridor E), rail extension (commuter rail) between Renton and Woodinville along the Eastside Rail Corridor (corridor J), BRT between Renton and Woodinville along Eastside Rail Corridor (corridor P), and BRT on I-405 between Renton and Lynnwood (corridor Q).
- **West of S Yakima Avenue (screenline 23)**—The increase in transit ridership would be attributable to a rail extension (assumed commuter rail) between DuPont and Lakewood (corridor I) and BRT between Federal Way and DuPont (corridor M).

Screenline with increases less than 3,000 daily riders

For several screenlines, there would be a relatively small number of additional transit riders between the Current Plan Alternative and ST2. The number of additional transit trips at these locations would be at a level that would likely fall within a statistical margin

of error for the ridership forecasting model. Locations with small numbers of ridership increases are as follows:

- **North of Spokane Street (screenline 2)**—The relatively slight increase in ridership associated with the Current Plan Alternative would result from light rail extending from Tacoma to Federal Way (corridor A).
- **West Seattle Bridge (screenline 3)**—No major HCT services would affect this corridor under the Current Plan Alternative.
- **SR 522, West of 68th Ave NE (screenline 7)**—Under the Current Plan Alternative, HCT between Northgate and Bothell (corridor L), would replace regional express bus service.
- **Across Lake Washington (screenline 8)**—Ridership at this screenline would be affected by the light rail extension between Bellevue and Issaquah along I-90 (corridor C) and HCT between the UW and Redmond via SR 520 (corridor K). However, ridership would not increase significantly beyond service already provided along the Bellevue-Issaquah corridor, for example, express bus service provided in ST2 between the UW and Redmond and light rail along the I-90 corridor.
- **West of 148th Avenue NE (screenline 9)**—Several corridors would contribute to ridership across this screenline, such as the light rail extension between Bellevue and Issaquah along I-90 (corridor C) and U-District to Redmond HCT (corridor K). BRT between Bellevue and Issaquah along I 90 (corridor O) and regional express bus between Redmond and Kirkland (corridor X) also would contribute. However, these corridors would not increase ridership notably beyond service already provided along the Bellevue-Issaquah corridor, which is served by express bus service provided in ST2. HCT between UW and Redmond does not increase ridership notably beyond existing express bus service.
- **Sammamish (screenline 11)**—No major HCT services would affect this corridor under the Current Plan Alternative.
- **North of SeaTac (screenline 13)**—The relatively slight increase in ridership associated with the Current Plan Alternative would result from regional express bus between SeaTac and West Seattle (corridor W).
- **South of Renton (screenline 15)**—BRT between Renton and Puyallup along SR 167 (corridor N) would replace several regional express routes.
- **King/Pierce Line East (screenline 17)**—BRT between Renton and Puyallup along SR 167 (corridor N) would replace several regional express routes. In addition, the low-density land use in this market would affect potential transit demand growth.
- **North of S 72nd Street (screenline 18)**—The slight increase in transit ridership would be attributable to a rail extension (assumed commuter rail) between DuPont and Lakewood (corridor I) and BRT between Federal Way and DuPont (corridor M). Federal Way to DuPont BRT (corridor M) would replace several regional

express routes. In addition, the low-density land use in this market would affect potential transit demand growth.

- **East of Canyon Road E (screenline 19)**—The minor increase in transit ridership would be attributable to regional express bus between Puyallup and DuPont via Cross Base Highway (corridor T), regional express bus between Puyallup and Lakewood (corridor U), and regional express bus between Puyallup and Tacoma (corridor V). The effect of operating BRT and regional express bus across this screenline generates relatively low travel increases due to the limited market potential of the area and the nature of travel patterns in the area.
- **Bellevue (screenline 21)**—Several HCT corridors (D, E, J, P, and Q) would replace regional express service. The added service would not result in major increases in transit ridership at screenline 21.
- **West of SR 900 (screenline 22)**—Bellevue to Issaquah light rail along I-90 (corridor C) and BRT between Bellevue and Issaquah along I 90 (corridor O) would not increase ridership notably beyond the express bus service provided in ST2.

Corridor effects on transit ridership changes

The estimated changes in Year 2040 daily transit ridership at selected screenlines would be attributable to corridors included in the Current Plan Alternative. The following sections summarize the relative effectiveness of notable individual corridors (shown in Chapter 2, Figure 2-7) in influencing transit ridership changes. The effectiveness of any corridor would be particularly high if it has one or more of the following characteristics: (1) it is resulting in a relatively high increase in daily transit ridership (5,000 or greater) at one or more screenlines, (2) it results in transit ridership increases at more than one screenline or (3) if it is the only corridor affecting transit ridership at a screenline. At most screenlines, multiple corridors are affecting transit ridership changes.

- **Corridor A—Light rail between Tacoma and Federal Way:** Corridor A would contribute to a major increase in daily transit ridership (15,000) at the King/Pierce Line West (screenline 16). Corridor A also would increase ridership (10,000) at North of S 128th Street (screenline 24).
- **Corridor B—Light rail between Burien and Renton:** Corridor B would result in the relatively large increase in daily transit ridership (10,000) at West of SR 167/ Rainier Avenue (screenline 14) and at North of S 128th Street (screenline 24).
- **Corridor D—Light rail from Renton to Lynnwood along I-405:** Corridor D would contribute to transit ridership increases (5,000) at King/Snohomish Line East (screenline 4), North Kirkland/Woodinville (screenline 10), and North of Renton (screenline 12).
- **Corridor E—Light rail between Renton and Woodinville along Eastside Rail Corridor:** Corridor E would contribute to transit ridership increases (5,000) at North Kirkland/Woodinville (screenline 10) and North of Renton (screenline 12).

- **Corridor F—Light rail between downtown Seattle and Ballard:** Corridor F would contribute to substantial increases of approximately 10,000 riders crossing the Ship Canal (screenline 1).
- **Corridor G—Light rail extension between Ballard and the University of Washington (UW):** Corridor G would result in a substantial increase of approximately 15,000 riders across the Wallingford screenline (screenline 20).
- **Corridor H—Light rail transit extension from Lynnwood to Everett:** Corridor H would contribute to relatively large increases in transit ridership (10,000) at the Ship Canal (screenline 1) and at King/Snohomish Line West (screenline 6). In addition, corridor H would contribute to transit ridership increases (5,000) at North of SR 526 (screenline 5).
- **Corridor I—Potential rail extension (assumed commuter rail) between DuPont and Lakewood:** Corridor I would contribute to transit ridership increases (5,000) at West of S Yakima Avenue (screenline 23).
- **Corridor M—BRT between Federal Way and DuPont on I-5:** Corridor M would contribute to transit ridership increases (15,000) at King/Pierce Line West (screenline 16), (10,000) at North of S 128th Street (screenline 24), and (5,000) West of S Yakima Avenue (screenline 23).

For other transit corridors in the Current Plan Alternative, several would contribute to ridership increases at a single screenline. Other corridors would be contributing to ridership increases at screenlines affected by the corridors described above.

Several transit corridors in the Current Plan Alternative would result in relatively low transit ridership increases (less than 3,000) at the selected screenlines and would not contribute to transit ridership increases at more than one screenline. These corridors are as follows:

- **Corridor T—**Regional express bus between Puyallup and DuPont via Cross Base Highway
- **Corridor U—**Regional express bus between Puyallup and Lakewood
- **Corridor V—**Regional express bus between Puyallup and Tacoma
- **Corridor X—**Regional express bus between Redmond and Kirkland

Ridership changes—Potential Plan Modifications Alternative compared to Current Plan Alternative

Ridership increases shown in Table 3-10 represent net increases in the volume of transit boardings resulting from the Potential Plan Modifications Alternative as compared to the Current Plan Alternative. Figure 3-8 shows locations of the screenlines and the associated changes in transit ridership at each location.

The changes in transit volumes at screenline are influenced by a variety of factors, including reduced transit travel times, market conditions influencing transit ridership, and the potential for multiple HCT elements to affect a single screenline. The discussion of results is organized into four groups of screenlines with the following relative transit volume increases:

- Greater than 20,000 daily riders
- Greater than 15,000 daily riders
- Greater than 10,000 daily riders
- Greater than 5,000 daily riders
- Less than 3,000 daily riders

Table 3-11 identifies the estimated increases in transit ridership volumes at screenlines affected by corridors included in the Potential Plan Modifications Alternative. The following sections describe in more detail how the corridors included in the Potential Plan Modifications Alternative are contributing to the transit ridership changes.

Table 3-10. Difference in daily screenline transit rider volumes—2040 Current Plan Alternative and 2040 Potential Plan Modifications Alternative

Location number	Screenline	Direction of travel	2040 Current Plan Alternative	2040 Potential Plan Modifications Alternative relative to 2040 Current Plan Alternative	
				Change ¹	Percent change ²
1	Ship Canal	North/South	172,000–228,000	+ 10,000	5%
2	North of Spokane Street	North/South	162,000–207,000	+ 20,000	10%
3	West Seattle Bridge	East/West	24,000–29,000	+ 20,000	85%
4	King/Snohomish Line: East	North/South	7,000–10,000	*	*
5	North of SR 526	North/South	24,000–36,000	*	*
6	King/Snohomish Line: West	North/South	65,000–92,000	*	*
7	SR 522, West of 68th Ave NE	North/South	5,000	+ 5,000	100%
8	Across Lake Washington	East/West	52,000–62,000	+ 10,000	20%
9	West of 148th Ave NE	East/West	38,000–51,000	+ 5,000	5%
10	North Kirkland/Woodinville	North/South	8,000–13,000	+ 5,000	40%
11	Sammamish	North/South	< 1,000	*	*
12	North of Renton: East	North/South	11,000–16,000	*	*
13	North of SeaTac	North/South	6,000–10,000	+ 15,000	160%
14	West of SR 167/Rainier Avenue	East/West	18,000–27,000	+ 10,000	40%
15	South of Renton	North/South	39,000–49,000	+ 5,000	15%
16	King/Pierce Line: West	North/South	32,000–47,000	+ 10,000	20%
17	King/Pierce Line: East	North/South	28,000–34,000	*	*
18	North of S 72nd Street	North/South	18,000–24,000	+ 10,000	50%
19	East of Canyon Road E	East/West	18,000–26,000	*	*
20	Wallingford	East/West	21,000–32,000	*	*
21	Bellevue	North/South	12,000–18,000	+ 5,000	25%
22	West of SR 900	North/South	7,000–8,000	*	*
23	West of S Yakima Avenue	North/South	26,000–39,000	+ 15,000	40%
24	North of S 128th Street	East/West	102,000–140,000	+ 5,000	5%

¹ Calculated absolute change using midpoints of ranges then rounded to the nearest 5,000

² Calculated percent change using absolute change prior to rounding; then rounded the percent change to the nearest 5%

* Change is less than 3,000 daily transit riders

SELECTED SCREENLINES

1. Ship Canal
2. North of Spokane St
3. West Seattle Bridge
4. King/Snohomish Line—East
5. North of SR 526
6. King/Snohomish Line—West
7. SR 522, West of 68th Ave NE
8. Across Lake Washington
9. West of 148th Ave NE
10. North Kirkland/Woodinville
11. Sammamish
12. North of Renton—East
13. North of SeaTac
14. West of SR 167/Rainier Ave
15. South of Renton
16. King/Pierce Line—West
17. King/Pierce Line—East
18. North of S 72nd St
19. East of Canyon Rd E
20. Wallingford
21. Bellevue
22. West of SR 900
23. West of S Yakima Ave
24. North of S 128th St

5,000 Volume Increase

***** A volume difference of + 3,000 or less

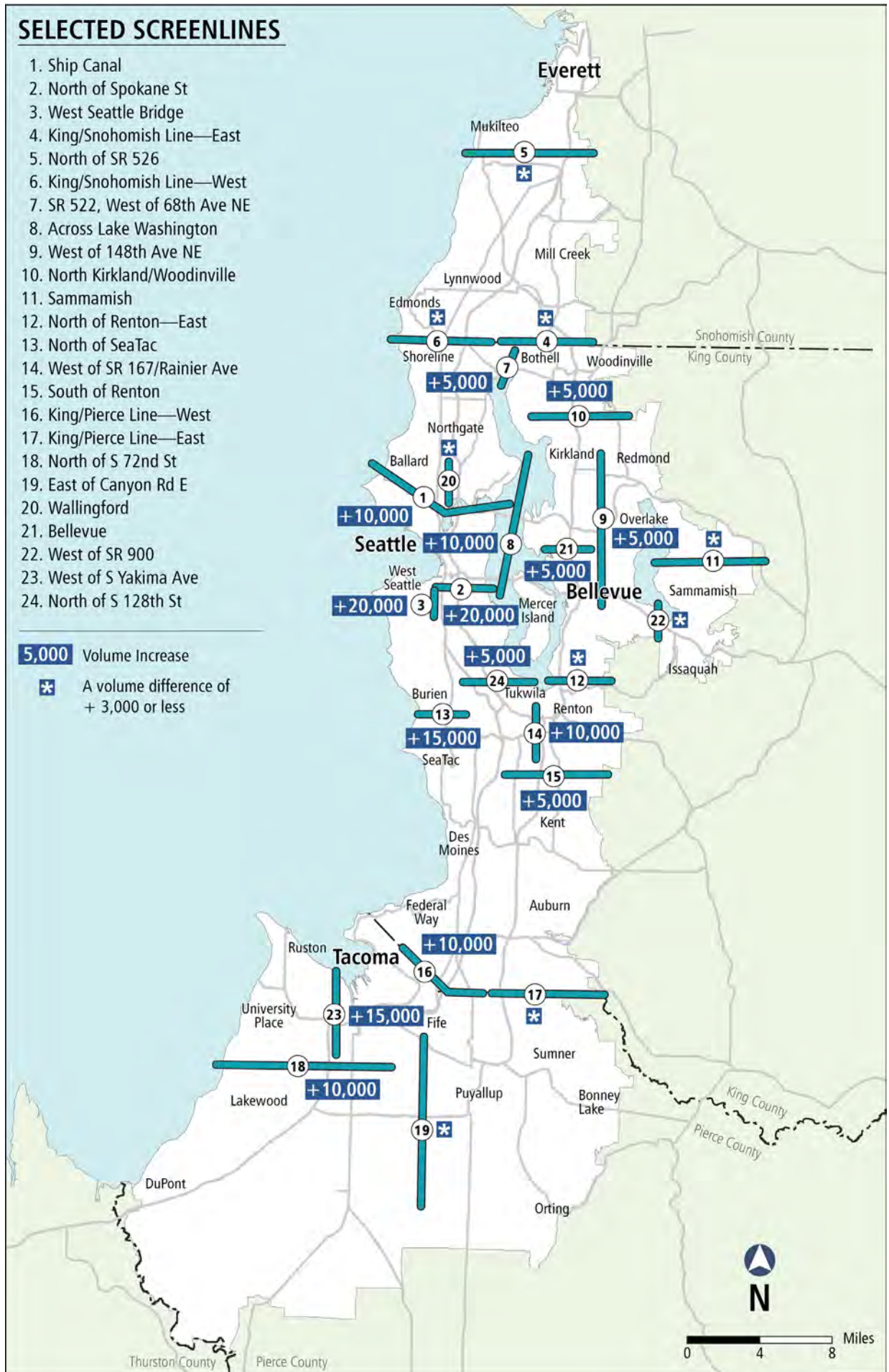


Figure 3-8. Daily transit ridership changes at selected screenlines—Potential Plan Modifications Alternative vs. Current Plan Alternative

Table 3-11. Estimated added screenline transit volumes and key contributing elements of the Potential Plan Modifications Alternative ordered by largest increase in transit volume

Screenline	Added transit volumes	Related corridors in the Potential Plan Modifications Alternative (Chapter 2, Figures 2-9 and 2-10)	Key factors affecting relative changes in transit volumes
2 North of Spokane Street	20,000	2 Light rail between downtown Seattle, West Seattle/Burien, potentially including a new tunnel under downtown Seattle 9 Light rail from Tukwila to SODO via Duwamish industrial area 23 HCT between Tukwila Sounder station and downtown Seattle via Sea-Tac Airport, Burien, and West Seattle 36 Regional express bus between Renton and downtown Seattle	Lower transit travel times More connections with three light rail/HCT elements serving one screenline High-density travel corridors
3 West Seattle Bridge	20,000	2 Light rail between downtown Seattle, West Seattle, and Burien, potentially including a new tunnel under downtown Seattle 23 HCT between Tukwila Sounder station and downtown Seattle via Sea-Tac Airport, Burien, and West Seattle	Lower transit travel times More connections with two light rail/HCT elements at one screenline High-density corridors
13 North of SeaTac	15,000	2 Light rail between downtown Seattle, West Seattle, and Burien, potentially including a new tunnel under downtown Seattle 7 Light rail between Puyallup/Sumner and Renton via SR 167 23 HCT between Tukwila Sounder station and downtown Seattle via Sea-Tac Airport, Burien, and West Seattle	Lower transit travel times More connections with three light rail/HCT elements at one screenline High-density corridors
23 West of S Yakima Avenue	15,000	6 Light rail between DuPont and downtown Tacoma via Lakewood and Tacoma Mall 15 Light rail between Downtown Tacoma and Tacoma Community College 16 Light rail between Tacoma Mall and University Place	Lower transit travel times in a congested corridor More connections with three light rail/HCT elements at one screenline
1 Ship Canal	10,000	1 Light rail from downtown Seattle to Magnolia/Ballard to Shoreline Community College 11 Light rail between Ballard and Bothell via Northgate 24 HCT between downtown Seattle and Edmonds via Ballard and Shoreline Community College	Lower travel times More connections with two light rail/HCT elements at one screenline High-density corridors
8 Across Lake Washington	10,000	14 Light rail from UW to Sand Point to Kirkland to Redmond 41 Regional express bus between North Kirkland and downtown Seattle via SR 520	Lower travel times More connections with one light rail line and one regional express route at one screenline High-density corridors

Table 3-11. Estimated added screenline transit volumes and key contributing elements of the Potential Plan Modifications Alternative ordered by largest increase in transit volume (continued)

Screenline	Added transit volumes	Related corridors in the Potential Plan Modifications Alternative (Chapter 2, Figures 2-9 and 2-10)	Key factors affecting relative changes in transit volumes
14 West of SR 167/ Rainier Avenue	10,000	2 Light rail between downtown Seattle, West Seattle/Burien, potentially including a new tunnel under downtown Seattle 7 Light rail between Puyallup/Sumner and Renton via SR 167 23 HCT between Tukwila Sounder station and downtown Seattle via Sea-Tac Airport, Burien, and West Seattle 29 BRT between Kent and Sea-Tac Airport 33 Regional express bus/BRT between Puyallup and downtown Seattle via Kent and Rainier Valley	Lower transit travel times High-density travel corridor
16 King/Pierce Line West	10,000	6 Light rail between DuPont and downtown Tacoma via Lakewood and Tacoma Mall 15 Light rail between Downtown Tacoma and Tacoma Community College 32 Regional express bus/BRT between Tacoma and Bellevue	Shifts in demand from Sounder to light rail operating in Pierce County. The spine has more connections and more frequent service. Added regional express bus/BRT would provide better connections
18 North of S 72nd Street	10,000	5 Light rail from Lakewood to Spanaway to Frederickson to South Hill to Puyallup 6 Light rail between DuPont and downtown Tacoma via Lakewood and Tacoma Mall 21 Potential rail extension (assumed commuter rail) between Tacoma and Frederickson 22 HCT between downtown Tacoma and Parkland	Lower travel times More connections with two light rail/HCT elements at one screenline
7 SR 522, West of 68th Ave NE	5,000	10 Light rail from North Kirkland or UW Bothell to Northgate via SR 522 11 Light rail between Ballard and Bothell via Northgate 40 Regional express bus on 145th Street from I-5 to SR 522	Lower travel times More connections with two light rail/HCT elements at one screenline High-density corridors
9 West of 148th Avenue NE	5,000	14 Light rail from UW to Sand Point to Kirkland to Redmond 37 Regional express bus between UW Bothell and Sammamish via Redmond	Lower travel times More connections with one light rail and one regional express HCT element at one screenline High-density corridors
10 North Kirkland/Woodinville	5,000	10 Light rail from North Kirkland or UW Bothell to Northgate via SR 522 12 Light rail between Mill Creek and Bothell, connecting to Eastside Rail Corridor 37 Regional express bus between UW Bothell and Sammamish via Redmond 41 Regional express bus between North Kirkland and downtown Seattle via SR 520 42 Regional express bus between Woodinville and Bellevue	More connections with two light rail/HCT elements at one screenline Lower travel times

Table 3-11. Estimated added screenline transit volumes and key contributing elements of the Potential Plan Modifications Alternative ordered by largest increase in transit volume (continued)

Screenline	Added transit volumes	Related corridors in the Potential Plan Modifications Alternative (Chapter 2, Figures 2-9 and 2-10)	Key factors affecting relative changes in transit volumes
15 South of Renton	5,000	7 Light rail between Puyallup/Sumner and Renton via SR 167 29 BRT between Kent and Sea-Tac Airport 33 Regional express bus/BRT between Puyallup and downtown Seattle via Kent and Rainier Valley	Lower transit travel times Expanded availability of service with light rail vs. commuter rail
21 Bellevue	5,000	12 Light rail between Mill Creek and Bothell, connecting to Eastside Rail Corridor 14 Light rail from UW to Sand Point to Kirkland to Redmond	Effect on network of light rail from UW to Redmond Riders would have multiple locations to transfer between lines operating across Lake Washington and within the Eastside
24 North of S 128th Street	5,000	7 Light rail between Puyallup/Sumner and Renton via SR 167 36 Regional express bus between Renton and downtown Seattle	Lower travel times along corridor
4 King/Snohomish Line East	Low additional demand	12 Light rail between Mill Creek and Bothell, connecting to Eastside Rail Corridor 43 Regional express bus between Woodinville and Everett	Lower transit travel times but added corridors would not increase ridership notably beyond transit service already provided
5 North of SR 526	Low additional demand	3 Light rail from Ballard to Everett Station via Aurora Village, Lynnwood 4 Light rail between Everett and North Everett 13 Light rail between Lynnwood and Everett serving Southwest Everett Industrial Area (Paine Field, Boeing) 43 Regional express bus between Woodinville and Everett	New light rail on SR 99 would not increase ridership notably beyond the rail service between downtown Seattle and Everett in the Current Plan Alternative Light rail service via Paine Field (corridor 15) substituted for the Lynnwood to Everett light rail service in the Current Plan Alternative would slow transit travel times for some O/D pairs
6 King/Snohomish Line West	Low additional demand	3 Light rail from Ballard to Everett Station via Aurora Village, Lynnwood 13 Light rail between Lynnwood and Everett serving Southwest Everett Industrial Area (Paine Field, Boeing) 24 HCT between downtown Seattle and Edmonds via Ballard and Shoreline Community College	New light rail would not increase ridership notably beyond the rail service between downtown Seattle and Everett in the Current Plan Alternative. Without substantial improvement in transit service, there would not be major increases in transit ridership Light rail service via Paine Field (corridor 15) substituted for the Lynnwood to Everett light rail service in the Current Plan Alternative would slow transit travel times for some O/D pairs
11 Sammamish	Low additional demand	31 Regional express bus/BRT between Issaquah Highlands and Overlake via Sammamish and Redmond	Low-density development along corridor
12 North of Renton: East	Low additional demand	32 Regional express bus/BRT between Tacoma and Bellevue 39 Regional express bus between Renton (Fairwood) and Eastgate via Factoria	Does not increase ridership notably beyond rail lines in Current Plan Alternative

Table 3-11. Estimated added screenline transit volumes and key contributing elements of the Potential Plan Modifications Alternative ordered by largest increase in transit volume (continued)

Screenline	Added transit volumes	Related corridors in the Potential Plan Modifications Alternative (Chapter 2, Figures 2-9 and 2-10)	Key factors affecting relative changes in transit volumes
17 King/Pierce Line East	Low additional demand	5 Light rail from Lakewood to Spanaway to Frederickson to South Hill to Puyallup 6 Light rail between DuPont and downtown Tacoma via Lakewood and Tacoma Mall 7 Light rail between Puyallup/Sumner and Renton via SR 167 27 Regional express bus/BRT in Puyallup vicinity, notably along Meridian Avenue 32 Regional express bus/BRT between Tacoma and Bellevue	Relatively small increases in demand with these corridors beyond rail lines in Current Plan While there will be some shift in demand from commuter rail to corridor 6, it would be offset by faster times in the SR 161 and SR 167 travel corridors
19 East of Canyon Road E	Low additional demand	5 Light rail from Lakewood to Spanaway to Frederickson to South Hill to Puyallup 44 Regional express bus connection to Joint Base Lewis-McChord	Relatively small increases in demand with these corridors
20 Wallingford	Low additional demand	11 Light rail between Ballard and Bothell via Northgate 14 Light rail from UW to Sand Point to Kirkland to Redmond	Increase in transit demand due to corridor 14 but it would be partially offset by corridor 11
22 West of SR 900	Low additional demand	18 Light rail from Issaquah to Issaquah Highlands	Relatively small increases in demand with this corridor

Screenlines with increases greater than 20,000 daily riders

The highest absolute levels of transit ridership increases (approximately 20,000) would occur at screenlines 2 (north of Spokane Street) and 3 (West Seattle Bridge). Maps showing Potential Plan Modifications Alternative corridors are provided in Chapter 2, Figure 2-9 and Figure 2-10. Increases in ridership associated with the Potential Plan Modifications Alternative would in part result from three proposed new corridors:

- **North of Spokane Street (screenline 2)**—The increase in transit rider volumes at this screenline is primarily associated with corridor 2—a new direct light rail connection between downtown Seattle, West Seattle, and Burien; corridor 9—a direct light rail line from Tukwila to the SODO area of Seattle via the Duwamish Industrial Area (only affects screenline 2); and corridor 23—an HCT line between the Tukwila Sounder station and SeaTac, Burien, West Seattle, and downtown Seattle. Corridors 2 and 23 overlap along that portion of their lines located between downtown Seattle and West Seattle. In addition, regional express bus between Renton and downtown Seattle (corridor 36) would contribute to riders at this screenline.

Corridor 9—a direct light rail line from Tukwila to the SODO area of Seattle via the Duwamish Industrial Area—would provide a shorter rail connection between downtown Seattle and Tukwila than the existing Central Link route. However, this corridor could require a reduction in service through Rainier Valley, or an additional transfer, since the lines would join before entering the DSTT. Overall, the modeling analysis indicates that the addition of the light rail connection from Tukwila to SODO via the Duwamish Industrial Area (corridor 9) would likely have little effect on overall transit usage to and from downtown Seattle.

Also, when modeled with corridor 2—light rail connection between downtown Seattle, West Seattle, and Burien—corridor 9 would increase daily light rail volumes by approximately 3,000 but have no effect on total transit ridership crossing screenline 2 east of Fourth Avenue South. For Fourth Avenue South and westward (including First Avenue South, SR 99 and the light rail corridor), the daily transit volume increase is estimated at over 20,000, reflecting transit ridership increases primarily from West Seattle, White Center, and Burien.

- **West Seattle Bridge (screenline 3)**—The increase in transit rider volumes at this screenline is primarily associated with corridor 2—a new direct light rail connection between downtown Seattle, West Seattle, and Burien, and corridor 23—an HCT line between the Tukwila Sounder Station and SeaTac, Burien, West Seattle, and downtown Seattle. Corridors 2 and 23 overlap along that portion of their lines located between downtown Seattle and West Seattle.

Screenlines with increases greater than 15,000 daily riders

- **North of SeaTac (screenline 13)**—The increase in transit rider volumes at this screenline is primarily associated with light rail between downtown Seattle, West Seattle, and Burien (corridor 2), light rail line between Renton, Sumner, and

Puyallup via SR 167 (corridor 7), and an HCT line from Tukwila Sounder station to Sea-Tac Airport to Burien to Downtown Seattle via West Seattle (corridor 23).

- **West of S Yakima Avenue (screenline 23)**—The increase in transit rider volumes at this screenline is primarily associated with light rail between DuPont and downtown Tacoma via Lakewood and Tacoma Mall (corridor 6), downtown Tacoma to Tacoma Community College (corridor 15), and Tacoma Mall to University Place (corridor 16).

Screenlines with increases greater than 10,000 daily riders

Increases in daily screenline volumes of approximately 10,000 transit trips associated with the Potential Plan Modifications Alternative would occur at the following locations:

- **Ship Canal (screenline 1)**—This increase in ridership would result from light rail service from downtown Seattle to Magnolia/Ballard to Shoreline Community College (corridor 1), light rail from Ballard to Bothell via Northgate (corridor 11), and HCT between downtown Seattle and Edmonds via Ballard and Shoreline Community College (corridor 24).
- **Across Lake Washington (screenline 8)**—The increase in rider volumes at this screenline is primarily associated with an additional light rail connection from UW to Sand Point to Kirkland to Redmond (corridor 14). Regional express bus between North Kirkland and downtown Seattle via SR 520 (corridor 41) also would contribute riders at this screenline.
- **West of SR 167/Rainier Avenue (screenline 14)**—The increase in rider volumes at this screenline is primarily associated with an additional potential connection between the proposed light rail between downtown Seattle, West Seattle and Burien (corridor 2), light rail between Puyallup/Sumner and Renton via SR 167 (corridor 7), HCT from Tukwila Sounder station and downtown Seattle via Sea-Tac Airport, Burien, and West Seattle (corridor 23), BRT between Kent and Sea-Tac Airport (corridor 29), regional express bus/BRT between Puyallup and downtown Seattle via Kent and Rainier Valley (corridor 33), and the potential rail extension between Renton and Burien included in the Current Plan Alternative.
- **King/Pierce Line (West) (screenline 16)**—Additional ridership would result from the light rail line from DuPont to downtown Tacoma via Lakewood, Tacoma Mall (corridor 6), downtown Tacoma to Tacoma Community College (corridor 15), and from regional express bus/BRT service between Tacoma and Bellevue (corridor 32).
- **North of S 72nd Street (screenline 18)**—The large light rail networks proposed as corridor 5 (from Lakewood to Spanaway to Frederickson to South Hill to Puyallup) and corridor 6 (between DuPont and downtown Tacoma via Lakewood, Tacoma Mall) would generate ridership increases through (1) travel time savings afforded by transit and (2) more opportunities for connections. The proposed rail extension (assumed commuter rail) between Tacoma and Frederickson (corridor 21) and HCT

between downtown Tacoma and Parkland (corridor 22) also would contribute riders at this screenline.

Screenlines with increases greater than 5,000 daily riders

Approximately 5,000 added trips per day would occur at six screenline locations: one in North King County, three in East King County, and two in South King County, as follows:

- **SR 522, West of 68th Ave NE (screenline 7)**—The combined effect of operating proposed corridors 10 (light rail between North Kirkland or University of Washington Bothell and Northgate via SR 522), 11 (light rail between Ballard and Bothell via Northgate), and 40 (regional express bus between 145th Street from I-5 to SR 522) provides some upgrade in service and coverage that results in a modest increase in forecasted ridership when compared to the network in the Current Plan Alternative. This network includes a potential rail extension from Northgate to Bothell and North Kirkland.
- **West of 148th Avenue NE (screenline 9)**—The combined effect of operating proposed corridors 14 (light rail from UW to Sand Point to Kirkland to Redmond) and 37 (regional express bus route connecting UW Bothell to Sammamish via Redmond) provides a modest increase in ridership.
- **North Kirkland/Woodinville (screenline 10)**—The combined effect of operating proposed corridors 10 (light rail from North Kirkland or University of Washington Bothell to Northgate via SR 522) and 12 (Mill Creek connecting to the Eastside Rail Corridor) provides a modest increase in service and coverage when compared to services on the north I-405 corridor assumed in the Current Plan Alternative. Other factors would include regional express bus between the UW Bothell and Sammamish via Redmond (corridor 37), regional express bus between North Kirkland and downtown Seattle via SR 520 (corridor 41), and regional express bus between Woodinville and Bellevue (corridor 42).
- **South of Renton (screenline 15)**—The proposed light rail line between Renton, Sumner, and Puyallup via SR 167 (corridor 7) provides the primary source of new riders for this screenline. Although Sumner and Puyallup are currently served by commuter rail, light rail would provide more frequent service and additional connections. The new BRT corridor between Kent and Sea-Tac Airport (corridor 29) and regional express bus/BRT between Puyallup and downtown Seattle via Kent and Rainier Valley (corridor 33) would also be factors, but the added ridership would be low.
- **Bellevue (screenline 21)**—The ridership increase would result from effects on the transit network resulting from light rail between Mill Creek and Bothell, connecting to Eastside Rail Corridor (corridor 12) and light rail from UW to Sandpoint to Kirkland to Redmond (corridor 14). Ridership increases would also be affected by an available transfer to Bellevue via the Eastside Rail Corridor.

- **North of S 128th Street (screenline 24)**—The ridership increases would result from light rail from Puyallup/Sumner to Renton via SR 167 (corridor 7), and regional express bus from Renton to downtown Seattle (corridor 36).

Screenline with increases less than 3,000 daily riders

For several screenlines, there would be a relatively small number of additional transit riders between the Potential Plan Modifications Alternative and the Current Plan Alternative. The number of additional transit trips at these locations would be at a level that would likely fall within a statistical margin of error for the ridership forecasting model. Locations with small numbers of ridership increases are:

- **King/Snohomish Line (East) (screenline 4)**—In the Potential Plan Modifications Alternative, a new light rail connecting Mill Creek with the Eastside Rail Corridor (corridor 12) and a new regional express bus route between Woodinville and Everett (corridor 43) would result in reduced transit travel times. But these reduced travel times would not substantially affect transit ridership as compared to light rail service in the Current Plan Alternative between Renton and Lynnwood along I-405 (corridor D) and BRT between Renton and Lynnwood via I-405 (corridor Q).
- **North of SR 526 (screenline 5)**—The new light rail on SR 99 would not increase ridership notably beyond the rail service between downtown Seattle and Everett in the Current Plan Alternative. The light rail between Lynnwood and Everett (corridor 13) that serves the Southwest Everett Industrial Area (Paine Field, Boeing) represents an alternative corridor compared to the Current Plan Alternative corridor H between Lynnwood and Everett. While this line provides a new rail connection to a major employment center, it also increases travel time between Everett and Seattle by about 5 to 8 minutes. Other factors are the light rail between Ballard and Everett Station via Aurora Village, Lynnwood (corridor 3), light rail between Everett and North Everett (corridor 4) and regional express bus between Woodinville and Everett (corridor 43).
- **King/Snohomish Line (West) (screenline 6)**—The new light rail on SR 99 would not increase ridership notably beyond the rail service between downtown Seattle and Everett in the Current Plan Alternative. In addition, the alternative light rail corridor via Paine Field (corridor 13) would slow transit travel time for some higher-ridership origin-destination pairs. The light rail from Ballard to Everett Station via Shoreline Community College, Aurora Village and Lynnwood (corridor 3) is in close proximity to the planned line contained in the Current Plan Alternative. HCT between downtown Seattle and Edmonds via Ballard and Shoreline Community College (corridor 24) would not increase ridership notably beyond the existing Sounder service connecting downtown Seattle and Edmonds.
- **Sammamish (screenline 11)**—This screenline’s volumes primarily reflect a single regional express route/BRT service option between Issaquah Highlands and Overlake via Sammamish and Redmond (corridor 31). In addition, the land use in

these corridors is characterized by low-density development, which is not conducive to high transit ridership.

- **North of Renton (East) (screenline 12)**—The Potential Plan Modifications Alternative would not increase ridership notably beyond the rail lines in the Current Plan Alternative, such as Link service between Tacoma and Seattle with connections to East Link. Only two corridors are counted in this screenline for the Potential Plan Modifications Alternative, the regional express bus between Renton (Fairwood) and Eastgate via Factoria (corridor 39) and regional express Bus/BRT service between Tacoma and Bellevue (corridor 32). These proposed corridors do not provide enough of a difference from the services assumed in the Current Plan Alternative to generate significant ridership increases.
- **King/Pierce Line (East) (screenline 17)**—The added HCT corridors affecting this screenline would not result in major increases in daily transit ridership. Light rail from Lakewood to Spanaway to Frederickson to South Hill to Puyallup (corridor 5) and DuPont to downtown Tacoma via Lakewood and Tacoma Mall (corridor 6) would attract riders but some riders would come from commuter rail service. Other factors include light rail between Puyallup/Sumner and Renton via SR 167 (corridor 7), regional express bus/BRT in Puyallup vicinity, notably along Meridian Avenue (corridor 27), and regional express bus/BRT between Tacoma and Bellevue (corridor 32).
- **East of Canyon Road E (screenline 19)**—The effect of operating corridor 5 (light rail from Lakewood to Spanaway to Frederickson to South Hill to Puyallup) and corridor 44 (regional express bus connection to Joint Base Lewis-McChord) would generate relatively minor travel increases due to the limited market potential of the area and the nature of travel patterns in the area.
- **Wallingford (screenline 20)**—Ridership would increase due to light rail from UW to Sandpoint to Kirkland to Redmond (corridor 14). However, this plan modification would not increase ridership notably beyond the light rail between Ballard and Bothell via Northgate (corridor 11).
- **West of SR 900 (screenline 22)**—The added HCT corridor, including light rail from Issaquah to Issaquah Highlands (corridor 18), affecting this corridor would not result in major increases in daily transit ridership.

Corridor effects on transit ridership changes

As described in the previous sections, estimated changes in Year 2040 daily transit ridership at selected screenlines would be attributable to corridors included in the Potential Plan Modifications Alternative (shown in Chapter 2, Figures 2-9 and 2-10). The following sections summarize the relative effectiveness of corridors in the Potential Plan Modifications Alternative in increasing transit ridership. As is the case with corridors included in the Current Plan Alternative, the effectiveness of any corridor would be particularly high if it has one or more of the following characteristics: (1) it is resulting in a relatively high increase in daily transit ridership (5,000 or greater) at one or more screenlines, (2) it is resulting in transit ridership increases at more than one

screenline and (3) it is the only corridor affecting transit ridership at a screenline (at most screenlines, multiple corridors are affecting transit ridership changes).

- **Corridor 1—Light rail from downtown Seattle to Magnolia/Ballard to Shoreline Community College:** Corridor 1 would contribute to transit ridership increases at the Ship Canal (screenline 1), which would experience daily transit ridership increases of approximately 10,000.
- **Corridor 2—Light rail between downtown Seattle, West Seattle, and Burien:** Corridor 2 would contribute to transit ridership increases at four locations, North of Spokane Street (screenline 2), West Seattle Bridge (screenline 3), North of SeaTac (screenline 13), and West of SR 167/Rainier Avenue (screenline 14). The extent of ridership changes is relatively high—between 10,000 and 20,000 per location.
- **Corridor 5—Light rail from Lakewood to Spanaway to Frederickson to South Hill to Puyallup:** Corridor 5 would contribute to transit ridership increases at North of S 72nd Street (screenline 18), which would experience daily transit ridership increases of approximately 10,000.
- **Corridor 6—Light rail from DuPont to downtown Tacoma via Lakewood and Tacoma Mall:** Corridor 6 would result in relatively high increases in daily transit ridership—15,000 at West of S Yakima Avenue (screenline 23) and 10,000 at King/Pierce Line West (screenline 16) and North of S 72nd Street (screenline 18). As a result of corridor 6, there would be faster transit travel times to Tacoma Mall and more frequent rail service along the entire corridor as compared to the Current Plan Alternative. Corridor 6 would also contribute to ridership (5,000) at North of S 128th Street (screenline 24).
- **Corridor 7—Light rail from Puyallup/Sumner to Renton via SR 167:** Corridor 7 would contribute to ridership increases North of SeaTac (screenline 13) and West of SR 167/Rainier Avenue (screenline 14). Corridor 7 also would contribute to ridership increases at two other locations: South of Renton (screenline 15) and North of S 128th Street (screenline 24).
- **Corridor 9—Light rail from Tukwila to SODO via Duwamish industrial area:** Corridor 9 would contribute to some ridership increases at North of Spokane Street (screenline 2). However, most of the daily transit ridership increases of approximately 20,000 would be attributable to corridors 2 and 23.
- **Corridor 10—Light rail from North Kirkland or UW Bothell to Northgate via SR 522:** Corridor 10 would increase ridership at SR 522 (screenline 7) and North Kirkland/Woodinville (screenline 10). Daily transit ridership increases at each screenline would be approximately 5,000.
- **Corridor 11—Light rail from Ballard to Bothell via Northgate:** Corridor 11 would contribute to transit ridership increases at two locations, Ship Canal (screenline 1) and SR 522 (screenline 7). Daily transit ridership increases at each screenline would be approximately 5,000 to 10,000.

- **Corridor 12—Light rail between Mill Creek and Bothell, connecting to Eastside Rail Corridor:** Corridor 12 would increase ridership at North of Kirkland/Woodinville (screenline 10) and Bellevue (screenline 21). Daily transit ridership increases at each screenline would be approximately 5,000.
- **Corridor 14—Light rail from UW to Sand Point to Kirkland to Redmond:** Corridor 14 would contribute to the relatively high daily transit ridership increases at Across Lake Washington (screenline 8) and at West of 148th Avenue NE (screenline 9) and Bellevue (screenline 21). Estimated transit ridership increases at these locations would be relatively high—10,000 at screenline 8 and 5,000 at screenlines 9 and 21, respectively.
- **Corridor 15—Light rail between downtown Tacoma and Tacoma Community College:** Corridor 15 would contribute to relatively high transit ridership increases at West of S Yakima Avenue (screenline 23), which would experience an increase of 15,000 riders. In addition, corridor 15 would contribute to ridership at the King/Pierce Line West (screenline 16), which would experience an increase of 10,000 riders.
- **Corridor 16—Light rail between Tacoma Mall and University Place:** Corridor 16, along with several other light rail corridors, would contribute to transit ridership increases at West of S Yakima Avenue (screenline 23), which would experience daily transit ridership increases of approximately 15,000.
- **Corridor 21—Potential rail extension, assumed commuter rail between Tacoma and Frederickson:** Corridor 21, along with several other rail corridors, would contribute to transit ridership increases North of S 72nd Street (screenline 18), which would experience daily transit ridership increases of approximately 10,000.
- **Corridor 22—HCT between downtown Tacoma and Parkland:** Corridor 22, along with several other rail corridors, would contribute to transit ridership increases North of S 72nd Street (screenline 18), which would experience daily transit ridership increases of approximately 10,000.
- **Corridor 23—HCT from Tukwila Sounder Station to downtown Seattle via Sea-Tac Airport, Burien, and West Seattle:** Corridor 23 would contribute to the relatively high transit ridership increases (20,000) at North of Spokane Street (screenline 2) and West Seattle Bridge (screenline 3). Corridor 23 also would contribute to ridership increases (15,000) North of SeaTac (screenline 13) and (10,000) at West of SR 167/Rainier Avenue (screenline 14).
- **Corridor 24—HCT from downtown Seattle to Edmonds via Ballard and Shoreline Community College:** Corridor 24 would contribute to transit ridership increases at the Ship Canal (screenline 1), which would experience daily transit ridership increases of approximately 10,000.

For other transit corridors in the Potential Plan Modifications Alternative, several would contribute to ridership increases at a single screenline. Other corridors would be contributing to ridership increases at screenlines affected by the corridors described above. Several corridors in the Potential Plan Modifications Alternative would result in relatively low transit ridership increases (less than 3,000) at the selected screenlines.

Ridership changes—Potential Plan Modifications Alternative compared to ST2

Ridership increases shown in Figure 3-9 represent net increases in the volume of daily transit ridership at screenlines that would result from the Potential Plan Modifications Alternative compared to ST2. Figure 3-9 shows the location of the screenlines and the associated changes in transit ridership at each location. The Potential Plan Modifications Alternative would include HCT corridors that are in addition to those in the Current Plan Alternative, and the Current Plan Alternative has corridors in addition to ST2. Therefore, substantial changes in daily transit ridership would occur at several screenlines.

The largest increase in daily transit ridership (approximately 25,000) would occur at North of Spokane Street (screenline 2). Other major increases in transit ridership (approximately 20,000) would occur at the Ship Canal (screenline 1), the West Seattle Bridge (screenline 3), West of SR 167/Rainier Avenue (screenline 14), King/Pierce Line-West (screenline 16), and West of S Yakima Avenue (screenline 23). Ridership would increase by over 15,000 North of SeaTac (screenline 13), Wallingford (screenline 20), and North of S 128th Street (screenline 24).

Ridership would increase by approximately 10,000 at North of Kirkland/Woodinville (screenline 10), North of Renton (screenline 12), and North of 72nd Street E (screenline 18). All but five of the remaining screenlines would experience increases of more than 5,000 riders.

SELECTED SCREENLINES

1. Ship Canal
2. North of Spokane St
3. West Seattle Bridge
4. King/Snohomish Line—East
5. North of SR 526
6. King/Snohomish Line—West
7. SR 522, West of 68th Ave NE
8. Across Lake Washington
9. West of 148th Ave NE
10. North Kirkland/Woodinville
11. Sammamish
12. North of Renton—East
13. North of SeaTac
14. West of SR 167/Rainier Ave
15. South of Renton
16. King/Pierce Line—West
17. King/Pierce Line—East
18. North of S 72nd St
19. East of Canyon Rd E
20. Wallingford
21. Bellevue
22. West of SR 900
23. West of S Yakima Ave
24. North of S 128th St

5,000 Volume Increase

***** A volume difference of + 3,000 or less



Figure 3-9. Daily transit ridership changes at selected screenlines—Potential Plan Modifications Alternative vs. ST2

3.4.2 Access to transit

How people get to transit is an important consideration that affects the transportation system as a whole. From home, people may walk or bike to their bus stop or light rail station, drive to a park-and-ride lot, or catch a local bus and then transfer onto the regional transit system. Sound Transit’s System Access Policy (Resolution No. R2013-03—Attachment A) establishes a framework to guide Sound Transit’s management of, and investment in, infrastructure and facilities to provide customer access to its transit services. The policy aims to encourage convenient and safe connections to Sound Transit services through all access modes, including connecting transit and ferry services, paratransit, pedestrian access, bicycle access, private vehicle pick-up and drop-off, and parking for transit users.

The travel forecasting carried out for this Final SEIS identified variations in auto access for the Year 2040 between ST2, the Current Plan Alternative, and the Potential Plan Modifications Alternative. Other access modes would include a combination of walking or biking to reach regional transit service, or using local bus service to access the regional transit service.

As indicated in Table 3-12, there would be little to no change in the extent of auto access between the Current Plan Alternative and the Potential Plan Modifications Alternative. This would be attributable to large networks under each alternative of existing park-and-ride facilities and lack of available local bus/walk access.

Table 3-12. Peak auto access share estimates for transit trips

Subarea	2040 ST2	2040 Current Plan Alternative	2040 Potential Plan Modifications Alternative
Snohomish County	30%	31%	29%
North King County	5%	5%	4%
East King County	32%	33%	32%
South King County	29%	30%	29%
Pierce County	28%	27%	26%
Systemwide	19%	19%	18%

Source: Sound Transit Ridership Forecasting Model

Further information on access mode cannot be determined under the plan-level impact analysis addressed in this Final SEIS. For example, because locations of rail stations have not yet been determined, access mode by local transit cannot be determined.

3.5 Impacts of alternatives on the regional transportation system

While the previous section described effects relating to transit ridership, the following section presents information on how implementation of the Current Plan and Potential Plan Modifications Alternatives would impact physical components of the multi-modal transportation system, including public transit, operations of freeways and local streets, parking, non-motorized modes (pedestrian and bicycle facilities), safety, and freight.

In addition to impacting regional travel conditions, including added transit volumes, the Potential Plan Modifications Alternative would affect elements of the transportation system. Examples include potential traffic conditions in the area of HCT stations and the potential need for added bicycle and pedestrian capacity in station areas.

This assessment of potential impacts is a high level overview of what could occur. No specific alignments have been selected for any transit mode, and there is no determination as to corridor profile (whether any particular element would be underground, at grade, or elevated).

3.5.1 Public transit

Light rail operations and facilities

Operating conditions of the Potential Plan Modifications Alternative are similar to the Current Plan Alternative but with greater coverage of service throughout the region. In each alternative, the average speed for light rail service would be 30 to 35 mph, with a top speed of 55 mph.

Expansion of light rail service would impact the capacity of Sound Transit operations and maintenance facilities. The extent of potential service expansion and the associated expansion of the fleet would likely require operations and maintenance facility capacity expansion.

Commuter rail operations and facilities

The Sound Transit commuter rail system would operate every 20 to 30 minutes during peak commute periods (and potentially up to a similar frequency during non-commute periods), with an average speed of 35 to 40 mph and a top speed of 79 mph. On the Eastside Rail Corridor, speeds would be slower than the average speed due to curves. In addition, extensions of commuter rail lines with the Potential Plan Modifications Alternative, as well as resulting additional ridership and service, could require negotiations for easements with freight railroads that own and use the tracks.

Expansion of commuter rail service would increase operations and maintenance activities. This additional demand for operations and maintenance support could be obtained through modifications to agreements with Sound Transit's current service providers or through the development of new operations and maintenance facilities.

Regional express bus/bus rapid transit operations and facilities

The Current Plan Alternative and the Potential Plan Modifications Alternative would add BRT and regional express bus routes throughout the Sound Transit service area. The average speed for regional express bus service on arterials would be approximately 15 to 25 mph. For buses operating on freeways, the modeling assumptions are consistent with *Transportation 2040*, which includes tolling of all lanes on limited-access facilities and operation of limited-access facilities as managed lanes. For modeling purposes, bus operations on bus/BAT lanes would be 60 to 70 percent of posted speeds and, for bus operations on freeways, buses would operate 20 percent slower than general-purpose traffic. This variation reflects potential operating conditions faced by bus operators that would result in slower speeds as compared to speeds by general-purpose traffic.

Expansion of regional express bus service would impact the capacity of operations and maintenance facilities. The extent of potential service expansion and the associated expansion of the fleet would likely require some level of operations and maintenance base capacity expansion.

Streetcar operations and facilities

Streetcars usually operate in mixed traffic and at-grade on surface streets. The travel speed of streetcars, as with buses in general-purpose lanes, would be affected by the number of stops as well as roadway operations if they are in mixed traffic. The existing South Lake Union Streetcar has a maximum operating speed of 35 mph, while the average operating speed is 5.3 mph (FTA 2012). The streetcar's level platform and multiple doors offer more efficient boarding and alighting than standard buses with steps.

Expansion of streetcar service would impact the capacity of streetcar operations and maintenance facilities. The extent of potential service expansion and the associated expansion of the fleet would require some level of streetcar operations and maintenance base capacity expansion.

Local bus service

New BRT and regional express bus service included in the Potential Plan Modifications Alternative would result in more restructuring of express bus service provided by local transit agencies than would the Current Plan Alternative. Regional express bus/BRT could replace some transit services provided by local transit agencies, freeing service hours for the local transit provider to use elsewhere. Service would be restructured to avoid duplication of bus services. The replacement of express routes with regional express/BRT could also have a net effect of reduced transit ridership levels by the local transit system. However, if transit ridership is reduced, transit agencies may adjust service levels and focus on other travel markets.

Demand could increase for local bus service to connect to new light rail and commuter rail stations and regional express bus/BRT services. Potential modifications to specific bus routes would be identified and coordinated with local transit agencies upon implementation of the Potential Plan Modifications Alternative.

New light rail service with the Current Plan Alternative and the Potential Plan Modifications Alternative could result in new bus transit centers, which would be major transit hubs at new light rail and other HCT stations. Also, with the Long-Range Plan alternatives, there could be the need for new or expanded bus transit centers and park-and-ride facilities at existing light rail and other HCT stations. The need for these transit centers would result from transit ridership at the stations that would potentially require access by local bus service. New bus transit stations and bus stops would be developed with enhancements to pedestrian and bicycle access, which would result in a net benefit to pedestrian and bicycle mobility.

Expansion of local bus service would impact capacity of operations and maintenance facilities. The extent of potential service expansion and the associated expansion of the fleet would likely require some level of operations and maintenance base capacity expansion.

3.5.2 Highway and road operations

The Current Plan Alternative and the Potential Plan Modifications Alternative would help remove vehicles from roadways by providing alternatives to driving. Increasing transit ridership benefits the regional transportation system through improved travel time and reliability and by providing an alternative to driving on congested roadways.

A relatively small decrease in highway and road demand would occur with the Current Plan Alternative as compared to ST2 and the Potential Plan Modifications Alternative as compared to the Current Plan Alternative. With ST2, there would be approximately 99.9 million VMT per day by 2040. With the Current Plan Alternative, there would be approximately 99.0 million VMT per day by 2040. With the Potential Plan Modifications Alternative, there would be approximately 98.3 million VMT per day. These VMT estimates are for the four-county region. In addition, the tolling of regional limited access facilities has been assumed for each alternative, which is consistent with *Transportation 2040*.

Highway system

The relatively small decrease in regional VMT with the Potential Plan Modifications Alternative would result in comparably small reductions in congestion on regional roadways compared to the Current Plan Alternative. Reductions of traffic under the Potential Plan Modifications Alternative could also have some beneficial effects on congested intersections.

In the Current Plan Alternative and the Potential Plan Modifications Alternative, consistent with *Transportation 2040*, all lanes on limited access facilities, including HOV lanes, would be converted to managed lanes and operate like the other lanes on these facilities. With these potential changes, the assumption used for the travel forecasting analysis is that all lanes would be managed for volume and speed, and buses would travel with the flow of traffic. Current WSDOT policy with managed lanes is to maintain a 45 mph operating speed at least 90 percent of the time during the morning and afternoon peak periods.

The effect of tolled managed lanes is the same for the Current Plan Alternative and the Potential Plan Modifications Alternative where express bus service is operated within limited-access facilities. Bus operations, like general-purpose traffic, are modeled to operate consistent with this policy. However, if these lanes are not managed in this fashion on limited access roadways, then speeds for buses on freeways could be much lower in some cases.

With increases in regional traffic congestion in the forecast year, bus operating speeds are expected to continue to deteriorate under the Current Plan Alternative and the Potential Plan Modifications Alternative where buses operate in mixed traffic. Buses operating on managed facilities would not necessarily have decreases in speed, as would be seen on arterials.

Local street system

Although specific alignments and designs have not been identified, the Current Plan Alternative and the Potential Plan Modifications Alternative include new rail and bus lines that, depending on the alignment and design, could impact local streets. These impacts could include use of lane capacity for high-capacity transit guideways, at-grade crossings for rail or BRT, and increased congestion around stations and park-and-ride facilities. At-grade and elevated light rail alignments could result in arterial modifications, such as permanently eliminating two-way left-turn lanes, and changes or limitations to local access.

New light rail and commuter rail stations could result in local traffic impacts associated with access, including transit riders using park-and-ride facilities at the stations. The additional traffic that would be generated by new Sounder stations with park-and-ride facilities and

expansion of park-and-ride capacity with the Potential Plan Modifications Alternative could impact local traffic.

The addition of streetcar rail lines on local roads could result in limiting left-turn movements and could remove parking on one or both sides of the street to provide for the streetcar right-of-way and connect to the station platforms.

3.5.3 Parking

Future project-level planning and environmental reviews would assess parking needs at facilities and mitigate potential impacts. The System Access Policy states that parking provided by Sound Transit is intended for and restricted to customers of transit services at the facility, although exceptions may be allowed in some cases. Sound Transit may implement parking management tools, such as designated parking for HOVs, parking fees, and parking management systems, to increase ridership and efficiency in the parking facilities.

If park-and-ride facilities are not sized large enough under the Current Plan Alternative and the Potential Plan Modifications Alternative to accommodate demand, parking facilities may reach full capacity earlier each morning and increased traffic could result in parking spillover onto residential streets. With the expanded rail service under each alternative, decreased on-street parking in some corridors could occur due to displacement of roadway capacity to accommodate new guideways and stations. Impacts such as these could be mitigated as part of future project-level planning.

3.5.4 Safety

Rail and BRT facilities could create safety impacts for at-grade crossings or where operating in mixed traffic. Projects include safety features and often upgrades for unprotected pedestrian crossings on commuter rail lines.

With the Current Plan Alternative and the Potential Plan Modifications Alternative, there would be a higher level of service frequency involving light rail and streetcar operations that could include at-grade crossings of intersections. These at-grade crossings could increase traffic congestion and the risk of accidents between trains and other modes of transportation.

With new rail and bus service, there would be increased vehicular, walk, and bike activity in station areas, potentially impacting the safety of roadway and non-motorized systems.

3.5.5 Non-motorized systems—pedestrian and bicycle facilities

Sound Transit is committed to encouraging and providing pedestrian and bicycle access and has a formal policy of investing in access infrastructure and providing access on transit vehicles, consistent with passenger safety and service quality standards. With expanded transit operations under each alternative, there could be potential impacts on pedestrian and bicycle facilities, as well as opportunities to improve multi-modal access.

Both the Current Plan Alternative and the Potential Plan Modifications Alternative include potential pedestrian and bicycle facilities that improve access to transit facilities. Sound Transit could add new or improved sidewalks in the immediate vicinity of new transit facilities to link activity centers to transit. Transit facilities that require a substantial change in grade between access and boarding areas generally include ramps, elevators, or escalators.

The Current Plan Alternative and the Potential Plan Modifications Alternative likely would allow bicycles to continue to be carried on streetcars, local bus, regional express bus, commuter rail, and light rail. Sound Transit may support bicycle usage at its stations and facilities through bicycle-related infrastructure, equipment, services, usage fees, and agreements with outside parties. Transit centers, stations, and parking facilities would include safe and convenient bicycle parking/storage; in many cases, such facilities would be weather-protected. Transit facilities would be designed to enhance current pedestrian and bicycle access across rights-of-way.

These improvements would facilitate the use of bicycles for regional trips. Additional services offering on-board bicycle access and new transit facilities with bicycle and pedestrian improvements also could add riders to the system and remove some additional single-occupant vehicle trips from the region's roadways. Accommodating bicycles on board would allow transit riders to use their bicycles on both ends of trips. However, increased demand for on-board capacity may present challenges—for example, if demand for bicycle storage on vehicles exceeds capacity. Sound Transit's Bicycle Policy includes language on bicycle storage for its bus and rail vehicles, including the maximum number of bicycles that can be stored per each vehicle type (Sound Transit 2010).

3.5.6 Freight movement

With expanded streetcar, light rail, and commuter rail services under the Current Plan Alternative and the Potential Plan Modifications Alternative, there could be impacts on delivery of goods. Commuter and light rail could affect freight mobility if trains impede truck routes, particularly in urban industrial areas. Depending on the frequency, speed, and station stops, trains could temporarily block truck routes at at-grade crossings more frequently and for a longer duration than under current conditions.

In some cases, new guideways and stations could reduce access to driveways serving businesses. In addition, the streetcar and light rail development could displace on-street loading capacity for trucks delivering goods. With increases in commuter rail service, there could be impacts associated with added train operations on existing freight lines, including the need for revised or new operating agreements between Sound Transit and rail operators. Future project-level planning and environmental reviews would assess freight access needs and identify potential mitigation for impacts.

3.6 Construction impacts

This section discusses the potential construction impacts of the Current Plan Alternative and the Potential Plan Modifications Alternative. These impacts involve both service facilities, such as a light rail extension, and infill construction along existing corridors, as well as supporting operations and maintenance facilities for all modes.

3.6.1 Local bus service

Buses that use streets or freeways undergoing construction of new transit facilities could temporarily travel more slowly or be detoured to adjacent streets. Local bus service could be temporarily affected by the increase in congestion, reduced lane widths, and construction activity. Detours during lane closures and closures of freeway overcrossings could require revised bus routes that could increase transit, walking, or bicycling travel times.

During construction, existing transit centers, park-and-ride bus facilities, and bus stops may need to be closed or moved to temporary locations. Pedestrian and bicycle travel routes could be temporarily affected by construction activities resulting in increased travel time and lower quality walking and biking facilities.

3.6.2 Roadway system

Freeways

Construction of HCT could occur on or adjacent to the freeway system in several different locations, which could temporarily close freeway lanes for short or long durations reducing lane capacity, lower speeds, and increase congestion, and require detours diverting traffic from the freeway system to alternative routes. For potential light rail construction, freeway interchanges could be affected if rail is constructed along freeway segments or in the median, or if the alignment crosses freeway lanes. Freeway overcrossings could be closed for short or long durations.

Construction activities that reduce lane or shoulder widths or alter freeway lanes would impact freeway traffic operations temporarily. Access to construction areas could be from the freeway shoulder. Shoulders could be closed to provide space for construction activities and construction access points.

Some construction activities, such as in locations where HCT crosses the freeway, could result in nighttime closures in each direction of the freeway mainline with traffic detours to adjacent streets. Haul routes for construction activities would be identified during project-level analysis and environmental review. These haul routes could impact freeways.

Local streets

In addition to freeway congestion, construction could temporarily increase congestion on arterials and the local street system as some trips are diverted from freeways to these roadways. Construction of transit facilities could result in short-term disruptions within and adjacent to the roadway.

Construction of rail and BRT along arterials or local streets, at-grade or above grade, would affect traffic operations on arterials with temporary or long-term lane closures. Building at-grade alignments could also temporarily or permanently block access from intersecting streets. Aerial structures could have temporary impacts during construction where they block lanes or turning movements. Local street overcrossings and interchange ramps could be realigned or reconfigured to accommodate light rail or BRT. Lane closures and construction activities could result in congestion on the street where construction occurs, as well as on nearby streets. Access to residents and businesses would be maintained as much as practical.

Construction of rail or BRT could also require utility relocations along the alignment and near stations. Utility relocations could require temporary lane closures and traffic control plans to maintain property access and circulation. Construction of rail tracks and stations could result in long-term lane closures and detours, as well as increased congestion on nearby streets.

Tunnel construction could generate more excavated rock or dirt than at- or above-grade construction and could require increased truck traffic to dispose of earth. Construction could also require temporary arterial lane closures if cut-and-cover tunnel construction is

used. In areas where tunnels are constructed by mining (including boring), disruption would be limited to portal and station areas. Impacts such as increased traffic, congestion, and impaired access to businesses could be greater where cut-and-cover methods are used. Although specific alignments and designs for corridors (shown in Chapter 2, Figures 2-7, 2-9, and 2-10) would be identified during future project-level planning and environmental reviews, some corridors could require tunnel construction. Examples of corridors that could involve tunnel construction include corridor C (Bellevue to Issaquah), corridor F (Ballard to downtown Seattle), corridor G (Ballard to UW), and corridor K (UW to Redmond) from the Current Plan Alternative, and corridor 2 (downtown Seattle, West Seattle, and Burien) in the Potential Plan Modifications Alternative.

The Potential Plan Modifications Alternative also could include a new tunnel in downtown Seattle. In addition, particular constraints for other corridors, such as hills, could require tunneling. Haul routes for construction activities would be identified during project-level environmental review and permitting. These haul routes could impact local streets. Generally, construction trucks traveling to construction sites would use local streets to access the freeway system. Construction access from local streets would likely be required. Peak truck trips are expected to occur during earthwork operations and during concrete delivery for either of the alternatives.

Multiple work zones could be used during peak construction operations that would result in higher total project peak truck trips; however, these trips would generally not overlap with each other on the same local streets.

3.6.3 Parking

Parking by construction workers would be provided on-site where possible. This parking could occur on local streets where parking is unrestricted.

Loss of parking on-street and at park-and-ride facilities could be expected during guideway and station construction and where new or expanded park-and-ride facilities occur. Temporarily displaced existing park-and-ride spaces could result in reduced access for patrons, increased travel times, shifted demand to other park-and-ride facilities, or increased spillover parking at other locations in the vicinity, including local streets where unrestricted.

3.6.4 Non-motorized system—pedestrian and bicycle facilities

Construction could temporarily close or restrict pedestrian and bicycle facilities such as sidewalks, bike lanes, and trails. Construction also would temporarily result in other localized impacts, such as increased congestion, restricted access to facilities, and a lower quality pedestrian and bicycle environment.

Sound Transit would minimize potential impacts on pedestrian and bicycle facilities by providing detours or clearly delineated routes through construction areas, such as protected walkways. Pedestrians would be accommodated on the existing street where possible, at times on one side only, and the pedestrian environment would be of lower quality during construction. Out-of-direction travel, such as crossing to the opposite side of the street to avoid construction, then later crossing back to the original side, may be required in some cases. Although bicyclists could be allowed to use the same accommodations made for

vehicular traffic during construction, they could be required or encouraged to detour or dismount and walk their bicycle when mixing with pedestrian traffic.

On-site activities could impact transit passengers as a result of having longer walking distances or a lower quality walking environment. Pedestrians and bicyclists would be affected by the increase in congestion, reduced lane widths, and construction activity.

Detours during lane closures and closures of freeway overcrossings could require revised sidewalk and bicycle facilities that could result in longer than normal walking and bicycling travel times.

3.6.5 Freight movements

With the Current Plan Alternative and the Potential Plan Modifications Alternative, streetcar and light rail construction could result in temporary disruptions to freight movements along local streets. In addition, regional express and BRT development could temporarily disrupt freight movement along arterials and highways in the Plan area.

For commuter rail construction, such as new service and stations, existing freight rail lines could require some upgrade or improvements that would lead to construction activity in the railroad right-of-way or adjacent areas. Access to construction areas could be from adjacent streets and within the railroad right-of-way. Construction activities involving tracks or within the railroad right-of-way could potentially affect freight operations temporarily.

3.7 Cumulative impacts

The transportation analysis is predicting future transportation conditions that are inherently cumulative because they already reflect past trends, current transportation conditions, as well as future actions such as planned transportation projects, land use changes, and population growth through 2040 in order to predict future transportation conditions. Appendix I of the Final SEIS lists the projects identified as funded in *Transportation 2040*, which, along with regionally adopted land use and population targets, are the basis of the transportation forecasts reported in the Final SEIS.

There is the potential for different cumulative transportation effects if some of the other planned actions in the region do not occur as expected. For example, the region's new tolling policy assumed in PSRC's *Transportation 2040* plan is to toll all limited access (freeway) facilities in the region. While this action is assumed, it is not yet in place. If tolling does not occur regionally or if it affects a more limited set of facilities, this could affect future levels of congestion, the amount of vehicle miles traveled, and the use of other modes such as transit. Similarly, the actual changes in land use patterns or the amount and distribution of population growth may be different than what is now regionally planned, and this could alter transportation conditions locally or regionally.

In any case, the Current Plan Alternative and the Potential Plan Modifications Alternative would support improved mobility over the long-term because each would help reduce the use of automobiles, improve transit travel times and levels of service, with positive effects on regional transportation conditions. Therefore, even if other projects and actions occur differently than expected, the implementation of the Long-Range Plan would likely be a benefit and would not worsen transportation conditions.

More localized differences in cumulative effects could occur where other developments and actions would be in close proximity to the Long Range Plan's corridors. However, these differences would generally be further identified at a project-level review as compared to the plan-level of analysis used for this Final SEIS. This is also true of the construction-related transportation impacts that could occur with Long-Range Plan projects or the projects of others. These activities could cumulatively affect traffic levels, parking supply, or other localized transportation conditions.

Localized and regional cumulative benefits could also be expected as other parties provide links to transit service, create new connections for bicycle and pedestrian travel, or develop transit-oriented or transit-supportive projects near HCT corridors.

3.8 Potential mitigation measures

3.8.1 Long-term mitigation

The Current Plan Alternative and the Potential Plan Modifications Alternative would increase transit ridership and benefit the regional transportation system. This benefit would occur by enhancing regional mobility through improved travel time and reliability and providing an alternative to travel on congested roadways. In addition, added station area improvements and local street reconstruction could result in net enhancements to local bus service, streets, and non-motorized facilities.

Mitigation would be required, however, to address impacts to local transit service, local roadway facilities, parking, safety, non-motorized facilities in station areas, and freight movement. The types of mitigation measures that could be implemented are discussed below. More specific measures would be identified during future project-level environmental reviews.

Local bus service

To address potential impacts on local bus service, Sound Transit could include transit partners in the planning and design process for HCT stations. This process would include identification of bus operations and required design features at the station that would conveniently accommodate local bus access. These bus services could serve as feeder access to HCT stations.

Local street system/level of service

Mitigation could include street enhancements to keep park-and-ride or station traffic out of neighborhoods. Intersection improvements could be made near stations and park-and-ride facilities to maintain acceptable traffic conditions, and also where at-grade rail or BRT crossings occur.

Parking

Parking impacts in station areas could be addressed through a station area parking management strategy developed during project-level planning. Sound Transit would work with the local jurisdiction to assess available on-street parking supplies, evaluate potential environmental impacts, and determine whether parking management and enforcement, such as the use of residential parking zones or other strategies, could be implemented to minimize impacts.

Some jurisdictions could choose to limit parking supply as a strategy to encourage station access by transit, walking, and bicycling, as well as reduce the negative impacts of traffic to and from a park-and-ride facility. Potential parking-related impacts would also recognize Sound Transit efforts in parking management, including the current pilot program relating to parking management at some park-and-ride facilities.

Increasing park-and-ride capacity would be considered during more detailed project-level reviews. However, a number of representative projects (listed in Appendix A, Tables A-6 and A-11) include access features as well as increasing parking capacity.

Safety

Implementation of improvements such as new sidewalks, improved traffic signals, crossing refuges, and other pedestrian amenities, would mitigate potential pedestrian safety impacts and could provide an improvement over existing conditions. Special message signing, advance information, and safety plans for pedestrians and bicyclists could be prepared by Sound Transit and local agencies. Traffic safety mitigation may include grade-separated crossings, restricting turning movements, intersection design, and signal improvements.

Non-motorized system—pedestrian and bicycle facilities

Mitigation for the non-motorized system could include improving pedestrian and bicycle facilities on streets in station areas and discouraging automobile access at stations. Mitigation efforts could also include coordination of Sound Transit rail and bus station design efforts with design of non-motorized facilities by local jurisdictions in affected station areas.

Freight movement

Potential mitigation for impacts to freight movement could include alternative access points and potential consolidation of multiple access locations. In some cases, grade-separated crossings may be considered on truck routes that would experience increased delays due to commuter or light rail train crossings. Mitigation would be coordinated with local jurisdictions, and affected businesses and operators could be consulted.

Mitigation for impacts to rail freight from commuter rail service could include track improvements such as additional track, track rehabilitation, new high speed turnouts, updates to existing signals, construction of new signals, and widening existing bridge crossings. Freight mitigation improvements would be developed in coordination with BNSF and Union Pacific railroads and in consultation with the ports, including the Port of Seattle, Port of Tacoma, and Port of Everett.

3.8.2 Construction mitigation

Mitigation of construction impacts would be the same for the Current Plan Alternative and the Potential Plan Modifications Alternative, except that there would be more construction activity with the Potential Plan Modifications Alternative.

For construction activities affecting freeways, Sound Transit would work with WSDOT to develop a plan to coordinate construction with incident management, construction staging, and traffic control where the construction could affect freeway traffic. Sound Transit would also coordinate with WSDOT to disseminate construction closure information to the public as needed. Access points from the freeway would be identified to provide adequate accel-

eration and deceleration for trucks and to minimize impacts on general purpose traffic and interchange operations.

Mitigation for traffic impacts would comply with local regulations governing construction traffic control and truck routing. Mitigation measures for traffic impacts due to construction of transit facilities could include the following:

- Develop a construction traffic management plan that would reduce the need for, or duration of, shoulder closures and lane reductions to minimize impacts.
- Develop a plan to communicate public information through tools such as print, radio, posted signs, websites, social media, and email to provide information regarding street closures, hours of construction, business access, trail closures, and parking impacts.
- Post truck prohibition signs on streets with a high likelihood of cut-through truck traffic.
- Coordinate access closures in person with affected businesses and residents.
- Encourage patronage of affected businesses by including signage for businesses announcing that they are open for business during construction and encouraging workers to eat locally while on the construction site.
- Provide parking areas for construction workers, where necessary. In some cases, construction worker parking would be the responsibility of the contractor, with Sound Transit maintaining approval authority over the construction worker parking plan. Construction worker parking strategies could include providing remote parking with shuttle service to and from the construction site if sufficient on-site parking cannot be provided.
- Post advance notice signs prior to construction in areas where surface construction activities would affect access to surrounding businesses.
- Provide signed detour routes for pedestrians and bicycles through construction areas.
- Keep multiuse trails that could be affected by construction open for use, if possible, but detours would be provided if trails are closed unless they are closed for short durations or in areas where a detour option is not feasible.

Mitigation measures could also be applied to transit service, parking, freight rail service, and construction site safety:

- Impacts to transit service would also be mitigated by working with local transit agencies to prepare a construction mitigation plan. Transit service could be rerouted, transit stops relocated, and—where warranted—a transit center could be temporarily relocated or modified during construction. In some cases, additional transit service may be considered as mitigation for impacts. The temporary loss of park-and-ride spaces could be mitigated through leasing of nearby off-site spaces or developing temporary replacement parking.

- Sound Transit would coordinate with railroad owners to mitigate construction impacts on freight operations.
- To address safety-related construction impacts, contractors would be required to follow Sound Transit policies regarding safety in construction zones.

3.9 Significant unavoidable adverse impacts

Even with the mitigation measures described above, there could be unavoidable adverse transportation impacts primarily during construction of the corridors and facilities included in the Current Plan or Potential Plan Modifications Alternatives. Construction impacts could include temporary lane or roadway closures, loss of parking, increased truck traffic and congestion, and reduced access to businesses.

