Chapter 3

Transportation Environment and Consequences

3.1 Introduction

This chapter summarizes the characteristics of the transportation system in the East Link Project study area and discusses potential impacts and mitigation associated with the project alternatives described in Chapter 2. This chapter first describes the existing transportation environment, and then presents the analysis and results showing potential impacts and mitigation. A more detailed discussion of the transportation analysis and results is provided in the *Transportation Technical Report*, located in Appendix H1 of this Final Environmental Impact Statement (EIS).

3.1.1 Transportation Elements and Study Area

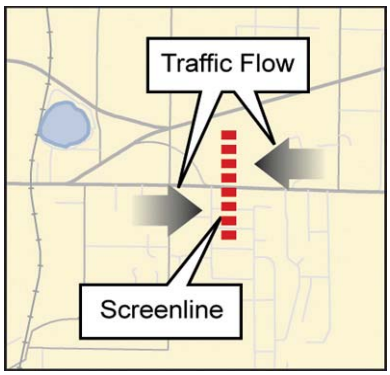
The analysis of the transportation system considered the following transportation elements:

- Regional facilities and travel patterns
- Transit operations
- Highway operations and safety
- Arterial and local street operations, safety, and parking
- Nonmotorized facilities
- Freight mobility and access
- Navigable waterways

This chapter is organized with a section on each transportation element. Each section discusses its methodology, affected environment, environmental impacts, and potential mitigation. For each of these elements, the affected environment is described under current conditions (2007), and the environmental impacts are described for the two future years, 2020 and 2030. The year 2020 was selected for analysis because it aligns with the project's estimated year of opening. The year 2030 provides a horizon-year analysis consistent with the planning period of regional and local agencies. The impact analysis compares the No Build Alternative with the East Link (light rail) alternatives.

The study area for this transportation analysis consists of the Interstate 90 (I-90) corridor between Seattle and Interstate 405 (I-405), South Bellevue, Downtown Bellevue, the Bel-Red area of Bellevue and Redmond, State Route (SR) 520 between Overlake and Downtown Redmond, and Downtown Redmond.

Exhibits 3-1 through 3-3 identify the transportation and local street analysis study area. Within the study area, approximately 151 intersections were analyzed. Pedestrian circulation was evaluated within a one-half mile radius surrounding stations, and sidewalks and on-street parking within a one-quarter-mile radius. Bicycle circulation was evaluated within a one-mile radius around the stations. Regional and corridor roadway operations were evaluated using six screenlines that assessed transit and vehicle travel performance in key subareas through the study area. As described in the transit section of this chapter (3.4), Sound Transit and King County Metro (Metro) service planners reviewed future bus routes as part of this project.

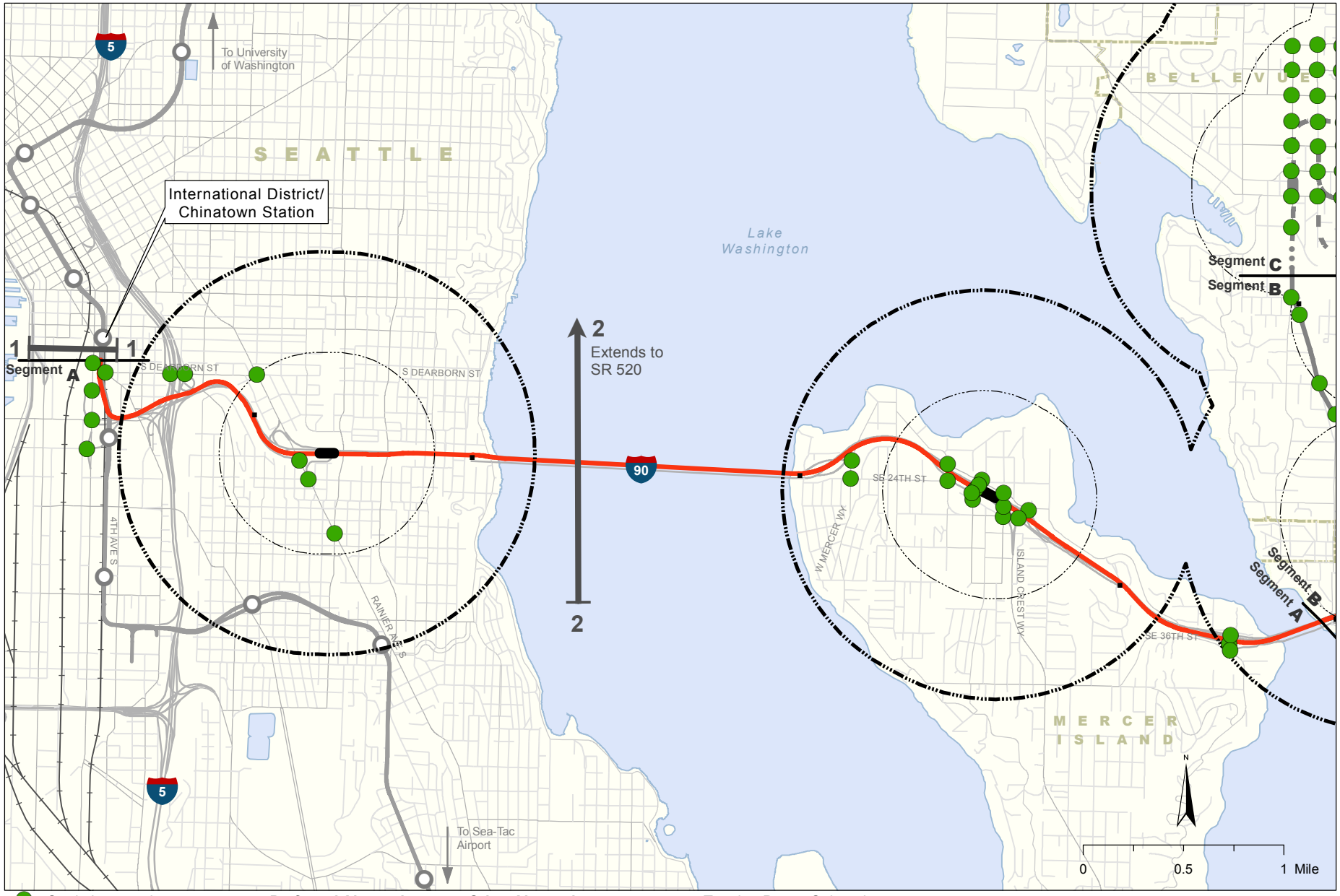


A **screenline** is an imaginary line across a section of freeways or arterials. These screenlines are used to provide a snapshot of how much volume is entering or exiting a particular area.

3.1.2 Meeting the Need for the Project

As summarized in the following points, the analysis in this chapter demonstrates that the East Link Project would meet and exceed the need for the project in all the categories presented in Chapter 1:

- **Increased Demand for Transit Services.** Without East Link, existing and projected transit service would not meet transportation reliability and capacity needs for the Eastside corridor. Projected residential and employment growth is expected to double the demand for transit services across Lake Washington and between Bellevue and Redmond by 2030 with the No Build Alternative, further highlighting the importance of providing reliable transit service. The East Link Project would more than double the I-90 person capacity across Lake Washington without any roadway widening.



Study Intersection
Screenline
Sidewalk and On-Street Parking Study Area (1/2 mile)
Bicycle Study Area (1 mile)

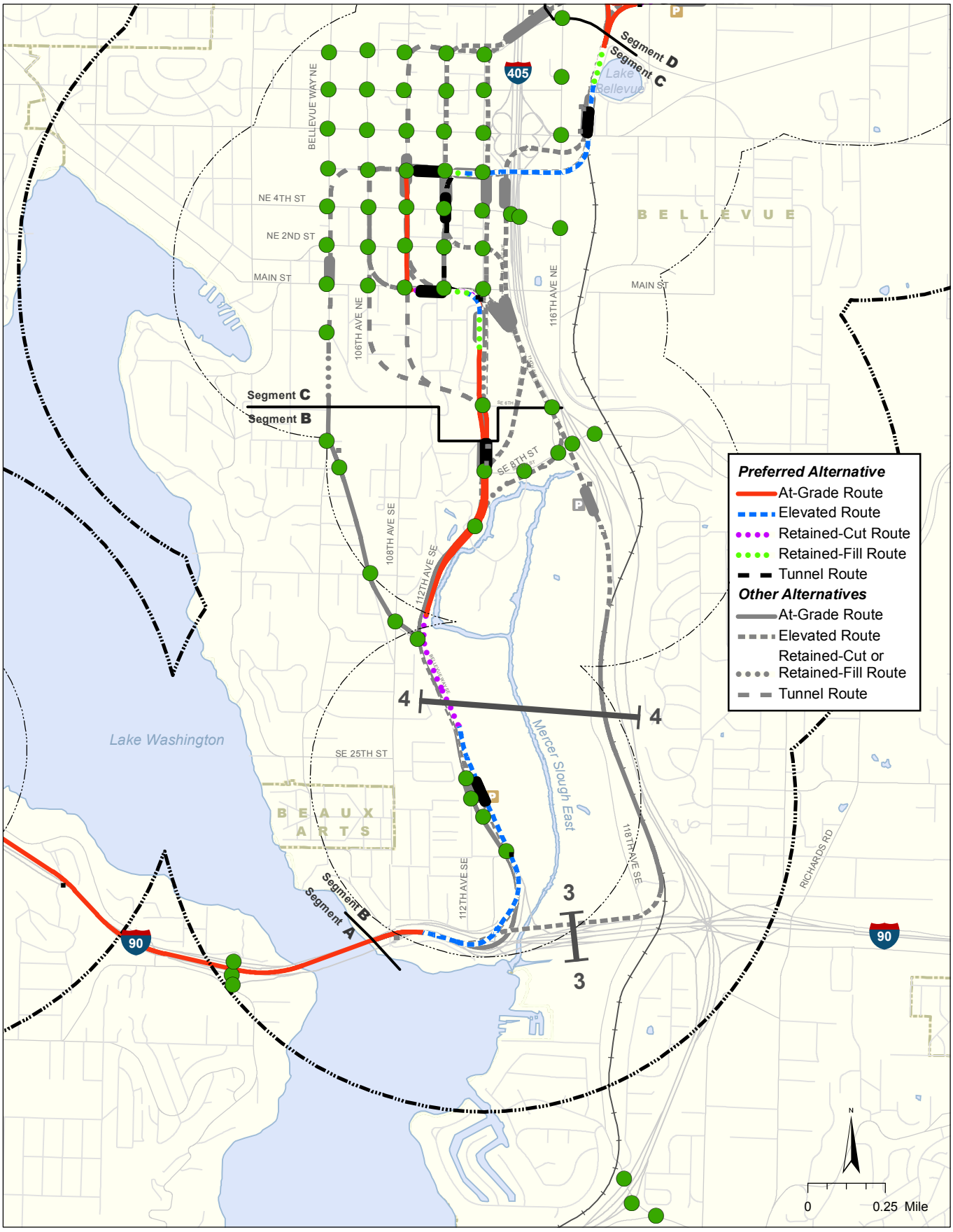
Preferred Alternative
At-Grade Route
Elevated Route
Retained-Cut Route
Retained-Fill Route
Tunnel Route

Other Alternatives
At-Grade Route
Elevated Route
Retained-Cut or Retained-Fill Route
Tunnel Route

Traction Power Substation
Proposed Station
Central Link Alignment and Station

Source: Data from King County (2006) modified by CH2M HILL.

Exhibit 3-1
Transportation Analysis Study Area Segment A
East Link Project

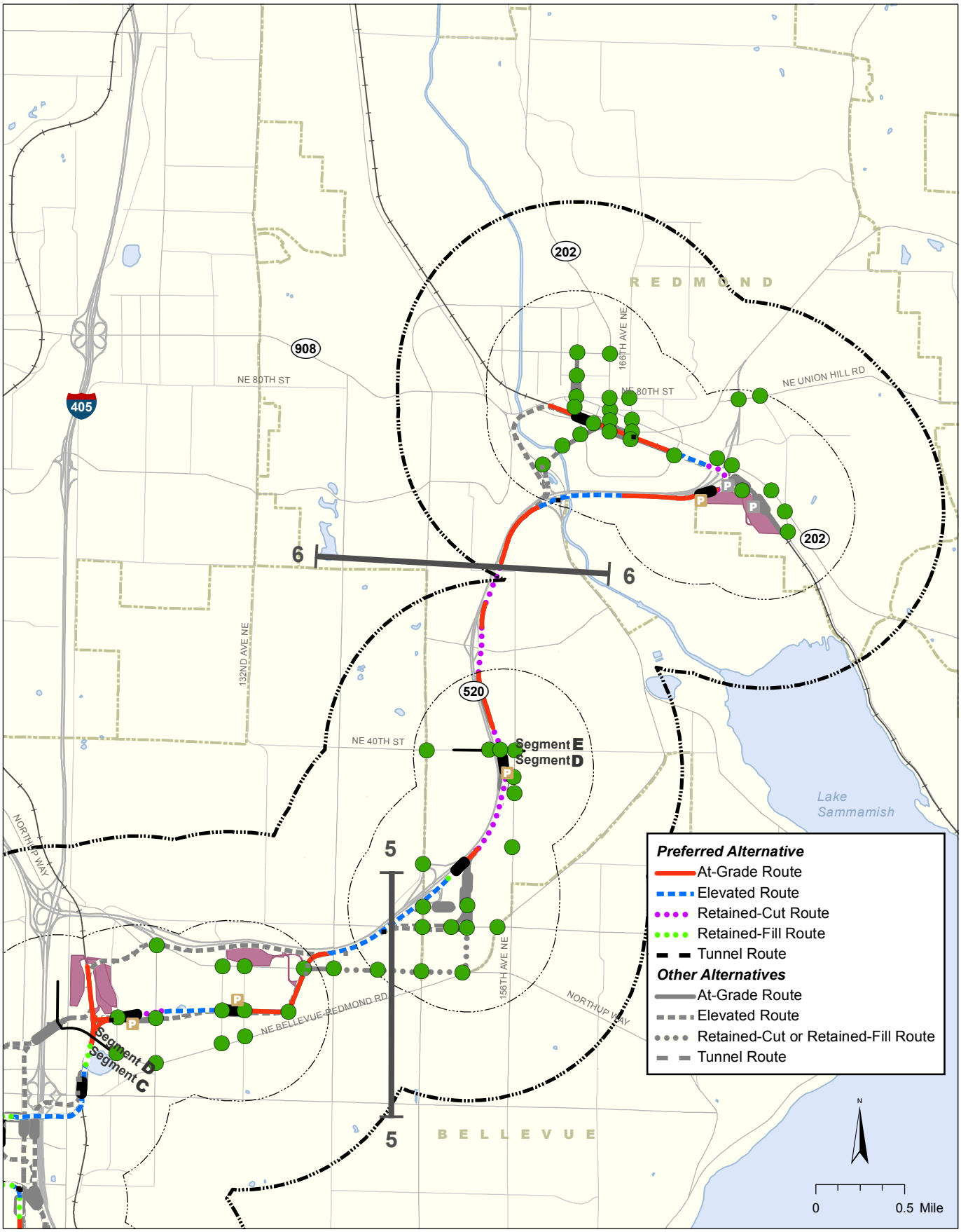


Source: Data from King County (2006).

Study Intersection
Screenline
Sidewalk and On-Street Parking Study Area (1/2 mile)
Bicycle Study Area (1 mile)

Traction Power Substation
Proposed Station
New and/or Expanded Park-and-Ride Lot

Exhibit 3-2 **Transportation Analysis Study Area Segments B and C**
East Link Project



Source: Data from King County (2006).

Exhibit 3-3 **Transportation Analysis Study Area Segments D and E**
East Link Project

Being able to move more people in both directions, especially in the reverse-peak direction (eastbound in the morning [AM] and westbound in the afternoon [PM]), when travel times are expected to double in the future, would improve the mobility into and out of the urban centers (Seattle, Bellevue, Overlake, and Redmond) on both sides of Lake Washington that this project would serve.

East Link would meet a growing demand for reliable transit alternatives. Within the East Link corridor, the travel mode in the future is predicted to shift, generally reducing the percentage of single-occupant vehicles (SOVs) and increasing the percentage of high-occupancy vehicles (HOVs [vanpools and carpools]) and transit (buses and light rail), a mode that carries more people within the limited transportation space. With the project, transit ridership across Lake Washington would increase by about 25 percent compared with the no-build condition during the PM peak period; therefore, an estimated 16 percent of the total number of people traveling across the lake would be in transit. This shift to transit indicates the growing demand for reliable high-capacity modes of travel that are consistent with urban environments and are crucial to providing person mobility rather than vehicle capacity.

- **Increased Congestion on I-90.** The vehicular capacity of I-90 during the peak periods is expected to be reached within the near future (around year 2015) (Washington State Department of Transportation [WSDOT], 2006). This would further constrain travel for all modes, including freight, HOVs, and buses. In addition, roads leading into and out of the urban centers of Seattle and Downtown Bellevue are forecasted to be at or near capacity in the near future, increasing travel time between these two key employment and population centers. This would substantially constrain the ability to travel to key employment and population areas of the region and highlights the need for increased transit service, which provides greater capacity and is more reliable than SOVs. Light rail also provides a safer transportation alternative because it operates in its own right-of-way for most of the project.
- **Regional Urban Center Growth Plans Supported by High-Capacity Transit Investments.** In accordance with Puget Sound Regional Council's (PSRC's) adopted *Transportation 2040* plan (PSRC, 2010) and the Growth Management Act objectives, Bellevue, Seattle, and Redmond have made land use and planning decisions for increased employment and residential density based in part on the long-term promise of high-capacity transit (HCT) connections across I-90. Traffic projections indicate that most major roadways in the study area would be congested and would fail to move vehicles effectively by 2030. This would occur even with implementation of planned transportation improvements on SR 520, I-90 (without East Link), and I-405. With the East Link Project, HCT would connect the region's dense commercial and residential centers, as well as major employers, across Lake Washington without being hindered by the increasingly congested highway conditions.
- **Operating Deficiencies in Regional Bus Transit.** The travel time between the key urban centers of Seattle and Downtown Bellevue would improve with light rail because light rail is faster and more reliable than bus or automobile. The East Link Project analysis estimates that light rail travel between Seattle and Downtown Bellevue would take less than 20 minutes, and between Seattle and Downtown Redmond, 29 to 39 minutes, regardless of time of day or level of traffic congestion. This is a savings of up to 25 minutes compared with an automobile currently traveling between these locations—in the afternoon peak period it currently can take approximately 45 minutes to travel between Seattle and Bellevue (via I-90) and approximately 55 minutes to travel between Seattle and Redmond (via SR 520) (WSDOT, 2011). In the future, these automobile times are expected to continue to rise, and therefore light rail would provide an even greater travel-time savings.

  Light rail service to the Eastside would substantially improve transit service reliability throughout the project vicinity. It is expected that bus reliability in the future would continue to operate at failing levels (not meeting level of service [LOS] standards) without the project, and a majority of the bus routes would not meet scheduled headways (the time between bus arrivals). Buses would continue to be an unreliable travel choice in the project area, for instance across Lake Washington and in Downtown Bellevue and

Traffic Level of Service

Describes traffic conditions in terms of speed and travel time, freedom to maneuver, comfort, convenience, and safety. LOS A is considered to be the ideal "free-flowing" condition, while LOS F is considered to be the least desirable condition, with stop-and-go traffic.

Redmond, because bus service would be slowed by heavily congested roadways. Bus speeds between Downtown Seattle and Downtown Bellevue are predicted to decrease approximately 30 percent by year 2030 as congestion worsens, even with improvements to I-90, because arterials connecting I-90 to these urban centers would not be improved. This poor bus reliability would not benefit transit ridership and would not provide an attractive transportation choice for the region.

The frequency of transit throughout the day would also improve because light rail would arrive every 15 minutes or less, in comparison with buses arriving on average every 30 minutes or more during off-peak hours. Light rail would also serve more hours of the day with expanded service coverage of 20 hours—a substantial improvement over existing and planned bus service.

- **Limited Transit Capacity and Connectivity.** Light rail service not only provides increased service frequency, faster travel times, and longer hours of service throughout the day, it would also be able to carry more passengers to connecting bus routes. The bus routes that share connections with the light rail system would likely experience higher ridership. By the year 2030, approximately 10,000 new riders would choose to ride transit each day with the addition of light rail serving Eastside communities. Overall, the East Link Project is forecasted to contribute between 48,000 and 52,500 daily riders to the region's light rail system. This is expected to eliminate close to 230,000 vehicle miles traveled and about 10,000 hours of travel each day in the region in 2030.

  The East Link light rail project has the capacity to carry from 9,000 to 12,000 people per hour in each direction, which would more than double the person-carrying capacity of I-90. The ability to carry this many people is equivalent to about seven to ten freeway lanes of vehicle traffic. Without light rail's ability to move more people in both directions across Lake Washington, there would continue to be roadway capacity constraints that would not efficiently and reliably serve the growing residential and commercial land use densities on the Eastside.

3.2 Methodology and Assumptions

The transportation impacts of the East Link Project were analyzed from three different perspectives: regional, corridor, and operations. The regional and corridor assessments addressed larger areas in the overall project vicinity. The operational assessment identified and analyzed specific roadways and intersections. The following types of information were developed and evaluated in these three analysis areas:

- Regional analysis includes information such as projectwide ridership and daily vehicle miles and hours of travel.
- Corridor analysis includes information such as transit service and ridership, roadway volume-to-capacity (v/c) ratios, and mode share.
- Operational analysis includes information on the operations (traffic LOS) and safety of the highways, arterial and local streets, and intermodal network(s).
- The arterial and local street analysis focused on intersection operations and safety analysis, whereas the highway analysis focused on person throughput and capacity, travel time, and safety. Impacts on parking, nonmotorized facilities, transit, and freight movement were also addressed. Construction impacts on traffic circulation were assessed qualitatively for local traffic and quantitatively for I-90.

The methodology and assumptions that were used to analyze the project impacts are discussed in detail in Appendix A of the *Transportation Technical Report* (see Appendix H1 of this Final EIS). That appendix includes further information on the following topics:

- Agency guidelines and regulations regarding the analysis of local and regionwide project impacts
- Transportation analysis methodology, including relevant definitions, data collection, regional traffic analysis, corridor traffic analysis, intersection impact analysis, and construction impact analysis
- Methods for traffic forecasting and assessing local and projectwide LOS standards and safety
- Methods for assessing impacts related to light rail station and park-and-ride areas, parking, nonmotorized facilities and modes, property access circulation, freight, transit, and construction.

3.3 Regional Travel

3.3.1 Methodology

This section describes the project's existing conditions (year 2007) and potential project impacts on regional transportation facilities in the study area in years 2020 and 2030. Regional travel conditions for the East Link

Project were evaluated based on future travel information obtained using the PSRC transportation demand model and Sound Transit's transit ridership model, which includes the urbanized areas of King, Pierce, and Snohomish counties. These travel demand models were used to create 2020 and 2030 vehicle and transit ridership forecasts for the study area. Based on these forecasts and driver travel patterns, the number of miles and hours traveled were estimated to create vehicle miles traveled (VMT) and vehicle hours traveled (VHT). On roadways in the study area, the vehicle traffic and mode share were predicted, giving the v/c ratios (congestion) and mode share at each of the six project screenlines shown in Exhibits 3-1 through 3-3.

Vehicle Miles Traveled (VMT). The total number of miles traveled each day by drivers in the region.

Vehicle Hours Traveled (VHT). The total number of hours that people drive each day in the region.

Volume-to-Capacity (v/c) Ratio. The ratio of how many vehicles are on a road compared to that road's capacity. A v/c ratio between 0.90 and 1.0 indicates slow traffic conditions, a v/c ratio between 1.0 to 1.2 indicates stop-and-go conditions, and a v/c ratio over 1.2 indicates severe traffic congestion.

Mode Share. The percentage of people using different travel modes (methods) such as single-occupant vehicles, high-occupancy vehicles (HOVs), and transit.

3.3.2 Affected Environment

3.3.2.1 Vehicle Miles Traveled and Vehicle Hours Traveled

In the Puget Sound region, vehicles travel more than 70 million miles each day. This results in close to 2 million hours of travel for all users of the transportation system. In the AM peak period (6 to 9 a.m.), daily regional travel is about 12 million total vehicle miles and over 300,000 total vehicle hours. In the PM peak period (3 to 6 p.m.), there are about 15 million total VMT and over 400,000 total VHT daily. Thirty-seven percent of all miles traveled and more than 40 percent of all hours of travel occur in the AM peak and PM peak periods, indicating that the most congested periods in this region are during the AM and PM commuting periods. Within the morning and afternoon peak periods, the highest hour of congestion is known as the AM and PM peak hours. Depending on the type of analysis, the performance measures used are based on either the peak period or the peak hour. The major regional highways within the East Link study area are I-90, I-5, I-405, and SR 520, and these highways serve a substantial amount of the vehicle trips within the Central Puget Sound region. SOVs were the dominant mode of regionwide travel in year 2006, accounting for 44 percent of the trips made. A large number of trips also occurred in vehicles with two or more passengers (HOV). Together, SOV and HOV travel accounted for 84 percent of the person trips made in 2006. The remaining trips were by transit, walk, and other modes (PSRC, 2007). The primary transit service providers within the project vicinity are King County Metro, Sound Transit, and Community Transit.

3.3.2.2 Regional Highways

I-90 is a major east-west interstate highway that extends from Boston through Chicago, and ends in Seattle at I-5, the western portion of the East Link Project corridor. In Washington, I-90 connects various freight and state routes originating in Seattle, through Mercer Island and Bellevue, to the eastern side of the state and beyond. The section of I-90 that crosses Lake Washington, including the floating bridges (Lacey V. Murrow Memorial Bridge and Homer M. Hadley Memorial Bridge), has three general-purpose lanes in each direction and a reversible center roadway that operates as a westbound expressway during the morning and as an eastbound expressway during the afternoon and evenings. The reversible center roadway is currently used for HOVs, buses, and Mercer Island drivers. These reversible lanes are located between the Mount Baker Tunnel in Seattle and the Bellevue Way SE interchange. On the floating bridges, the average daily traffic volume is 140,000 to 150,000 vehicles. This consists of about 135,000 vehicles per day in the eastbound and westbound mainline lanes and about 15,000 daily vehicles in the reversible center roadway (WSDOT, 2007).

I-5 is the primary north-south West Coast route in the region, connecting the U.S. borders with Canada and Mexico. In Washington, this interstate is a major transportation corridor in the Puget Sound region and serves as a main highway connection among the urban communities between Portland and Seattle.

I-405 is a key interstate facility that parallels I-5 on the east side of Lake Washington and connects to I-5 in Tukwila and Lynnwood. I-405 has interchanges that connect with I-90 and with state routes. In urban areas of the project corridor, specifically Downtown Bellevue, I-405 consists of six lanes with HOV facilities.

SR 520 provides an east-west connection across Lake Washington between Seattle and the Eastside communities, such as Kirkland, Bellevue, and Redmond, and connects large employment centers in Bellevue, Redmond, and Seattle.

3.3.2.3 Screenline Performance

A v/c ratio of 0.90 and above indicates slow to severe traffic conditions. Screenline 2, which crosses I-90 and SR 520 (see Exhibit 3-1), and Screenline 4, which crosses I-405 (see Exhibit 3-2), cross areas of heavy congestion in both directions in the peak periods, as indicated by a v/c ratio above 1.0. This level of congestion is expected because these screenlines intersect three of the most heavily traveled highways in the region (SR 520, I-90, and I-405). Most of the other screenlines have a v/c ratio less than 0.70. Although Screenline 3 (Exhibit 3-2) is also located on I-90, its v/c ratio is considerably less than at Screenline 2 because of the additional roadway capacity (collector-distributor system) that is provided between Bellevue Way and I-405 to better manage the flow of traffic.

Within the study area, the current use of different transportation modes (mode share) varies depending on available transportation choices, congestion, and land use (e.g., commercial, residential, retail) surrounding the area. For example, some of the higher HOV and transit mode shares are found at locations leaving Seattle (Screenline 1 southbound and screenlines 2 and 3 eastbound). At Screenline 5 (Exhibit 3-3) westbound and Screenline 6 southbound (these routes include trips to Seattle across SR 520), a higher HOV mode share occurs compared with its counter eastbound direction into Redmond. Exhibit 3-4 shows the existing mode share during the PM peak hour at each screenline.

3.3.3 Environmental Impacts

This section describes the potential regional travel impacts associated with the No Build Alternative and with the proposed East Link Project. The analysis shows that the East Link Project would reduce the rate of growth of regional VMT and VHT, lower v/c ratios at the screenlines, and produce a mode share with an increased emphasis on transit. The *Transportation Technical Report* provides a more detailed year 2020 and 2030 discussion of the regional VMT and VHT, v/c ratios, and mode share.

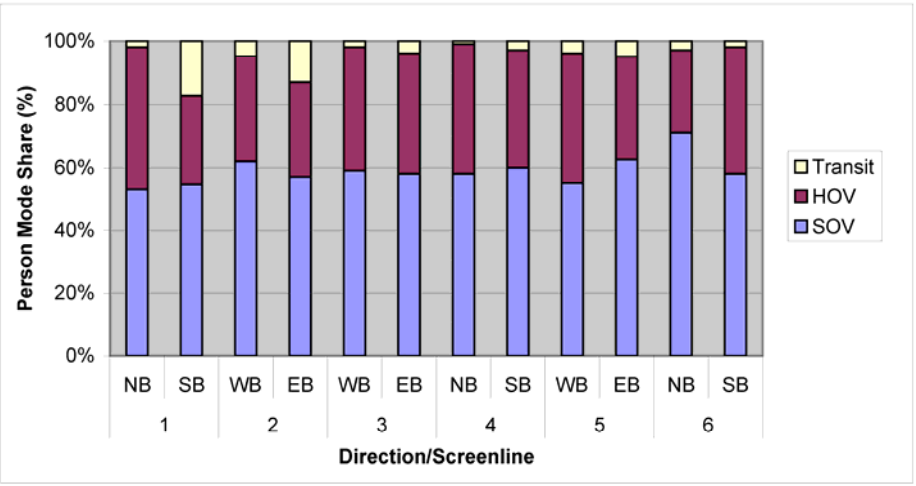
3.3.3.1 Traffic Forecasts

Future-year analysis was based on PSRC's current population and land uses forecasts for years 2020 and 2030 in the regional travel demand model. The programs and/or projects that were assumed in the analysis to occur in the future, both with and without the East Link Project, were selected because they are considered reasonably foreseeable. These projects include a mixture of state highway and local roadway projects as well as Sound Transit and Metro enhancements. Attachment 1 in Appendix A of the *Transportation Technical Report* gives a complete list of future projects that were assumed to occur in the future.

According to PSRC's regional trip forecasting and regional population and employment forecasts, travel on major highway facilities will continue to increase through 2030. Future roadway projects will improve the HOV system, allowing more carpool trips, but will not include substantial improvements in high-capacity modes of travel. Roadways that lead into and out of the urban centers of Seattle and Downtown Bellevue will be at capacity in the near future. Exhibit 3-5 depicts PSRC's 2030 PM forecast without East Link for roadways with a v/c ratio of greater than 0.90, meaning slow to severe traffic conditions. This exhibit shows that, in 2030, the afternoon commute across Lake Washington on SR 520 and I-90 and on I-5 and I-405 will range from slow, to stop-and-go, to severe traffic conditions.

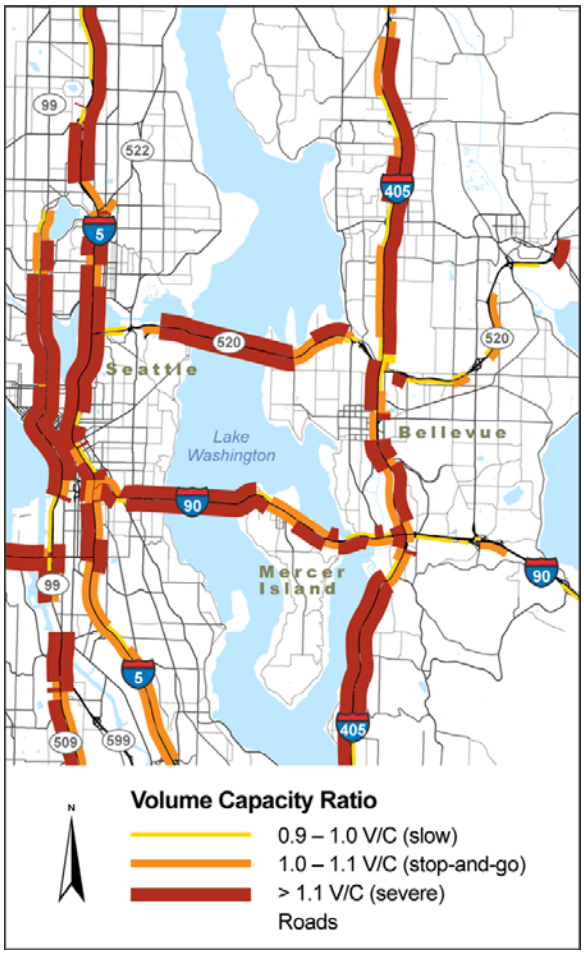
This congestion would substantially constrain the ability to travel into key employment and population areas of the region and highlights the importance of increased utilization of transit.

The East Link Project would link Seattle, the region's main urban downtown area, with the Eastside communities, connecting the region's dense commercial and residential centers as well as major



HOV = high-occupancy vehicle
SOV = single-occupant vehicle

EXHIBIT 3-4
Existing PM Peak-Hour Screenline Mode Share



Source: PSRC, 2007

EXHIBIT 3-5
PSRC 2030 PM Highway Volume-to-Capacity Ratios without East Link

employers across Lake Washington. Light rail would support increased density in Bellevue and Redmond, as well as Seattle, consistent with regional land use plans and Washington Growth Management Act goals to preserve natural resources. Higher density provides economic growth and opportunities for more effective infrastructure development with HCT. Travel between the key urban centers (Seattle and Downtown Bellevue) would improve with light rail service because it has greater capacity and is a more reliable mode of travel than SOVs.

Year 2020 and 2030 annual traffic growth rates for the PM peak hour are listed in Table 3-1. These are based on PSRC travel demand model forecasts. By year 2030, the annual vehicle growth rates within the study area would be less than 2 percent per year. With East Link, a slight reduction in auto usage is forecasted as approximately 10,000 people shift their mode of transportation and use light rail by year 2030.

TABLE 3-1
Future PM Peak-Hour Traffic Growth Rate for No Build Alternative

Segment	Boundary	Annual Vehicle Growth Rate (percent)	
		Year 2020	Year 2030
Segment A	Seattle to South Bellevue	2.5	1.8
Segment B	South Bellevue to Bellevue Central Business District	0.8	1.0
Segment C	Bellevue Central Business District	1.3	1.7
Segment D	Bellevue Central Business District to NE 40th (Redmond)	2.5	1.9
Segment E	NE 40th (Redmond) to Downtown Redmond	1.7	1.5

3.3.3.2 Vehicle Miles Traveled and Vehicle Hours Traveled

VMT and VHT are regional performance measures used to assess the impacts of the project alternatives on travel. Changes in VMT mean people are traveling either less or more distance (miles) to get to their destinations. Changes in VHT generally reflect the change in traffic congestion or the amount of time required to travel.

The PSRC and Sound Transit travel demand models were used to predict traffic conditions with the East Link Project. The results indicate that the regionwide VMT and VHT would decrease by about 0.20 percent, with the majority of the reductions occurring in the AM and PM peak periods. This is a reduction of slightly less than 230,000 VMT and 10,000 hours of travel each day in year 2030. Total regional VMT and VHT for year 2030 with and without East Link are shown in Table 3-2.

TABLE 3-2
2030 Regional Travel Impact Comparison Summary

	No Build	East Link	Percent Change
Total VMT	116,690,200	116,461,200	-0.20
Total VHT	4,463,000	4,453,900	-0.20

Source: PSRC and Sound Transit demand models.

3.3.3.3 Screenline Performance

Generally, with the project, regional roadway v/c ratios would remain the same or improve slightly (lower values) compared with the No Build Alternative. Removing vehicle use from the center roadway to accommodate light rail would not affect other regional highways, such as SR 520, I-5, and I-405. Mode shares generally would become less dominated by SOVs as the transit share increases. With the project, transit ridership across Lake Washington would increase by about 25 percent compared with no-build condition during the PM peak period; therefore, an estimated 16 percent of the total number of people traveling across the lake would be using transit. This mode shift provides increased person mobility in a corridor with limited opportunities for road expansion. The projected v/c ratios and mode shares are summarized in this section for each screenline. Year 2030 v/c ratios at each screenline are shown in Table 3-3. Exhibit 3-6 shows the PM peak-hour mode share at each screenline for year 2030.

TABLE 3-3
2030 PM Peak-Hour Volume-to-Capacity Ratios at Screenlines

Screenline	Direction	2030	
		No Build[a]	East Link
1	Northbound	0.95	0.94
	Southbound	1.16	1.14
2	Westbound	1.13	1.12
	Eastbound	1.02	1.17
3	Westbound	0.70	0.68
	Eastbound	0.82	0.72
4	Northbound	1.12	1.10
	Southbound	1.22	1.23
5	Westbound	0.75	0.75
	Eastbound	0.77	0.78
6	Northbound	0.86	0.86
	Southbound	.059	0.58

Source: PSRC travel demand model.

[a] No-build condition with Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.

Screenline 1: City of Seattle

For the No Build Alternative, the mode share among SOV, HOV, and transit usage in Seattle (across Screenline 1) is expected to change little in the future. With East Link, transit usage would more than double, and the Screenline 1 v/c ratios would improve. This increase in transit share is due to modifications in transit service and the addition of light rail service across this screenline.

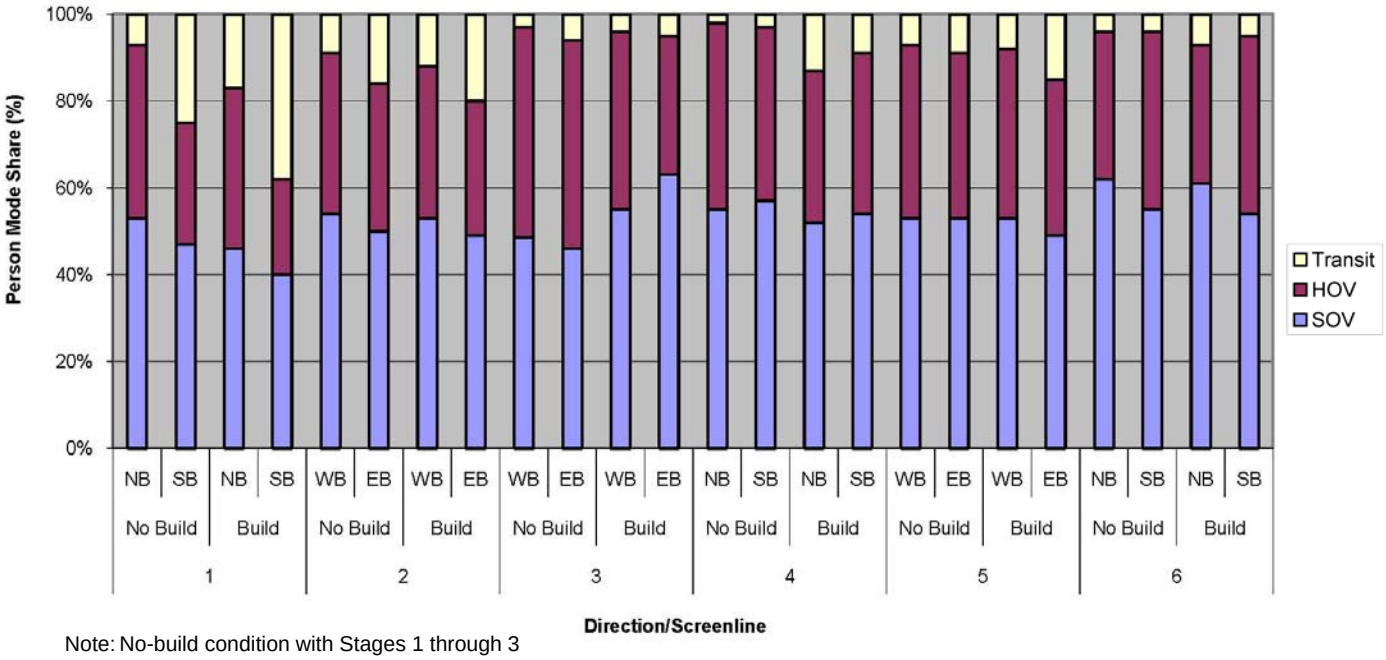
Screenline 2: Lake Washington (Includes I-90 and SR 520)

In the future, the v/c ratios crossing Lake Washington on both I-90 and SR 520 (across Screenline 2) would remain similar to today's highly congested conditions with or without light rail. Because the I-90 reversible center roadway would be removed by the East Link Project, the v/c ratio in the peak directions (into Seattle in the morning and out of Seattle in the afternoon) is expected to become slightly higher than with the No Build Alternative, although increased transit use with the project would increase person throughput and provide increased capacity for future growth (see Section 3.5.3.3). Forecasted travel on both I-90 and SR 520 with the East Link Project is expected to remain similar to the No Build Alternative, indicating no substantial diversion to other facilities.

For travel across Screenline 2 in 2020 and 2030, the percentage of SOVs would slightly decrease with the No Build Alternative as congestion worsens and people choose alternative modes, such as HOVs and transit. With light rail, both SOV and HOV usage would decrease as people choose to use transit. Providing light rail would increase transit usage in 2030 by up to 25 percent, which is a substantial shift to transit. There is also an expected slight shift in HOV usage from I-90 to SR 520. This shift would be caused in part by the planned SR 520 HOV lane improvements and closure of the I-90 center roadway. Section 3.5 discusses I-90 traffic operations and congestion patterns in detail, including vehicle and person throughput, vehicle travel time, level-of-service, and safety.

Screenline 3: Interstate 90 (at Mercer Slough)

With the No Build Alternative, congestion in the future would increase slightly compared with existing conditions. With the East Link Project, v/c ratios across Screenline 3 would decrease slightly because of a shift in travel patterns during the PM peak hour, indicating that congestion would improve slightly. Mode shift patterns indicate that, with the future No Build Alternative, SOV usage would decrease and HOV and transit usage would increase. With light rail, the HOV share would decrease slightly due to the reasons noted above for Screenline 2.



Note: No-build condition with Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.

EXHIBIT 3-6
2030 PM Peak-Hour Mode Share at Screenlines

Screenline 4: South Bellevue

In 2020 and 2030 with the No Build Alternative, v/c ratios at Screenline 4 are expected to be near or above 1.0. This indicates that future travel into and out of the key Eastside urban center of Downtown Bellevue would remain constrained. With the East Link Project, congestion would improve slightly, but v/c ratios would still be at or over capacity. The percentage of people using SOVs, HOVs, and transit at this location is expected to remain fairly similar between existing conditions and the No Build Alternative. With light rail, the transit mode share would increase substantially as people adjust their travel patterns and choose to use light rail to travel into and out of Bellevue. Overall, by 2030 the transit share of total trips is expected to reach over 10 percent with light rail. This is a substantial increase from the 2 to 3 percent transit share in the No Build Alternative. This increase in transit share is due to the addition of light rail service across this screenline. For a discussion of cross-lake mode share, refer to the Screenline 2 (Lake Washington) discussion above.

Screenlines 5 and 6: Bellevue-Redmond (Bel-Red) and Redmond (Grasslawn)

Across screenlines 5 and 6, future v/c ratios are expected to increase and further constrain vehicle travel with the No Build Alternative. With East Link, v/c ratios would either remain similar or slightly decrease as people use light rail. Mode share percentages for the No Build Alternative would remain similar to existing conditions, with approximately 55 to 65 percent SOV vehicle users and 30 to 40 percent HOV users. With East Link, transit is expected to increase to 7 percent of the total mode share.

3.3.4 Potential Mitigation

No mitigation would be required for regional travel impacts because, overall, the highways and arterials would not experience adverse changes in operations. The v/c ratios and mode share would generally remain similar or would improve with the East Link Project. For specific mitigation along I-90, refer to Section 3.5.

3.4 Transit

3.4.1 Methodology

The six screenlines established for evaluating the East Link Project, along with the areas served by the project, were used to measure the transit LOS performance (buses and light rail) along key corridors within the study area (see Exhibits 3-1 through 3-3 for the screenline locations). The project alternatives include both light rail and bus service on the Eastside, whereas the No Build Alternative includes only bus service on the Eastside. The bus routes that were selected for evaluation are those most likely to have their ridership influenced by the project.

The impacts on existing and future regional and local transit services were evaluated based on the following categories:

- Coverage and circulation
- Transit LOS performance
  - Service frequency LOS
  - Hours of service LOS
  - Passenger load LOS
  - Reliability of service LOS
- Transit travel time
- Transit transfers
- Light rail ridership

The coverage area is defined as the area(s) for which transit provides service. Circulation is defined as the route(s) on which transit operates. Transit LOS performance was analyzed for the PM peak hour (5 to 6 p.m.) to describe transit performance during the period when traffic congestion and transit ridership are highest. For transit LOS performance, LOS A indicates more frequent service, more hours served during the day, high reliability, and minimal passenger crowding in a transit vehicle. LOS F indicates less frequent service, fewer hours served during the day, low reliability, and passenger crowding in a transit vehicle. Individual components of transit LOS performance are defined as follows:

- Service frequency LOS is the number of times within the PM peak hour that a bus or light rail train stops at a specific location. Generally, the less time riders have to wait between bus arrivals, the better the service frequency LOS. Bus routes that have headways less than 10 minutes are considered LOS A, whereas more than 60-minute headways are LOS F.
- The hours of service LOS measures the total number of transit operating hours provided within a 24-hour (daily) period. Hours of service LOS is intended to measure the availability of transit service to riders and potential users. The longer the period that transit service is provided throughout the day, the better the LOS.
- The passenger load LOS, which is measured at screenlines, is intended to measure passenger comfort and the ability of a rider to find a seat during the on-board portion of the trip during the PM peak hour. Passenger load LOS also measures crowding in the transit vehicle. A passenger load LOS at or worse than LOS D may reflect overcrowding, and, therefore, the transit service provider could consider service changes, such as increasing the transit frequency. In addition, a large number of passengers can cause the bus to wait (dwell) longer at stops because of crowded passenger boarding and alighting. A longer dwell time can negatively affect travel time and service reliability.
- Service reliability LOS was analyzed at major transit hubs along the East Link route. The reliability LOS measures the degree to which a transit vehicle meets or misses its scheduled headway at its arrival station. The routes evaluated at each major transit hub were chosen using the same criteria as the routes used in passenger load LOS evaluation. Two methods were used to determine transit reliability. For transit routes with scheduled headways greater than 10 minutes, on-time reliability was analyzed in terms of on-time performance, defined as being 0 to 5 minutes late. For transit routes operating at scheduled headways of 10 minutes or less, headway adherence was used to determine reliability. Headway adherence reliability was calculated comparing actual headways with scheduled headways of transit routes at major transit centers and park-and-ride lots within the study area. Future on-time performance and headway adherence for buses was not forecasted, so future bus reliability LOS was based on existing conditions. It was assumed that both Metro and Sound Transit would adjust their bus services according to the demand and congestion levels to maintain existing reliability, although unforeseen conditions may limit what is implemented.

From a bus rider's perspective, all individual bus routes that serve two areas can sometimes be perceived as a single service between these two areas. To reflect these connections, pairs of specific areas served by East Link were evaluated. These areas are Northgate, University District, Downtown Seattle,

Transit Level of Service. Transit conditions, such as delays at intersections, that influence how passengers perceive the quality of a transit trip. Measures of transit LOS include:

Transit Coverage. The areas for which transit routes provide service.

Service Frequency. How often the bus arrives at scheduled stops.

Transit Headway. The length of time between transit vehicles arriving at a location.

Hours of Service. How many hours the transit route operates in a day.

Passenger Load. How full a transit vehicle is compared to its capacity.

Transit Reliability. How often the transit vehicle arrives on time at its scheduled stops.

Alighting. Transit passengers exiting the transit vehicle.

Mercer Island, South Bellevue, Downtown Bellevue, Bel-Red, Overlake, and Downtown Redmond. Transit performance of these area connections was evaluated for service frequency LOS and hours of service LOS.

The *Transportation Technical Report*, located in Appendix H1 of this Final EIS, provides a detailed discussion of the routes within the study area as well as the transit LOS performance analysis methodology.

3.4.2 Affected Environment

Within the study area, transit services, including regional express buses and local buses, are provided by Metro, Sound Transit, and Community Transit. The frequency and number of bus routes in service increases during the peak periods (6 to 9 a.m. and 3 to 6 p.m.), most noticeably in the peak direction of travel (into employment areas in the AM, exiting employment areas in the PM). Sound Transit and Metro transit services crossing Lake Washington and connecting Downtown Seattle to Downtown Bellevue, Overlake, and Downtown Redmond currently serve over 13,000 transit riders (King County Metro, 2008a).

Major transit activities within the study area occur at transit centers and park-and-ride lots. A transit center is a central transportation hub where transportation modes and routes meet, providing transit users a central location to connect with multiple transit services and providers. There are four transit centers within the study area: International District/ Chinatown Station, Bellevue Transit Center, Overlake Transit Center, and Redmond Transit Center.

A park-and-ride lot is a parking facility in which people can park their vehicles and transfer to other modes (e.g., bus, rail, carpool, nonmotorized) to travel to destinations, mainly urban centers (e.g., Downtown Seattle, Bellevue). There are park-and-ride lots in segments A, B, D, and E. Metro and Sound Transit provide service to transit centers and park-and-ride lots so riders can make transfers to reach their destinations. Within the study area, Community Transit provides service only to the Overlake area. Table 3-4 lists the existing transit facilities in the study area.

TABLE 3-4
Existing Transit Facilities in Study Area

Transit Facility	Type of Facility	Served by Routes[a]	Park-and-Ride Stalls[a]
International District/Chinatown Station	Station	KCM 41, 71, 72, 73, 74X, 101, 106, 150, 174, 194, 212, 217, 225, 229, 255, 256, 301 ST 550	none
Bellevue Transit Center	Transit center station	KCM 220, 222, 230, 232, 233, 234, 237, 240, 243, 249, 253, 261, 271, 280, 342, 630, 885, 886, 921 ST 532, 535, 550, 555, 556, 560, 564, 565	none
South Bellevue Park-and-Ride	Park-and-ride facility	KCM 222, 240, 942 ST 550, 560	519
Wilburton Park-and-Ride	Park-and-ride facility	KCM 167, 243, 280, 342, 885, 921, 952 ST 560	186
Mercer Island Park-and-Ride	Park-and-ride facility	KCM 201, 202, 203, 204, 205, 213, 216, 942 ST 550, 554	447
Bear Creek Park-and-Ride	Park-and-ride facility	KCM 216, 233, 251, 253, 266, 268, 269, 922 ST 540, 545	283
Overlake Village Park-and-Ride	Park-and-ride facility	KCM 222, 242, 247, 249, 250, 253, 261, 269 CT 441	203
Overlake Transit Center	Transit center station, park-and-ride facility	KCM 222, 225, 229, 230, 232, 233, 245, 247, 256, 268, 269, 644 CT 441 ST 545, 564, 565	170
Redmond Transit Center	Transit center station, park-and-ride facility	KCM 220, 232, 249, 250, 251, 253, 254, 265, 266, 291, 922, 929 ST 540, 545	377

[a] Transit routes and park-and-ride stalls as of spring 2007 except for Mercer Island Park-and-Ride lot, which was inventoried in February 2008 (King County Metro, 2008b).
CT Community Transit
KCM King County Metro.
ST Sound Transit

Sound Transit's Regional Express buses provide regional transit service to commuters within the study area as well as in other parts of King County and Pierce and Snohomish counties. Average headways of buses within the study area are 30 minutes. A few Sound Transit routes (such as ST 550 between Bellevue and Seattle) offer more frequent service, with headways around 10 minutes. In Downtown Seattle, Sound Transit also offers other services, including the Sounder commuter rail and Central Link light rail. The International District/Chinatown Station, a bus and Central Link station in the downtown Seattle Transit Tunnel, provides a connection to Sounder and Amtrak services at the nearby King Street Station. Sounder operates during peak periods with train service between Seattle and Tacoma and between Seattle and Everett. Central Link light rail offers light rail service between Downtown Seattle and the Seattle-Tacoma International Airport (Sea-Tac Airport). Headways for the light rail line are currently 7.5 minutes in each direction during the peak periods.

Metro provides regional and local service throughout King County. Within the study area, Metro operates most of the local fixed-route and express bus service in addition to other transit services. During peak periods, the average headway for Metro buses is about 30 minutes. Community Transit provides service between Snohomish and King counties and has one bus route within the study area.

3.4.3 Environmental Impacts

The East Link Project would improve transit operations and LOS within the regional transit system. Light rail would provide regional travel benefits by extending transit access and mobility into the growing urban areas east of Lake Washington. Enhancing transit service connections with light rail between major employment centers in the Puget Sound region—Seattle, Bellevue and Redmond—would improve overall transit usage by providing these communities with more reliable transit service.

By 2030 with this project, between 48,000 and 52,500 riders would use East Link, and slightly over 10,000 more people would use transit compared to the no-build condition where only bus service is provided to the Eastside communities. These people would not use transit if this project is not built. Light rail would provide service between Seattle and Downtown Bellevue in under 20 minutes and between Seattle and Redmond in 29 to 39 minutes. Light rail service would close gaps in the existing transit network. Bus routes that share connections with the light rail system would likely experience higher ridership, while light rail would be able to carry an increased number of passengers to connecting bus routes. As further described in this section, light rail would improve transit service by providing increased service frequency, faster travel times, and longer hours of service throughout the day, in addition to serving both the peak and reverse-peak directions.

3.4.3.1 Coverage and Circulation

Sound Transit and Metro service planners developed a bus service plan for the 2020 and 2030 years for both the No Build and the East Link alternatives. Although the service plans would not be finalized until close to system operation, the plans provide a snapshot of how bus service would look with and without the project. Some of these plans are currently being implemented through Transit Now, an initiative to expand Metro service that was approved by King County voters in the general election in November 2006, and Sound Transit's ST2 program approved by King, Snohomish, and Pierce County voters in the November 2008 general election.

In general, the future bus service frequency and coverage area would increase both with and without the East Link Project because of changes in travel demand patterns and regional growth. With the project, bus service within the study area would change to feed the light rail system: some routes would be modified to end at the light rail stations where bus layover areas would be provided, and other routes would continue from the stations. Bus routes that serve the same markets as light rail and that are far less reliable would be reduced or eliminated. The following subsections briefly describe transit coverage and circulation changes associated with the project alternatives in each of the project segments. For more detailed information please refer to Section 4.3.1 and Appendix C of the *Transportation Technical Report.*

Segment A, *Preferred Interstate 90 Alternative (A1)*

Along I-90 between Seattle and the Bellevue Way interchange, light rail would use the reversible center roadway. Peak direction buses would be rerouted from the reversible center roadway to the HOV lanes in the outer roadways constructed as part of the I-90 Two-Way Transit and HOV Operations Project. Bus access to and from Mercer Island and the Rainier Avenue flyer stop would be maintained in all directions with a combination of the existing ramps provided on the outer roadways and the future HOV lanes and ramps built as part of the I-90 Two-Way Transit and HOV Operations Project. East of I-405, the I-90 HOV lanes and transit access that currently exists would not change with the East Link project. Changes to key transit routes on I-90 east of I-405 are further

described in this section and are included in the transit LOS and ridership forecasts, where applicable.

In Seattle, if the D2 Roadway (the ramp connection between I-90 at Rainier Avenue S and the Airport Way S and 5th Avenue S intersection) is not designated as joint use for buses and light rail, Downtown Seattle bus routes that use the D2 Roadway would more than likely be rerouted to 4th Avenue S via SR 519. Sections 3.4.3.2 and 3.5.3.3 identify the bus reliability and bus travel times with and without joint use operations on the D2 Roadway, respectively. Also in Seattle, as evaluated in the North Link Supplemental Final EIS (Sound Transit, 2006), buses might not operate in the Downtown Seattle Transit Tunnel once light rail extends to Northgate, which is an assumption for the East Link No Build Alternative and project alternatives for both 2020 and 2030 years.

Direct transit service between Mercer Island and the University District would not occur in the No Build Alternative because the bus route that connects these areas would be deleted per the future bus service plan. With East Link, the direct connection between these areas would be reestablished via light rail. Additional connections would also be created with light rail between Mercer Island and Northgate, Bel-Red, Overlake, and Downtown Redmond.

With the project, Sound Transit Regional Express Route 554 (ST 554) would be assumed to terminate at the Mercer Island Station. With this change, bus stops would be relocated on Mercer Island to serve ST 554 when it arrives from the east. Route ST 550 would also be eliminated because it would provide parallel service to light rail.

On Mercer Island, if the future eastbound HOV off-ramp is not connected to 77th Avenue SE (connecting to Island Crest Way is Sound Transit's and WSDOT's preferred configuration), buses traveling eastbound on I-90 would continue to be able to serve the Mercer Island Park-and-Ride via the general-purpose eastbound off-ramps similar to current eastbound I-90 bus operations when the center roadway is closed to eastbound traffic.

Segment B

Under the No Build Alternative, direct transit connections to South Bellevue would not change. With light rail, however, South Bellevue would be directly connected to the Bel-Red, Overlake, Downtown Redmond, Northgate, and University District areas.

Preferred 112th SE Modified Alternative (B2M)

Under the *Preferred Alternative B2M*, route ST 550 would be eliminated, and other bus routes would continue to serve Bellevue Way between the South Bellevue Park-and-Ride and the Bellevue Transit Center. All other modifications to the future transit service coverage and circulation for Segment B would be similar in the no-build and build conditions.

Other Segment B Alternatives

For the BNSF Alternative (B7) at the 118th Station, some bus routes that could be effectively rerouted would begin and end at this station. Without the project, many of these routes would begin and end at the Wilburton Park-and-Ride. Current bus service on Mercer Island would connect to the South Bellevue Park-and-Ride and Downtown Bellevue with Alternative B7. For all other Segment B alternatives, transit service coverage and circulation would remain similar to the *Preferred Alternative B2M*.

Closing the eastbound HOV off-ramp at the I-90 and Bellevue Way SE interchange is a design option for all Segment B alternatives, while closing the westbound HOV on-ramp is a design option for only Alternative B1. The potential closure of the HOV direct-access ramps would not affect bus services because the project would eliminate buses currently using these ramps; the exception, however, is Alternative B7, for which one bus route would be rerouted to the general-purpose ramp if the eastbound HOV direct-access off-ramp were to be closed.

Segment C

With light rail, there would be more direct transit connections between Downtown Bellevue and the areas served by East Link. In both the No Build Alternative and build alternatives, a Metro RapidRide route would connect downtown Bellevue, Overlake, and Redmond.

Preferred 108th NE At-Grade Alternative (C11A)

Under *Preferred Alternative C11A*, routes ST 550 and ST 556 would be eliminated. Other bus routes, such as ST 555 and ST 564/565, would be truncated to end at the Bellevue Transit Center and reduce redundancy with light rail service. All other modifications to the future transit service coverage and circulation for the Segment C area would be similar under the no-build and build conditions.

Preferred 110th NE Tunnel Alternative (C9T)

Under *Preferred Alternative C9T*, transit service coverage and circulation would be similar to the *Preferred Alternative C11A*.

Other Segment C Alternatives

Under the Couplet Alternative (C4A), transit that travels on 108th Avenue NE and 110th Avenue NE might need to be revised depending on the direction of the one-way vehicle couplet. All other modifications to the future transit service coverage and circulation

under the Alternative C4A would be similar to the *Preferred Alternative C11A*.

For all other Segment C alternatives, bus service and circulation would be similar to the *Preferred Alternative C11A*.

Segment D

Without the East Link Project, there would be no direct transit connection between Bel-Red and Downtown Redmond because the bus routes connecting these areas would be deleted or modified. East Link would provide a direct connection between these areas. In addition, light rail would directly connect Bel-Red and Overlake to the South Bellevue, Mercer Island, University District, and Northgate areas. Light rail would also directly connect the Bel-Red area to Downtown Seattle.

Preferred NE 16th At-Grade Alternative (D2A)

Under the *Preferred Alternative D2A*, to serve the 120th Station, some bus routes' circulation patterns would be modified to use 120th Avenue NE instead of 116th Avenue NE between NE Bel-Red Road and NE 20th Street. Some services between the Bellevue Transit Center and the Overlake Transit Center would be reduced or eliminated if light rail extended to the Overlake Transit Center. If light rail terminated at Overlake Village Station, then some bus routes would be changed to serve that station. All other modifications to the future transit service coverage and circulation for the Segment D area would be similar under the no-build and build conditions.

Other Segment D Alternatives

For all other Segment D alternatives, transit service coverage and circulation would be similar to the *Preferred Alternative D2A*, except for Alternative D5, which does not have a 120th Station and, therefore, would not have any of the bus route modifications associated with that station.

Segment E

Under the No Build Alternative, there would be no direct transit connection between the downtown Redmond and Bel-Red areas. With light rail, new direct transit connections would be established between Downtown Redmond and the Bel-Red, South Bellevue, Mercer Island, and Northgate areas.

Preferred Marymoor Alternative (E2)

Under *Preferred Alternative E2*, the SE Redmond Station would be added, which would change transit service. Some bus routes would be revised to serve the SE Redmond Station, and these buses would use NE Redmond Way and NE 70th Street to access the SE Redmond Station. Some bus routes would continue using the Bear Creek Park-and-Ride as they would in the no-build condition. It was assumed that similar transit services would be provided at either the Redmond Transit Center or Downtown Redmond Station because they are both located in Downtown Redmond. All other modifications to the future transit service coverage and circulation for the Segment E area would be similar under the no-build and build conditions.

Other Segment E Alternatives

For all other Segment E alternatives, transit service coverage and circulation would be similar to the *Preferred Alternative E2*.

3.4.3.2 Transit Level of Service and Operations

Future transit hours of service and frequency would change with or without East Link to meet future transit needs. With the project, Metro and Sound Transit bus routes would be modified to develop an integrated transit network with transit hubs at many East Link stations. Some routes would be reduced or eliminated where bus service duplicates light rail service. Other routes would be modified to end at light rail stations. Some would be modified to stop at the new stations and continue. It was assumed that future Community Transit service in the area would be unaffected.

The following subsections show results for each of the measures used to evaluate transit LOS performance**.** Table 3-5 provides LOS values and associated grades for each of the transit LOS measures. Appendices B and C in the *Transportation Technical Report* provide more information on the LOS values and descriptions.

Service Frequency Level of Service

With the No Build Alternative, some areas would be connected by frequent service; however, many other areas would not have direct transit connections. Service frequency in the reverse-peak direction (eastbound in the morning [AM] and westbound in the afternoon [PM]) between Overlake and Downtown Seattle, and between Downtown Redmond and Downtown Seattle, would improve from the existing LOS C to LOS A. This service frequency improvement would be a result of planned more frequent headways of ST Route 545. Between Downtown Seattle and Downtown Bellevue, the service frequency would remain at a LOS B or better. With a few exceptions, the University District, Northgate, Mercer Island, South Bellevue, Bel-Red, Overlake and Downtown Redmond areas would not have direct bus service between them.

TABLE 3-5
Transit LOS Definitions

LOS	Service Frequency (minutes between arrivals)	Service Hours (in a day)	Passenger Load		Reliability (percent on-time)[a]
			Buses (passengers per seat)	Light Rail (square feet per standing passenger)	
A	Less than10	19 to 24	0.00 to 0.50	More than10.8[b]	95.0 to 100
B	10 to 14	17 to 18	0.51 to 0.75	8.2 to 10.8	90.0 to 94.9
C	15 to 20	14 to 16	0.76 to 1.00	5.5 to 8.1	85.0 to 89.9
D	21 to 30	12 to 13	1.01 to 1.25	3.9 to 5.4	80.0 to 84.9
E	31 to 60	4 to 11	1.26 to 1.50	2.2 to 3.8	75.0 to 79.9
F	More than 60	0 to 3	More than 1.5	Less than 2.2	Less than 75.0

Source: Transit Capacity and Quality Service Manual, Transportation Research Board (TRB), 2003.
[a] "On time" is 0 to 5 minutes late; early departures are not considered on time.
[b] This includes the potential for some cars to have no standing passengers.

Planned modification of some routes (elimination, truncation, and rerouting) would also decrease the service frequency LOS with some of the connections to and from the Bel-Red area. Service frequency would improve from LOS D to LOS C between the Downtown Bellevue and University District areas because headways would improve from 25 minutes to 15 minutes. Even though many of the bus routes are planned for more frequent headways, buses would likely be unable to meet their scheduled headways in the future due to additional congestion on roadways.

In both years 2020 and 2030, East Link would connect all of the areas with more frequent service. East Link trains would have a peak-period headway of up to 7 minutes (in year 2030) resulting in LOS A. The Eastside areas would be directly connected with light rail service, with frequent direct connections with the Bel-Red, Overlake, and Downtown Redmond areas. The chart on the left in Exhibit 3-7 shows the service frequency LOS for the No Build Alternative, and the chart on the right shows the service frequency LOS with the project during the PM peak period. Because the transit integration plan did not alter the transit service frequencies enough to shift the LOS between years 2020 and 2030 conditions, this exhibit analyzes both years.

Hours of Service Level of Service

With the No Build Alternative, in both years 2020 and 2030, the hours of service for direct bus service between most areas would be similar to the existing

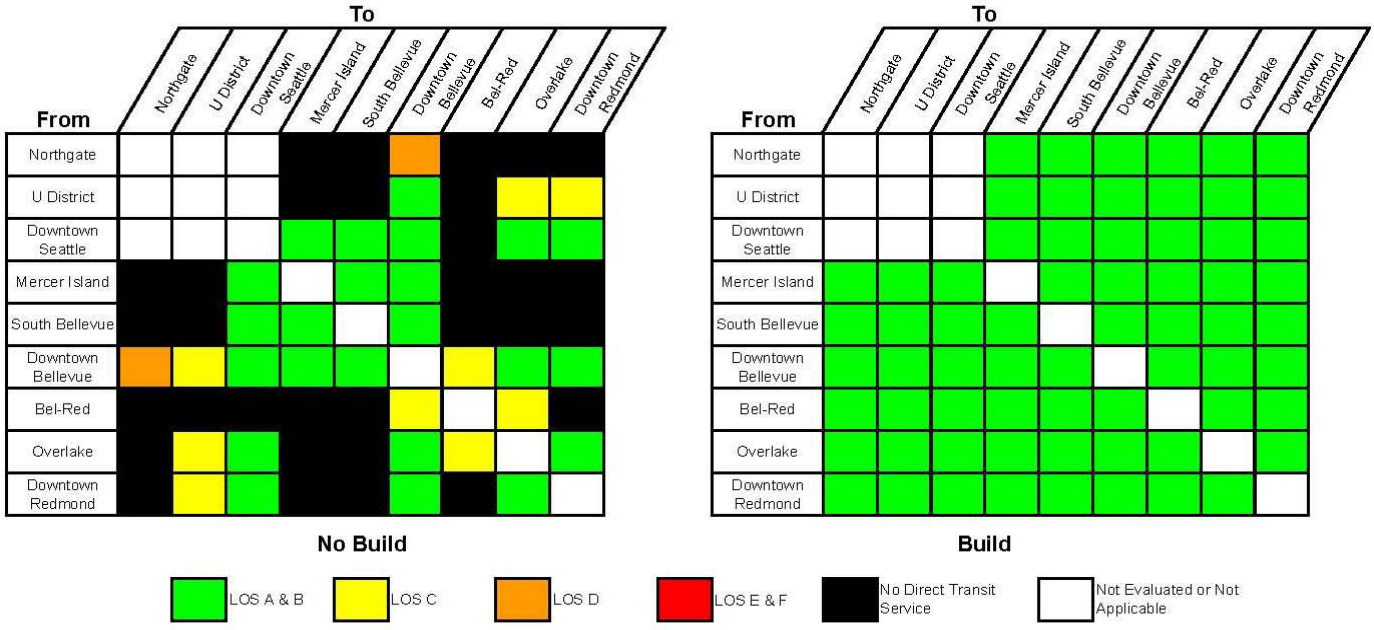


EXHIBIT 3-7
2020 and 2030 PM Peak-Period Service Frequency LOS

conditions. Service between Downtown Seattle and Downtown Redmond would continue to operate over 19 hours per day (LOS A). All connections with the Bel-Red area would operate at LOS C or worse. With a few exceptions, the University District, Northgate, Mercer Island, South Bellevue, Bel-Red, Overlake and Downtown Redmond areas would not have direct bus service between them. The connection between Downtown Bellevue and Northgate would continue to operate at hours of service LOS E (11 hours or less) or worse.

With the East Link Project, the hours of service would be LOS A between all areas directly connected by light rail. East Link would either introduce new direct connections among them or would substantially improve existing service areas. East Link would operate for 20 hours each day, which would be a longer operating duration than a majority of the future bus routes. The Eastside areas would be directly connected with light rail service, with most noticeable hours of service improvements in the connections with Bel-Red, Overlake, and Downtown Redmond. Downtown Seattle to Downtown Bellevue, and Downtown Seattle to Downtown Redmond, would continue to have hours of service LOS A. Northgate and the University District, with light rail, would have direct connections with Mercer Island and all the Eastside areas (South Bellevue, Downtown Bellevue, Bel-Red, Overlake, and Downtown Redmond).

The chart on the left in Exhibit 3-8 shows the hours of service LOS without the East Link Project, and the chart on the right shows the hours of service LOS with the project. Because the transit integration plan did not alter the hours of transit service enough to shift the LOS between years 2020 and 2030 conditions, this exhibit analyzes both years.

Passenger Load Level of Service

The future passenger load LOS was calculated differently for buses and light rail per the *Transit Capacity and Quality of Service Manual* (Transit Cooperative Research Program, 2003). Because buses are intended to provide mostly seated transit service, the number of available seats was compared with the forecasted number of passengers. A ratio of more than one passenger per seat would mean that some passengers must stand. Light rail, however, is intended to provide both seated and standing service. When the number of passengers exceeds the number of available seats, some passengers must stand. Passenger load for light rail was calculated as the square footage available per standing passenger. As the available square footage decreases, the LOS degrades.

Compared with existing conditions, the number of transit passengers in the No Build Alternative in both 2020 and 2030 years would increase. Overall, the passenger load LOS with the No Build Alternative would be expected to operate at LOS C or better. A greater number of passengers per bus would occur at Screenlines 1 (Seattle) and 2 (Lake Washington). Across Screenline 2, the passenger load for Seattle-to-Bellevue bus routes would be LOS D, indicating all bus seats are used by passengers. Although the total number of transit passengers across the other screenlines would increase in the future No Build

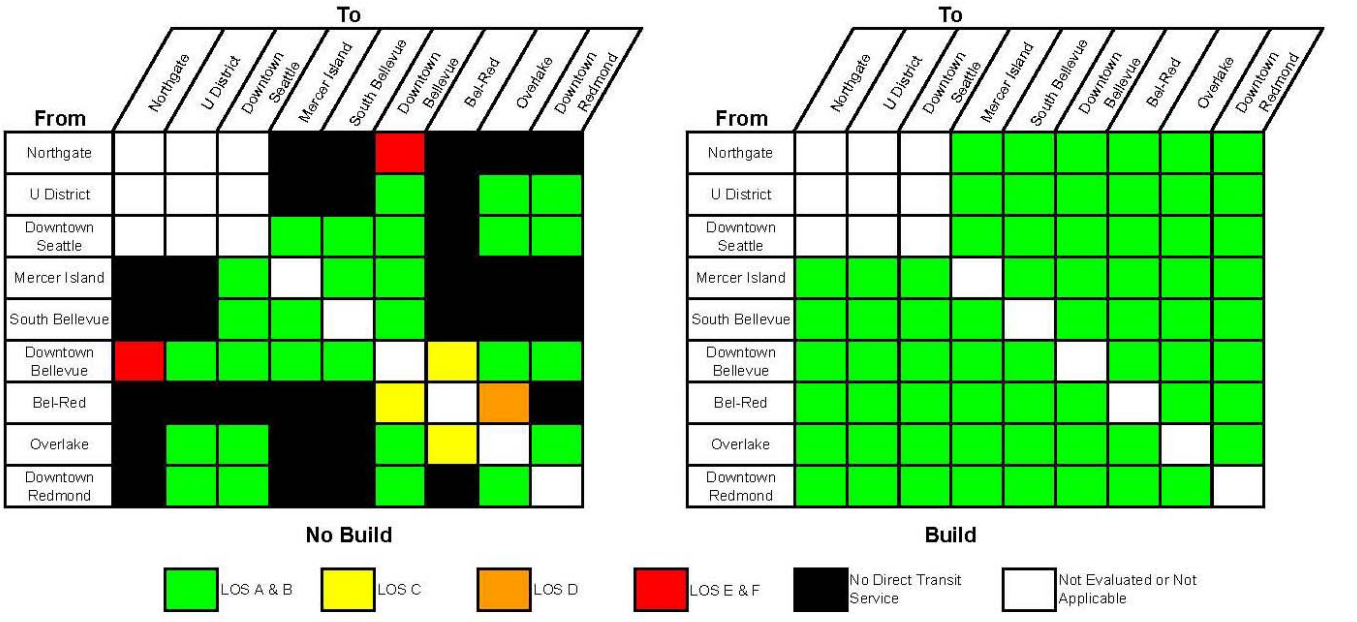


EXHIBIT 3-8
2020 and 2030 Hours of Service LOS

Alternative, depending on the bus service modifications, the passenger load LOS would increase or decrease compared with existing conditions.

With East Link, the light rail 2020 passenger load LOS would be expected to operate at LOS A. Transit use would continue to increase in 2030 with light rail as more people choose to travel on light rail because of its frequency and reliability. By 2030, light rail passenger load operations are expected to be LOS A and B. With East Link, the number of passengers per bus would decrease and the bus passenger load LOS would be LOS A in both 2020 and 2030. The improvement to LOS A for buses with the project would be notable at Screenline 2, where the bus passenger load without the project in the year 2030 would operate at LOS C in both directions. While the passenger load LOS would improve with light rail, the number of transit (bus and light rail combined) riders would increase by about 25 percent across the lake compared with the No Build Alternative.

In the future, if the light rail passenger load LOS becomes unacceptable, the transit service provider might consider increasing service frequency or train length to improve the passenger load LOS and passenger comfort. In Segment A, if in the future the D2 Roadway did not operate as joint use for bus and light rail, the buses that use the D2 Roadway would be rerouted to other roadways such as SR 519 to access Downtown Seattle. This rerouting would slightly increase bus travel time, which could potentially affect bus passenger load. Screenline passenger load LOS levels are presented in Table 3-6.

Transit Reliability Level of Service

Future on-time performance and reliability LOS in the no-build and build conditions were analyzed using data from existing conditions because deviations from future headways cannot be predicted. It was assumed that in the future both Metro and Sound Transit would adjust their bus services according to the demand and congestion levels to maintain existing reliability, although unforeseen conditions could limit what would be implemented.

Bus Reliability

In the future both with and without East Link, the majority of bus routes at each of the five stations (International District/Chinatown, Mercer Island, Bellevue Transit Center, Overlake Transit Center, and Redmond Transit Center) are expected to operate with a reliability of LOS E or F. None of the 23 bus routes at either the International District/Chinatown or Mercer Island stations are expected to have a reliability better than LOS E. Only 3 out of the 18 evaluated routes at the Bellevue Transit Center would operate better than LOS E. Sound Transit Route 550, a key transit route in the study area that follows a route similar to that of the light rail alternatives between Seattle and Downtown Bellevue, would operate at LOS F in both directions at the Mercer Island Park-and-Ride Lot, which indicates that this route would almost always be off schedule and would have about a 50 percent probability of arriving on time. Only at the Overlake Transit Center and Redmond Transit Center would some bus routes operate with a reliability better than LOS D.

TABLE 3-6
PM Peak-Hour Passenger Load Level of Service at Screenlines

Screenline	Direction	Existing Bus	2020 No Build Bus	2020 Build		2030 No Build Bus	2030 Build	
				Bus	Light Rail		Bus	Light Rail
1	Southbound	A	B	A	B	B	A	B
	Northbound	A	A	A	A	B	A	A
2	Eastbound	B	C	A	A	C	A	A
	Westbound	B	B	A	A	C	A	A
3	Eastbound	A	A	A	N/A	B	A	N/A
	Westbound	A	B	A	N/A	B	A	N/A
4	Northbound	A	A	A	A	A	A	A
	Southbound	B	A	A	A	B	A	A
5	Eastbound	A	B	A	A	C	A	A
	Westbound	A	A	A	A	B	A	A
6	Northbound	A	A	A	A	A	A	A
	Southbound	A	A	A	A	A	A	A

N/A Not applicable because light rail would not cross this screenline.

The continuation of poor reliability between Downtown Seattle and Downtown Bellevue would be expected because bus speeds between these two major urban centers are predicted to decrease slightly more than 30 percent by year 2030, even with improvements to I-90. This would occur because roadways connecting I-90 to these urban centers, especially to and from Bellevue, are not planned for improvements; therefore, congestion would worsen. Bus reliability LOS is presented in Table 3-7. While the bus reliability presented in Table 3-7 is based on existing data, future bus performance is expected to operate similar to or worse than existing conditions.

TABLE 3-7
Transit Reliability Level of Service at Stations

Station	Existing Bus		Future Light Rail[a] Level of Service[b]
	Percent On-Time Performance	Level of Service[b]	
International District/ Chinatown	48.8	F/E	A
Mercer Island	52.2	F/F	A
Bellevue Transit Center	53.3	F/E	A
Overlake Transit Center	52.4	F/C	A
Redmond Transit Center	45.3	F/D	A

[a] Light rail reliability performance was projected using St. Louis light rail data.

[b] LOS values are station averages; existing bus average LOS X/Y, where X=LOS for percent on-time performance station average, Y=LOS for coefficient of variation station average (definitions provided in the *Transportation Technical Report* [Appendix H1]).

Note: While the data used in this analysis were gathered during Downtown Seattle Transit Tunnel closure, data collected before the tunnel closure showed similar reliabilities (i.e., LOS E/F).

In Segment A, with light rail using the center roadway, buses would use the HOV lanes in the outer roadway during both construction and light rail operation. If performance of these HOV lanes is degraded, buses would likely not be able to maintain acceptable reliability because they would be operating in congested conditions in these HOV lanes.

If light rail and buses jointly use the D2 Roadway in Seattle, buses would gain up to a 2-minute savings inbound in the AM peak period to Downtown Seattle and up to a 6-minute savings outbound in the PM peak period from Downtown Seattle on I-90 compared to the operational option where buses would not be eligible to use the D2 Roadway. However, some of the savings would be reduced when buses travel along 5th Avenue South to and from the D2 Roadway. It would take up to 2 additional minutes to travel along 5th Avenue South compared to 4th Avenue South. Additionally, depending on the joint-use operating policy of the D2 Roadway, up to 3 additional minutes of average delay, in either direction, could be incurred by buses while waiting for clearance to enter the D2 Roadway. However, during evening events at the stadiums, bus routes along 4th Avenue South would incur additional travel time due to increased congestion along this street.

With an interim terminus station at the Ashwood/Hospital or Hospital station in Bellevue, current bus service would continue to serve the Bel-Red and Overlake areas with poor reliability. With an interim terminus farther east, the transit reliability in the Bel-Red and Overlake areas would improve with the direct service provided by light rail.

Light Rail Reliability

The poor bus reliability discussed above indicates that buses would be unable to meet their scheduled arrival times and would frequently arrive close together rather than at the desired intervals due to highly congested local and regional roadways. Poor reliability can make buses an unattractive mode for potential users and would be a major deterrent to transit use. Light rail would not experience the same disruptions in transit reliability as buses because light rail would operate in its own dedicated right-of-way, separate from vehicle congestion, and therefore would be able to accommodate higher ridership through more frequent and reliable service. In most cases, at-grade light rail routes would have priority at traffic signals.

The Puget Sound region's light rail system (Central Link) is in its first years of operation. The 2010 third quarter year-to-date service reliability indicates that the year-to-date adherence to schedule is around 80 percent, and the headway adherence is above 90 percent (Sound Transit, 2010). Refer to Appendix H1, *Transportation Technical Report*, of this Final EIS for information on how these percentages are calculated. Because the Puget Sound region's light rail system has different characteristics than assumed with the East Link Project (for example, current joint bus and rail operations in the Downtown Seattle Transit Tunnel are not assumed during East Link operations), and because Central Link is continuing to adjust operations to improve its reliability, East Link's expected reliability was estimated using the St. Louis light rail system's on-time performance data. St. Louis light rail includes features similar to East Link (such as at-grade crossings and tunnels) and is reported to be 93 percent on time. Other U.S. light rail lines report

between 92 and 98 percent on-time performance. The *Transportation Technical Report* contains additional St. Louis light rail data. The estimated light rail reliability LOS for future conditions is presented in Table 3-7.

3.4.3.3 Transit Travel Time Savings

Door-to-door (from the beginning to the end of your trip—for example, when you leave your place of work, ride transit, and then reach your destination, such as entering your home) travel time is a key factor in forecasting potential transit ridership. For some potential transit riders, especially riders who have other available travel options, the ability to provide a transit service that saves them time is an important factor in their decision-making process. Table 3-8 shows the average transit travel times for the No Build Alternative and East Link in the PM peak period in year 2030. The comparisons reflect an average person's door-to-door transit travel time using a particular station and include the following factors:

- Bicycle or walk time to stop or station
- Wait time
- Transfer wait time(s), if any
- In-vehicle time (in bus and/or light rail)
- Drive, bicycle, or walk time to destination

Compared with the No Build Alternative, East Link patrons in the representative alternative would save between 4 and 16 minutes during the PM peak period in year 2030. While the values presented in Table 3-8 represent a travel time for any transit rider in the region connecting to transit at the East Link stations, transit riders making trips where their origin and destination areas are both served by East Link would have the greatest travel-time benefits. This is due to shorter waits, no transfer times, and high in-vehicle speeds. Travel time savings would be similar in years 2020 and 2030 with East Link.

An important component of the overall transit travel time is the actual time for a train to travel between stations. With the East Link Project, a passenger's travel time between Downtown Seattle and Downtown Redmond, after boarding light rail, would be between 29 and 39 minutes. Light rail travel time between Downtown Seattle and Downtown Bellevue would be less than 20 minutes. This would be a savings of about 25 minutes compared with an automobile currently traveling between these locations, as in the afternoon peak period it now takes up to 45 minutes to travel between Seattle and Bellevue (via I-90) and up to 55 minutes to travel between Seattle and Redmond (via SR 520) (WSDOT, 2011).

TABLE 3-8
Comparative Analysis of Year 2030 Average Door-to-Door PM Peak-Period Transit Travel Times[a]

Station	Travel Time (minutes)			
	Year 2020		Year 2030	
	No Build Alternative	Build Alternatives	No Build Alternative	Build Alternatives
Segment A, Interstate 90				
Rainier	52	43	52	45
Mercer Island	49	41	50	41
Segment B, South Bellevue				
South Bellevue	51	43	50	43
SE 8th[b]	57	48	58	47
118th[b]	58	47	60	48
Segment C, Downtown Bellevue				
Old Bellevue[b]	59	50	60	51
Bellevue Transit Center	59	51	60	52
108th[b]	60	51	62	52
East Main	61	51	64	52
Hospital[b]	63	54	64	55
Ashwood/ Hospital	59	52	60	52
Segment D, Bel-Red/Overlake				
120th	62	53	62	54
130th	63	55	64	58
Overlake Village	66	56	63	56
Overlake Transit Center	63	55	60	56
Segment E, Downtown Redmond				
Redmond Town Center	69	54	70	56
Downtown Redmond	69	56	71	58
SE Redmond	64	59	66	50
Redmond Transit Center[b]	69	58	71	61
Weighted average (all stations)	**60**	**51**	**61**	**52**

[a] Door-to-door means from the beginning to the end of your trip, for instance from when you leave your place of work to when you enter your home.
[b] Travel times for these stations were derived from their alternative, which is not included in the representative alternative combination. These alternatives are Alternative B1 (connecting with Alternative C1T), Alternative B7, *Preferred Alternatives C11A* and *C9T*, and E2 - Redmond Transit Center Design Option.

In the future these automobile travel times are expected to continue to get even longer, and therefore light rail would provide an even greater travel time savings. Exhibit 3-9 shows light rail travel times between key stations.

3.4.3.4 Transfers

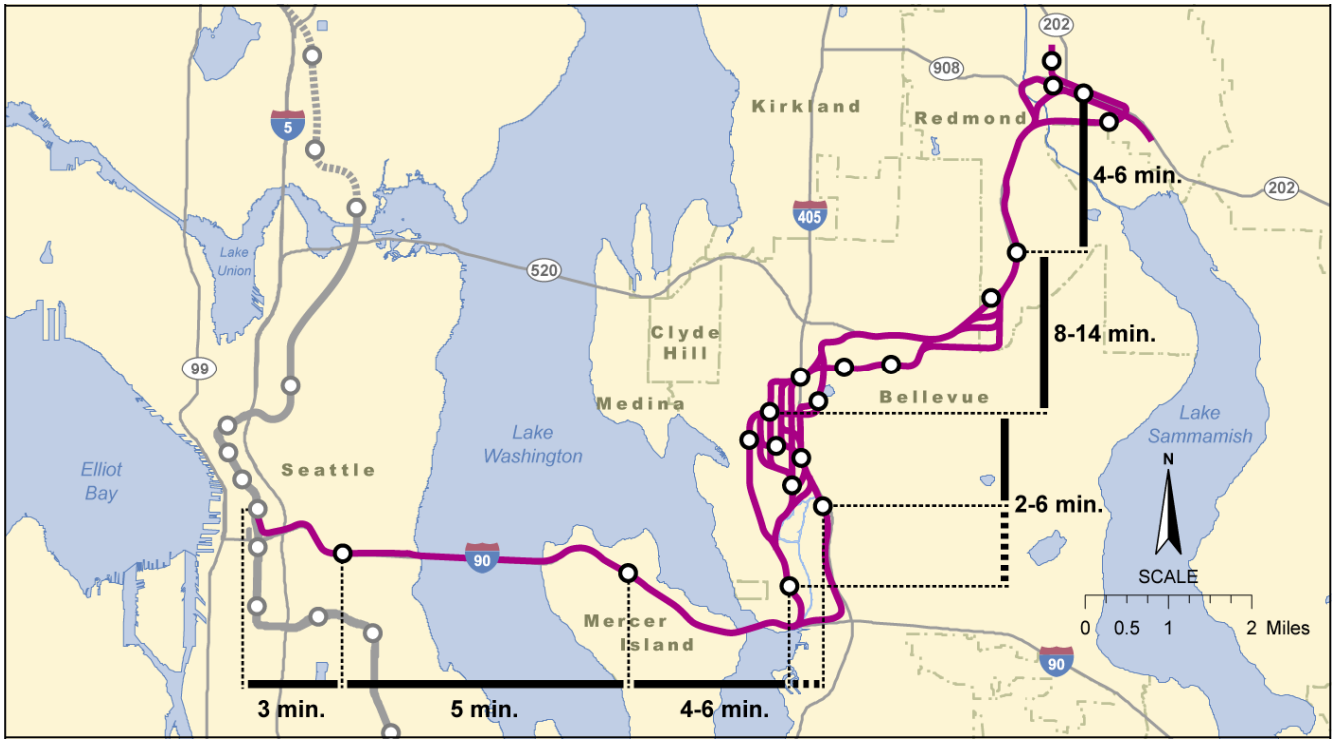
When transit riders are required to transfer, it is often perceived as a negative attribute of transit systems and an impediment to transit use. However, it is recognized that the quality of transfers, whether between buses or between bus and rail, has a dramatic impact on how negatively transfers are perceived. Factors determining quality of transfers include proximity of transfer location, wait time, waiting area conditions, and service reliability.

A slight reduction in transfer rate would be predicted with East Link because it would connect to the planned North Link light rail line and provide a one-seat transit trip between North Seattle and the Eastside.

Passengers transferring from bus to light rail would have shorter wait times compared with bus-to-bus transfers because the East Link operating plan assumes light rail trains in the peak periods would arrive every 8 minutes in 2020 and every 7 minutes in 2030. Even during off-peak hours, East Link would operate with 12-minute headways in 2020 and 10-minute headways in 2030. Because of the high reliability of light rail service, riders might choose a light rail trip that would result in a shorter wait time for transfers than a longer and potentially less reliable bus-only trip.

3.4.3.5 Station Parking

With the No Build Alternative, no expansion or changes would occur in existing park-and-ride capacities in the study area. With East Link, parking provided at the Mercer Island, Overlake Village, and Redmond Transit Center stations would remain unchanged. Depending on the alternative, new park-and-ride lots would be constructed at the 130th Station or 120th Station (proposed 300 stalls) with *Preferred Alternative D2A* and SE Redmond Station (proposed 1,400 stalls) and existing park-and-ride lots proposed to be expanded include the South Bellevue Station (approximately 1,400 additional stalls), 118th Station (proposed 1,030 stalls), and Overlake Transit Center Station (proposed 320 stalls) to better accommodate the expected ridership. Section 3.6 provides further details on parking and parking utilization at East Link stations.



Note: Estimated East Link travel time between the Mercer Island Station and the South Bellevue Station is about 4 minutes (solid line), between the Mercer Island Station and the 118th Station it is about 6 minutes (solid plus dashed line), between the South Bellevue Station and Bellevue Transit Center it is between 4 and 6 minutes (solid plus dashed line), and between the 118th Station and the Bellevue Transit Center it is about 2 to 4 minutes (solid line).

EXHIBIT 3-9
East Link Travel Times between Key Stations

3.4.3.6 Light Rail Ridership

The Sound Transit ridership forecasting model was used to develop the 2020 and 2030 light rail system ridership forecasts for each of the project alternatives.

The ridership forecasts use 2020 and 2030 land use forecasts based on the PSRC projections developed in 2005 and released in spring 2006. The transit ridership model also accounts for the voter-approved ST2 program and recent changes to background project schedules. The ridership forecasts and analysis also include the City of Bellevue's adopted Bel-Red Subarea Plan and the City of Redmond's Overlake Village Plan Update.

The segment ridership for each project alternative is the sum of the daily boardings at the stations in that alternative. Because the route, profile, and station locations vary for each alternative, changes are expected not only in the station boardings but also in the segment and projectwide ridership. The projectwide ridership is the total number of daily riders that would use East Link.

Daily ridership differences would be considered substantial if the forecasted variation among alternatives for total East Link ridership exceeded about 2,000 daily boardings. Generally, the variation among segment alternatives is expected to be less than 2,000 daily boardings because many of the segments include similar numbers of stations and the travel times are not different enough to cause a dramatic change in patronage. Station mode of access is discussed in Section 3.6. Ridership analysis methodology and results are presented in detail in Appendix H1, *Transportation Technical Report*, of this Final EIS.

Projectwide Ridership Summary

Based on the segment ridership forecasts discussed in the following sections, the full-length East Link Project would generate up to 45,000 riders in 2020 and up to 52,500 in 2030. There are several reasons for the variation in ridership among the alternatives. Alternatives C1T and C3T would generate the highest ridership among Segment C alternatives by connecting the commercial, retail, and office core of Downtown Bellevue through tunnel profiles that provide a relatively fast travel time. *Preferred Alternatives C11A* and *C9T* would generate ridership forecasts near the middle to lower end of the Segment C alternatives. Alternative B7, which generates the lowest projectwide ridership among Segment B alternatives, travels along a former BNSF Railway/I-405 route that would not stop at the South Bellevue Park-and-Ride. Alternative C14E would also generate a low projectwide ridership because it does not enter into the business and retail core of Downtown Bellevue as much as the other Segment C alternatives and, therefore, requires a longer walk to access the station. *Preferred Alternative D2A* would generate the highest ridership among Segment D alternatives. Exhibit 3-10 displays the 2030 projectwide ridership for each alternative by segment.

Preferred Alternative Ridership

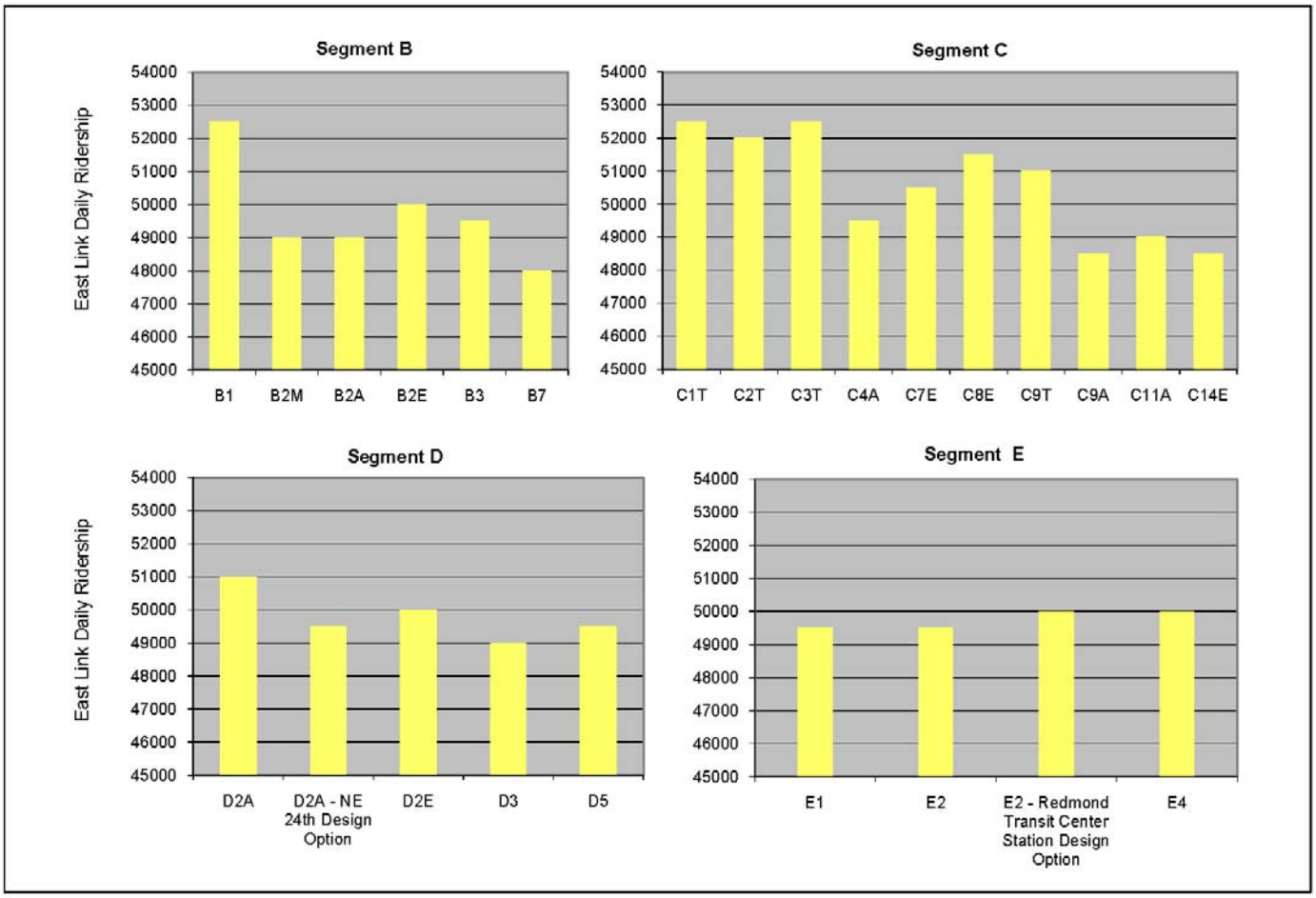
Table 3-9 lists the 2020 and 2030 projectwide ridership and boardings for the East Link *Preferred Alternative* (*Preferred Alternatives A1*, *B2M*, *C11A* and *C9T*, *D2A* and *E2*) in all five segments. The ridership forecasts presented in this table use a different approach from the forecasts that compare segment alternatives. Because the *Preferred Alternative* spans all five project segments, a "representative alternative" was not required to create a consistent ridership comparison for individual segments. For each year, two forecasts are provided in Table 3-9 because of the two preferred alternatives (*Preferred Alternatives C11A* and *C9T*) in Segment C.

Overall, projectwide ridership is very similar between the two preferred alternative forecasts, with 49,000 riders for *Preferred Alternative C11A* and 50,000 for *Preferred Alternative C9T*. The two alternatives would have very similar station and segment boardings within Segments A, D, and E. In Segment B, *Preferred Alternative C9T* would have 1,000 more boardings (5,500 compared with *Preferred Alternative C11A* with 4,500). The opposite is true for Segment C where *Preferred Alternative C11A* would have 1,000 more boardings than *Preferred Alternative C9T* (8,000 versus 7,000). One reason for the boarding differences between these two segments is the station locations. *Preferred Alternative C11A* has a 108th Station in Segment C and *Preferred Alternative C9T* has a SE 8th Station in Segment B.

Although not included in these ridership results, ridership between the Eastside and Seattle would be expected to be higher on days with special events at Safeco Field, Qwest Field, or other venues near the light rail system (e.g., for concerts, trade shows, other sporting events). East Link ridership would be anticipated to increase more than 8 percent on days with special events.

Alternative Ridership Forecasts by Segment

To forecast ridership for each alternative, a representative alternative was created to provide a baseline for the East Link Project. This representative alternative generally follows a combination of the *Preferred Interstate 90 Alternative (A1)*, 112th SE Bypass Alternative (B3), Couplet Alternative (C4A), NE 16th At-Grade Alternative (D2A) NE 24th Design Option,



Note: In Segment A, *Preferred Alternative A1* is forecasted to have a 2030 daily projectwide ridership of 49,500.

EXHIBIT 3-10
2030 Projectwide Daily Ridership

and the *Preferred Marymoor Alternative (E2)*. To assess each of the alternatives within a segment, the alternatives outside that segment being analyzed reflected the representative alternative, and, within the segment, each alternative was coded and ridership forecasts were prepared. This method provides a common baseline to compare the alternatives within each of the segments. Tables 3-10 through 3-14 provide the alternative ridership forecasts by segment. Included in these tables is a forecast for the preferred alternative for that segment. These forecasts, as described in this paragraph, are defined differently than the forecasts presented in Table 3-9. Refer to Appendix H1, *Transportation Technical Report*, of this Final EIS for further information on the methodology to forecast ridership for segment alternatives.

Segment A, *Preferred Interstate 90 Alternative (A1)* and Projectwide Ridership

Although there is only one project alternative in Segment A (the *Preferred Alternative I-90 [A1]*), the adjacent Segment B alternatives would affect its daily boardings because of the Segment B station's proximity to Segment A. The Segment A ridership forecasts are similar for all the Segment B alternatives except one because of a proposed station at the South Bellevue Park-and-Ride. Alternative B7 would have a station at 118th Avenue NE, not at South Bellevue, and it would cause a shift in travel patterns of the light rail users to the surrounding stations. Projectwide ridership would be about 40,000 riders in 2020 and up to 49,500 riders in 2030. The daily boardings at the Mercer Island Station in Segment A are expected to increase by around 1,000 under Alternative B7 in 2020 and 1,500 in 2030. Although this boarding information suggests a potential increase in the number of riders at the Mercer Island Station, the park-and-ride lot can only accommodate 447 vehicles; therefore, potential park-and-ride light rail riders exceeding this parking capacity would either use another station or alter their mode of transportation to access the station. Table 3-10 lists the projected 2020 and 2030 daily station boardings for Segment A.

TABLE 3-9
Year 2020 and 2030 Daily Ridership Forecasts for the Preferred Alternatives

Station	*2020*		*2030*	
	***Preferred Alternative* with *C11A* (and *A1, B2M, D2A,* and *E2*)**	***Preferred Alternative* with *C9T* (and *A1, B2M, D2A,* and *E2*)**	***Preferred Alternative* with *C11A* (and *A1, B2M, D2A,* and *E2*)**	***Preferred Alternative* with *C9T* (and *A1, B2M, D2A,* and *E2*)**
	Preferred Alternative A1			
Rainier	3,000	3,000	3,000	3,000
Mercer Island	1,500	1,500	2,000	2,000
Segment A Totals	**4,500**	**4,500**	**5,000**	**5,000**
	Preferred Alternative B2M			
South Bellevue	4,000	4,000	4,500	4,500
SE 8th	-	500	-	500
Segment B Totals	**4,000**	**4,500**	**4,500**	**5,500**
	***Preferred Alternative C11A*[a]**	***Preferred Alternative C9T***	***Preferred Alternative C11A*[a]**	***Preferred Alternative C9T***
108th	1,500	-	2,000	-
Bellevue Transit Center	4,000	5,000	5,000	6,000
Hospital	500	500	1,000	1,000
Segment C Totals	**6,500**	**5,500**	**8,000**	**7,000**
	Preferred Alternative D2A		***Preferred Alternative D2A***	
120th Station	500	500	1,000	1,000
130th Station	1,000	1,000	1,000	1,500
Overlake Village	1,000	1,000	1,000	1,500
Overlake Transit Center	2,500	2,500	3,500	4,000
Segment D Totals	**5,000**	**5,500**	**6,500**	**7,000**
	Preferred Alternative E2		***Preferred Alternative E2***	
Downtown Redmond	1,000	1,000	1,500	1,500
SE Redmond	1,500	1,500	2,000	2,000
Segment E Totals	**3,000**	**3,000**	**3,500**	**3,500**
Projectwide Ridership	***39,500***	***40,500***	***49,000***	***50,000***

- = Station not included in alternative.

Note: Due to rounding, station ridership may not sum exactly to segment totals.

[a] A low level of transit signal priority is assumed to ensure key east-west arterials in Downtown Bellevue are not affected. This assumption is consistent with the traffic analysis presented in this chapter.

If the D2 Roadway that connects I-90 and the Downtown Seattle Transit Tunnel operated with exclusive light rail service, transit (bus and rail) ridership along I-90 in the peak periods would not noticeably change because a slight increase in rail ridership would be offset by a slight decrease in bus ridership.

Segment B Alternative and Projectwide Ridership

Table 3-11 lists the projected 2020 and 2030 Segment B alternative and station daily boardings.

Preferred 112th SE Modified Alternative (B2M)

In Segment B, projectwide ridership for *Preferred Alternative B2M* would be in the middle of the range in 2020 and 2030 with 39,500 and 49,000 riders, respectively. In terms of segment boardings, *Preferred Alternative B2M* would have similar ridership as the other Segment B alternatives, other than Alternative B7, with 4,500 in 2020 and 5,000 in 2030.

TABLE 3-10
Year 2020 and 2030 Daily Ridership Forecast in Segment A

Station	2020		2030	
	A1	*A1* (combined with B7)	*A1*	*A1* (combined with B7)
Rainier	3,000	3,000	3,000	3,000
Mercer Island	1,500	2,500	1,500	3,000
Segment A totals	**4,500**	**5,500**	**5,000**	**6,000**
Projectwide ridership	**40,000**	**39,000**	**49,500**	**48,000**

Note: Due to rounding, station ridership might not sum exactly to segment totals.

The reason the ridership varies between Alternatives B2M and B7 is because the locations and numbers of Segment B stations by alternative are different. With Alternative B7, riders may choose to access East Link in another segment (such as Segments A or C) due to the relative ease of accessing those stations rather than the stations in Segment B. This is reflected in the East Link project-wide ridership, which varies less between these alternatives compared to the segment boarding forecasts because riders are choosing to access East Link in a different segment.

Other Segment B Alternatives

Alternative B1 connecting with Alternative C1T would generate the highest projectwide daily ridership among Segment B alternatives: 42,500 riders in year 2020 and 52,500 riders in year 2030. Alternative B7 would generate the lowest projectwide daily ridership among Segment B alternatives with 39,000 riders in 2020 and 48,000 in 2030. The Old Bellevue Station, immediately north of the Segment B boundary, would contribute to the higher projectwide ridership for Alternative B1 because it is surrounded by a high concentration of medium- to high-density, mixed-use neighborhoods and it is close to commercial, retail, and office properties.

In year 2020, Segment B ridership for each alternative would range from a low of 1,500 daily boardings under Alternative B7 to a high of 4,500 daily boardings generated by *Preferred Alternative B2M* and Alternatives B2E and B2A. By 2030, ridership in Segment B would range from a low of 1,500 daily boardings with Alternative B7 to a high of 5,000 daily boardings with the *Preferred Alternative B2M* and Alternatives B2A and B2E.

The South Bellevue Station ridership would be similar for all alternatives that include this station. The year 2020 daily boardings at this station would be 4,000. In year 2030, this station would generate 4,500 daily boardings. In both years 2020 and 2030, the SE 8th Station would generate 500 daily boardings for all alternatives with this station. Alternative B7 would be the only route that would stop at the 118th Station, which would produce 1,500 daily boardings in both years 2020 and 2030. Boardings at the 118th Station are lower than at the South Bellevue Station because it would have less convenient auto and transit access with I-90.

Alternatives B3 and B7 also have an East Main Station in Segment C just north of the Segment B boundary. Under Alternative B3, this station is expected to generate 2,000 and 2,500 daily boardings in years 2020 and 2030, respectively, while under Alternative B7, the station would generate 2,500 and 3,000 daily boardings in these same forecast years, respectively.

TABLE 3-11
Year 2020 and 2030 Daily Ridership Forecast in Segment B

Station	2020						2030					
	B2M	B1	B2E	B2A	B3[a]	B7	*B2M*	B1	B2E	B2A	B3[a]	B7
South Bellevue	4,000	4,000	4,000	4,000	4,000	-	4,500	4,500	4,500	4,500	4,500	-
SE 8th	500	-	500	500	-	-	500	-	500	500	-	-
118th	-	-	-	-	-	1,500	-	-	-	-	-	1,500
Segment B totals	**4,500**	**4,000**	**4,500**	**4,500**	**4,000**	**1,500**	**5,000**	**4,500**	**5,000**	**5,000**	**4,500**	**1,500**
Projectwide ridership	**39,500**	**42,500**	**40,500**	**39,500**	**40,000**	**39,000**	**49,000**	**52,500**	**50,000**	**49,000**	**49,500**	**48,000**

[a] Alternative B3 and the B3 - 114th Extension Design Option would produce similar ridership forecasts.

- = Station not included in alternative.

Notes:
All Segment B alternatives are connected to Alternative C4A in Segment C to create a consistent ridership comparison except Alternative B1, which is connected to Alternative C1T. Due to rounding, station ridership might not sum exactly to segment totals.

Segment C Alternative and Projectwide Ridership

Tables 3-12 and 3-13 lists the projected 2020 and 2030 Segment C alternative and station daily boardings with a connection to Alternatives B3 and B7 and with a connection to *Preferred Alternative B2M* or Alternative B2A, respectively.

Preferred 108th NE At-Grade Alternative (C11A)
By year 2030, projectwide daily ridership for *Preferred Alternative C11A*, with a connection to Alternative B3, would be 49,000. This would be near the lower end of the range for Segment C alternatives. *Preferred Alternative C11A* would be the only Segment C alternative that provides the 108th Station, which would be in lieu of an East Main Station or a SE 8th Station. *Preferred Alternative C11A* is forecasted to be in the middle of the range for segment boardings with 6,500 in 2020 and 8,000 in 2030 with a connection to Alternative B3.

With a connection to Alternative B7, projectwide ridership decreases to 47,000, but segment boardings increase to 9,000 in year 2030 compared with Alternative B3. With a connection to *Preferred Alternative B2M* or Alternative B2A, projectwide ridership and segment boardings would remain similar to a connection with Alternative B3 due to a similar number of stations and location for these Segment B Alternatives.

Preferred 110th NE Tunnel Alternative (C9T)
By the year 2030, daily projectwide ridership for *Preferred Alternative C9T,* with a connection to Alternative B3, would be 51,000. This would be in the middle of the range for Segment C alternatives. *Preferred Alternative C9T* is forecasted to have 6,500 boardings in 2020 and 8,000 boardings in 2030 with this B3 connection. With a connection to Alternative B7, projectwide ridership would decrease to 49,000, but segment boardings increase to 9,000 in year 2030 compared to Alternative B3. With a connection to *Preferred Alternative B2M* or Alternative B2A, projectwide ridership, compared with Alternative B3, would decrease to 50,000 and segment boardings to 7,000. This is due to a change in the station locations as a SE 8th station is provided with *Preferred Alternative B2M* or Alternative B2A instead of an East Main Station with Alternative B3.

Other Segment C Alternatives
In 2020, the projectwide ridership under the Segment C alternatives would range from 39,000 to 43,000 with a connection to Alternative B3 and range from 37,000 to 41,500 with a connection to Alternative B7. By 2030, the projectwide ridership under the Segment C alternatives would range from 48,500 to 52,500 with a connection to Alternative B3 and range from 46,000 to 51,000 with a connection to Alternative B7.

With a connection to *Preferred Alternative B2M* or Alternative B2A, projectwide ridership for Segment C alternative would range from 39,000 to 42,500 in year 2020 and by year 2030 would range from 48,500 to 52,000. The following discussion of Segment C ridership assumes a connection to Alternative B3; refer to Tables 3-14 and 3-15 for the comparison with Alternative B7 and *Preferred Alternative B2M* and Alternative B2A, respectively. In general, with a connection to *Preferred Alternative B2M* or Alternative B2A, projectwide ridership would either remain similar or be slightly reduced compared with a connection with Alternative B3, but would be higher than with a connection to Alternative B7.

Alternatives C1T and C3T would result in the highest East Link projectwide ridership by connecting to the center of the commercial, retail, and office core of Downtown Bellevue and the Bellevue Transit Center. These alternatives are also expected to have shorter Segment C travel times because they would be inside a tunnel with a relatively direct route. The projectwide ridership under Alternatives C1T and C3T would be 52,500 daily boardings in year 2030.

In year 2020, Alternatives C9A and C14E would result in the lowest East Link ridership among the Segment C alternatives, with 39,000 daily riders. By year 2030, both of these alternatives would continue to have the lowest East Link ridership, 48,500 riders. Alternative C14E has a lower ridership compared to other Segment C alternatives because it would be located on the edge of downtown Bellevue.

In year 2020, total Segment C ridership for each alternative would range from a low of 4,500 daily boardings for the Alternative C14E to a high of 7,000 daily boardings for Alternatives C1T, C2T, and C3T. By 2030, Segment C total ridership would be expected to increase from a low of 5,500 daily boardings for Alternative C14E to a high of 9,000 daily boardings for Alternatives C1 and C3T. The Old Bellevue Station, which would be only included in Alternative C1T, would generate 1,500 and 2,500 daily boardings in years 2020 and 2030, respectively. The East Main Station would have ridership of 2,000 daily boardings in 2020 and 2,500 daily boardings in 2030. Ridership at the East Main Street Station Design Option under *Preferred Alternative C9T* would be similar to the East Main Station. The 108th Station, which would only be included in *Preferred Alternative C11A*, would generate 1,500 daily boardings in 2020 and 2,000 daily boardings in 2030.

TABLE 3-12
Year 2020 and 2030 Ridership Forecasts in Segment C (connecting from Alternative B3 or B7)

Station	2020										2030									
	C11A[a]	***C9T***	**C1T**	**C2T**	**C3T**	**C4A**[a]	**C7E**	**C8E**	**C9A**[a]	**C14E**	***C11A***[a]	***C9T***	**C1T**	**C2T**	**C3T**	**C4A**[a]	**C7E**	**C8E**	**C9A**[a]	**C14E**
Old Bellevue	-	-	1,500	-	-	-	-	-	-	-	-	-	2,500	-	-	-	-	-	-	-
East Main	-	2,000 (2,500)	-	2,000 (2,500)	2,000 (2,500)	2,000 (2,500)	2,000 (2,500)	2,000 (2,500)	2,000 (2,500)	-	-	2,500 (3,000)	-	2,500 (3,000)	2,500 (3,000)	2,500 (3,000)	2,500 (3,500)	2,500 (3,000)	2,500 (3,000)	-
108th	1,500 (2,000)	-	-	-	-	-	-	-	-	-	2,000 (2,500)	-	-	-	-	-	-	-	-	-
Bellevue Transit Center	4,000 (4,500)	4,000 (4,000)	5,000	4,500 (5,000)	4,500 (5,000)	4,000 (4,500)	3,500 (3,500)	4,000 (4,000)	3,500 (3,500)	3,500 (3,500)	5,000 (5,500)	4,500 (5,000)	6,000	5,500 (6,000)	5,500 (6,000)	5,000 (5,000)	3,500 (4,000)	4,500 (5,000)	4,000 (4,500)	4,000 (4,000)
Ashwood/ Hospital	-	-	-	-	500 (500)	500 (500)	500 (500)	500 (500)	-	-	-	-	-	-	1,000 (1,000)	1,000 (1,000)	1,000 (1,000)	1,000 (1,000)	-	-
Hospital	500 (500)	500 (500)	500	500 (500)	-	-	-	-	500 (500)	1,000 (1,000)	1,000 (1,000)	1,000 (1,000)	1,000	1,000 (1,000)	-	-	-	-	1,000 (1,000)	1,500 (1,500)
Segment C totals	**6,500 (7,500)**	**6,500 (7,000)**	**7,000**	**7,000 (7,500)**	**7,000 (8,000)**	**6,500 (7,000)**	**6,000 (7,000)**	**6,500 (7,000)**	**6,000 (6,500)**	**4,500 (4,500)**	**8,000 (9,000)**	**8,000 (9,000)**	**9,000**	**8,500 (9,500)**	**9,000 (10,000)**	**8,000 (9,000)**	**7,000 (8,000)**	**8,000 (9,000)**	**7,500 (8,500)**	**5,500 (5,500)**
Projectwide ridership	**39,500 (38,000)**	**41,000 (39,500)**	**42,500**	**42,000 (40,500)**	**43,000 (41,500)**	**40,000 (39,000)**	**41,500 (40,000)**	**41,500 (40,500)**	**39,000 (38,500)**	**39,000 (37,000)**	**49,000 (47,000)**	**51,000 (49,000)**	**52,500**	**52,000 (50,000)**	**52,500 (51,000)**	**49,500 (48,000)**	**50,500 (48,500)**	**51,500 (49,500)**	**48,500 (46,500)**	**48,500 (46,000)**

Notes: Ridership forecasts outside the parentheses are when Segment C alternatives are connected to Alternative B3. Forecasts within the parentheses are when Segment C alternatives are connected to Alternative B7. The exception to this is Alternative C1T, which is connected to Alternative B1.

Due to rounding, station ridership might not sum exactly to segment totals.

[a] A low level of transit signal priority is assumed to ensure key east-west arterials in downtown Bellevue are not affected. This assumption is consistent with the traffic analysis presented in this report.

- Station not included in alternative.

TABLE 3-13
Year 2020 and 2030 Ridership Forecasts in Segment C (connecting from *Preferred Alternative B2M* or Alternative B2A)

Station	2020										2030									
	C11A[a]	***C9T***	**C1T**	**C2T**	**C3T**	**C4A**[a]	**C7E**	**C8E**	**C9A**[a]	**C14E**	***C11A***[a]	***C9T***	**C1T**	**C2T**	**C3T**	**C4A**[a]	**C7E**	**C8E**	**C9A**[a]	**C14E**
Old Bellevue	-	-		-	-	-	-		-		-	-		-	-	-	-		-	
East Main	-	-		-	-	-	-		-		-	-		-	-	-	-		-	
108th	1,500	-		-	-	-	-		-		2,000	-		-	-	-	-		-	
Bellevue Transit Center	4,000	5,000		6,000	6,000	5,000	4,500		4,500		5,000	6,000		7,000	7,000	6,500	5,500		6,000	
Ashwood/ Hospital	-	-		-	500	500	500		-		-	-		-	1,000	1,000	1,000		-	
Hospital	500	500		500	-	-	-		500		1,000	1,000		1,000	-	-	-		1,000	
Segment C totals	**6,500**	**5,500**	**N/A**	**6,500**	**6,500**	**5,500**	**5,500**	**N/A**	**5,000**	**N/A**	**8,000**	**7,000**	**N/A**	**8,000**	**8,000**	**7,000**	**6,000**	**N/A**	**7,000**	**N/A**
Projectwide ridership	**39,500**	**40,500**	**N/A**	**41,500**	**42,500**	**39,500**	**41,000**	**N/A**	**39,000**	**N/A**	**49,000**	**50,000**	**N/A**	**51,500**	**52,000**	**49,000**	**50,000**	**N/A**	**48,500**	**N/A**

Notes: Ridership forecasts provided in this table are based on Segment C Alternatives connected to *Preferred Alternative B2M* or Alternative B2A. The exceptions to this (noted with N/A) are Alternatives C1T, C8E, and C14E; which can only be connected to Alternative B1 or Alternatives B3/B7, respectively.

Due to rounding, station ridership might not sum exactly to segment totals.

[a] A low level of transit signal priority is assumed to ensure key east-west arterials in downtown Bellevue are not affected. This assumption is consistent with the traffic analysis presented in this report.

- Station not included in alternative.

N/A not applicable

TABLE 3-14
Year 2020 and 2030 Daily Ridership Forecasts in Segment D

	2020					2030				
Station	***D2A***	**D2A – NE 24th Design Option**	**D2E**	**D3**	**D5**	***D2A***	**D2A – NE 24th Design Option**	**D2E**	**D3**	**D5**
120th	500	500	500	500	-	1,000	1,000	500	1,000	-
130th	1,000	1,000	1,000	1,000	-	1,000	1,000	1,000	1,000	-
Overlake Village	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,500	1,000	1,500
Overlake Transit Center	3,000	2,500	2,500	2,500	3,000	4,000	3,500	3,500	3,500	4,500
Segment D totals	**5,500**	**5,000**	**5,000**	**5,000**	**4,500**	**7,000**	**7,000**	**7,000**	**6,500**	**6,000**
Projectwide ridership	**41,500**	**40,000**	**40,500**	**40,000**	**40,000**	**51,000**	**49,500**	**50,000**	**49,000**	**49,500**

Notes:
Due to rounding, station ridership might not sum exactly to segment totals.

D2A - 120th Design Option would have the same ridership as the *Preferred Alternative D2A*.

- Station not included in alternative.

TABLE 3-15
Year 2020 and 2030 Daily Ridership Forecasts In Segment E

	2020				2030			
Station	***E2***	**E2 - Redmond Transit Center Design Option**	**E1**	**E4**	***E2***	**E2 - Redmond Transit Center Design Option**	**E1**	**E4**
Redmond Town Center	-	1,000	1,500	1,500	-	1,500	2,000	2,000
Downtown Redmond	1,000	-	-	-	1,500	-	-	-
Redmond Transit Center	-	500	-	-	-	500	-	-
SE Redmond	1,500	1,500	1,500	1,500	2,000	1,500	1,500	2,000
Segment E totals	**3,000**	**3,000**	**3,000**	**3,000**	**3,500**	**4,000**	**3,500**	**3,500**
Projectwide ridership	**40,000**	**40,500**	**40,000**	**40,500**	**49,500**	**50,000**	**49,500**	**50,000**

Note: Due to rounding, station ridership might not sum exactly to segment totals.

- Station not included in alternative

The Bellevue Transit Center Station would have a range of ridership between 3,500 and 5,000 daily boardings in 2020 and between 4,000 and 6,000 daily boardings in 2030. Alternative C1T would generate the highest daily boardings at the Bellevue Transit Center, with 5,000 daily boardings in 2020 and 6,000 in 2030. In contrast, Alternatives C7E, C9A, and C14E would generate the lowest daily boardings of 3,500, in year 2020. Alternative C7E would generate 3,500 daily boardings at the Bellevue Transit Center, the lowest daily boardings in 2030.

The Ashwood/Hospital Station is projected to generate 500 daily boardings in 2020 and 1,000 in 2030 for all alternatives. The Hospital Station would be expected to generate 500 daily boardings in 2020 for all alternatives except Alternative C14E, which would produce 1,000 in 2020. The same pattern would be expected in 2030 with 1,000 daily boardings for all alternatives except Alternative C14E, which would produce 1,500 daily boardings in 2030. This slight increase in boardings under Alternative C14E is due in part to decrease of accessibility at Bellevue Transit Center relative to the Hospital Station and slightly faster travel times because the alternative is located along the eastern edge of downtown Bellevue.

Segment D Alternative and Projectwide Ridership

Table 3-14 lists the projected 2020 and 2030 Segment D alternative and station daily boardings.

Preferred NE 16th At-Grade Alternative (D2A)
By year 2030, projectwide daily ridership for *Preferred Alternative D2A* would be 51,000, which would be the highest for Segment D alternatives. *Preferred Alternative D2A* would also have the highest segment boardings in both 2020 and 2030 with 5,500 and 7,000 boardings, respectively. This would be due in part to the alternative having a shorter route in this segment than most of the other Segment D alternatives while serving the key retail, commercial, and employment areas proposed as part of the Bel-Red Corridor Project EIS by the City of Bellevue. The D2A – 120th Station Design Option would be expected to have a similar ridership forecast as the *Preferred Alternative D2A*.

Other Segment D Alternatives
In year 2020, while the *Preferred Alternative D2A* would have the highest daily projectwide ridership with 41,500 in 2020, D2A - NE 24th Design Option and Alternatives D3 and D5 would result in the lowest daily ridership projectwide with 40,000 in 2020. In 2030, *Preferred Alternative D2A* would again result in the highest number of projectwide riders at 51,000, and Alternative D3 would result in the lowest projectwide ridership of 49,000. These differences do not constitute a substantial difference in ridership between the Segment D alternatives. In year 2020, ridership for Segment D alternatives would range from 4,500 to 5,500 daily boardings. By 2030, Segment D total ridership for Segment D alternatives would be expected to range from 6,000 to 7,000 daily boardings.

The 120th Station, which would be included in all alternatives except Alternative D5, would generate 500 daily boardings in year 2020. In 2030, daily boardings at the 120th Station would range between 500 and 1,000. The 130th Station, which is also included in all Segment D alternatives except Alternative D5, would generate 1,000 daily boardings in both years 2020 and 2030. If parking were provided at the 120th Station instead of the 130th Station, the station boarding forecasts would switch between the two stations.

The Overlake Village Station would have 1,000 daily boardings for all alternatives in year 2020 and between 1,000 and 1,500 daily boardings in 2030. *Preferred Alternative D2A*, D2A - NE 24th Design Option, and Alternative D3 are expected to generate 1,000 daily boardings at this station in 2030, whereas Alternatives D2E and D5 are expected to generate 1,500 daily boardings at this station.

In year 2020, Overlake Transit Center would be expected to generate 2,500 daily boardings for all alternatives except *Preferred Alternative D2A* and Alternative D5, for which they would generate 3,000 daily boardings. In year 2030, the daily boardings would range from a low of 3,500 with Alternatives D2A - NE 24th Design Option, D2E and D3 to a high of 4,500 under Alternative D5. Because only two stations would serve the Bel-Red and Overlake areas under Alternative D5, this alternative would generate slightly higher station ridership at the Overlake Village and Overlake Transit Center stations than the other alternatives. Nearby stations in adjacent segments also would have slightly higher ridership because Alternative D5 would require less travel time than the other alternatives. If a pedestrian/bicycle bridge were constructed connecting Overlake Transit Center Station to the properties west of SR 520, then transit ridership would be expected to increase at this station.

Although both the 120th and 130th Stations were analyzed for the *Preferred Alternative D2A,* D2A - NE 24th Design Option, and Alternatives D2E and D3, only one station may ultimately be constructed. If this were to occur, then ridership would not substantially change from what is presented in Table 3-14 because these stations' coverage areas overlap. Riders would likely consolidate to the one station.

Sound Transit's ridership model uses population and employment growth for future forecast years that have been adopted by the regional planning agency, PSRC. The future growth from the City of Bellevue and City of Redmond studies (Bel-Red Corridor Project EIS [City of Bellevue, 2007] and Overlake Neighborhood Plan [City of Redmond, 2007]) has yet to be fully adopted by the PSRC. However, these two studies are included in both cities' long-range development and economic goals. Therefore, growth in these areas was adjusted in these ridership forecasts with assistance from PSRC, the City of Bellevue, and the City of Redmond. Based on ridership forecasts included in the Bel-Red Corridor Project EIS [City of Bellevue, 2007], if the land uses surrounding the stations were developed to be oriented toward transit use, then the projected East Link ridership could be higher. Any increase in ridership caused by this type of development would be pedestrian or bicycle trips from the areas immediately surrounding the stations.

Segment E Alternative and Projectwide Ridership

Table 3-15 lists the projected 2020 and 2030 Segment E alternative and station daily boardings.

Preferred Marymoor Alternative (E2)
By year 2030, projectwide daily ridership for *Preferred Alternative E2* would be 49,500. *Preferred Alternative E2* would have segment boardings of 3,000 in 2020 and 3,500 in 2030.

Other Segment E Alternatives

All Segment E alternatives generate very similar daily projectwide ridership, varying by 500 in both 2020 and 2030. These differences do not constitute a substantial difference in ridership between the Segment E alternatives. In forecast year 2020, total Segment E ridership for all alternatives would be 3,000 daily boardings. By 2030, Segment E total ridership would be expected to increase to 3,500 and 4,000 daily boardings.

The SE Redmond Station would be expected to generate 1,500 daily boardings in 2020 and between 1,500 and 2,000 in 2030. The Redmond Town Center Station is expected to generate between 1,000 and 1,500 daily boardings in years 2020 and between 1,500 and 2,000 in 2030. The Downtown Redmond Station, which would only be included with *Preferred Alternative E2*, would be expected to generate 1,000 daily boardings in year 2020 and 1,500 daily boardings in year 2030.

Interim Terminus Ridership

The Hospital, Ashwood/Hospital, 120th, 130th, Overlake Village, Overlake Transit Center, SE Redmond, and the Redmond Town Center Stations could potentially serve as interim terminus stations although the East Link Project is funded to extend as far as the Overlake Transit Center. The Overlake Transit Center is therefore considered the most reasonable interim terminus. Table 3-16 compares the projected year 2020 and 2030 daily interim terminus station and projectwide ridership for each station as an interim terminus. The three interim terminus stations that would expect to have a noticeable increase in ridership are at the Hospital, Overlake Village and Overlake Transit Center Stations. By 2030, up to 3,000 daily riders are expected at the Hospital Station, up to 3,500 daily riders are expected at the Overlake Village Station, and up to 6,000 daily riders are expected at the Overlake Transit Center Station.

3.4.4 Construction Impacts

During construction of East Link, current bus routes would be affected at some locations along the corridor. Bus reliability could potentially degrade along arterials with construction for East Link due to lane closures and other construction-related activity. For areas with construction in the roadway right-of-way, arterials may be reduced to one lane in each direction, affecting roadway operations, including bus service along those arterials. In general, alternatives constructed outside the roadway right-of-way would have minimal impacts on bus routes.

3.4.4.1 Segment A, Preferred Interstate 90 Alternative (A1)

East Link construction impacts on Central Link operations would be minimal. Impacts would occur with the connection of East Link to Central Link in the Downtown Seattle Transit Tunnel. The Downtown Seattle Transit Tunnel construction activities would likely be scheduled to occur over a limited number of full weekend closures. Minor additional evening closures likely would be required for other technical work. When possible, the evening closures would be outside of revenue service hours. These construction impacts would be to Central Link service only because bus service would have previously shifted from the tunnel to surface streets.

Along I-90, construction would affect the bus routes stopping at Rainier Avenue S and at Mercer Island. Bus service would continue at these locations during the D2 Roadway construction but buses would use the outer I-90 mainline roadways to access the Rainier Avenue S and Mercer Island stops. During construction of light rail track on the D2 Roadway, buses would be rerouted to the I-90 mainline and use the HOV lanes completed as part of the I-90 Two-Way Transit and HOV Project. These HOV lanes would be completed before East Link is constructed on I-90.

3.4.4.2 Segment B

At the South Bellevue Park-and-Ride, the entire parking lot would be closed due to parking garage and station construction, but bus service and bus stops would remain on Bellevue Way SE.

For *Preferred Alternative B2M*, it is likely that less disruption would occur to transit service than Alternatives B1, B2A, B2E, B3, and the B3 - 114th Extension Design Option because only one lane of Bellevue Way SE would likely be closed for most of the civil construction period rather than multiple lanes. *Preferred Alternative B2M* and Alternatives B2A, B2E, and B3, and the B3 - 114th Extension Design Option would reconstruct a portion of the roadway on 112th Avenue SE. This construction would close lanes, thereby reducing the reliability of buses that travel along these roads during periods when lanes are closed. For Alternative B7, bus service at the Wilburton Park-and-Ride would continue, but all or some parking would be removed.

TABLE 3-16
Year 2020 and 2030 Daily Terminus Station and Projectwide Ridership Forecasts for Interim Terminus Stations

Year	Ridership Category	Full-Length Project[a]	Interim Terminus at:							
			Ashwood/ Hospital	Hospital	120th	130th	Overlake Village	Overlake Transit Center	Redmond Town Center	SE Redmond
2020	Interim terminus station ridership[b]	N/A	1,000	2,000	1,000	1,000	2,500	4,500	2,000	2,000
	Projectwide ridership	40,000	31,000	27,000	30,500	31,500	32,500	37,500	39,500	39,000
2030	Interim terminus station ridership[b]	N/A	1,000	3,000	1,500	1,500	3,500	6,000	2,500	2,500
	Projectwide ridership	49,500	37,500	33,000	37,000	38,500	39,500	46,500	49,000	48,000

[a] Full-length project alternative is the combination of Alternatives A1, B3, C4A, D2A – NE 24th Design Option, and E2.

[b] Station and projectwide ridership might vary depending on which alternative connects to the terminus station.

Note: Due to rounding, station ridership might not total exactly to segment totals.

3.4.4.3 Segment C

Constructing *Preferred Alternatives C11A* and *C9T* would either consist of a full closure or a staged partial closure of the Bellevue Transit Center. In either scenario, impacted bus routes and stops would be rerouted along 106th, 108th, and 110th Avenues NE. Bus routes and stops might also be relocated to a nearby off-street location. One potential off-street location is on 108th Avenue NE, near NE 6th Street. This site would be able to accommodate some of the existing Bellevue Transit Center routes and stops.

For Alternatives C1T, C2T, and C3T, buses would not be able to access the transit center during construction. The Bellevue Transit Center would be closed for more than a year to construct the new station for these three alternatives; therefore, bus services and stops associated with these alternatives would be rerouted and relocated along 106th, 108th, and 110th Avenues NE.

The remaining Segment C alternatives likely would be able to retain current bus service within the Bellevue Transit Center during the construction period. Constructing the at-grade track along 108th Avenue NE (*Preferred Alternative C11A*) would affect bus routes along this road. Cut-and-cover construction on Bellevue Way (for Alternative C1T) between SE 6th and NE 6th Streets, on 106th Avenue NE (for Alternative C2T) between Main and NE 6th Streets, and on 110th Avenue NE (for *Preferred Alternative C9T*) would affect bus routes along these roadways. Alternative C4A would reconstruct 108th and 110th Avenues NE, which would affect bus service. The elevated construction of Alternative C8E and the at-grade construction of Alternative C9A would affect bus routes traveling on 110th Avenue NE. Construction activities surrounding NE 6th Street between 110th Avenue NE and the I-405 direct-access ramps (*Preferred Alternatives C11A* and *C9T* and Alternatives C1T, C2T, C3T, C9A, and C14E) could affect bus routes. All of these potential construction impacts could increase bus travel times.

3.4.4.4 Segment D

During construction at the Overlake Transit Center Station, bus service and stops could be routed along 156th Avenue NE and/or other nearby arterials because the parking lot would be closed to construct the parking garage and station. For Alternative D3, buses traveling on 152nd Avenue NE, north of NE 24th Street, would be affected by the at-grade station construction in the median and also along NE 20th Street between 136th Avenue NE and 152nd Avenue NE, due to median trench construction. These impacts could increase bus travel times.

3.4.4.5 Segment E

Buses traveling along 161st Avenue NE between Cleveland Street (SR 202) and NE 87th Street would be affected by at-grade construction of E2 - Redmond Transit Center Design Option and would likely need to be rerouted. Under *Preferred Alternative E2*, which would terminate at the Downtown Redmond Station, and all other Segment E alternatives, potential impacts along 161st Avenue NE would be avoided.

3.4.5 Potential Mitigation

If the D2 Roadway is not designated for joint use operations with bus and light rail in the future, then bus routes that currently use the D2 Roadway would be expected to be rerouted to 4th Avenue South to

access Downtown Seattle via SR 519. Transit signal priority could be implemented on 4th Avenue South at the I-90 western terminus and Airport Way South to improve bus reliability for these affected routes.

During East Link operations, bus routes on I-90 would not require any mitigation because the I-90 Two-Way Transit and HOV Project would be completed prior to East Link construction. This project would provide HOV lanes in both directions on I-90 between Mercer Island and the Rainier Avenue S interchange. Consistent with WSDOT's HOV Speed and Reliability Standard of a vehicle able to travel at least 45 miles per hour (mph) during the peak commuting hour 90 percent of the time, bus reliability would remain similar to that of the No Build Alternative.

No other transit mitigation during East Link operations would be required for the East Link Project because the project would have a beneficial impact on transit service. The transit integration plan provides coordinated bus service with the light rail system, and major park-and-ride lots in the study area would be expanded to better accommodate the increase in transit ridership with the project.

During construction, the existing South Bellevue (associated with all Segment B alternatives, except B7) and Overlake Transit Center (associated with all Segment D alternatives) park-and-ride lots would either be partially or fully closed. Measures to mitigate the loss of parking at these locations could include the following:

- Route transit riders that use these locations to available spaces at nearby park-and-ride lots, such as the Eastgate or Overlake Village Park-and-Rides.
- Lease parking lots and/or new parking areas within the vicinity of the closed park-and-ride lots.

During construction, transit service mitigation measures for the South Bellevue, Bellevue Transit Center (associated with *Preferred Alternatives C11A* and *C9T* and Alternatives C1T, C2T, and C3T) and Overlake Transit Center partial or full closure could include the following:

- Relocate transit stops to adjacent streets.
- Provide a temporary transit center at a nearby off-street location.
- Revise transit services. For example, at South Bellevue and Overlake Transit Center, bus routes that stop within the park-and-ride would be rerouted, to the extent possible, to on-street stops (for example along Bellevue Way SE and 156th Avenue NE) to ensure service during construction.

During construction of alternatives within street rights-of-way, buses would be rerouted to nearby arterials where appropriate to maintain transit service. For example in Downtown Bellevue, transit could be rerouted to parallel streets. In other areas, such as Bellevue Way SE, buses would continue to operate along this arterial due to lack of alternative routes.

Transit service modifications would be coordinated with King County Metro and private transit service providers to minimize construction impacts and disruptions to bus facilities and service. This could include posting informative signage before construction at existing transit stops that would be affected by construction activities. Refer to Section 3.5 for mitigation regarding future I-90 operations and Section 3.6 for mitigation regarding arterial and local street traffic operations.

3.5 Highway Operations and Safety

This section describes highway operations within the study area and the potential impacts on highways from the East Link Project. I-90 is the only regional highway that would be directly affected by the project; direct impacts on SR 520 and I-405 would be limited to light rail transit overpasses, parallel routes, and construction; therefore, operations on these two highways would be similar with or without the project.

For discussion of regional travel, including VMT, VHT, roadway v/c ratio, and mode choice at the six project screenline locations, refer to Section 3.3. For the analysis of intersection operations at or near I-90 ramp terminals refer to Section 3.6.

3.5.1 Methodology

Four key measures were established to evaluate the quality of operating conditions on I-90: vehicle and person throughput, travel time by transportation mode, LOS, and safety. Vehicle and person throughput is a measure of the number of vehicles and people who are able to cross a specific location. Person throughput is a more appropriate assessment measure than vehicle throughput for analysis of a transit project because it illustrates the overall efficiency of the system through number of people moved instead of vehicles. I-90 throughput information is presented at the Lake Washington Screenline (Screenline 2; see Exhibit 3-1) to explain changes in travel patterns across the lake, while the Mercer Slough Screenline (Screenline 3; see Exhibit 3-2) is intended to be used to understand I-90 conditions, east of the study area.

Vehicle Throughput. The number of vehicles that cross a location.

Person Throughput. The number of people in vehicles (autos and transit) who cross a location.

Travel times provide information on how long it would take to travel through the corridor or certain paths within the corridor. Congestion maps, which indicate roadway LOS, are charts that indicate when, how long, and how severe congestion would be on I-90. A safety comparison between the No Build Alternative and the East Link Project is provided to show how the project might affect the number of I-90 accidents. Appendix H1, *Transportation Technical Report*, of this Final EIS provides more details on the freeway operations analysis.

3.5.2 Affected Environment

Segment A is the only segment in which the East Link Project would directly affect a regional highway, I-90, during project operations. Potential impacts on SR 520, I-5, and I-405 from East Link Project operation are not considered to be substantial, as indicated in Section 3.3. Therefore, traffic operations on SR 520 (which also crosses Screenline 2) and I-5 and I-405 were not evaluated further. SR 520 is addressed in this section only when describing travel predictions across the lake in Section 3.5.2.2 and potential construction impacts (along with I-405) in Section 3.5.3.4.

Segment A spans approximately 7 miles, originating at the International District/Chinatown Station in Seattle and terminating where I-90 reaches South Bellevue. Within this segment that crosses Lake Washington, I-90 consists of two "outer" roadways that are the westbound and eastbound mainline lanes and a two-lane center roadway that has peak-directional reversible lanes that are for transit, HOVs, and Mercer Island residents driving between Seattle and Mercer Island, per the 1976 Memorandum of Agreement. Consistent with long-standing regional objectives of connecting the urban communities in the Puget Sound region, the center roadway has always been intended as an HCT connection between Bellevue and Seattle to support higher density employment and residential land uses on both sides of Lake Washington. This is documented in Appendix H of the *Transportation Technical Report* (Appendix H1), where a 2004 amendment to the 1976 I-90 Memorandum Agreement states "Alternative R-8A, with HCT deployed in the center lanes, is the ultimate configuration for I-90 in this segment."

3.5.2.1 Vehicle and Person Throughput

In existing conditions, slightly over 55 percent of the total number of vehicles on I-90 travel in the peak direction (westbound in the AM peak hour and eastbound in the PM peak hour). In the AM peak hour, slightly less than 13,000 vehicles travel on I-90, while in the PM peak hour, slightly over 13,500 vehicles travel on I-90. In both AM and PM peak hours, the center roadway accommodates less than 15 percent of the total vehicles on I-90 due to its limited access. Access is provided by ramps from the outer mainline roadways and the 5th Avenue South and South Dearborn Street intersection, neither of which provides enough capacity to effectively use the two lanes across Lake Washington in the reversible center roadway (WSDOT and Sound Transit, 2004, p 3-28). Table 3-17 lists I-90 vehicle throughput data for Screenlines 2 and 3 in the AM and PM peak hours.

TABLE 3-17
Existing (2007) I-90 AM and PM Peak-Hour Vehicles and Persons

Screenline/ Direction	AM Peak Hour				PM Peak Hour			
	Vehicles	Persons	Vehicle Percent of Total	Person Percent of Total	Vehicles	Persons	Vehicle Percent of Total	Person Percent of Total
Screenline 2 (Lake Washington)								
Westbound outer roadway	5,450	6,250	43	39	6,000	7,500	44	43
Reversible center roadway	1,750	3,350	14	21	1,850	3,450	14	20
Eastbound outer roadway	5,500	6,500	43	40	5,650	6,500	42	37
Screenline 2 Total	**12,700**	**16,100**	**100**	**100**	**13,500**	**17,450**	**100**	**100**
Screenline 3 (Mercer Slough)								
Westbound outer roadway	7,200	9,550	58	61	6,000	6,500	45	45
Eastbound outer roadway	5,300	6,000	42	39	7,250	7,950	55	55
Screenline 3 total	**12,500**	**15,550**	**100**	**100**	**13,250**	**14,450**	**100**	**100**

Source: Results from VISSIM software (CH2M HILL, 2007).

In terms of person throughput, in the AM peak hour on the Lake Washington Screenline (Screenline 2), the westbound outer roadway throughput approaches 6,300 persons. The reversible center roadway (westbound direction in the AM peak hour) person throughput is approximately 3,300 persons (of which about 25 percent are in buses). The eastbound throughput is about 6,500 persons. Overall, about 16,100 people travel I-90 in both directions during the AM peak hour.

In the PM peak hour on the I-90 floating bridges, the westbound throughput is about 7,500 persons. The eastbound outer roadway throughput is slightly over 6,500 persons, and the reversible center roadway (eastbound direction in PM peak hour) throughput is about 3,500 persons (of which about 20 percent are in buses). Overall, about 17,500 people travel I-90 in both directions during PM peak hour.

Similar person throughput trends occur at Screenline 3, except in the eastbound direction during the PM peak hour. Transit usage decreases compared to Screenline 2 because some passengers disembark at Mercer Island and some buses exit I-90 at Bellevue Way and therefore do not cross Screenline 3. Exhibit 3-11 shows the existing AM and PM peak-hour person throughput by direction and mode at Screenlines 2 and 3. The person and vehicle throughput in the reversible center roadway is included in the direction it operates, depending on the time period.

3.5.2.2 Travel Time

Travel time paths between Seattle, Mercer Island, Bellevue Way, and I-405 were identified to help understand local and regional trip times. The selected travel paths are listed in Table 3-18 along with the existing AM and PM travel times for single-occupant vehicle (SOV), HOV, and transit modes on these paths.

During the AM peak period, the travel time for SOVs traveling westbound on I-90 to Seattle from I-405 is approximately 12 minutes. In the eastbound direction, the travel time for SOVs traveling between Seattle and I-405 is approximately 14 minutes. The PM peak-period travel time for SOVs traveling westbound to Seattle from I-405 is about 19 minutes. The travel time for SOVs traveling eastbound from Seattle to I-405 is 17 minutes.

3.5.2.3 Level of Service

The existing LOS on I-90 varies throughout the study area. There is substantial congestion where vehicles travel at stop-and-go conditions (LOS F), and vehicle queues are observed throughout most of the peak periods, especially in the PM peak period. The congestion maps in Exhibit 3-12 illustrate the I-90 mainline LOS.

These congestion maps indicate vehicle speeds over time (vertical axis) and distance (horizontal axis). The time indicated on these maps is a 2.5-hour duration in both the AM (6:30 to 9 a.m.) and PM (3:30 to 6 p.m.) peak periods.

TABLE 3-18
I-90 Existing Travel Times by Mode

Travel Time Path Endpoints		Travel Time (minutes)					
		AM Peak Period			PM Peak Period		
Beginning Point	**Ending Point**	**SOV**	**HOV**	**Transit[a]**	**SOV**	**HOV**	**Transit[a]**
Westbound Outer Roadway							
Mercer Island (Island Crest Way)	I-5 to Downtown Seattle	7	7	-/-	9	9	11/8
Bellevue Way	I-5 to Downtown Seattle	10	10	-/-	17	17	19/-
I-405	I-5 to Downtown Seattle	12	12	-/-	19	18	21/18
Reversible Center Roadway[b]							
Mercer Island (77th Avenue SE)	I-5 to Downtown Seattle[c]	7	N/A	-/-	8	N/A	-/-
Mercer Island (77th Avenue SE)	Seattle (5th Avenue South)[d]	N/A	5	6/6	N/A	5	6/6
Bellevue Way	Seattle (5th Avenue South)[d]	N/A	7	11/-	N/A	8	11/-
I-405	Seattle (5th Avenue South)[d]	N/A	10	13/11	N/A	10	13/11
Eastbound Outer Roadway							
I-5 from Downtown Seattle	Mercer Island (Island Crest Way)	8	8	10/9	12	12	-/-
I-5 from Downtown Seattle	Bellevue Way	12	12	20/-	15	15	-/-
I-5 from Downtown Seattle	I-405	14	14	25/17	17	17	-/-

[a] Numbers are for bus routes with stops on Mercer Island /bus routes with no stops on Mercer Island.
[b] Reversible center roadway operates westbound in the AM peak and eastbound in the PM peak.
[c] SOVs are required to exit/enter the reversible center roadway near Rainier Avenue South.
[d] Travel time is to/from 5th Avenue South via the D2 Roadway.
Note: Travel times are rounded to the nearest minute.
N/A = not applicable because the mode is not eligible to travel this path or the path is not prohibited.
- = Buses do not travel on this roadway during this period and/or do not travel between these points.

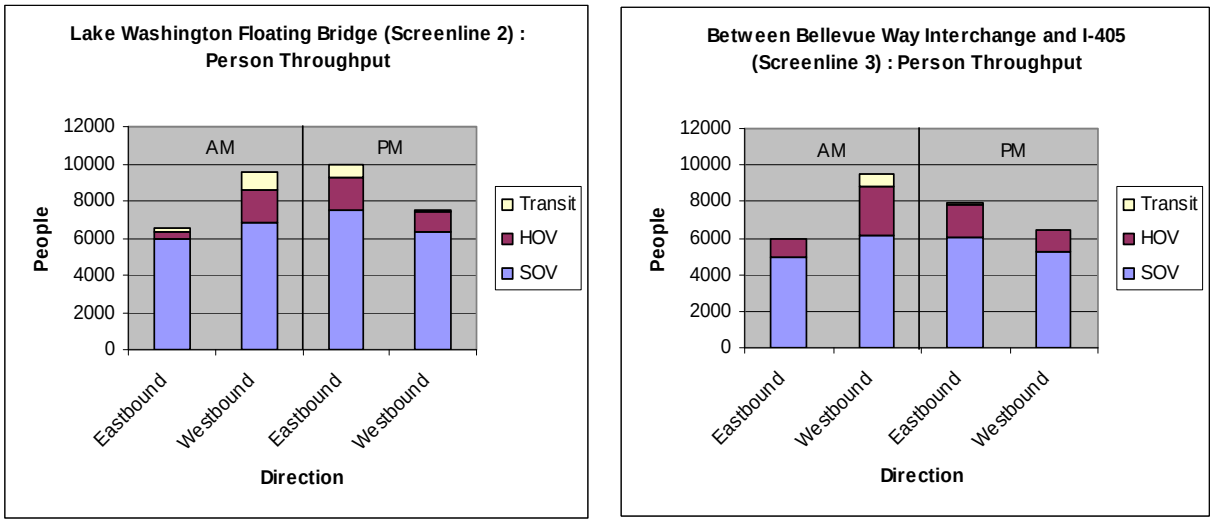


EXHIBIT 3-11
I-90 Existing AM and PM Peak-Hour Person Throughput by Mode at Screenlines 2 and 3

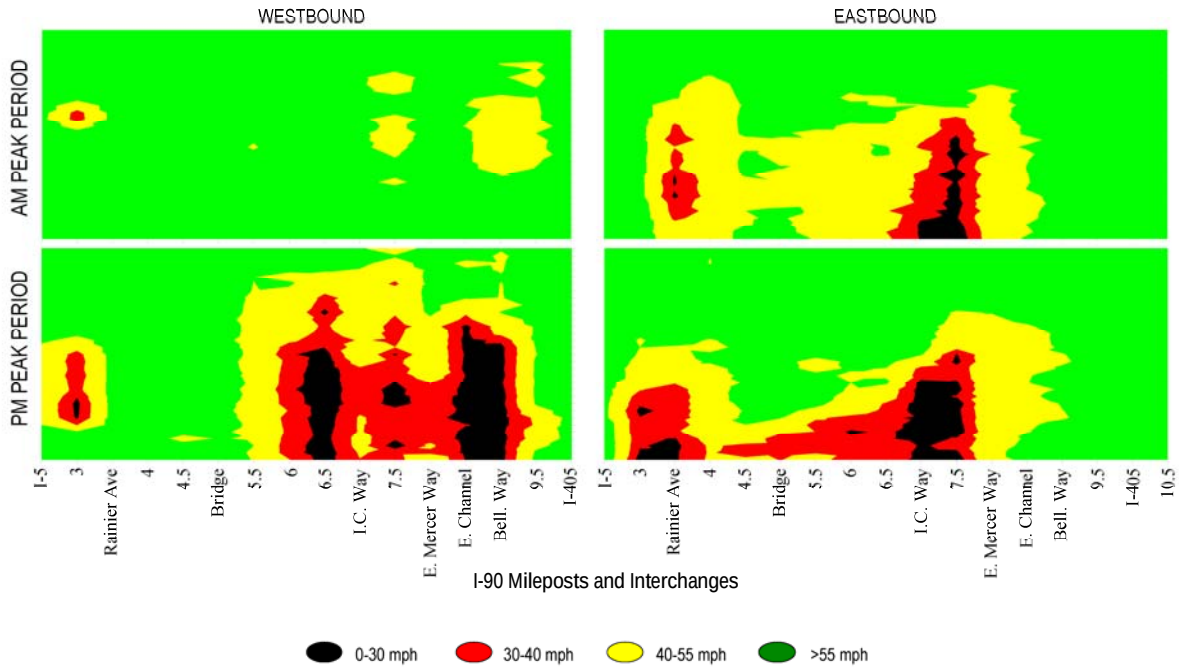


EXHIBIT 3-12
I-90 Existing Year AM and PM Peak-Period Vehicle Speeds in General-Purpose Lanes

The distance covers I-90 from the western terminus at SR 519 to east of the I-405 interchange. Although LOS is based on vehicle density and the congestion maps are based on speed, the two measurements are generally related to one another. On the congestion maps, LOS E and F conditions (speeds at or below 55 mph) are indicated where areas of yellow, red, or black occur. LOS D or better conditions are portrayed by areas of green (vehicle speeds over 55 mph) occur.

During the AM peak period in the westbound direction, I-90 starting east of I-405 operates at LOS E or better until the area between the Rainier Avenue South interchange and the I-5 interchange, which operates at LOS F. Traveling in the eastbound direction, I-90 operates at LOS E or worse from the Rainier Avenue South interchange to the East Mercer Way interchange. East of the East Mercer interchange, I-90 operates at LOS D or better. The reversible center roadway operates at LOS B or better. The greatest congestion is at the western terminus of the reversible center roadway where center roadway vehicles merge back onto the I-90 mainline.

During the PM peak period, westbound I-90 operates at LOS E or worse between Bellevue Way and the First Hill Tunnel in Mercer Island. West of Mercer Island, I-90 then operates at LOS D or better, with the exception of the area just east of I-5, which operates at LOS F due to vehicles merging with I-5 traffic. I-90 in the eastbound direction operates at LOS F between I-5 and the East Mercer Way interchange. Across the East Channel Bridge, I-90 operates at LOS E until the Bellevue Way interchange. East of Bellevue Way, I-90 operates at LOS D or better. The reversible center roadway operates at LOS B or better. The highest congestion is at the western origin of the reversible center roadway where automobiles coming from the D2 Roadway and the I-90 mainline access the reversible center roadway.

3.5.2.4 Freeway Safety

WSDOT's existing I-90 accident data were collected for the 5-year period (2004 to 2008). The accident analysis included the westbound, eastbound, and reversible center roadways. The extent of the analysis was from the I-90 western terminus to just east of I-405, which is slightly more than 8 miles. The corridor-length accident rates for the eastbound, westbound, and center roadways are well below the average accident rate for urban interstate facilities in WSDOT's Northwest Region.

The accident analysis also identified collision analysis locations (CALs) and collision analysis corridors (CACs), as defined by WSDOT. A CAL is a spot location determined to have a clustering rate of severe accidents during the previous 5 years. A CAC is defined as a 5-mile corridor with a 5-year history of at least 11 fatal or serious collisions. No CACs were identified in the study area, and the only CAL was essentially I-90 between the Bellevue Way and I-405

ramps near the eastern edge of the East Link Project study area.

3.5.3 Environmental Impacts

This section describes the physical and operational changes on I-90 resulting from the No Build Alternative and from implementation of light rail for the years 2020 and 2030. Consistent with the *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Supplemental Draft EIS* (WDSOT, January 2010), SR 520 improvements and tolling strategies are assumed to be in place by year 2020; therefore, the East Link Project assumed these improvements in both future year conditions.

Although the entire I-90 Two-Way Transit and HOV Operations Project is expected to be completed before beginning construction of the East Link Project, the East Link Project was compared to two different No Build Alternatives along I-90. HOV traffic would be moved from the center roadway to the outer roadways when construction of the East Link Project begins. Stage 1 of the I-90 Two-Way Transit and HOV Operations Project was recently completed and Stage 2 is being constructed, but Stage 3 might not be completed until just before East Link construction on I-90 begins. If the entire I-90 Two-Way Transit and HOV Operations Project is completed well before East Link construction begins, then the reversible center roadway would be available for vehicle use as well as the new HOV outer roadway lanes. Because the HOV lanes in the outer roadway might not be completed until just before construction of East Link, the following two No Build Alternatives were analyzed:

1. One with the Stage 3 HOV lanes completed immediately before East Link construction on I-90, so HOVs and transit can shift from the center roadway to the outer roadway HOV lanes. In this scenario, the new HOV lanes in the outer roadway would never operate in conjunction with the center roadway. This is referred as the No Build Alternative with Stages 1 and 2 only.
2. One with the Stage 3 HOV lanes completed and the center roadway available for transit, HOV, and Mercer Island drivers. In this No Build Alternative, both the center roadway and outer HOV lanes are open the entire distance between Seattle and Bellevue. This is referred to as the No Build Alternative with Stages 1 through 3.

Exhibit 3-13 is a schematic of the three stages of the I-90 Two-Way Transit and HOV Operations Project, and Exhibit 3-14 provides the I-90 configurations between Seattle and Mercer Island with and without East Link. The following subsection describes the proposed future access and circulation modifications to I-90. These changes were incorporated into the 2020 and 2030 No Build Alternative and East Link travel forecasts (Section 3.5.3.2) and in the operational and safety analysis (Section 3.5.3.3). The *Transportation Technical Report* further describes these future access and circulation modifications.

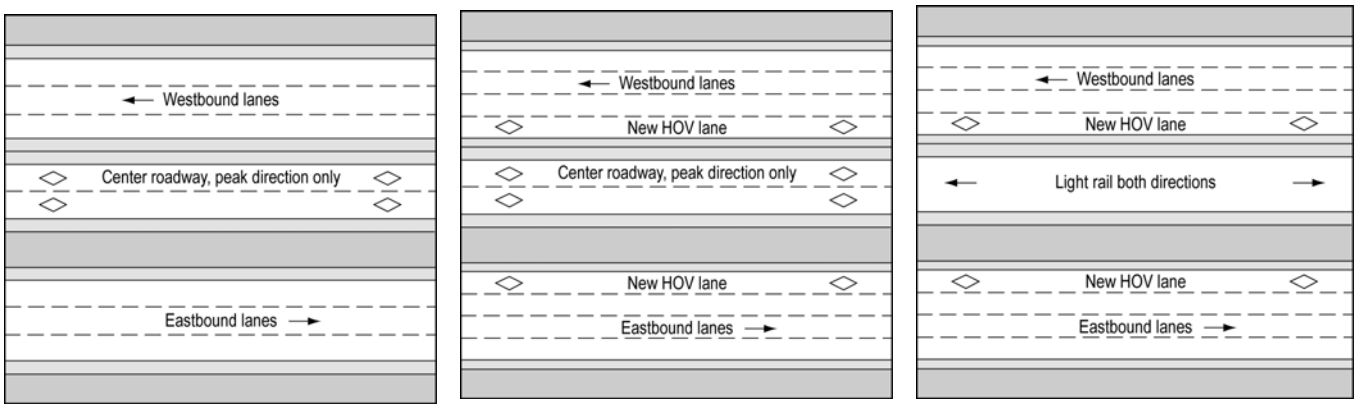
EXHIBIT 3-13
I-90 Two-Way Transit and HOV Project Stages

3.5.3.1 Access and Circulation Modifications

Preferred Interstate 90 Alternative (A1)

Access and circulation along the I-90 corridor will be modified in the No Build Alternative by the I-90 Two-Way Transit and HOV Operations Project. With the East Link Project, access and circulation modifications would affect the D2 Roadway, access to the reversible center roadway, eastbound HOV access near Mercer Island, and potentially the HOV ramps connecting to Bellevue Way SE.

With the East Link Project, the *Preferred Alternative* includes joint operations of buses and light rail for the D2 Roadway that connects the south area of Downtown Seattle with the I-90 center roadway. A operational option is also evaluated that includes rail-only operations on the D2 Roadway. HOVs would not be allowed to use this roadway in either condition with the East Link Project. For the operational option that has exclusive light rail in the D2 Roadway, buses would be rerouted to other roadways to access I-90 from the south area of Downtown Seattle (such as 4th Avenue South via SR 519).



I-90 Existing Conditions *I-90 Two-Way Transit and HOV Project* *I-90 with Preferred Alternative A1*

EXHIBIT 3-14
I-90 Configuration Before and After East Link

During East Link construction and operations, access to and from the I-90 reversible center roadway would be removed as well as its ramps connecting to Mercer Island (77th Avenue SE and Island Crest Way). With the access modifications from the I-90 Two-Way Transit and HOV Operations Project and the changes in access with light rail construction, the traffic analysis assumed Mercer Island SOVs would be able to use the HOV lanes in both directions of I-90 between Seattle and Island Crest Way to demonstrate that it does not affect the results of the East Link analysis and represents a worst case condition. This assumption does not represent approval of SOVs using the outer roadway HOV lanes or the eastbound left-side off-ramp to Island Crest Way. Any changes to the HOV lane eligibility such as tolling or managed lanes or Mercer Island SOV use would be addressed in a future analysis, approval, and agreement.

As part of the *Preferred Alternative A1*, an eastbound HOV off-ramp to would be constructed at Island Crest Way. In lieu of providing this HOV off-ramp at Island Crest Way, a design option to construct the eastbound HOV off-ramp at 77th Avenue SE was considered. A second design option that would construct neither of these eastbound HOV off-ramp options was also evaluated. With this design option, all HOV and bus traffic would utilize the eastbound general-purpose ramps at 77th Street and Island Crest Way to access Mercer Island. With either the *Preferred Alternative* or the design options, the existing eastbound general-purpose off-ramps at Island Crest Way and 77th Avenue SE would remain.

Preferred 112th SE Modified Alternative (B2M) and other Segment B Alternatives

In Segment B, *Preferred Alternative B2M* would preserve both the westbound HOV on-ramp and eastbound HOV off-ramps at the I-90 and Bellevue Way SE interchange by exiting the center roadway on a new elevated structure over the westbound mainline. With *Preferred Alternative B2M* and Alternatives B2A, B2E, B3, B3 – 114th Extension Design Option, and B7, a design option is considered that would preserve only the westbound HOV on-ramp. Specific to Alternative B1, another design option is considered that would close both westbound general-purpose and westbound HOV ramps as the light rail track would use the space currently used by both ramps beneath the westbound mainline roadway. However, WSDOT's preference is to maintain both the westbound HOV on-ramp and the eastbound HOV off-ramp at this interchange. This would require modifying the design for all nonpreferred alternatives that use Bellevue Way SE. The analysis of these access modifications is discussed in Section 3.5.3.3, Highway Operational and Safety Impacts.

3.5.3.2 Traffic Forecasts

Vehicle traffic and transit ridership forecasts for I-90 were prepared using the PSRC and Sound Transit travel demand models, as discussed in Section 3.3.3. The overall AM and PM peak-period growth rates to the year 2030 are estimated to be between 1 and 2 percent with the higher growth forecasted in the non-peak direction (eastbound in the morning and westbound in the afternoon). By year 2030, the peak-period demand in each direction would become more balanced than today as the population and employment density on the Eastside increases. With the project, slightly less vehicle traffic growth was predicted compared to the no-build condition, as the model predicts people would shift from driving to riding light rail. This is because East Link would provide a more reliable mode of travel with substantial travel-time savings compared to a vehicle

travelling in a congested regional roadway network, especially between the urban centers of Seattle and Bellevue.

As part of the forecasting, the SOV, HOV, and transit mode shares were calculated both with and without East Link. As expected with more congestion, the forecasts for the future No Build Alternative suggest that people would slightly shift toward HOV and bus usage. With the East Link Project, the forecasts suggest a substantial shift to transit across Lake Washington (Screenline 2), compared to the No Build Alternative, because light rail would provide shorter travel times than other transportation choices.

By 2030, the transit mode share percentage across Lake Washington (SR 520 and I-90) would increase by up to 33 percent from the No Build Alternative (Table 3-19). People would readjust their mode choices and choose to ride light rail because of faster travel times when compared to bus or auto modes. The overall transit mode share (combined eastbound and westbound) on I-90 alone would more than double from about a 10 and 7 percent share (AM and PM conditions) without the project to slightly over a 20 percent share with the project in both AM and PM conditions. The pie charts in Exhibit 3-15 compare mode share between the No Build Alternative and East Link on I-90 in the year 2030 at Screenline 2. In conjunction with the increased transit mode share increase, the SOV and HOV mode share would decrease as people choose to ride light rail.

At Screenline 3, the transit mode share shifts would be less pronounced with the project because light rail would not cross the screenline. Slight changes in mode share are forecast at Screenline 3 in 2020 and 2030 with East Link.

3.5.3.3 Highway Operational and Safety Impacts

Based on the traffic forecasts discussed in Section 3.5.3.2, freeway operations during the AM and PM peak periods were analyzed for years 2020 and 2030. The following measures were used to assess potential project impacts on I-90:

- Vehicle and person throughput and capacity
- Vehicle and person demand served
- Travel time
- Congestion and LOS
- Safety

Person and Vehicle Throughput and Capacity

Vehicle and person throughput on I-90 was tabulated at Lake Washington (Screenline 2) and Mercer Slough (Screenline 3) in the SOV, HOV, and transit modes. Transit includes both bus and light rail passengers for the project alternatives.

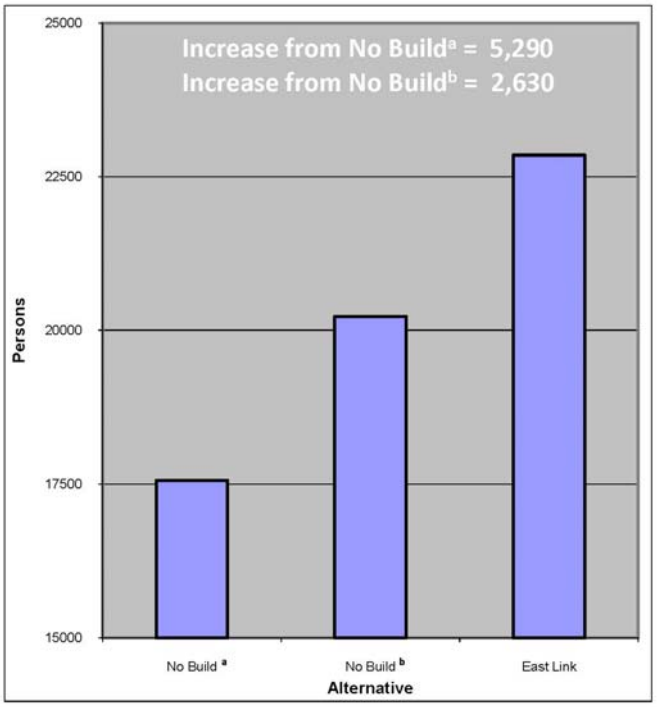
With East Link, the overall person throughput across Lake Washington (Screenline 2) in the AM and PM peak hours in 2030 would increase by about 5,300 people (about 30 percent) compared to the No Build Alternative with Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project completed. Throughput would increase by about 2,600 people (about 15 percent) compared to the No Build Alternative with Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project completed (Exhibit 3-16).

One of the key reasons the East Link Project would transport more people across I-90 is because bidirectional light rail would be a more efficient use of the center roadway space than the current reversible one-directional vehicle operations. The roadway's restricted access and egress also limit vehicle capacity and throughput.

TABLE 3-19
Screenline 2 Existing, 2020, and 2030 Mode Share for I-90 and SR 520

Direction	Existing	2020 SOV/HOV/Transit Mode Share (Percent)			2030 SOV/HOV/Transit Mode Share (Percent)		
		No Build[a]	No Build[b]	Light Rail	No Build[a]	No Build[b]	Light Rail
AM Peak Period							
Westbound	65/20/15	59/23/18	59/24/17	56/22/22	58/23/19	57/24/19	55/21/24
Eastbound	76/18/6	74/15/11	74/16/10	72/14/14	70/17/13	69/18/13	68/16/16
PM Peak Period							
Westbound	62/33/5	58/35/7	58/35/7	58/33/9	47/42/11	54/37/9	53/35/12
Eastbound	57/30/13	55/30/15	53/32/15	52/30/18	52/32/16	50/34/16	49/31/20

[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project.
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.
Source: PSRC and Sound Transit travel demand models.



[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project

[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project

EXHIBIT 3-16
I-90 2030 AM and PM Peak-Hour Person Throughput across Lake Washington

Compared with the No Build Alternative, the East Link project would also increase the I-90 person capacity across Lake Washington as light rail in the center roadway would serve both directions of travel at all times and would provide a substantial capacity increase over the existing reversible center roadway. Along I-90, the project would use dedicated right-of-way, allowing East Link to operate reliably, independent of congested roadway conditions. The project is planned to operate during the peak periods with a train-arrival frequency (i.e., headway) of every 7 minutes by 2030. The project could carry 600 persons per four-car train comfortably and 800 persons during crowded conditions, operated with 4-minute headways; this would more than double the person-carrying capacity of I-90, as East Link could carry a total of 18,000 to 24,000 people (9,000 to 12,000 per direction) during the peak period. This is the equivalent of about seven to ten freeway lanes of traffic (assuming that automobiles in the Puget Sound region average 1.17 persons per vehicle during commute hours, or about 2,300 persons per hour per freeway lane). The following subsections present the vehicle and person throughput results at Screenlines 2 and 3.

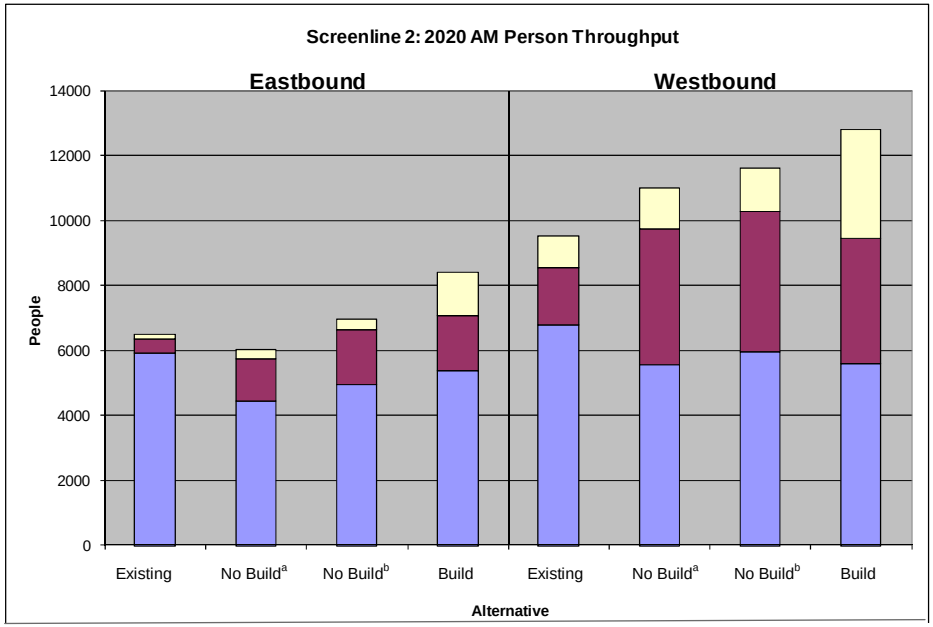
Screenline 2 (I-90 across Lake Washington)
At Screenline 2, compared to both No Build Alternatives, person throughput would be substantially higher with the project for both AM and PM peak hours in 2020, as indicated in Table 3-20 and Exhibit 3-17. The greatest increase in person throughput is expected in the reverse-peak direction on I-90 (reverse peak is defined as eastbound in the AM peak period and westbound in the PM peak period) because light rail would provide a more reliable transportation option and would provide capacity in the direction opposite of vehicle travel in the reversible center roadway (no-build conditions only). In the reverse-peak directions, there would be no modification to the I-90 roadway (vehicular) capacity across Lake Washington.

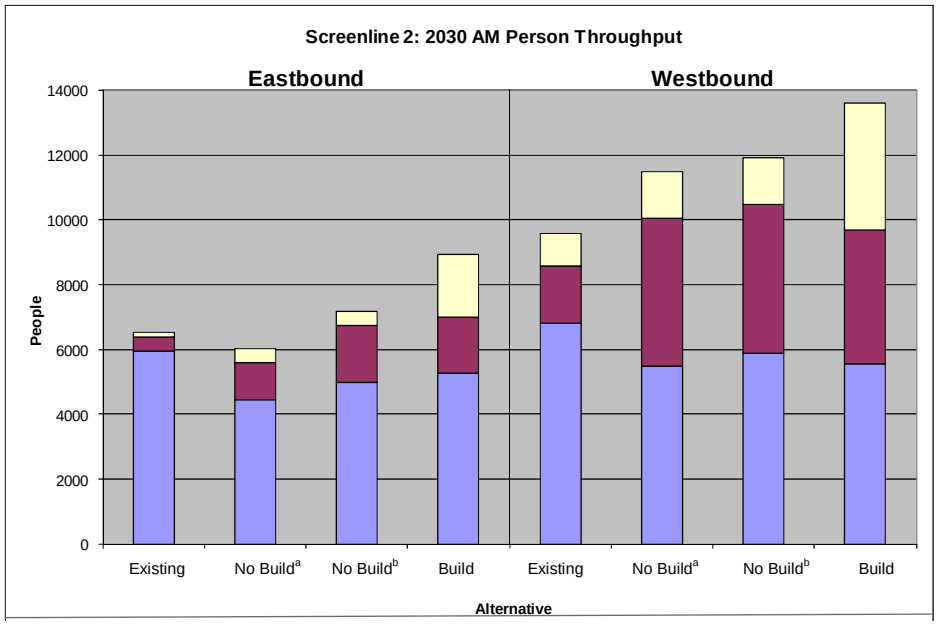
Overall, the East Link Project would increase total person throughput by 14 to 25 percent compared to the no-build condition (with Stages 1 through 3 or Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project, respectively) in the 2020 AM peak hour, and a 5 to 21 percent increase in the PM peak hour, respectively.

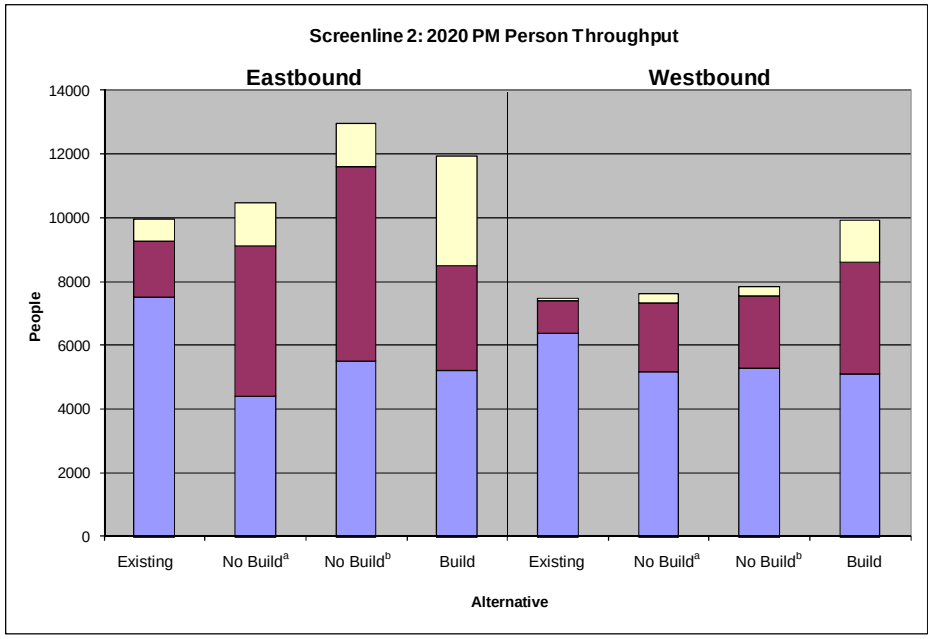
In 2030, the East Link Project would increase total person throughput by 18 to 29 percent in the AM peak hour and 9 to 31 percent in the PM peak hour compared to the two no-build conditions. In every comparison with the No Build Alternative, the person throughput with East Link is higher in the westbound direction in year 2020 and 2030, higher in the eastbound direction in the AM peak hour (reverse-peak direction), and slightly lower (less than 4 percent in 2030) for the eastbound direction in the PM peak hour.

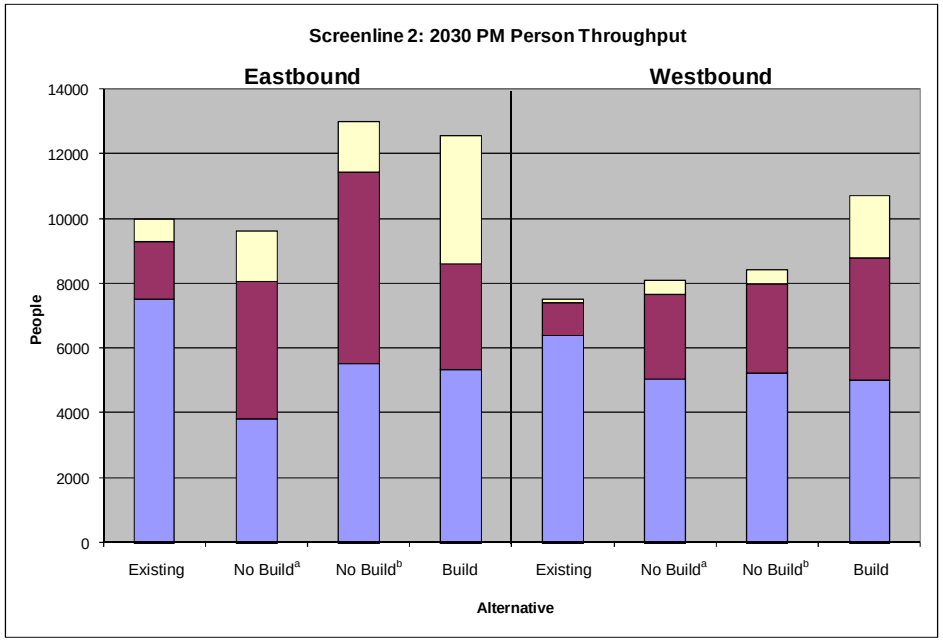
The lower eastbound PM person throughput is because of a relatively low throughput in the eastbound HOV lane that crosses the screenline. Lane changing associated with the transition of the general-purpose lane to an HOV lane near the Rainier Avenue South interchange and the additional vehicles involved in the lane changing due to the center roadway closure result in reduced throughput in the HOV lane. If the lane were managed to accommodate more people, the throughput should be comparable for the no-build and build conditions.

In terms of vehicle throughput, the project would have a similar to higher vehicle throughput compared to either of the two no-build conditions in the reverse-peak directions because roadway capacity would be unaffected in combination with people riding light rail. People riding light rail would slightly reduce congestion and, therefore, increase vehicle throughput.









[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project

SOV HOV Transit

EXHIBIT 3-17
2020 and 2030 I-90 Peak-Hour Person Throughput by Mode at Lake Washington (Screenline 2)

TABLE 3-20
2020 and 2030 Vehicle and Person Peak-Hour Throughput for I-90 at Lake Washington (Screenline 2)

	2020 AM		2020 PM		2030 AM		2030 PM	
	Vehicles	**Persons**	**Vehicles**	**Persons**	**Vehicles**	**Persons**	**Vehicles**	**Persons**
Westbound								
No Build[a]	7,600	11,050	6,150	7,600	7,700	11,450	6,200	8,050
No Build[b]	8,100	11,600	6,300	7,850	8,100	11,900	6,400	8,400
East Link Project	7,450	12,850	6,650	9,950	7,550	13,600	6,650	10,700
Percent change in persons[c]	+16/+11		+31/+27		+19/+14		+33/+27	
Eastbound								
No Build[a]	5,050	6,050	6,650	10,500	4,950	6,000	5,850	9,600
No Build[b]	5,750	6,950	8,350	12,950	5,800	7,150	8,050	13,000
East Link Project	6,150	8,400	6,750	11,950	6,050	8,900	6,850	12,500
Percent change in persons[c]	+39/+21		+14/-8		+48/+24		+30/-4	
Total								
No Build[a]	12,650	17,100	12,750	18,100	12,650	17,450	12,050	17,650
No Build[b]	13,800	18,600	14,650	20,800	13,900	19,050	14,450	21,350
East Link Project	13,600	21,250	13,400	21,900	13,550	22,500	13,550	23,200
Percent change in persons[c]	+25/+14		+21/+5		+29/+18		+31/+9	

[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project.
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.
[C] Numbers indicate percent change between No Build Alternative (Stages 1 and 2) and East Link/ percent change between No Build Alternative (Stages 1 through 3) and East Link.
Note: Due to rounding, values may not sum correctly.

Although in most cases the East Link Project would increase the person throughput in the peak direction (the peak direction is westbound in the AM peak period and eastbound in the PM peak period), the vehicle throughput in the peak direction would be similar to improved compared to the No Build Alternative (with Stages 1 and 2 of I-90 Two-Way Transit and HOV Operations Project) or slightly reduced compared to the No Build Alternative (with Stages 1 through 3 of I-90 Two-Way Transit and HOV Operations Project). This decrease is due to a relatively low throughput in the eastbound HOV lane that crosses the screenline, as previously discussed. Table 3-20 provide Screenline 2 vehicle throughput for years 2020 and 2030.

Person and vehicle throughput at Screenline 2 for both the 77th Avenue SE eastbound HOV off-ramp design option and the design option without an HOV eastbound off-ramp to Mercer Island are expected to be similar (within 3 percent) to *Preferred Alternative A1* with the eastbound HOV off-ramp at Island Crest Way. These access modifications are not expected to substantially affect I-90 mainline operations because connections to Mercer Island residents to the south currently exist.

The operational option at the D2 Roadway and design option at the I-90 at Bellevue Way interchange would have person and vehicle throughput across Screenline 2 similar to the *Preferred Alternative A1*.

Screenline 3 (Mercer Slough)
Compared to Screenline 2, changes in throughput at Screenline 3 would be fewer between the no-build and build conditions because light rail would not cross this screenline and HOV lanes are already provided in this area. For the 2020 and 2030 total person throughput at Screenline 3, the East Link Project would increase total person throughput in both of the AM and PM peak hours when compared to the No Build Alternative with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Project completed. Total person throughput would remain similar if Stage 3 of the I-90 Two-Way

Transit and HOV Project is completed as indicated in Table 3-21 and Exhibit 3-18.

The build condition would accommodate a higher person throughput than either of the two no-build conditions in the reverse-peak direction (eastbound in the AM and westbound in the PM). This is because the vehicle capacity would not change in this direction and people would choose to ride light rail. As people shift to ride light rail, vehicle congestion would decrease slightly and, therefore, vehicle throughput would increase.

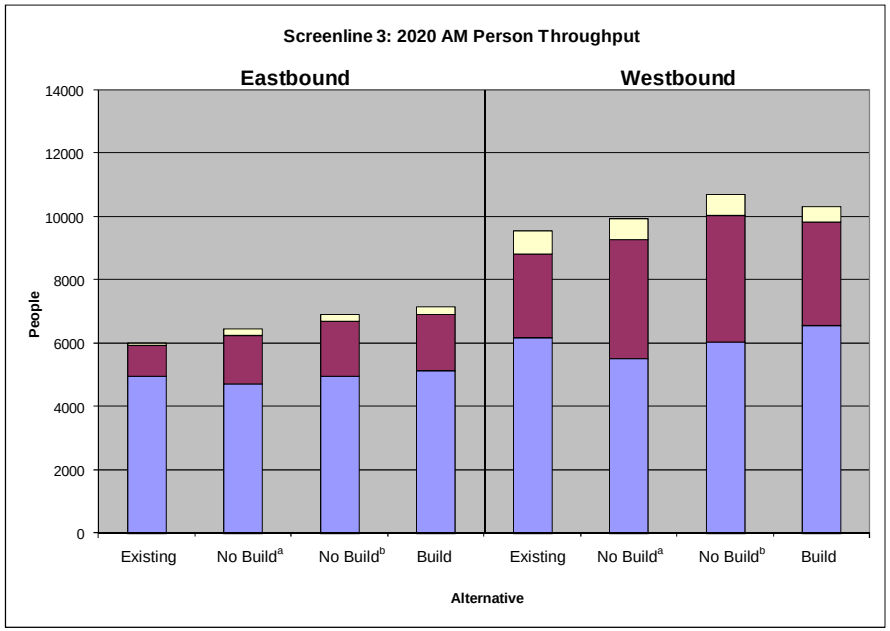
In the peak directions (westbound in the AM and eastbound in the PM), the build condition would generally increase person throughput compared to the no-build condition with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project completed, but would be similar or slightly decrease when compared to the no-build condition that includes Stage 3. This decrease in person throughput is most noticeable in the eastbound direction during the PM peak hour. As noted in the Screenline 2 (Lake Washington) discussion, the reduced eastbound (PM peak) HOV throughput would reduce the HOV throughput at Screenline 3.

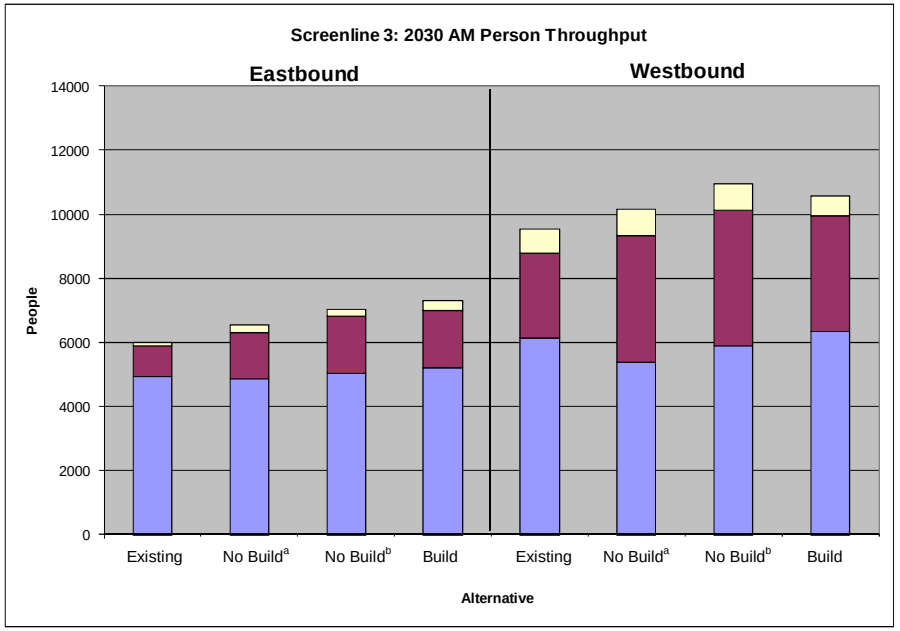
In the 2020 and 2030 reverse-peak directions (eastbound in the AM and westbound in the PM), the vehicle throughput in the build condition would increase compared to either of the two no-build conditions, and would be similar or decrease in the peak directions; reasons for these changes are discussed earlier in this section. Overall, total vehicle throughput across Screenline 3 would increase compared to the no-build condition with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project completed, and would be similar compared to the no-build condition that includes Stage 3. Table 3-21 provide Screenline 3 vehicle throughput for years 2020 and 2030.

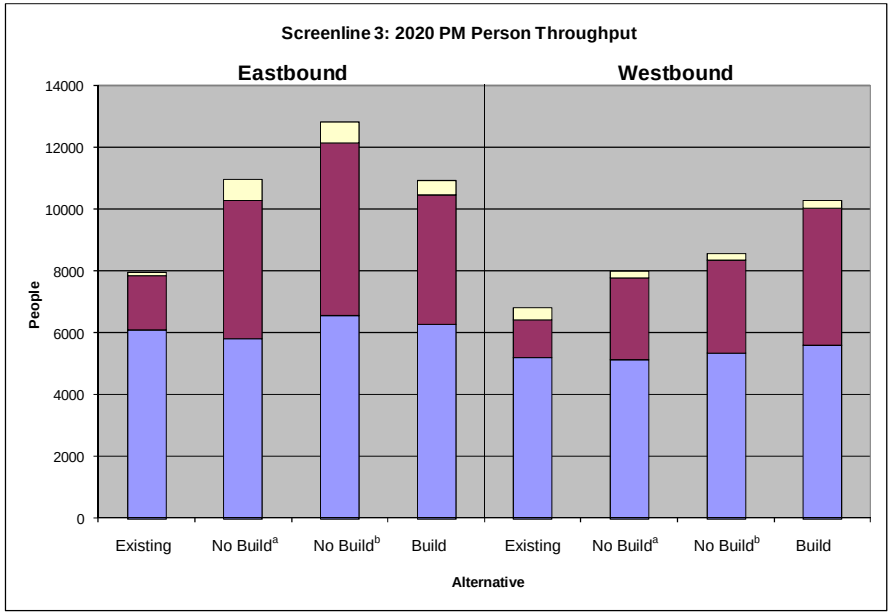
TABLE 3-21
2020 and 2030 Vehicle and Person Peak-Hour Throughput for I-90 at Mercer Slough (Screenline 3)

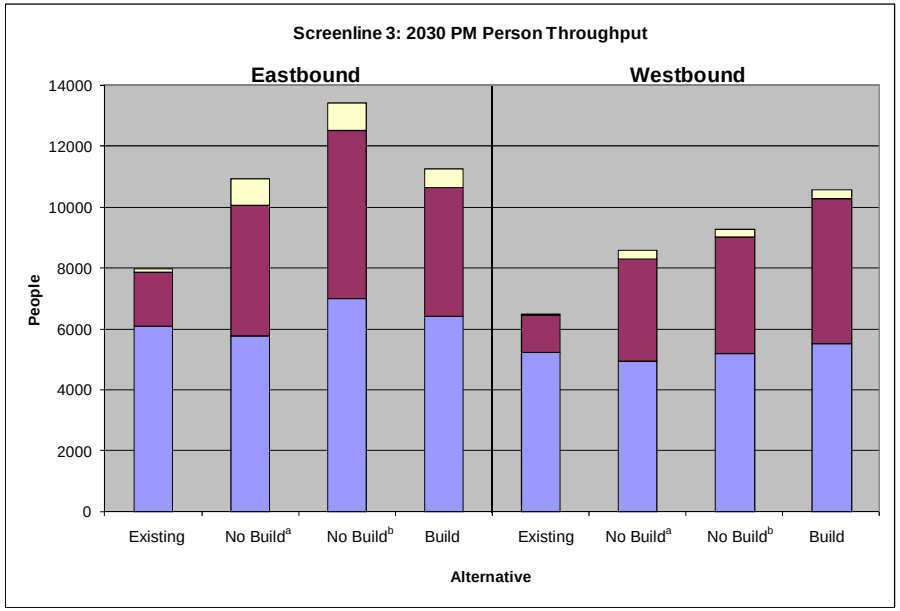
	2020 AM		2020 PM		2030 AM		2030 PM	
	Vehicles	**Persons**	**Vehicles**	**Persons**	**Vehicles**	**Persons**	**Vehicles**	**Persons**
Westbound								
No Build[a]	7,300	9,900	6,300	8,000	7,300	10,200	6,400	8,550
No Build[b]	7,950	10,700	6,650	8,550	7,950	10,950	6,850	9,250
East Link Project	8,150	10,300	7,550	10,250	8,100	10,600	7,600	10,550
Percent change in persons[c]	+4/-4		+28/+20		+4/-3		+23/+14	
Eastbound								
No Build[a]	5,400	6,400	7,900	10,950	5,500	6,550	7,800	10,950
No Build[b]	5,750	6,900	9,200	12,800	5,850	7,050	9,600	13,400
East Link Project	5,900	7,150	8,250	10,900	6,000	7,300	8,400	11,250
Percent change in persons[c]	+12/4		+0/-15		+11/+4		+3/-16	
TOTAL								
No Build[a]	12,700	16,350	14,200	18,950	12,850	16,700	14,200	19,500
No Build[b]	13,700	17,550	15,850	21,400	13,800	18,000	16,450	22,650
East Link Project	14,050	17,450	15,800	21,200	14,150	17,900	16,000	21,800
Percent change in persons[c]	+7/-1		+12/-1		+7/-1		+12/-4	

[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project.
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.
[C] Numbers indicate percent change between No Build Alternative (Stages 1 and 2) and East Link/percent change between No Build Alternative (Stages 1 through 3) and East Link.
Note: Due to rounding, values might not sum correctly.









[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project
SOV HOV Transit

EXHIBIT 3-18
2020 and 2030 I-90 Peak-Hour Person Throughput by Mode at Mercer Slough (Screenline 3)

Vehicle and Person Demand Served

In conjunction with person and vehicle throughput, the percentage of the forecasted travel demand that can be accommodated was evaluated. This measure compares the person and vehicle throughput with the expected demand across each screenline. A percent served value less than 100 indicates congested conditions that limit the number of vehicles (or people) crossing the screenline. The ability to serve more of the demand indicates that congestion patterns might not be as significant and that congestion might not occur for as long a period. Table 3-22 provides the vehicle and person demand served across Screenlines 2 and 3 for year 2030 conditions.

At Screenline 2, the AM and PM peak-hour total (combined eastbound and westbound directions) vehicle- and person-demand served percentage would increase in the build condition compared to both no-build conditions. Total vehicle percent demand served would increase between 14 and 22 percent in the build condition compared to the no-build condition with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project completed; the increase would be between 2 and 4 percent with Stage 3 completed.

Total person percent demand served would increase between 19 and 24 percent in the build condition compared to the no-build conditions with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project completed; the increase would be between 6 and 9 percent with Stage 3 completed. At Screenline 3, the build condition total (eastbound and westbound directions) vehicle and person demand served would increase between 9 and 17 percent compared to the no-build condition with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project completed. Compared to the no-build condition when Stage 3 is completed, the vehicle and person demand served would increase up to 4 percent.

Travel Time

In the 2020 and 2030 no-build conditions, travel times would continue to become longer as congestion would increase in the future. Table 3-23 lists 2020 and 2030 AM and PM peak-period travel times for SOVs, HOVs, and transit between Seattle and I-405, and the *Transportation Technical Report* (Appendix H1) further describes and compares the travel times. It is expected

TABLE 3-22
2030 Vehicle and Person Peak-Hour Demand Served for I-90 at Lake Washington (Screenlines 2 and 3)

Direction	Vehicles			Persons		
	Demand	Throughput	Percent Served	Demand	Throughput	Percent Served
Screenline 2						
AM Total						
No Build[a]	21,000	12,600	60.2	27,100	17,500	64.5
No Build[b]	20,900	13,900	66.4	27,000	19,100	70.7
Build	19,700	13,600	68.8	29,200	22,500	76.9
PM Total						
No Build[a]	22,200	12,000	54.3	30,000	17,700	58.9
No Build[b]	22,300	14,500	64.7	30,500	21,100	69.2
Build	20,500	13,500	66.1	31,800	23,200	73.1
Screenline 3						
AM Total						
No Build[a]	20,300	12,800	63.3	25,000	16,700	66.8
No Build[b]	20,300	13,800	67.9	25,300	18,000	71.0
Build	20,000	14,100	70.5	24,500	17,900	73.0
PM Total						
No Build[a]	22,300	14,200	63.8	29,200	19,500	66.7
No Build[b]	22,700	16,400	72.5	30,100	22,700	75.4
Build	21,500	16,000	74.4	28,800	21,800	75.8

[a] With Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project.
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.

that by 2030 in the no-build condition, SOV travel time from I-405 to Seattle in the AM peak period could more than double and take up to 27 minutes. In the eastbound direction, SOV travel time could increase by approximately 50 percent and would be close to 21 minutes. In the PM peak period, a similar increase in travel time is expected. In the westbound direction, to go from I-405 to Seattle, the trip would take close to 30 minutes—an increase of about 60 percent from existing conditions. In the eastbound direction, an SOV going from Seattle to I-405 could take close to 19 minutes. The following subsections provide travel time comparisons for each of the three modes (SOV, HOV, and transit) between the no-build conditions and conditions with the East Link Project.

SOV

With light rail in 2020 and 2030, SOV travel times in the AM peak period are expected to decrease by approximately 5 minutes in the westbound direction and increase by up to 4 minutes in the eastbound direction when compared to the No Build Alternative (with Stages 1 and 2 of the I-90 Two-Way Transit and HOV Project) in the AM peak period. In the 2020 PM peak period, SOV travel times are expected to be similar (eastbound direction) or improve by up to 8 minutes (westbound direction) when compared to the No Build Alternative with Stages 1 and 2 of the I-90 Two-Way Transit and HOV Project. By 2030, smaller travel time improvements in the PM peak period are expected as congestion would increase in the build condition. In the 2030 PM peak period, SOV travel times with East Link would improve by 6 minutes in the westbound direction and travel times would be similar in the eastbound direction compared to the No Build Alternative with the I-90 Two-Way Transit and HOV Project Stages 1 and 2. Westbound travel time improvements would be attributed to a shift from people driving their automobiles to riding light rail and the additional capacity provided with the outer roadway HOV lanes.

In year 2020, SOV travel times with East Link compared to the No Build Alternative that assumes the I-90 Two-Way Transit and HOV Project Stages 1 through 3 are completed would be similar (eastbound direction) or improve by up to 3 minutes (westbound direction) in the AM peak period. Travel time comparisons in the PM peak period would be similar to. In year 2030, SOV travel time comparisons between these two conditions in the AM peak period would be similar to those in 2020. In the PM peak period, westbound travel times with light rail are expected to improve by approximately 6 minutes and improve by about 2 minutes in the eastbound direction compared to the No Build Alternative, assuming that I- 90 Two-Way Transit and HOV Operations Project Stages 1 through 3 are completed.

SOV travel times between Seattle and Mercer Island would remain similar or improve by as much as 2 minutes with East Link compared to the No Build Alternative, except in the PM eastbound direction. In this direction, travel times from Seattle to Mercer Island would take between 6 (using the reversible roadway) and 12 (using the eastbound mainline roadway) minutes with the No Build Alternative, but would take about 11 minutes with East Link. For trucks, a similar travel time comparison between the no-build conditions and the East Link Project would be expected because they also travel in the general-purpose lanes.

HOV and Bus Transit

HOV and bus travel times on I-90 in years 2020 and 2030 under the No Build Alternative (with only the I-90 Two-Way Transit and HOV Operations Project Stages 1 and 2) would stay similar or get longer than existing conditions as congestion would increase in the future. HOV and bus travel times would be similar in the peak direction and improve in the reverse-peak direction for East Link and the No Build Alternative that assumes the I-90 Two-Way Transit and HOV Project is completed (Stages 1 through 3) compared to existing conditions. In the AM and PM peak periods, it could take between 10 and 15 minutes for an HOV to travel between Seattle and I-405 for the No Build Alternative (with only Stages 1 and 2).

For the No Build Alternative (Stages 1 through 3), HOV travel between Seattle and I-405 could take between 10 and 17 minutes. With East Link, it would take between 11 and 15 minutes. Buses traveling along I-90 in the reverse-peak direction would be expected to have similar or improved travel times because the outer HOV lane would provide buses with a faster lane than the general-purpose lanes they would be required to use when the reversible center roadway would be operating in the opposite direction. In the peak directions, buses travelling between Seattle and I-405 would have up to 3 minutes longer travel time with the East Link Project than in either of the no-build conditions.

Light rail travel between Seattle and Mercer Island and between Seattle and Bellevue Way would take 8 and 12 minutes, respectively; this would be a substantial improvement compared to an SOV trip, which could take up to 15 minutes between Seattle and Mercer Island and up to 24 minutes between Seattle and Bellevue Way in the No Build Alternative.

TABLE 3-23
2020 and 2030 Travel Times on I-90 between Seattle and I-405 by Mode for No Build Alternative and Light Rail (minutes)

Travel Time Path Endpoint			AM Peak Period									PM Peak Period								
			SOV			HOV			Transit[d]			SOV			HOV			Transit[d]		
Year	Beginning Point	Ending Point	NB[a]	NB[b]	Bld[c]	NB[a]	NB[b]	Bld[c]	NB[a]	NB[b]	Bld[c]	NB[a]	NB[b]	Bld[c]	NB[a]	NB[b]	Bld[c]	NB[a]	NB[b]	Bld[c]
Westbound Outer Roadway																				
2020	I-405	I-5 to Downtown Seattle	27	24	22	14	12	11	- /-	-/-	13/12	29	28	21	13	12	12	16/15	17/12	-/12
2030	I-405	I-5 to Downtown Seattle	27	25	22	14	13	11	-/-	-/-	16/12	29	29	23	13	12	12	17/15	17/12	-/12
Reversible Center Roadway[e]																				
2020	I-405	Seattle (5th Avenue South)[f]	N/A	N/A	N/A	10	11	N/A	13/11	14/12	12[g]/ -	N/A	N/A	N/A	10	10	N/A	13/11	14/11	12[g]/-
2030	I-405	Seattle (5th Avenue South)[f]	N/A	N/A	N/A	10	12	N/A	13/11	13/13	12[g]/ -	N/A	N/A	N/A	10	10	N/A	13/11	14/11	12[g]/-
Eastbound Outer Roadway																				
2020	I-5 from Downtown Seattle	I-405	15	19	19	15	17	14	16/14	14/13	-/14	16	17	17	14	10	12	-/-	-/-	17/14
2030	I-5 from Downtown Seattle	I-405	16	21	20	15	17	15	16/14	14/13	-/15	16	19	17	13	11	12	-/-	-/-	16/14

[a] The No Build Alternative with Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project.

[b] The No Build Alternative with Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.

[c] "Bld" represents the East Link Project 's *Preferred Alternative A1* (joint bus/light rail operations in the D2 Roadway, an eastbound HOV direct-access off-ramp at Island Crest Way, and both eastbound and westbound HOV direct-access ramps preserved at Bellevue Way).

[d] Numbers are for transit routes with stops on Mercer Island /transit routes with no stops on Mercer Island.

[e] Reversible center roadway operates westbound in the AM peak and eastbound in the PM peak for the No Build Alternative; it would be used by light rail with the project.

[f] Travel time is to/from 5th Avenue South via the I-90 D2 Roadway.

[g] Light rail travel time between International District/Chinatown Station and South Bellevue Station.

Note: Travel times are rounded to the nearest minute.

N/A = not applicable because the mode is not eligible to travel this path or the path is not prohibited.

NB = No Build Alternative

- = Buses do not travel on this roadway during this period and/or do not travel between these points.

The *Preferred Alternative A1* assumes joint use of the D2 Roadway. For the operational option that has exclusive light rail use in the D2 Roadway, buses would be rerouted to other roadways to access I-90 from South Seattle (such as 4th Avenue South), and the bus travel time would increase. With the *Preferred Alternative A1*, buses would experience up to a 2-minute savings inbound in the AM peak period to Downtown Seattle and experience up to a 6-minute savings outbound in the PM peak period from Downtown Seattle on I-90 compared to the operational option in which buses are not eligible to use the D2 Roadway. Some of this savings would be reduced when buses travel along 5th Avenue South to and from D2 Roadway. It would take up to 2 additional minutes of time to travel along 5th Avenue South compared to 4th Avenue South. Additionally, depending on the joint-use operating policy of the D2 Roadway, up to 3 additional minutes of average delay, in either direction, could be incurred by buses while waiting for clearance to enter the D2 Roadway. However, during evening events at the stadiums, bus routes along 4th Avenue South would incur additional travel time due to increased congestion along this street.

For the design option with an HOV off-ramp to 77th Avenue SE, HOV and bus travel times are expected to be approximately 1 to 2 minutes faster in both the AM and the PM peak hours when compared to the Island Crest Way off-ramp in the *Preferred Alternative A1*. Compared to the *Preferred Alternative A1,* HOV and bus travel times are similar in both AM and PM peak hours for the design option that does not include an eastbound HOV off-ramp and uses the 77th Avenue SE general purpose ramp only.

The preferred alternative preserves both the eastbound and westbound HOV ramps from I-90 to Bellevue Way SE as preferred by WSDOT. For the design option at I-90 and Bellevue Way interchange that would close the eastbound HOV off-ramp to Bellevue Way, HOVs using this ramp would reroute to use the general-purpose Bellevue Way off-ramp. Closing the eastbound HOV ramp would have a negligible effect on travel time for HOVs, as minimal congestion is expected between Mercer Island and the Bellevue Way interchange. This is a result of the I-90 Two-Way Transit and HOV Operations Project improvements, which include an auxiliary lane between East Mercer Way and I-405 ramps.

For Alternative B1, which closes the westbound direct-access HOV on-ramp from Bellevue Way, HOVs traveling between Bellevue and Seattle would use the general-purpose Bellevue Way on-ramp and weave across the general-purpose lanes to enter the HOV lane. This maneuver would increase the westbound HOV travel time from Bellevue Way to Seattle by approximately 8 to 12 minutes, depending on the peak period.

With any operational option at the D2 Roadway or design option at the eastbound Mercer Island HOV off-ramp or HOV ramps at the Bellevue Way interchange, the travel times for the other vehicles (SOV and trucks) on I-90 would not be expected to change from the travel times already described.

Congestion and Level of Service

Congestion on I-90 is expected to be worse in the future, as indicated by longer travel times described in the previous section. Therefore, the LOS on I-90 would continue to degrade and generally operate at LOS E or F conditions throughout the peak periods with the No Build Alternative. Without light rail, increased congestion on I-90 is expected to occur for longer distances and longer periods each day. More congestion and longer travel times would make travel more difficult between Seattle and Bellevue, two of the key employment and population centers of Puget Sound. Congestion and resulting vehicle hours of travel would be expected to extend for longer periods, exceeding 3 hours for each peak period. Without light rail's ability to move more people, an imbalance in vehicle capacity with the reversible center roadway across I-90 would impede efficient and reliable transit service to the growing residential and commercial areas on the Eastside.

The congestion maps in Exhibit 3-19 indicate vehicle speeds over time (vertical axis) and distance (horizontal axis) for the year 2030. The time indicated on these maps is for a 2.5-hour duration in both the AM (6:30 to 9 a.m.) and PM (3:30 to 6 p.m.) peak periods. The distance covers I-90 from the western terminus (west of I-5) to east of the I-405 interchange. On the map, areas with yellow, red, and black are generally considered LOS E or F conditions with vehicle speeds typically at or below 55 mph. Green areas generally indicate LOS D or better conditions with vehicle speeds over 55 mph. This section focuses on year 2030 conditions, as the comparison between no-build and build conditions in year 2020 is similar to year 2030.

In the AM peak period, congestion in the westbound direction would slightly improve under the No Build Alternative if the I-90 HOV lanes are completed by the I-90 Two-Way Transit and HOV Operations Project (Stages 1 through 3). With the East Link Project, congestion in the westbound direction would have traits similar to those of the No Build Alternative with

the I-90 Two-Way Transit and HOV Project Stages 1 and 3, although less congestion would occur across the I-90 bridge. In the eastbound direction with East Link operating, there would be less AM peak congestion between the I-5 and Mount Baker Tunnel area as people shift modes and ride light rail.

In the PM peak period, the freeway LOS would generally operate at LOS E or F conditions throughout the peak period. The center roadway would continue to be underutilized because access is constrained by congested roadways and traffic signals. These constraints reduce the ability to move high volumes of people to and from key urban centers across the lake. With the project, congestion in the westbound direction would be substantially reduced compared to either of the two no-build conditions; as a result of people riding light rail in the corridor. In the eastbound direction, congestion would be heavier in the Rainier Avenue South interchange and Mount Baker Tunnel area because the reversible center roadway would be closed, but there would be less congestion east of this area, near Mercer Island, because slightly less vehicle throughput could occur at the Rainier Avenue South/Mount Baker Tunnel area.

With the operational option to have exclusive light rail in the D2 Roadway, there would be no change in the eastbound or westbound congestion on I-90 in the AM or PM peak period compared to the *Preferred Alternative A1*. AM and PM peak period congestion on I-90 would also be comparable between the *Preferred Alternative A1* and either of the eastbound Mercer Island HOV off-ramp design options. If either of the Bellevue Way HOV direct-access ramps (westbound on-ramp and eastbound off-ramp) were closed, the impact on I-90 congestion would be nearly negligible. Minor variations would occur, but they would not be noticeable enough to affect overall congestion.

In addition to the general I-90 operating conditions, the performance of the HOV lanes was evaluated to identify where they would fail to meet WSDOT's HOV Speed and Reliability Standard of vehicles travelling at least 45 mph during the peak commuting hour 90 percent of the time. It was assumed in the traffic analysis that, in no-build conditions, Mercer Island SOVs would not be allowed in the outer roadway HOV lanes but would have access to the center roadway. However, in the build condition, all vehicles traveling to and from Mercer Island were assumed for the traffic analysis to be able to use the outer roadway HOV lanes. This assumption does not represent approval of SOVs using the outer roadway HOV lanes. Any changes to the HOV lane eligibility such as tolling or managed lanes or Mercer Island SOV use would be addressed in a future analysis, approval, and agreement.

During the AM peak period in the 2030 no-build condition, the westbound HOV lane would not meet WSDOT's HOV Speed and Reliability Standard near Rainier Avenue South, as the lane transitions from an HOV lane to a general-purpose lane and vehicles begin to slow due to the congestion in the general-purpose lanes. In the 2030 *Preferred Alternative* condition, the westbound HOV lane would meet WSDOT's HOV Speed and Reliability Standard at all locations in the westbound direction.

In the eastbound direction, the HOV lane in both the 2030 no-build and *Preferred Alternative* conditions would meet WSDOT's HOV Speed and Reliability Standard at all locations except Rainier Avenue South interchange, where the general-purpose lane transitions to an HOV lane and vehicles begin to accelerate as they leave the congested general-purpose lanes.

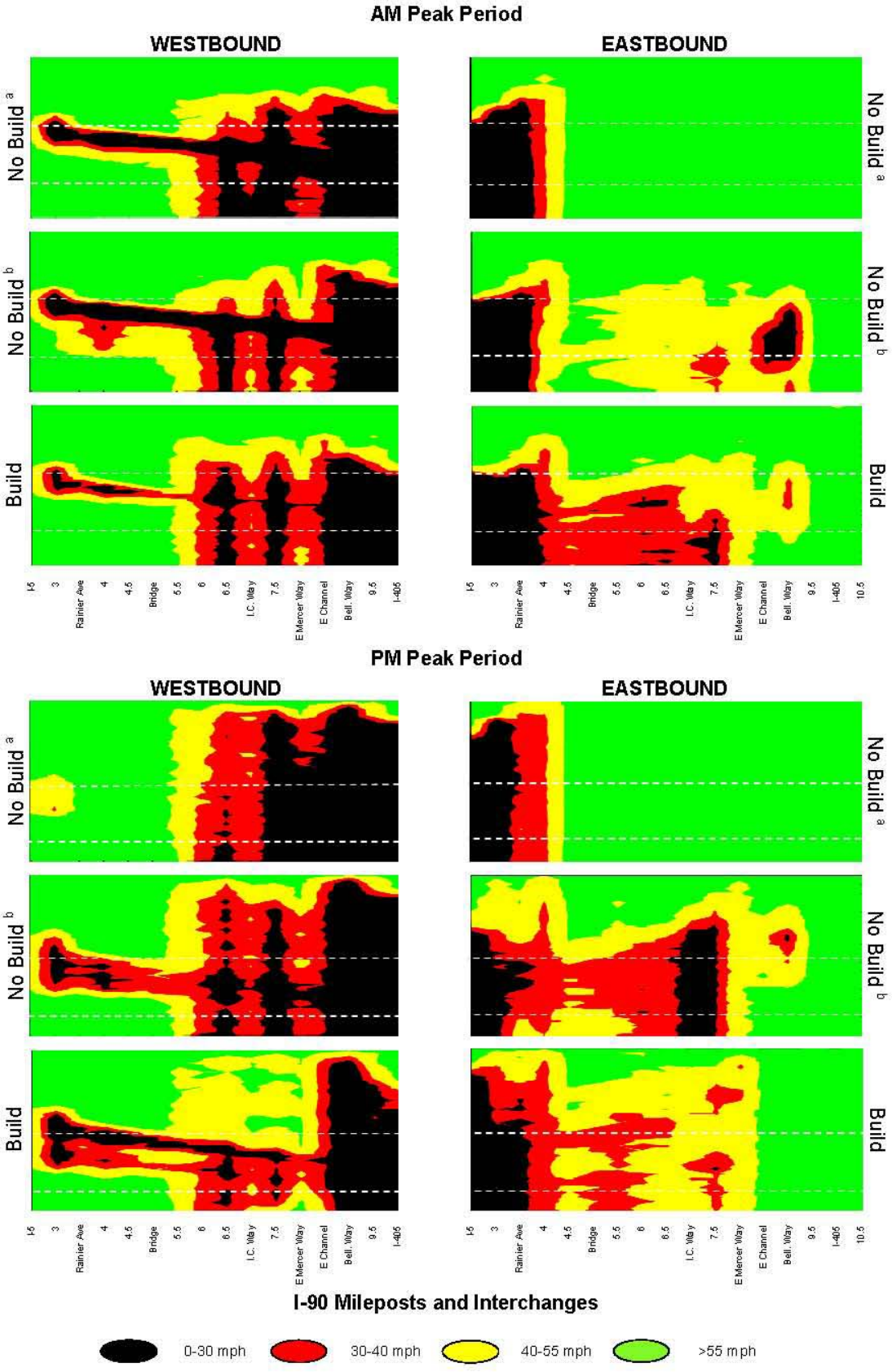
With the project, under the design option where the westbound HOV direct-access on-ramp from Bellevue Way is closed (Alternative B1), HOVs would use the general-purpose on-ramp and weave across the general-purpose lanes to enter the HOV lane. This would likely occur near Island Crest Way and would degrade the HOV lane performance at this location as vehicles travel at slow speeds.

During the PM peak period in the 2030 no-build condition, the westbound HOV lane would have some increased congestion between Island Crest Way and Rainier Avenue South. In the 2030 *Preferred Alternative* condition, the westbound HOV lane would meet WSDOT's HOV Speed and Reliability Standard in all locations except near Rainier Avenue South, where a small amount of congestion would be expected due to the weaving described in the previous paragraph.

In the 2030 no-build condition, the eastbound HOV lane would meet WSDOT's HOV Speed and Reliability Standard. In the 2030 *Preferred Alternative* conditions, the eastbound HOV lane would perform similarly to the no-build condition except that it would operate worse at the transition to an HOV lane near Rainier Avenue South due to weaving.

Safety

Implementing the East Link Project would not increase the total number of accidents in the corridor because the number of accidents in the corridor would be similar to no-build conditions. Overall, with more people moving across Lake Washington with East Link and a similar number of accidents, the overall collision rates on I-90 would improve with the project.



[a] The No Build Alternative with Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project.
[b] The No Build Alternative with Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.

EXHIBIT 3-19
I-90 Year 2030 AM and PM Peak-Period Vehicle Speeds in General-Purpose Lanes

The methodology used to predict future accident frequency for the I-90 roadways is predicated on the basis that accident rates are not uniform throughout the day. As volumes increase and congestion worsens, the accident frequency increases, resulting in higher peak-period accident rates. Based on the I-90 patterns observed, existing accident rates (using 2004 to 2008 accident data) were calculated for four time periods—morning, afternoon, midday, and evening—plus early morning periods. Additionally, a qualitative assessment regarding the proposed access changes with the East Link Project was prepared. Specifically, access modifications that might influence lane changes from a general-purpose on-ramp to the center roadway or outer roadway HOV lane and from the center roadway or outer roadway HOV lane to a general-purpose off-ramp.

It was estimated that, in 2030, East Link would have no impact on the total number of crashes in the I-90 corridor (the westbound outer roadway, eastbound outer roadway, and reversible center roadway combined). East Link would replace the vehicle operations in the reversible center roadway with light rail; as a result, the six to seven annual vehicle accidents predicted in the reversible center roadway would be eliminated. This number is offset by the expected increase in vehicle accidents in the outer mainline roadways as East Link shifts vehicles to the outer eastbound and westbound roadways. When East Link is constructed, the higher VMT in the outer mainline roadway can result in a 1.4 percent increase (a potential for five additional accidents per year) in crashes when compared to the No Build Alternative with the I-90 Two-Way Transit and HOV Project Stages 1 through 3.

Measuring the accident rate in terms of how many people are moved across the lake is another method for assessing safety with the development of the light rail system. Because more people would travel through the corridor with the East Link Project and the expected accident frequency is expected to be similar to the No Build Alternative, the accident frequency on I-90 in terms of moving people would be lower. Overall, the East Link Project would eliminate the potential vehicle conflicts for all modes in the center roadway, improving traveler safety.

Specific to the D2 Roadway operations with light rail, if designated for joint use with buses, there would be about 30 vehicles (including light rail) per hour during the peak periods, or a vehicle about every 2 minutes using this roadway. This number of light rail and bus vehicles would be substantially less than the maximum number of vehicles for safe operations that was determined for Central Link and the bus/light rail joint operations in the Downtown Seattle Transit Tunnel. The findings from the *Central Link Initial Segment Environmental Assessment* (Sound Transit, 2002) established that 60 buses and up to 10 trains per hour would operate jointly. To provide safer vehicle separation and management of bus and light rail vehicle movements on the D2 Roadway, a vehicle identification and signal system would be installed. In addition, bus on-ramps to the D2 Roadway would be equipped with gates to prevent vehicles from entering this roadway. These gates would be raised when buses designated to enter the D2 Roadway are detected.

Qualitative Safety Review of Lane Changes near Interchanges

As mentioned earlier, a qualitative assessment was completed of lane changes from a general-purpose on-ramp to the center roadway or outer roadway HOV lane and from the center roadway or outer roadway HOV lane to a general-purpose off-ramp. This assessment only compared the build condition to the no-build condition with Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project completed, as these two conditions include the completed outer roadway HOV lane. Data used in this assessment were based on the 2030 peak-hour throughput presented earlier in this section.

In the no-build condition, the reversible center roadway is open to westbound HOVs and Mercer Island traffic in the AM peak hour and eastbound HOVs and Mercer Island traffic in the PM peak hour; therefore, the East Link Project would result in no physical roadway differences in the off-peak direction, except for eastbound I-90 through downtown Mercer Island where the proposed ramp options result in slight differences during both AM and PM peak periods. Thus, the review of weaving volumes focuses on the following three lane-changing movements:

- **Westbound I-90 from the center roadway or the HOV lane to the ramp to I-5 northbound (AM peak hour) and northbound I-5 to the eastbound I-90 entrance into the center roadway or the HOV lane (PM peak hour):** The number of lane changes to/from I-90 and the northbound I-5 ramps in the peak travel direction for the AM and PM peak hour would likely decrease with the East Link Project due to the closure of the center roadway. This should reduce the potential for related incidents in the build condition compared to the no-build condition with Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project completed.
- **76th Street westbound on-ramp to the HOV lane (AM peak hour):** The 76th Street on-ramp to

westbound I-90 would see an increase in the expected number of lane changes; however, the frequency should be negligible in terms of the overall safety impact on the corridor.

- **Eastbound I-90 from the HOV lane to either the 77th Street or Island Crest Way off-ramps (AM and PM peak hours):** Eastbound I-90 weaving volumes to the 77th Street off-ramp and Island Crest Way off-ramp would likely increase in comparison with the no-build condition. This is due to the fact that, under build conditions, HOV vehicles are required to weave across several lanes of traffic to access general-purpose Mercer Island off-ramps at 77th Street and Island Crest Way. Under no-build conditions, this weaving condition is less significant because HOV vehicles are able to use the eastbound center roadway to access Mercer Island.

Overall, the East Link Project would result in a lower number of lane changes, but this would be offset by a higher volume of mainline general-purpose vehicles than the no-build condition. Appendix H1, *Transportation Technical Report*, of this Final EIS further describes the qualitative safety review of the lane changes at the analyzed interchanges.

3.5.3.4 Construction Impacts

This section discusses potential impacts on I-90 and on other regional freeways. Appendix H1, *Transportation Technical Report*, of this Final EIS provides further information and data supporting the conclusions described in this section.

Interstate 90

The impacts due to construction of the light rail along I-90 were analyzed assuming a 2020 construction year. Before light rail is constructed on I-90, the I-90 Two-Way Transit and HOV Project would be completed and the reversible center roadway would be closed. As a result, all bus routes, HOVs, and Mercer Island drivers would be rerouted to the outer roadways. To construct East Link along I-90, the reversible center roadway and D2 Roadway would be affected. Constructing light rail tracks on these facilities would require their full closure. Buses that currently travel on the D2 Roadway would be detoured to adjacent I-90 accesses, either the SR 519/South Atlantic Street or Rainier Avenue South interchanges. While most construction activities would be on the reversible center roadway, activities might occur for the short term along the I-90 shoulder and outer roadway HOV lanes near the East Channel Bridge and Rainier Avenue South interchange.

The amount of automobile congestion on the outer roadways during the East Link construction period would be similar to East Link operations because the reversible center roadway would be removed in both of these conditions. Therefore, the vehicle travel times during the construction period would be similar to the travel times during East Link operations. Although the number of automobiles able to travel across Lake Washington on I-90 would be similar in both of these conditions, the auto demand to use the outer roadway would be greater in the construction period because light rail would not be operating. The person throughput would be less in the construction period than during East Link operations because the reversible center roadway would not be operational for vehicles or light rail; therefore fewer people would cross Lake Washington.

Compared to the No Build Alternative with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Project completed, the SOV travel times in the construction period would generally be similar or better because the outer roadway HOV lanes would be constructed prior to the construction period. Vehicle throughput during the construction period compared to the No Build Alternative with only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Project would be similar in the peak directions and higher in the reverse-peak directions because of the completion of the outer roadway HOV lanes. Person throughput, with the same comparison, would be less in the peak directions and higher in the reverse-peak directions.

Similar to the previous comparison, when East Link construction is compared with the No Build Alternative when all three stages of the I-90 Two-Way Transit and HOV Operations Project are completed, the SOV travel times would generally be similar or better during the construction period. One reason for this is the lower number of lane changes near the closed center roadway ramps creating less congestion. Person throughput in the reverse-peak directions (eastbound in the AM period and westbound in the PM period) at Screenline 2 (I-90 Floating Bridge) would be slightly higher during the East Link construction period than for the No Build Alternative when all three stages of the I-90 Two-Way Transit and HOV Project are completed. This is partly because the traffic analysis assumed Mercer Island drivers would be eligible to use the outer roadway HOV lanes when the center roadway is closed.

In the peak directions (westbound in the AM period and eastbound in the PM period), person throughput at Screenline 2 (Lake Washington) is expected to be higher in the No Build Alternative when all three stages of the I-90 Two-Way Transit and HOV Project are completed than in the East Link construction

period as the center roadway and the outer roadway HOV lanes are open in this No Build Alternative. Although more people would cross Lake Washington in the No Build Alternative, during East Link construction the outer roadway HOV lanes would accommodate a substantial portion of the vehicles displaced from the center roadway as the center roadway is underutilized due to its connections not providing enough capacity to effectively use the two lanes in the center roadway.

At the I-90 and Bellevue Way interchange, the westbound mainline, HOV direct-access ramps, and ramps to and from I-90 to the east would experience short-term partial (likely nighttime) closures for construction of the elevated structures for the *Preferred Alternative B2M* or Alternatives B2A, B2E, B3, and B7. Alternative B1 would not require these closures because it would be at-grade underneath the mainline roadway. During periods when ramps are closed, vehicles would be detoured to the corresponding general-purpose or HOV ramp, but vehicles could also be detoured to another interchange.

Other Regional Freeways

Short-term impacts on I-405 and SR 520 are expected with the light rail construction. All Segment C alternatives would close multiple lanes of I-405, likely at night or on weekends depending on the construction method of the elevated structure over I-405, potentially causing drivers to detour and take alternative routes. I-405 impacts due to *Preferred Alternatives C11A* and *C9T* and Alternatives C1T, C2T, C9A, and C14E would occur adjacent to the NE 6th Street direct-access ramps and NE 8th Street ramps to and from the south of NE 8th Street. Impacts associated with Alternatives C3T, C4A, C7E, and C8E would occur immediately north of the NE 12th Street overpass across I-405.

Along the SR 520 mainline, impacts would be limited to short-term shoulder or lane closures. SR 520 eastbound on- and off-ramps from 148th Avenue NE to West Lake Sammamish Parkway would experience shoulder or lane closures and temporary lane shifts for all Segment D and E alternatives, except Alternative D3 would not have any impacts to the 148th Avenue NE interchange, and when the elevated portions of Alternatives E1 and E4 cross SR 520 near the Lake Sammamish Parkway interchange and the elevated portion of Alternative E1 crosses SR 520 near the SR 202 interchange. These elevated crossings would result in each direction of SR 520 being closed at night, causing drivers to detour and take alternative routes. The westbound on-ramp and eastbound off-ramp at the SR 520 and SR 202 intersection would be reconstructed to provide clearance for the light rail structure that would be constructed for *Preferred Alternative E2* and Alternative E4.

3.5.4 Potential Mitigation

No mitigation would be necessary along the I-90 mainline during project operations because the project would have either similar or improved vehicle travel times and increased person throughput across Lake Washington in both the AM and PM peak periods compared to the No Build Alternative. In addition, before the East Link Project is constructed, the I-90 Two-Way Transit and HOV Project would be completed to provide HOV lanes on I-90 west to Seattle that replace the reversible center roadway used by East Link. During East Link construction, Sound Transit would coordinate with WSDOT on incident management, construction staging, and traffic control where the light rail construction may affect freeway traffic. Sound Transit would also coordinate with WSDOT to disseminate construction closure information to the public as needed.

For potential mitigation regarding transit on I-90, including mitigation for transit when the D2 Roadway is closed, refer to Section 3.4. For potential mitigation regarding freight on I-90, refer to Section 3.8. For potential intersection mitigation at or near I-90 ramp terminals, refer to Section 3.6.5.

3.6 Arterials and Local Streets

3.6.1 Methodology

This section describes the methodology applied to the analysis of existing conditions and environmental impacts on arterial and local street transportation elements, including roadway characteristics, intersection levels of service, safety, and parking.

3.6.1.1 Operations and Level of Service

Existing intersection vehicle movement counts were collected for the daily and AM and PM peak periods from local and state agencies (WSDOT, City of Seattle, City of Mercer Island, City of Bellevue, and City of Redmond). When study intersection count data were not available, new counts were acquired for the project. Additional information that was used in the intersection analysis included lane geometry, existing traffic signal timing, truck percentages, on-street parking, proximity to bus stops, and speed limits.

The quality of roadway traffic operations is described in terms of LOS. LOS grades range from LOS A to F, where LOS A represents the best operation (most vehicles do not stop at all) and LOS F represents the poorest operation (most of the drivers stop and will wait more than a minute until proceeding through the intersection). Traffic volumes were analyzed using *Highway Capacity Manual* methodology (Transportation Research Board [TRB], 2000), and LOS was calculated at signalized and unsignalized intersections. A more detailed discussion of the intersection analysis, results, and LOS descriptions is provided in the *Transportation Technical Report*.

3.6.1.2 Traffic Safety

Accident data for arterial intersections were collected from each jurisdiction and reviewed within the study area. Existing accident rates were calculated as the number of accidents per million entering vehicles (MEV). An assessment of the potential for accidents to occur with each alternative is provided based on existing accident patterns and how the East Link track profile aligns with roadway operations.

3.6.1.3 Parking

The analysis of parking supply and usage and of potential parking impacts from the East Link Project focused on areas with the greatest potential impact within an approximately 0.25-mile radius of stations. Parking supply and demand data were collected during spring 2007 for the area surrounding each proposed station. The survey included a space occupancy count, taken once during the morning and afternoon on a weekday. The time of the count was outside the peak periods to reflect longer-duration parking. The time periods selected represent "typical" conditions for parking demand based on the type of land use surrounding each station. Parking supply and demand were inventoried for two types of on-street parking: unrestricted and restricted. Restricted on-street parking includes all on-street parking that is restricted by meters, time limit signs, parking zones, or other restrictions.

3.6.2 Affected Environment

Because this Affected Environment (existing conditions) section was based on the year 2007, a few projects (such as some of the projects in the I-405 program, the NE 10th Street extension in Downtown Bellevue, and other minor intersection improvements) that have been constructed are included in the future no-build condition. Refer to the *Transportation Technical Report* for the list of these already completed projects.

3.6.2.1 Intersection Operations and Level of Service

Intersections were analyzed to understand whether they are operating acceptably or failing. Intersections are considered failing when they do not operate at or better than the agency's intersection LOS standard. Intersections that fail typically mean that vehicles incur substantial delay and queuing. Table 3-24 lists the LOS standards for each of the jurisdictions in the East Link study area. These standards were compared to the existing and future intersection LOS results to indicate when an intersection is operating acceptably or failing. The following subsections summarize existing LOS conditions in existing AM and PM peak hours at the study area intersections that were analyzed.

TABLE 3-24
Intersection Level of Service Standards

Jurisdiction	LOS Standard
Seattle	LOS D
WSDOT	LOS E
Mercer Island	LOS C
Bellevue: Segment B	LOS D
Bellevue: Segment C	LOS E
Bellevue: Segment D	LOS E
Redmond: Segments D and E	LOS E

Segment A

In Segment A, 11 intersections in Seattle and 20 intersections on Mercer Island were analyzed for existing AM and PM peak-hour conditions. Five of the intersections in Seattle and 13 of the intersections on Mercer Island are within WSDOT's jurisdiction because the intersection is at the ramp end or located near a ramp.

Six intersections in Segment A currently fail to meet the LOS standards in the existing condition: five in the PM peak hour and one in the AM peak hour. Out of all the intersections that fail, most operate at LOS E or F except for the 77th Avenue SE and North Mercer Way intersection on Mercer Island (LOS D in AM peak hour). Other failing intersections are at or near I-90 ramps: I-90 at 4th Avenue S in Seattle (western terminus of I-90) and East Mercer Way at the I-90 westbound off-ramp in the PM peak hour. The three other failing intersections in the PM peak hour are at S Dearborn Street and Rainier Avenue S, S Royal Brougham Way and 4th Avenue S, and 77th Avenue SE and SE 27th Street.

Segment B

In Segment B, 13 intersections in Bellevue and 6 intersections in WSDOT's jurisdiction were analyzed for existing PM peak-hour conditions. Four intersections—118th Avenue SE and SE 8th Street, 112th Avenue SE and SE 15th Street, Bellevue Way SE and SE 30th Street, and Bellevue Way SE and South Bellevue Park-and-Ride Lot—currently operate at LOS F in the PM peak hour. All four intersections are close to interstate facilities. All other intersections within Segment B meet the applicable intersection operation standard.

Segment C

In Segment C, 36 intersections in Bellevue and 7 intersections in WSDOT's jurisdiction were analyzed for PM peak-hour conditions. Of the 43 study intersections in Segment C, only the intersection at NE 8th Street at 112th Avenue NE operates at LOS F in the PM peak hour. Twelve intersections operate at LOS D or E, which indicates that these intersections are operating near or at capacity.

Segment D

In Segment D, 16 intersections in Bellevue and 12 intersections in Redmond were analyzed for PM peak-hour conditions. Of the 28 intersections studied in Segment D, 5 are in WSDOT's jurisdiction. None of the intersections in Segment D currently operate at LOS F. Three intersections along 148th Avenue NE operate at LOS E: SR 520 westbound ramp, NE 24th Street, and 20th Avenue NE. All other intersections operate at LOS D or better. Generally, the worst operating intersections are located along the highest-volume and most congested arterials: 140th Avenue NE, 148th Avenue NE, 20th Avenue, and 156th Avenue NE. An analysis of the AM peak hour along 156th Avenue NE and NE 40th Street was prepared because of the unique travel patterns created by the surrounding land uses. This analysis included five intersections and all those intersections met agency LOS standards.

Segment E

In Segment E, 22 intersections are in Redmond and 3 are in WSDOT's jurisdiction. The intersections of NE Leary Way and West Lake Sammamish Parkway, Avondale Road NE and NE Union Hill Road, and SR 202 and East Lake Sammamish Parkway operate at LOS F in the PM peak hour. The intersection of SR 202 and SR 520 westbound ramps operates at LOS E, while all other intersections in Segment E operate at or better than LOS D.

3.6.2.2 Traffic Safety

None of the study area intersections in Seattle have yearly accident totals higher than the City's standard 10 or more accidents per year at a signalized intersection and 5 or more accidents at an unsignalized intersection. Of the study intersections, the Rainier Avenue S and S Massachusetts Street intersection has the highest number of accidents, with seven accidents per year. The highest intersection accident rate on Mercer Island is at Island Crest Way and the I-90 eastbound off-ramp, with a rate of 0.75 accidents per MEV.

The intersection with the highest accident rate in Segment B is at 118th Avenue SE and SE 8th Street, with a rate of 0.27 accidents per MEV. In Segment C, two intersections have accident rates near or above 1.00 accident per MEV: 112th Avenue NE at NE 8th Street/I-405, and 110th Avenue NE at NE 10th Street. The highest accident rate in Segment D is at 130th Avenue NE and NE 20th Street, with an accident rate of 0.72 accidents per MEV. In Segment E, two intersections have intersection accidents rates over 1.00 accident per MEV: 164th Avenue NE and NE 76th Street and at 166th Avenue NE and SR 202, which have accident rates of 1.51 and 1.32 accidents per MEV, respectively.

3.6.2.3 Parking

Areas surrounding the proposed light rail stations have an on-street parking utilization rate of 88 percent or less, indicating that there is generally available on-street parking. Over half of the areas surrounding stations have a parking utilization of 50 percent or less.

Table 3-25 lists the existing unrestricted on-street parking utilization and supply information near the proposed stations. Restricted parking is not as likely to be used by light rail riders. Parking impacts identified due to the East Link Project primarily affect unrestricted parking near light rail stations, as discussed in the following Environmental Impacts section. In Segment A, 26 time-restricted on-street parking stalls with a utilization of 23 spaces were identified on Mercer Island. The parking survey on Mercer Island had the highest utilization rate in the study area at 68 percent. The parking located in the residential neighborhoods north of I-90 surrounding the Mercer Island Park-and-Ride Lot is restricted through a residential parking zone (RPZ) to reduce the impacts of park-and-ride spillover.

The Mercer Island Park-and-Ride Lot has approximately 450 parking spaces, of which 435 are currently used on the typical weekday (King County Metro, 2008b). On-street parking surrounding the Rainier Station site is unrestricted and has a utilization of approximately 40 percent.

Private parking garages in the Seattle neighborhoods serve most of the parking demand within Segment A. Much of the private parking surrounding the Rainier Station is located on commercial and light industrial properties along Rainier Avenue S. Private off-street parking garages are located throughout the Mercer Island Town Center, and private off-street parking is within moderate walking distance of the Mercer Island Station. Regulations for private parking are enforced by the private property owners at their discretion.

TABLE 3-25
Existing Unrestricted On-Street Parking Supply and Utilization by Station

Station	AM Period			PM Period		
	Supply[a]	Utilization	% Utilization	Supply[a]	Utilization	% Utilization
Segment A, Interstate 90						
Rainier	879	363	41	879	335	38
Mercer Island [b]	108	73	68	108	67	62
Segment B, South Bellevue						
South Bellevue	438	51	12	438	31	7
SE 8th [b]	301	24	8	301	27	9
118th	127	5	4	127	5	4
Segment C, Downtown Bellevue						
Old Bellevue	38	22	58	38	20	53
Bellevue Transit Center	–	–	–	–	–	–
108th [c]	29	19	66	29	13	45
East Main	50	5	10	50	4	8
Ashwood/Hospital	–	–	–	–	–	–
Hospital	26	8	31	26	8	31
Segment D, Bel-Red/Overlake						
120th	177	44	25	177	55	31
130th	152	63	41	152	59	39
Overlake Village	42	21	50	42	18	43
Overlake Transit Center	21	14	67	21	14	67
Segment E, Downtown Redmond						
Redmond Town Center [b]	393	162	41	393	175	45
SE Redmond	41	29	71	41	29	71
Downtown Redmond [b]	253	121	48	253	120	47
Redmond Transit Center [b]	485	303	62	485	303	62

[a] Total on-street unrestricted parking.

[b] Restricted parking zones (RPZs) near the proposed stations have been implemented since the 2007 parking survey. These RPZs would reduce the available on-street unrestricted parking.

[c] Parking survey was conducted in spring of 2010 after initiation of Surrey Downs Residential Parking Zone.

Notes: Parking supply and demand data were collected in spring 2007 on all roads within a 0.25-mile radius of the stations.

Parking near the Mercer Island Station was collected in spring 2008 on all roads within a 0.25-mile radius of the station because the park-and-ride lot was closed during spring 2007.

In Segment B, on-street parking utilization rates were the lowest of any segment, with utilization rates around 10 percent. The on-street parking supply near the South Bellevue Station extended into the Enatai neighborhood, while most of the parking supply on 118th Avenue SE was east of I-405. No restricted on-street parking exists in any of the areas surrounding the stations in Segment B. The two park-and-ride lots in the South Bellevue segment, South Bellevue Park-and-Ride and the Wilburton Park-and-Ride, are both currently used at or near capacity on weekdays (King County Metro, 2007). People do not appear to be parking on-street in nearby neighborhoods and walking to these lots. Most off-street private parking within Segment B comprises parking lots surrounding office and commercial areas adjacent to SE 8th Street.

In Segment C, most on-street parking in Downtown Bellevue is restricted; therefore, the parking utilization rates were generally low, with the majority of the surveys calculating between 20 and 60 percent utilization. The on-street parking surrounding the Bellevue Transit Center had the highest utilization rate in Segment C, with percentages between 43 and 62 percent. There is no unrestricted on-street parking available in the areas around the Bellevue Transit Center and Ashwood/Hospital stations.

Private off-street parking within Segment C is located at major commercial and employment centers in Downtown Bellevue and the Ashwood/Hospital area. Hourly parking rates, monthly permits, and validation policies are typically enforced at private garages. Demand for private parking is highest in the day during traditional business hours.

All of the on-street parking surveyed in Segment D is considered unrestricted, with all of the surrounding areas near stations having parking utilization rates lower than 70 percent. The areas near the Overlake Village and Overlake Transit Center have the highest parking utilization rates (between 43 and 67 percent), but also have the lowest supply. The Overlake Village Park-and-Ride lot has 203 spaces, of which 33 percent are typically used each weekday. The Overlake Transit Center has 170 parking spaces, which are fully used each weekday (King County Metro, 2007). Within Segment D, the bulk of off-street parking occurs on private property throughout the Bel-Red Corridor in Bellevue and the Overlake area in Redmond.

In Segment E, parking utilization rates varied between 42 percent near the Redmond Town Center and Downtown Redmond Stations and 71 percent near the SE Redmond Station. Of the 377 parking spaces at the Redmond Transit Center, 80 percent are generally used each weekday. The Bear Creek Park- and-Ride lot, located about one mile east of the Redmond Transit Center, has 273 parking spaces, of which over 100 percent are used on a typical weekday (King County Metro, 2007). Private off-street parking is located at major employment and commercial centers within Segment E. Free parking is available at the Redmond Town Center.

3.6.3 Environmental Impacts

This section provides the future vehicular traffic and trips forecasted with each East Link station. Potential impacts on the arterial and local street operations (including property access and circulation patterns), traffic safety, and parking were assessed. A major component of the impact analysis for arterial and local street operations was the intersection LOS analysis for future years 2020 and 2030. A detailed discussion of the roadway and intersection impact analysis assumptions is presented in the *Transportation Technical Report*.

The intersection LOS analysis compared the 2020 and 2030 years for the East Link Project and the No Build Alternative in each segment study area. In general, the analysis predicted that, for light rail along at-grade profiles or elevated within the roadway right-of-way, intersections generally would operate at an LOS similar to that of the No Build Alternative, although a few intersections in the study area may degrade depending on the alternative and intersection movements. The similarity occurs partly because a similar roadway capacity is provided in most cases with East Link, but also because light rail trains, operating in at-grade profiles, are generally able to safely travel through intersections without substantial signal timing adjustments. At-grade alternatives outside of Downtown Bellevue would receive some level of priority at the traffic signals, although changes to the signal coordination are expected to be minimal because the traffic signals would have advanced detection of an approaching light rail train. Within Downtown Bellevue, at-grade alternatives would also likely receive some signal priority, but traffic signal coordination for autos would be maintained along key east-west arterials. For alternatives with either elevated or tunneled sections, intersections are expected to have operations similar to the No Build Alternative because these profiles are generally outside the roadway right-of-way.

Individual station impacts are described in each of the following segment discussions, but intersections near potential stations are expected to operate in most cases at an LOS similar to the No Build Alternative. Stations that include park-and-ride facilities are expected to generate more auto trips than other stations.

Therefore, at these locations, the intersections immediately adjacent to the stations may operate worse with the East Link Project than under the No Build Alternative because of the potential traffic increases at these intersections.

3.6.3.1 Traffic Forecasts and Station Trips

To evaluate impacts of the No Build Alternative and East Link Project on arterials and local streets, safety, and parking facilities, traffic was forecasted to determine the number of vehicles that would be on these facilities in the years 2020 and 2030. The analysis in this section uses the traffic forecasts presented in Section 3.3.3 and the ridership estimates presented in Section 3.4.3.6.

Overall, the annual traffic growth rate by year 2030 is expected to be between 1 and 2 percent per year within each segment for the No Build Alternative. With East Link, however, the study area is expected to experience slight changes in travel patterns as people adjust their mode of transportation and shift to light rail, thereby avoiding vehicle congestion and improving their travel times and trip reliability. This is further discussed in Section 3.3, Regional Travel. Additional information on the traffic forecasts is provided in the *Transportation Technical Report* in Appendix H1.

The number of person trips at each station was calculated based on the alternative that generates the highest PM peak-period (3-hour) ridership forecasts at that station. Included in this calculation is the number of park-and-ride and passenger drop-off and pick-up trips (also known as a kiss-and-ride trip) for each proposed East Link station. Additionally, PM peak bus service levels were provided by Metro and Sound Transit as part of the transit integration plan prepared for this project (Sound Transit, 2007). Year 2020 and 2030 daily, PM peak-period ridership and PM peak-hour vehicle trips for the highest ridership alternatives at each station are summarized by total auto and person trips in Table 3-26. Further information on the vehicle trip generation information associated with each station is provided in Appendix H1, Transportation Technical Report.

Within the study area, five of the proposed park-and-ride stations already exist as park-and-ride facilities. These are at Mercer Island, South Bellevue, Overlake Village, Overlake Transit Center, and Redmond Transit Center stations. With the project, the total number of parking stalls at the South Bellevue and Overlake Transit Center stations would increase. The 118th, 130th, and SE Redmond stations are proposed to be new park-and-ride facilities with this project. Instead of providing a park and ride at the 130th Station, this lot could be relocated to 120th Station with the *Preferred Alternative D2A*. The number of parking stalls at the Mercer Island, Overlake Village, and Redmond Transit Center stations would not be increased with this project. For the traffic analysis, all park-and-ride lots were assumed to be at full capacity, regardless of the vehicle demand from the ridership model. Section 3.6.3.4 identifies the existing and proposed parking stalls at park-and-ride stations and the number of autos expected to park there.

Kiss-and-ride trip: A vehicle trip where people drive to the station and drop off or pick up a passenger.

For the interim terminus ridership forecasts, three stations are predicted to have a noticeable increase in daily boardings: Hospital Station, Overlake Village Station, and Overlake Transit Center Station. These increases are largely due to the changes in bus service that would be planned to serve these stations if they are interim termini. Therefore, the increase in boardings is mainly due to people transferring to and from bus service, which would not be expected to have a noticeable impact on roadway operations.

In either year 2020 or 2030, the Hospital, Overlake Village, and Redmond Town Center stations are anticipated to have a noticeable increase in PM peak-hour vehicle trips, primarily due to an increase in kiss-and-ride trips. An additional traffic analysis has been conducted at these stations because of this increase in vehicle trips when they are an interim terminus. Table 3-27 provides daily PM peak-period ridership and PM peak-hour vehicle trips information at each potential interim terminus station.

3.6.3.2 Arterial and Local Street Operations

This section provides information by segment for arterial and local street operations. This includes impacts on intersection LOS and operations, traffic control, property access and circulation for the project alternatives, interim terminus stations, and maintenance facilities. Traffic safety on the arterial and local streets is addressed in Section 3.6.3.3, and parking impacts are discussed in Section 3.6.3.4. The *Transportation Technical Report* provides the complete list of roadway and intersection projects assumed in 2020 and 2030 in each project segment. Exhibits 3-20 through 3-26 illustrate year 2030 intersection operations with and without the project. For the year 2020 intersection exhibits, refer to the *Transportation Technical Report* in Appendix H1. Refer to the engineering drawings located in Appendix G1 for the proposed roadway channelization and traffic control for all alternatives.

TABLE 3-26
2020 and 2030 Station Boardings, Vehicle Trips, and Person Trips Forecasts

Station	Alternative	2020				2030			
		Daily Station Boardings[a]	PM Peak Period Kiss-and-Ride/ Park-and-Ride Vehicle Trips[b]	PM Peak Period Person Trips[c]	PM Peak-Hour Vehicle Trips[d]	Daily Station Boardings[a]	PM Peak Period Kiss-and-Ride/ Park-and-Ride Vehicle Trips[b]	PM Peak Period Person Trips[c]	PM Peak-Hour Vehicle Trips[d]
Segment A, Interstate 90									
Rainier	*Preferred Alternative A1*	3,000	220/0	1,490	190	3,000	220/0	1,550	200
Mercer Island	*Preferred Alternative A1*	2,500	70/390	1,280	70	3,000	90/460	1,670	80
Segment B, South Bellevue									
South Bellevue	*Preferred Alternative B2M,* and Alternatives B1, B2A, B2E, B3, and B3 – 114th Extension Design Option	4,000	250/1,310	2,780	590	5,000	300/1,560	3,600	630
SE 8th	*Preferred Alternative B2M to Preferred Alternative C9T* and Alternatives B2A and B2E	500	50/0	310	40	500	60/0	380	50
118th	Alternative B7	2,000	110/580	1,390	455	2,500	140/760	2,010	485
Segment C, Downtown Bellevue									
Old Bellevue	Alternative C1	1,500	160/0	1,070	140	2,500	210/0	1,450	190
Bellevue Transit Center	All Segment C alternatives	6,000	460/0	5,650	400	7,000	510/0	6,240	440
East Main	Segment C alternatives (except *Preferred Alternative C11A*) from Alternatives B3 and B7[e]	2,500	210/0	1,440	180	3,500	310/0	2,120	270
108th	*Preferred Alternative C11A*	2,000	200/0	1,360	170	2,500	250/0	1,700	220
Ashwood/ Hospital	Alternatives C3T, C4A, C7E, and C8E	1,000	110/0	740	100	1,000	110/0	740	100
Hospital	*Preferred Alternatives C11A* and *C9T* and Alternatives C1T, C2T, C9A, and C14E	1,000	100/0	680	90	1,500	230/0	1,610	210
Segment D, Bel-Red/Overlake									
120th[f]	*Preferred Alternative D2A* and Alternatives D2E and D3	500	70/0	460	60	1,000	80/0	560	70

TABLE 3-26 CONTINUED
2020 and 2030 Station Boardings, Vehicle Trips, and Person Trips Forecasts

Station	Alternative	2020				2030			
		Daily Station Boardings[a]	PM Peak Period Kiss-and-Ride/ Park-and-Ride Vehicle Trips[b]	PM Peak Period Person Trips[c]	PM Peak-Hour Vehicle Trips[d]	Daily Station Boardings[a]	PM Peak Period Kiss-and-Ride/ Park-and-Ride Vehicle Trips[b]	PM Peak Period Person Trips[c]	PM Peak-Hour Vehicle Trips[d]
130th[f]	*Preferred Alternative D2A* and Alternatives D2E andD3	1,000	50/270	680	180	1,500	70/380	1,230	200
Overlake Village	All Segment D alternatives	1,000	50/260	740	110	1,500	90/480	1,510	140
Overlake Transit Center	All Segment D alternatives	3,000	90/460	2,140	140	4,500	130/670	3,230	170
Segment E, Downtown Redmond									
Redmond Town Center	Alternatives E1, E4, and E2 – Redmond Transit Center Design Option	1,500	120/0	790	100	2,000	140/0	950	120
SE Redmond	All Segment E alternatives	2,000	200/1,030	1,470	775	2,000	200/1,030	1,470	775
Downtown Redmond	*Preferred Alternative E2*	1,500	140/0	980	130	2,000	160/0	1,130	150
Redmond Transit Center	E2 – Redmond Transit Center Design Option	500	30/150	310	65	500	30/180	390	65

[a] The daily station boardings provided in this table represent the highest ridership at that station from any East Link alternative.

[b] The PM peak-period (3-hour) park-and-ride forecasts shown are not constrained by the available parking supply.

[C] The PM peak-period (3-hour) person trips include all people boarding and alighting (exiting) bus and light rail.

[d] These peak-hour vehicle trips are the total number of new kiss-and-ride and park-and-ride trips associated with the East Link Project; these trips are incorporated in the traffic analysis. For bus volumes at each station refer to Section 6.3.1 of Appendix H1, Transportation Technical Report.

[e] C9T – East Main Station Design Option connecting from *Preferred Alternative B2M* would have no change in forecasts for either *Preferred Alternative C9T* or *B2M*.

[f] Instead of providing a park and ride at the 130th Station, this lot could be relocated to 120th Station with the *Preferred Alternative D2A*.

Note: Due to rounding, ridership might not sum exactly to totals.

TABLE 3-27
2020 and 2030 Interim Terminus Station Boardings, Vehicle Trips, and Person Trips Forecasts

Interim Terminus Station	2020						2030					
	Daily Station Boardings[a]	Increase in Daily Station Boarding[b]	PM Peak Period Kiss-and-Ride/ Park-and-Ride Vehicle Trips[c]	PM Peak Period Person Trips[d]	PM Peak-Hour Vehicle Trips	Increase in PM Peak-Hour Vehicle Trips[b,e]	Daily Station Boarding[a]	Increase in Daily Station Boardings[b]	PM Peak Period Kiss-and-Ride/ Park-and-Ride Vehicle Trips[c]	PM Peak Period Person Trips[d]	PM Peak-Hour Vehicle Trips	Increase in PM Peak-Hour Vehicle Trips[b,e]
Hospital	2000	1,000	170/0	1160	150	60	3,000	1,500	250/0	1,740	220	20
Ashwood/Hospital	1000	0	80/0	530	70	0	1,000	0	120/0	850	110	10
120th	1000	500	100/0	660	90	30	1,500	500	130/0	880	110	40
130th	1,000	0	90/450	880	210	30	1,500	0	100/510	1,120	220	20
Overlake Village	2,500	1,500	150/770	1,720	190	80	3,500	2,000	180/960	2,310	220	80
Overlake Transit Center	4,500	1,500	80/440	2,940	140	0	6,000	1,500	110/560	3,960	160	0
SE Redmond	2,000	0	180/960	1,460	765	0	2,500	500	200/1,050	1,630	785	10
Redmond Town Center	2,000	500	200/0	1,350	170	70	2,500	500	240/0	1,630	210	90

[a] The highest ridership alternative is shown for each interim terminus station.

[b] Increase from Table 3-26 numbers.

[c] The PM peak-period (3-hour) park-and-ride forecasts shown are not constrained by the available parking supply.

[d] PM peak-period (3-hour) person trips include all people boarding and alighting (exiting) bus and light rail.

[e] These vehicle trips are the total increase number of new kiss-and-ride and park-and-ride trips associated with an East Link interim terminus station. These trips are incorporated in the interim terminus traffic analysis, where required. For bus volumes changes at each interim terminus station refer to Section 6.3.1 of Appendix H1, Transportation Technical Report.

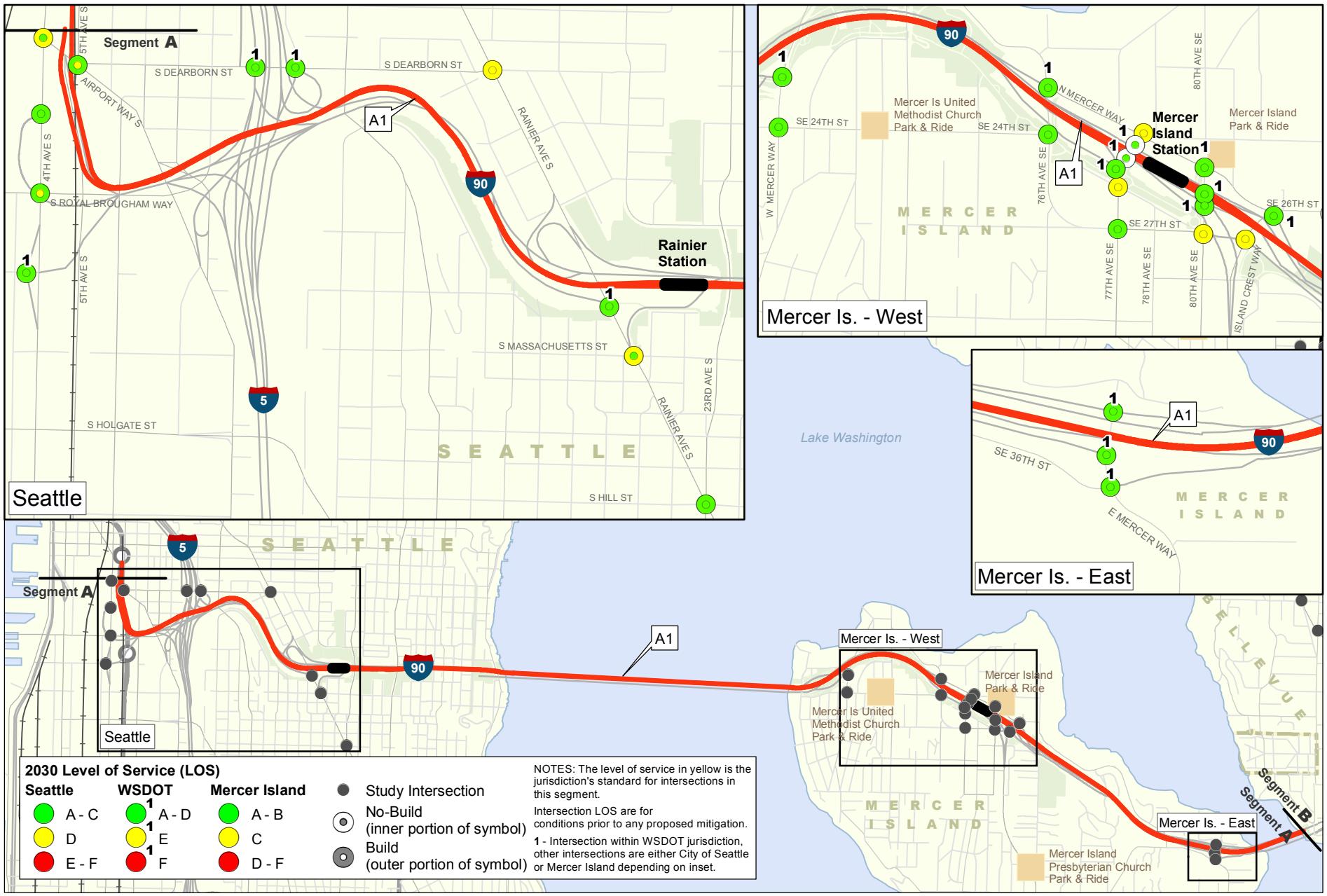


Exhibit 3-20 **2030 AM No Build and Build Level of Service at Intersections Segment A**
East Link Project

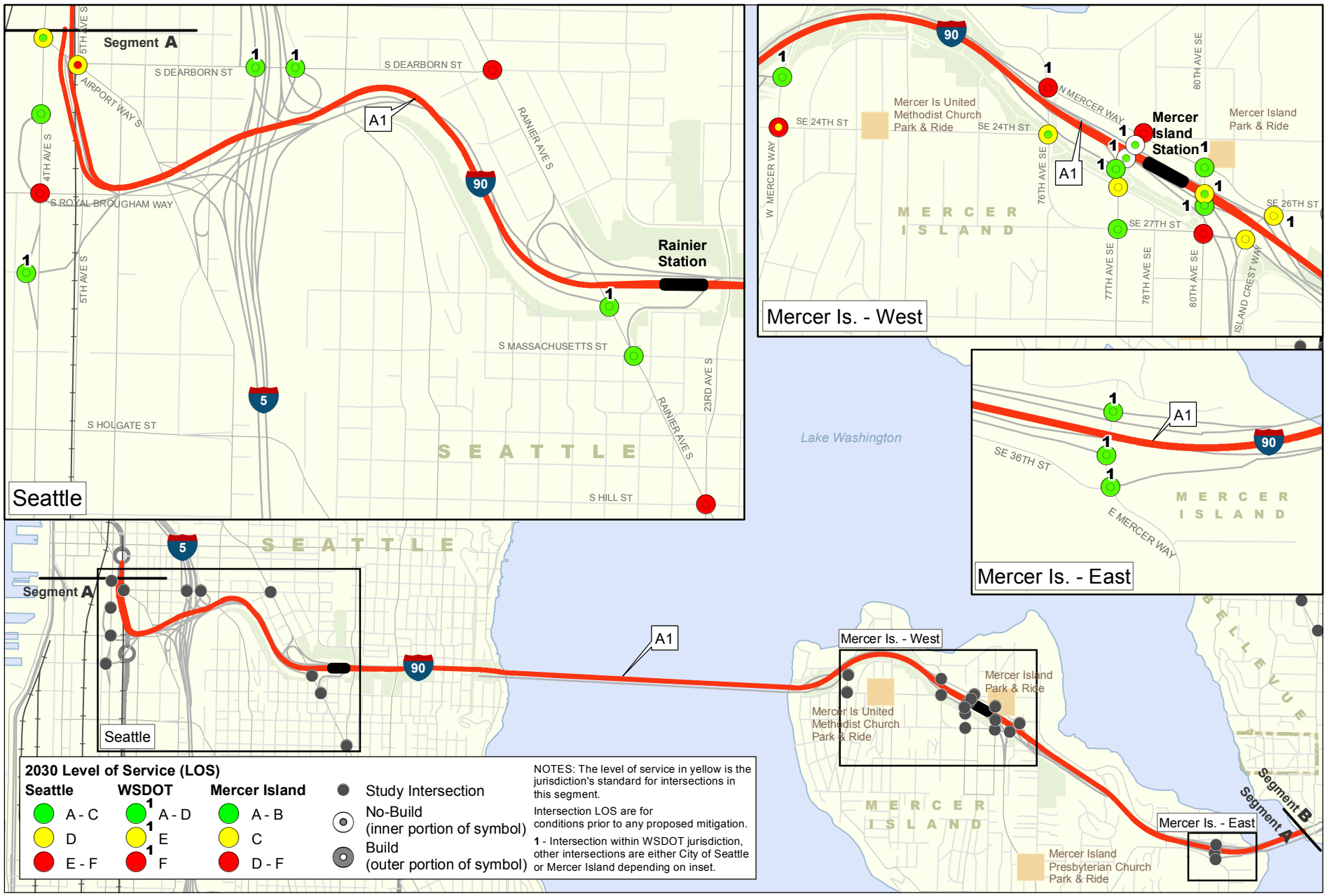
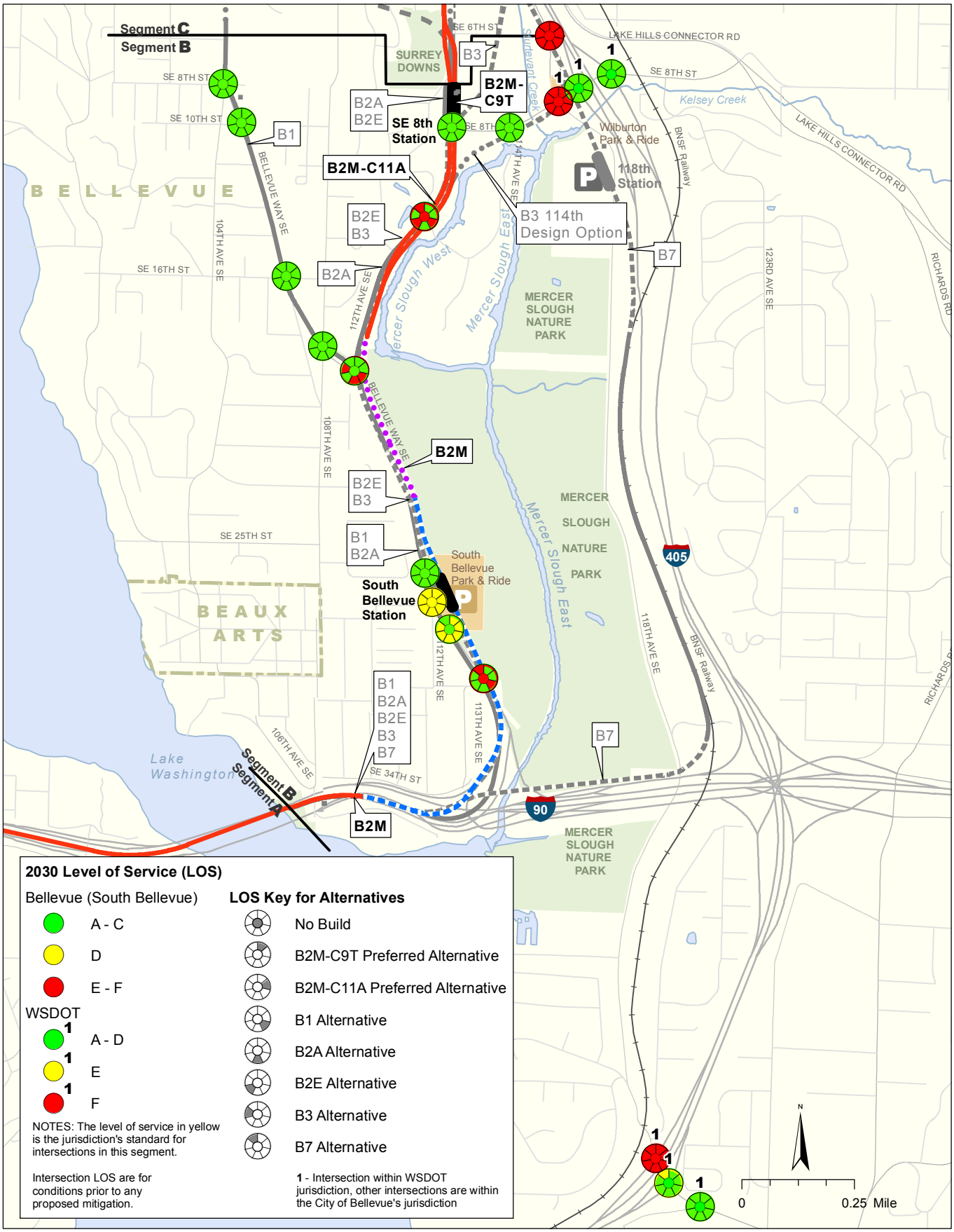


Exhibit 3-21 **2030 PM No Build and Build Level of Service at Intersections Segment A**
East Link Project



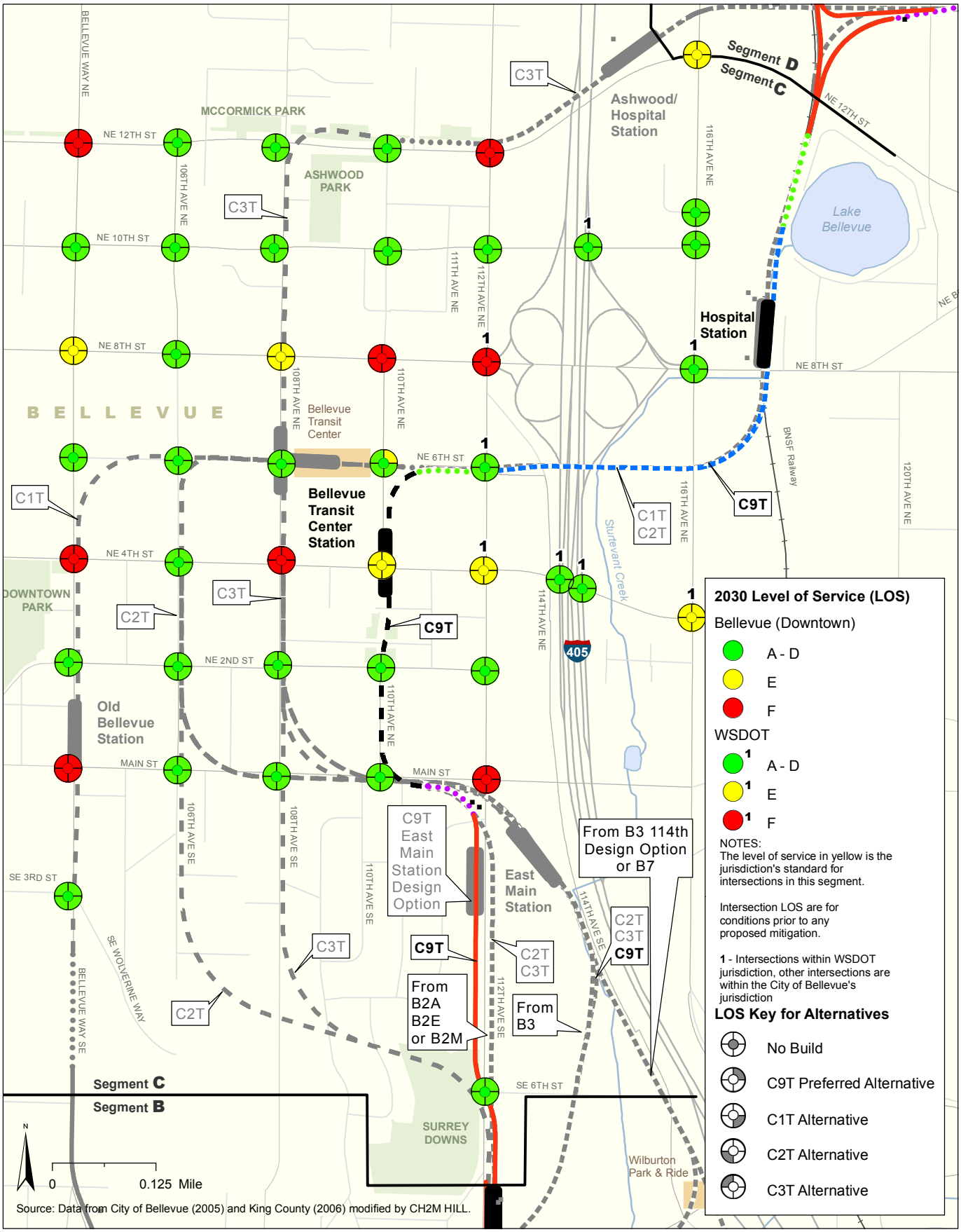
Preferred Alternative
- At-Grade Route
- Elevated Route
- Retained-Cut Route
- Retained-Fill Route
- Tunnel Route

Other Alternatives
- At-Grade Route
- Elevated Route
- Retained-Cut or Retained-Fill Route
- Tunnel Route

- Traction Power Substation
- Proposed Station
- P New and/or Expanded Park-and-Ride Lot

Source: Data from King County (2006) modified by CH2M HILL.

Exhibit 3-22 **2030 PM No Build and Build Level of Service at Intersections Segment B**
East Link Project

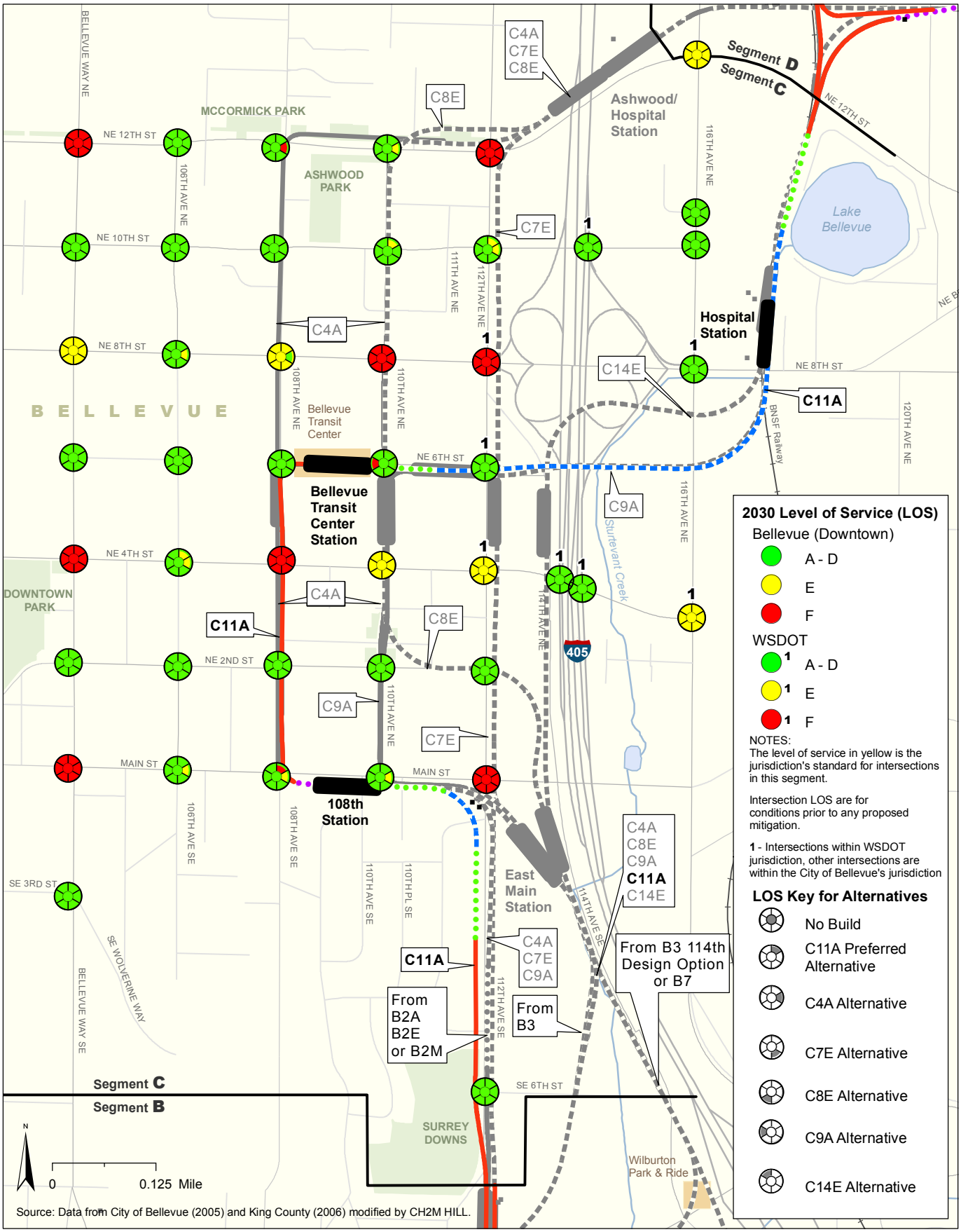


Preferred Alternative
- At-Grade Route
- Elevated Route
- Retained-Cut Route
- Retained-Fill Route
- Tunnel Route

Other Alternatives
- At-Grade Route
- Elevated Route
- Retained-Cut or Retained-Fill Route
- Tunnel Route

- Traction Power Substation
- Proposed Station
- P New and/or Expanded Park-and-Ride Lot

Exhibit 3-23 **2030 PM No Build and Build Level of Service at Intersections, Tunneled Alignments Segment C**
East Link Project

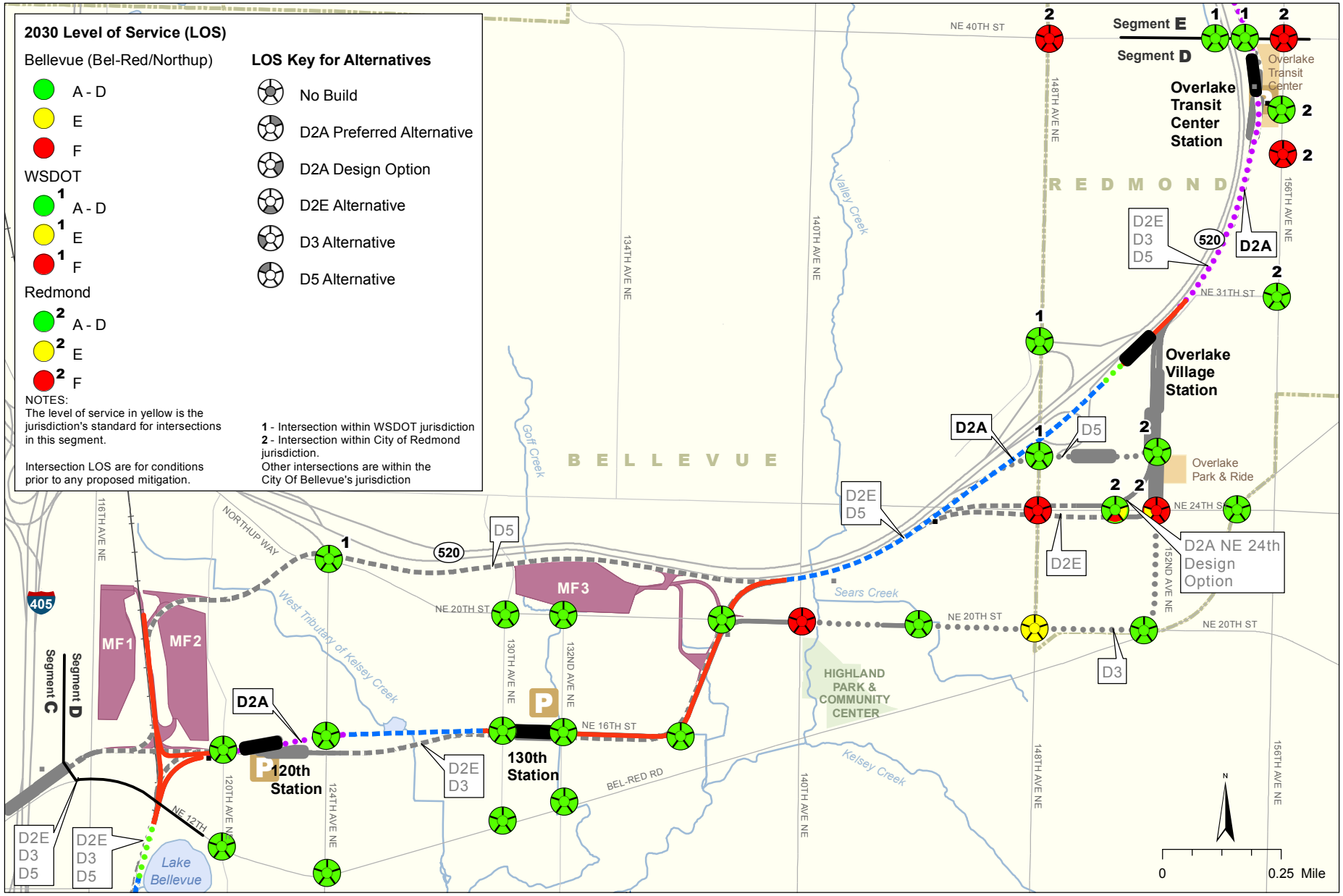


Preferred Alternative
- At-Grade Route
- Elevated Route
- Retained-Cut Route
- Retained-Fill Route
- Tunnel Route

Other Alternatives
- At-Grade Route
- Elevated Route
- Retained-Cut or Retained-Fill Route
- Tunnel Route

- Traction Power Substation
- Proposed Station
- New and/or Expanded Park-and-Ride Lot

Exhibit 3-24 **2030 PM No Build and Build Level of Service at Intersections, Non-Tunneled Alignments Segment C**
East Link Project



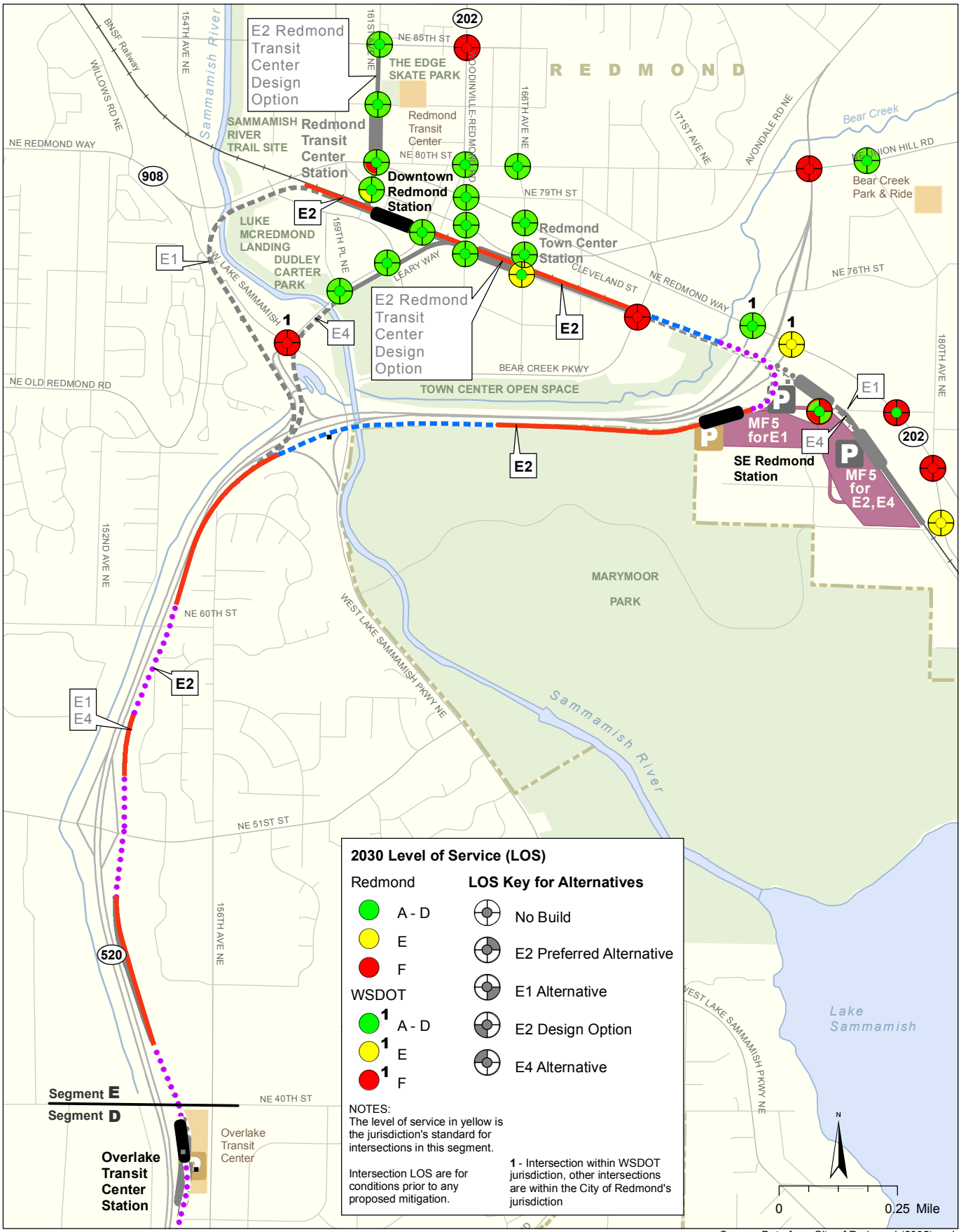
Preferred Alternative
- At-Grade Route
- Elevated Route
- Retained-Cut Route
- Retained-Fill Route
- Tunnel Route

Other Alternatives
- At-Grade Route
- Elevated Route
- Retained-Cut or Retained-Fill Route
- Tunnel Route

- Traction Power Substation
- Proposed Station
- P New and/or Expanded Park-and-Ride Lot

Source: Data from City of Bellevue (2005), City of Redmond (2005), and King County (2006) modified by CH2M HILL.

Exhibit 3-25 **2030 PM No Build and Build Level of Service at Intersections Segment D**
East Link Project



Preferred Alternative
- At-Grade Route
- Elevated Route
- Retained-Cut Route
- Retained-Fill Route
- Tunnel Route

Other Alternatives
- At-Grade Route
- Elevated Route
- Retained-Cut or Retained-Fill Route
- Tunnel Route

- Traction Power Substation
- Proposed Station
- New and/or Expanded Park-and-Ride Lot

Source: Data from City of Redmond (2005) and King County (2006) modified by CH2M HILL.

Exhibit 3-26 **2030 PM No Build and Build Level of Service at Intersections Segment E**
East Link Project

Segment A, *Preferred Interstate 90 Alternative (A1)*

In Segment A, arterial and local streets are within the cities of Seattle and Mercer Island. With the No Build Alternative, local roadway access on Mercer Island to the I-90 outer roadway HOV lanes is provided by direct-access ramps as part of the I-90 Two-Way Transit and HOV Operations Project. No substantial arterial and local roadway improvements are considered in Segment A with the No Build Alternative.

Preferred Alternative A1 would convert the I-90 reversible center roadway for exclusive light rail use, as discussed in Section 3.5, while providing joint use by bus and light rail in the D2 Roadway. After converting the center roadway to light rail, the 77th Avenue SE and Island Crest Way reversible center roadway accesses would be eliminated and vehicles would use other I-90 access points. These access points could include the West Mercer Way, 76th Avenue SE, 77th Avenue SE, Island Crest Way, and East Mercer Way interchanges.

Additionally, as part of Stage 3 of the I-90 Two-Way Transit and HOV Operations Project, the current proposal to build the eastbound HOV off-ramp at 77th Avenue SE on Mercer Island is not the preferred design option in conjunction with the East Link Project, as bus use of the 77th Avenue SE ramp would be partially or wholly replaced by light rail service. Sound Transit, WSDOT, and the City of Mercer Island prefer to connect this access with the Island Crest Way eastbound off-ramp from the center roadway. A third design option that would construct neither of these eastbound off-ramp options is also considered. All three of these options were analyzed for impacts on the street system surrounding I-90 on Mercer Island.

Traffic Control, Property Access, and Circulation

Within Segment A, East Link is not expected to substantially affect traffic control, property access, or vehicular circulation on arterial streets because the *Preferred Alternative A1* and any of its design options are located on I-90 and do not travel along arterial or local street; however, circulation patterns are expected to change near the I-90 ramps on Mercer Island due to the closures of the reversible center roadway. Gates would be installed at the D2 Roadway ramps to ensure that general-purpose vehicles do not enter this facility.

If light rail operated exclusively in the D2 Roadway, then buses would need to modify their route and use another access location with I-90 (such as Rainier or SR 519 interchanges). This would not affect general vehicles and is discussed in more depth in Sections 3.4 and 3.5.

Operations and Level of Service

Throughout Segment A, the light rail profile is in an exclusive right-of-way separated from vehicle traffic, except in the D2 Roadway with joint bus and rail operations. Year 2030 intersection operations in Segment A for the No Build Alternative and East Link are depicted in Exhibits 3-20 and 3-21.

With East Link, the following intersections on Mercer Island (including the design option where the impact occurs) would not meet agency standards and operate worse than in the no-build condition:

- West Mercer Way and 24th Avenue SE (*Preferred Alternative A1* and both HOV off-ramp design options).
- 80th Avenue SE and SE 27th Street (*Preferred Alternative A1* and both HOV off-ramp design options)
- 77th Avenue SE and Sunset Highway (design option that provides a 77th HOV off-ramp)
- 77th Avenue SE and the I-90 eastbound HOV off-ramp (design option that provides a 77th HOV off-ramp)
- 77th Avenue SE and N Mercer Way (*Preferred Alternative A1* and both HOV off-ramp design options)
- 77th Avenue SE and I-90 eastbound off-ramp (Preferred Alternative A1 and design option that provides neither eastbound HOV off-ramp)
- 76th Avenue SE/N Mercer Way and I-90 westbound on-ramp (*Preferred Alternative A1* and both HOV off-ramp design options)

During the AM and PM peak hours, intersection operations in Seattle with East Link would vary only slightly when compared to the No Build Alternative. In the AM peak hour, intersection operations would generally stay the same or improve in Seattle, especially along Airport Way South and South Dearborn Street, because HOV access from the I-90 D2 Roadway would be restricted. HOVs would likely shift to the I-90 western terminus at South Atlantic Street/SR 519, which could lead to slightly worse intersection operations in this area.

During the PM peak hour, intersection operations in Seattle would vary slightly when comparing the East Link Project to the No Build Alternative. At the I-90 D2 Roadway terminus at 5th Avenue South and Airport Way South/South Dearborn Street, intersection operations again are expected to improve because the HOV access to the D2 Roadway would not be

permitted. In the operational option to have exclusive light rail use in the D2 Roadway (i.e., bus services are not permitted), AM and PM peak-hour intersection operations would further improve at the D2 Roadway terminus and slightly degrade at the I-90 terminus on 4th Avenue.

On Mercer Island, some intersections that provide access to or are adjacent to I-90 in the build condition might experience some degradation in operations because of the changes in I-90 access between no-build and build conditions.

In *Preferred Alternative A1* (providing an eastbound HOV off-ramp at Island Crest Way) and the design option that does not provide any eastbound HOV off-ramp, all Mercer Island intersections would meet agency standards in the 2020 and 2030 AM peak hours. With the design option that would provide the eastbound 77th Avenue SE HOV off-ramp, the intersection of 77th Avenue SE and Sunset Highway would not meet agency standards in the 2020 and 2030 AM peak hours.

In the 2020 PM peak hour, the *Preferred Alternative A1* (eastbound HOV off-ramp to Island Crest Way) and the design option that provides neither eastbound HOV off-ramp, three intersections would not meet agency standards. These intersections are North Mercer Way and 77th Avenue SE, SE 24th Street and West Mercer Way, and SE 27th Street and 80th Avenue SE. These intersections are expected to operate at LOS D or E conditions. In addition, the I-90 eastbound off-ramp and 77th Avenue SE would exhibit vehicle queue lengths that extend onto the I-90 mainline. With the design option to provide a 77th Avenue SE HOV off-ramp, the intersection of 77th Avenue SE and I-90 eastbound HOV off-ramp would fail to meet agency standards in addition to those already identified above, except the I-90 eastbound off-ramp at 77th Avenue SE, which would not exhibit queues extending onto the I-90 mainline under this design option.

By 2030, the *Preferred Alternative A1* and the design option that provides neither eastbound HOV off-ramp, the 76th Avenue SE and I-90 westbound on-ramp intersection would fail to meet agency standards, in addition to those identified for the 2020 PM peak hour. With the design option to provide a 77th Avenue SE HOV off-ramp, the intersection of 77th Avenue SE and Sunset Highway would fail to meet agency standards in addition to those identified for the 2020 PM peak hour under this design option. Overall, by 2030, with the *Preferred Alternative A1* and the design option that does not provide any eastbound HOV off-ramp, five intersections would fail to meet agency standards, all in the PM peak hour. With the design option to provide a 77th Avenue SE HOV off-ramp, six intersections would fail to meet agency standards by 2030, five in the PM peak hour and one in both the AM and PM peak hours.

Segment B

With the No Build Alternative, the physical characteristics of the arterials and local roadways in 2020 and 2030 would remain the same as in existing conditions, except for modifications to the SE 8th Street interchange as part of the State's I-405 improvements.

With any Segment B alternative, roadway channelization generally remains similar to the No Build Alternative, except near the South Bellevue Station (described in the following section), as the alternatives are either outside the roadway right-of-way or, when the alternative is within the roadway, channelization is restored to no-build conditions.

Traffic Control, Property Access, and Circulation

Alternative B1 would have the highest number of traffic control revisions because it travels in the median along Bellevue Way SE, while Alternative B7 would have the fewest.

Preferred 112th SE Modified Alternative (B2M)

Preferred Alternative B2M (with either Segment C connection) would operate in exclusive right-of-way along the east side of Bellevue Way SE. Two roadway modification options are proposed to improve the station and neighborhood access along Bellevue Way near the South Bellevue Station. Of the two options, the second option, which does not install a traffic signal at SE 30th Street or provide a southbound HOV lane, is more consistent with the City of Bellevue's adopted long-range plans.

The first option would install two new traffic signals along Bellevue Way SE at the south driveway to the South Bellevue Station and at SE 30th Street and would convert the center two-way left-turn lane from the South Bellevue Station to I-90 into a southbound HOV lane. With the signal at the south driveway, westbound left turns exiting the South Bellevue Station would be allowed. Right-in/right-out access would be provided to residences south of the South Bellevue Station, and northbound and southbound U-turn movements would be allowed at the intersection of Bellevue Way SE, 112th Avenue SE, and the South Bellevue Station. At the SE 30th Street intersection, northbound traffic from I-90 would not be stopped by the signal. Access to the Sweylochen Boat Ramp would be right-in/right-out, and a northbound left turn into the Enatai neighborhood would be provided. The eastbound left turn exiting the Enatai neighborhood at SE 30th Street

would be prohibited, and vehicles would be rerouted to 112th Avenue SE or another location.

The second option would also install a traffic signal at Bellevue Way SE and the south driveway to the South Bellevue Station. With this signal, northbound U-turn movements would be allowed at this intersection, and southbound U-turns would be allowed at the intersection of Bellevue Way SE, 112th Avenue SE, and the South Bellevue Station. No changes to property access and circulation along Bellevue Way would occur south of the south driveway, and the current movements allowed at SE 30th Street and Bellevue Way SE would remain.

For the connection to *Preferred Alternative C11A*, *Preferred Alternative B2M* along 112th Avenue SE would transition to at-grade center-running south of SE 15th Street, with the light rail train crossing of the northbound lanes controlled by gates. A signalized crossing would be provided at the SE 8th Street intersection. This variation of *Preferred Alternative B2M* would provide right-in/right-out access along 112th Avenue SE from Bellevue Way to SE 6th Street except at SE 8th Street, where left-turn and U-turn movements would be allowed. The pedestrian, bicycle, and maintenance driveways to Lincoln Plaza just south of SE 6th Street would be closed. Emergency access from south of the two driveways, however, would be maintained. Access to this property would be maintained on SE 6th Street, which would minimize the impact.

Along 112th Avenue SE, the connection from *Preferred Alternative B2M* to *Preferred Alternative C9T* would operate on the east side of 112th Avenue SE and cross SE 15th and SE 8th Streets as signalized gated crossings. A northbound right-turn pocket would be provided at the intersections of SE 8th Street and 112th Avenue SE and SE 15th Street and 112th. The emergency access driveway to Lincoln Plaza from 112th Avenue SE just south of SE 6th Street would be maintained, but the pedestrian, bicycle, and maintenance driveway would be closed. Access to this property is maintained on SE 6th Street, which would minimize the impact.

An option with the *Preferred Alternative B2M* connection to *Preferred Alternative C9T* would close the east approach at SE 15th Street to the Bellefield Office Park. Closing SE 15th Street would eliminate the conflict between light rail and vehicles, pedestrians, and bicyclists at this location. This closure would recirculate vehicles in the office park to the intersection of 114th Avenue SE and SE 8th Street. During emergencies, SE 15th Street might need to be opened, allowing for a secondary access into and out of the Bellefield Office Park.

Other Segment B Alternatives

For all alternatives, with the exception of Alternatives B1 and B7, traffic control, property access, and circulation near the South Bellevue Station to I-90 would be the same as described in *Preferred Alternative B2M*.

Alternative B1 would modify property access along Bellevue Way north of the 112th Avenue SE intersection and between the South Bellevue Station and I-90 to right-turn in/right-turn out because of the at-grade median profile. Between the 112th Avenue SE intersection and the South Bellevue Station an existing median is already in place, therefore, no change in property access would occur for this section. Where feasible, u-turn movements would be provided at signalized intersections along Bellevue Way to minimize circulation impacts.

South of the 112th Avenue SE intersection, Alternatives B2A, B3, and B3 - 114th Extension Design Option would have minimal impacts along Bellevue Way, similar to those of Alternative B1. North of this intersection, these three alternatives proceed along 112th Avenue SE until approximately SE 8th Street, restricting access to the Bellefield Office Park to the east and the residential properties to the west, allowing only right in/right-out movements. With the B3 – 114th Extension Design Option, an at-grade gated crossing of the northbound lanes on 112th Avenue SE, south of SE 8th Street, is provided.

Alternatives B2E and B7 would have minimal impacts on property access and/or traffic circulation because most of the length of these two alternatives would be either elevated or outside the roadway rights-of-way.

Operations and Level of Service

Year 2030 intersection operations in Segment B for the No Build Alternative and East Link are shown in Exhibit 3-22.

Under the No Build Alternative, intersection LOS in 2020 and 2030 is expected to degrade as traffic volumes increase on the roadways. Three intersections are expected to operate at LOS F in year 2020.

- SE 30th Street and Bellevue Way SE
- 112th Ave SE and SE 15th Street
- SE 8th Street and 118th Avenue SE

By 2030, the SE 6th Street and 114th Avenue SE and I-405 southbound ramps and Coal Creek Parkway intersections are also expected to operate at a failing LOS in the No Build Alternative.

The following intersections (including with the alternative where the impact occurs) would not meet agency standards with East Link and would operate worse than in the no-build condition.

- 112th Avenue SE and Bellevue Way SE (Alternatives B1, B2A, and B3)
- 112th Avenue SE/South Bellevue Station and Bellevue Way SE (Alternative B1)
- 112th Avenue SE and SE 15th Street (Alternatives B1, B2E, and B7)
- Coal Creek Parkway and I-405 southbound ramps (Alternative B7)
- 118th Avenue SE and SE 8th Street/I-405 southbound on-ramp (Alternative B7)

Preferred 112th SE Modified Alternative (B2M)
Under *Preferred Alternative B2M* with connections to *Preferred Alternatives C11A* or *C9T,* intersection operations would be similar to the no-build condition because of roadway and signal modifications along Bellevue Way SE and 112th Avenue SE.

The resulting intersection LOS along SE 8th Street at 112th Avenue SE and at 114th Avenue SE would still meet City of Bellevue LOS standards with the option to close the east approach at SE 15th Street to the Bellefield Office Park with the *Preferred Alternative B2M* connection to *Preferred Alternative C9T*. There would be, however, an increase in the northbound vehicle queues at the SE 8th Street and 114th Avenue SE intersection.

Other Segment B Alternatives
Alternatives B1, B2A, and B3 are at-grade throughout most of Segment B. These at-grade profiles would degrade intersection operations on Bellevue Way SE at the Bellevue Way SE and 112th Avenue SE intersection because of increased traffic associated with the expanded park-and-ride lot and changes in channelization due to the at-grade profile. Alternatives B2A and B3 are not expected to have any other intersection impacts. In addition to the proposed roadway modifications, under Alternative B1, pedestrians would access the light rail platform in one pedestrian crossing cycle, while pedestrians crossing Bellevue Way SE would require two pedestrian crossing cycles; this change in pedestrian crossing time would allow for improved intersection operations. No other intersections along Bellevue Way where light rail would operate at-grade are expected to experience worse intersection operations than in the no-build condition.

Because Alternative B2E is elevated throughout Segment B, intersection operations would not degrade due to route modifications. Only one intersection—112th Avenue SE and SE 15th Street—would degrade noticeably in this alternative. This effect is due to the increased traffic associated with the nearby stations.

The 118th Avenue SE and SE 8th Street intersection would operate at LOS F with the no-build condition and all Segment B alternatives. In Alternative B7, however, this intersection would operate with a higher delay than in the no-build condition due to the increased traffic from the new park-and-ride lot at the 118th Station. The intersection of Coal Creek Parkway and I-405 southbound ramps would also operate with a higher delay under Alternative B7 than in the no-build condition.

Segment C

Multiple projects are planned by the City of Bellevue and WSDOT within Segment C that will change the physical characteristics of major roadways from their existing condition, with or without the East Link Project, including the following:

- 110th Avenue NE widening from a three- and four-lane cross section to a five-lane cross section between NE 4th and NE 8th Streets
- NE 4th Street extension from 116th Avenue NE to 120th Avenue NE
- By 2030, NE 2nd Street widening from three lanes with on-street parking to five lanes between 112th Avenue NE and Bellevue Way NE

In general, Segment C tunnel alternatives (*Preferred Alternative C9T* and Alternatives C1T, C2T, and C3T) would not impact the roadway channelization except in some instances near the tunnel portals. At-grade alternatives within Segment C (*Preferred Alternative C11A* and Alternatives C4A and C9A) would require roadway modifications to 108th Avenue NE or 110th Avenue NE and NE 6th Street. Elevated alternatives in Segment C (Alternatives C7E, C8E, and C14E) would not impact roadway channelization except where the columns supporting the elevated structure are within the roadway right-of-way.

Traffic Control, Property Access, and Circulation
Alternative C4A would have the highest number of traffic control revisions because it travels at-grade along the side of 108th and 110th Avenues NE. The tunnel alternatives (Alternatives C1T, C2T, C3T, and C9T) and elevated alternatives along or east of 112th Avenue NE (C7E and C14E) would have the fewest revisions.

Preferred 108th NE At-Grade Alternative (C11A)

Preferred Alternative C11A has signalized crossings along 108th Avenue NE at Main, NE 2nd, NE 4th, and NE 6th Streets, a midblock pedestrian crossing north of NE 2nd Place, and signalized crossings at 112th Avenue SE and SE 6th Street and 110th Avenue NE and NE 6th Street. A southbound left-turn pocket would be provided at the 112th Avenue SE and SE 6th Street intersection. As *Preferred Alternative C11A* operates along portions of 108th Avenue NE and NE 6th Street in the median, property access and circulation is right-in/right-out except at signalized intersections, where all movements are allowed (including U-turn movements where appropriate) except the northbound left turns at NE 2nd Street and NE 4th Street. SE 4th Street would be closed to 112th Avenue SE. Access to SE 4th Street would be maintained via 111th Avenue SE. 110th Place SE and 110th Avenue SE would not have access to Main Street, but would have a new connection to one another. At Surrey Downs Park, the north driveway would be closed and the south driveway would allow right-in and right-out movements. No gates would be required. Due to the roadway realignment, the driveway may need to be rebuilt to the appropriate standards with this alternative.

With a connection to Alternatives B3, B3 - 114th Extension Design Option, or B7, no traffic control, property access, or circulation changes would occur along 112th Avenue SE because *Preferred Alternative C11A* would operate grade-separated east of 112th Avenue SE before transitioning to at-grade south of Main Street, west of 112th Avenue SE.

Preferred 110th NE Tunnel Alternative (C9T)

Preferred Alternative C9T has one signalized crossing at 112th Avenue SE and SE 6th Street. *Preferred Alternative C9T* would not affect roadway and property access and circulation except along 112th Avenue SE and NE 6th Street. SE 1st Street would be closed and not have access to 112th Avenue SE. Access to SE 1st Place would be maintained via 111th Avenue SE. SE 4th Street would be realigned to the intersection of 112th Avenue SE and SE 6th Street. With this realignment, northbound and southbound left turn pockets would be provided at SE 6th Street and 112th Avenue SE. Along NE 6th Street, property access would be similar to property access under *Preferred Alternative C11A*.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, *Preferred Alternative C9T* would operate in the same manner as *Preferred Alternative C11A* with no traffic control, property access, or circulation changes along 112th Avenue SE.

Other Segment C Alternatives

The tunnel alternatives (Alternatives C1T, C2T, and C3T) would have minimal traffic control, property access, and circulation impacts because they would mainly operate underground and would not affect vehicle circulation. Alternative C1T would restrict driveway access on Bellevue Way between the short section of SE 6th Street and SE Kilmarnock Street by allowing only right-in/right-out movements as it transitions to below grade; further, a new signal would be installed at the Bellevue Way SE and SE Kilmarnock Street intersection. Alternatives C2T and C3T would restrict driveway access on 112th Avenue SE south of SE 6th Street when connecting to Alternative B2A. All other Segment B connections to Alternatives C2T and C3T would not result in additional traffic control, property access, and circulation impacts on 112th Avenue SE. Alternatives C1T and C2T are similar to *Preferred Alternative C11A* once they exit their tunnel profiles east of the Bellevue Transit Station along NE 6th Street. Alternative C3T would require two road modifications north of NE 12th Street to serve the remaining residential properties. New connections to 110th Avenue NE would be constructed to the north and connect with 110th Avenue NE.

Alternative C4A would impact traffic circulation along 108th and 110th Avenues NE, and vehicles would operate one-way northbound along 108th Avenue NE and one-way southbound along 110th Avenue NE. Driveway locations on 108th and 110th Avenues NE where vehicles would cross light rail tracks would be potentially closed if access is available at another driveway location. The intersection at Main Street and 110th Avenue NE would be reconfigured to accommodate the realignment of 110th Avenue SE and 110th Place SE so that 110th Avenue south of Main Street would be realigned to match 110th Avenue NE north of Main Street. Minor impacts on traffic circulation at the NE 12th Street and 110th Avenue NE intersection are expected as a result of realigning 111th Avenue NE to connect to 110th Avenue NE. Private driveway access from existing properties on 111th Avenue NE would be maintained, and impacts on circulation would be expected to be minimal.

The Bellevue Transit Station location with Alternative C4A would close the City Hall visitor parking entrance on 110th Avenue NE; parking access would remain on NE 6th Street.

If Alternative C4A connects with Alternative B2A, there would be some property access and circulation impacts along 112th Avenue SE between SE 6th Street and just south of Main Street because the profile is at-grade and elevated in the median. Turning movements

at driveways would be restricted to right-in/right-out movements. U-turn movements would be provided at the SE 6th Street and Main Street intersections along 112th Avenue NE to minimize circulation impacts. With the other Segment B connections, there would not be any traffic control, property access, or circulation impacts.

Alternative C7E is elevated along the east side of 112th Avenue NE, and its configuration would have minimal traffic control, property access, and circulation impacts. When connecting to Alternative B2A, traffic control, property access, and circulation along 112th Avenue SE between Main and SE 6th Streets would be similar to those under Alternative C4A. The signal at NE 6th Street and 112th Avenue NE also would be modified because of column placement. With the other Segment B connections, there would be no traffic control, property access, or circulation impacts.

Alternative C8E is expected to have some impacts on traffic control, property access, and circulation. Column placement along 110th Avenue NE between NE 2nd and NE 12th Streets would restrict turning movements to right-in/right-out at driveways. To minimize circulation impacts, U-turn movements at signalized intersections along this roadway section would be provided, where appropriate. Due to right-of-way constraints along 110th Avenue NE, northbound left turns at NE 8th Street would be prohibited and vehicles in this direction would have to turn left at either NE 4th or NE 10th Street. As this alternative only connects with Alternative B3, B3 - 114th Extension Design Option, or B7, traffic control, property access, or circulation would not be affected along 112th Avenue SE south of Main Street.

Alternative C9A, with a connection to Alternative B2A, would have traffic control, property access, and circulation impacts along 112th Avenue SE between Main and SE 6th Streets similar to those under Alternative C4A. A gated crossing would be provided to the properties south of Main Street at 110th Place SE. Alternative C9A would have signalized crossings along 110th Avenue NE at Main, NE 2nd, NE 4th, and NE 6th Streets. Because Alternative C9A would operate along 110th Avenue SE in the center median, property access and circulation would be right-in/right-out. This alternative would be similar to *Preferred Alternative C11A* once it becomes elevated on NE 6th Street. With the other Segment B connections, there would be no traffic control, property access, or circulation impacts.

Alternative C14E would have no signalized crossings or access and circulation impacts.

Operations and Level of Service

Year 2030 intersection operations with the No Build Alternative and East Link project are shown in Exhibits 3-23 and 3-24.

Under the No Build Alternative, intersections in Downtown Bellevue are expected to become more congested even as roadway projects are completed in the area. Four intersections in the study area are expected to operate at LOS F in 2020, and by the year 2030, four additional intersections are expected to operate at LOS F. These eight intersections are as follows:

- Bellevue Way and Main Street
- Bellevue Way and NE 4th Street
- Bellevue Way and NE 12th Street
- 112th Avenue NE and NE 8th Street (I-405 southbound off-ramp)
- 112th Avenue NE and Main Street
- 110th Avenue NE and NE 8th Street
- 112th Avenue NE and NE 12th Street
- 108th Avenue NE and NE 4th Street

With East Link, the majority of intersections in Segment C are expected to operate similarly to the No Build Alternative. This is due to the roadway modifications incorporated into each alternative and modified travel patterns related to a shift to transit. The following intersections (along with the alternative where the impact occurs) would not meet agency standards and would operate worse than in the no-build condition by 2030:

- Bellevue Way and Main Street (Alternative C1T)
- 112th Avenue NE and NE 12th Street (Alternatives C3T, C7E, and C8E)
- 112th Avenue NE and NE 8th Street (Alternatives C4A and C8E)
- 112th Avenue NE and Main Street (*Preferred Alternative C11A*)
- 110th Avenue NE and NE 8th Street (Alternatives C4A, C8E, and C9A)
- 110th Avenue NE and NE 6th Street (Alternative C9A)
- 108th Avenue NE and NE 12th Street (Alternative C4A)
- 108th Avenue NE and NE 4th Street (*Preferred Alternatives C11A* and *C9T* and Alternatives C1T, C2T, C3T, C8E, and C9A)
- 108th Avenue NE and Main Street (*Preferred Alternative* C11A)

Preferred 108th NE At-Grade Alternative (C11A)
Most intersections in downtown Bellevue under *Preferred Alternative C11A* would operate similar to the No Build Alternative. The intersections of Main Street and 112th Avenue NE, Main Street and 108th Avenue NE, and NE 4th Street and 108th Avenue NE would not meet City of Bellevue LOS standards and would operate worse than the No Build Alternative. These impacts are due to roadway modifications and signal adjustments along 108th Avenue NE and because of passenger drop-off and pick-up traffic at the 108th Station and Bellevue Transit Center Station.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or Alternative B7, operations along 112th Avenue SE would be similar to a connection with *Preferred Alternative B2M*.

Preferred 110th NE Tunnel Alternative (C9T)
Most intersections in downtown Bellevue under the *Preferred Alternative C9T* would operate similar to the No Build Alternative because this alternative is mostly grade-separated from the street system. The intersection of NE 4th Street and 108th Avenue NE would not meet City intersection LOS standards and would operate slightly worse than the No Build Alternative condition with the additional drop-off/pick-up traffic at the Bellevue Transit Center Station.

A design option under *Preferred Alternative C9T* provides a Bellevue Transit Center Station exit and entrance on the west side of 110th Avenue NE. This would improve intersection operations at the intersection of 110th Avenue NE and NE 6th Street because the pedestrian-only signal phase would no longer be proposed to provide convenient pedestrian access to the station exit and entrance on the east side of 110th Avenue NE.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, operations along 112th Avenue SE would be similar to a connection with *Preferred Alternative B2M*.

Intersection LOS results for the East Main Street Station design option under *Preferred Alternative C9T* would be similar to a connection with Alternative B3, B3 - 114th Extension Design Option, or B7 that have an East Main Station.

Other Segment C Alternatives
Alternative C1T is grade-separated throughout most of Segment C except on Bellevue Way SE south of Kilmarnock Street, where the profile transitions from at-grade to a tunnel. The intersection operations at Bellevue Way and Main Street in both 2020 and 2030 are expected to get slightly worse from the traffic associated with the Old Bellevue Station. Overall, however, Alternative C1T is expected to cause little to no impact on the intersection LOS compared to the No Build Alternative.

Alternatives C2T and C3T are grade-separated throughout most of the Segment C. The intersection operations for both of these alternatives are expected to experience little change in LOS compared to the No Build Alternative except at the intersections of 108th Avenue NE and NE 4th Street under both alternatives and 112th Avenue NE and NE 12th Street under Alternative C3T. At both intersections, an increase in delay would result from additional trips associated with nearby stations.

The Alternative C4A is an at-grade profile throughout Segment C except south of Main Street when connecting to an elevated Segment B alternative. Alternative C4A operates as a light rail track couplet along 110th Avenue NE and 108th Avenue NE. Light rail would operate northbound along the east side of 110th Avenue NE and southbound along the west side of 108th Avenue NE between Main Street and NE 12th Street. Along 110th Avenue NE, to improve safety, auto traffic would be limited to the southbound direction with left-turn lanes at each intersection. Similarly, along 108th Avenue NE, auto traffic would be limited to the northbound direction with left-turn lanes at each intersection. Light rail gates are required at two intersections, at 111th Avenue NE north of NE 12th Street and at 110th Avenue SE south of Main Street, for the westbound light rail track.

Intersection operations with Alternative C4A are expected to experience some change compared to the No Build Alternative. Under Alternative C4A, three intersections would fail to meet standards and would operate worse than in the no-build condition: 108th Avenue NE and NE 12th Street, 110th Avenue NE and NE 8th Street, and 112th Avenue NE and NE 8th Street. These impacts would result from the changes in trip patterns and recirculation that would occur with a one-way couplet except at 108th Avenue NE and NE 12th Street, which is due to the at-grade light rail operations.

The 112th NE Elevated Alternative (C7E) is elevated throughout Segment C. With Alternative C7E, the Bellevue Transit Center Station would be located on 112th Avenue NE between NE 4th and NE 6th Streets. The resulting shift in passenger drop-off/pick-up traffic would not create additional delays at the intersections near this station. Intersection operations at 112th Avenue NE and NE 12th Street would fail to meet the intersection LOS standards due to additional trips associated with the Ashwood/Hospital Station.

Otherwise, this alternative is expected to cause little change in intersection LOS compared to the No Build Alternative.

Alternative C8E is elevated throughout Segment C. Along 110th Avenue NE between NE 2nd and NE 12th Streets, the number of lanes are reduced from a three- to five-lane section (planned by the City of Bellevue) for the No Build Alternative to a two- to four-lane section with the East Link Project. This is due to column placements and right-of-way constraints. The intersections of NE 8th Street at 110th Avenue NE, NE 8th Street at 112th Avenue NE, NE 12th Street at 112th Avenue NE, and 108th Avenue NE and NE 4th Street would operate at LOS F and worse than the no-build condition. This is a result of the shift in travel patterns associated with the reduction in travel lanes because of the median column placements and additional trips associated with the Bellevue Transit Center and Ashwood/Hospital stations. Otherwise, this alternative is expected to cause little change in intersection LOS compared to the No Build Alternative.

Under Alternative C9A, most intersections operate similar to the No Build Alternative. Along 112th Avenue SE, intersection impacts would be similar to those described for Alternative C4A. The intersections of NE 4th Street and 108th Avenue NE and NE 8th Street and 110th Avenue NE would not meet the City of Bellevue's intersection LOS standards and would operate worse than the No Build Alternative condition. Intersection delays along 110th Avenue NE would be higher with Alternative C9A than under the No Build Alternative, but would continue to operate within the City of Bellevue's LOS standards unless where noted.

Intersection operations with Alternative C14E would operate similar to the No Build Alternative condition due to the elevated alignment on the eastern edge of downtown Bellevue. If a parking garage were provided to support the Bellevue Transit Center Station with Alternative C14E, stalls would need to be managed to prohibit use by non-transit passengers. Also, congestion along NE 6th Street and 112th Avenue NE would likely become slightly worse and possibly require mitigation with the additional traffic associated with a parking garage.

With any of the nonpreferred Segment C alternatives, a connection to Alternative B3, B3 - 114th Extension Design Option, or B7 would not impact operations along 112th Avenue SE and intersection LOS results would be similar to the No Build Alternative.

With Alternatives C3T, C4A, C7E, and C8E, the gated crossing of 116th Avenue NE would be coordinated with the traffic signal at NE 12th Street and 116th Avenue NE to allow enough clearance for southbound vehicles potentially queued between NE 12th Street and the gated crossing. Intersection operations would meet City standards.

Concept Design Report Analysis

In addition to the analysis provided in this Final EIS, Sound Transit and the City of Bellevue cooperatively explored at-grade and grade-separated alternatives in Segment C and analyzed their effects on traffic operations using different models than those applied in this Final EIS. Results of the study are presented in the *Downtown Bellevue Light Rail Alternatives Concept Design Report* (CH2M HILL, 2010). A peer review of the study by traffic engineering and transit operations professionals from Seattle, Portland, Denver, and San Diego concluded that the traffic modeling, simulation, and operational analysis were sufficient to compare build alternatives. Based upon their experience in all four cities, the panel concluded that the surface alternatives studied would impact traffic operations in Bellevue similarly to those of the surface light rail systems in the comparable downtown environments of Portland, Denver, and San Diego. The panel noted that most changes in forecasted future traffic operating conditions in Downtown Bellevue would result from traffic volume growth and not from the introduction of surface light rail.

This analysis is not included in the Final EIS because the methodology is not consistent with the EIS approach reviewed by all cooperating agencies, a no-build condition was not analyzed, and some of the Segment C alternatives were not included. Even so, some of the key downtown traffic analysis findings are important to note. Specifically, two criteria (average vehicle delay for all downtown intersections and average vehicle delay for intersections adjacent to the at-grade light rail alignments) produced conclusions similar to those of the EIS analysis when comparing the grade-separated (*Preferred Alternative C9T* and Alternative C14E) and at-grade (Alternative C9A and *Preferred Alternative C11A*) alternatives. In both analyses, the difference between the grade-separated and the at-grade alternative for the average downtown vehicle delay was within 10 percent. The Final EIS analysis also projected percentage differences in vehicle delay for the key affected intersections similar to those presented in the *Downtown Bellevue Light Rail Alternatives Concept Design Report*.

Interim Terminus Stations

The Ashwood/Hospital and Hospital stations are potential interim termini. The ridership at the Ashwood/Hospital Station would not substantially

increase as an interim terminus. The ridership at the Hospital Station would increase as an interim terminus. With a Hospital Station interim terminus, most additional ridership would result from transfers to and from buses. Therefore, no transportation impacts beyond what is described in the alternative route analysis would be expected.

Segment D

Within Segment D, multiple roadway projects planned by the cities of Bellevue and Redmond will change the physical characteristics of major roadways from their existing conditions, both with and without the East Link Project. Some of these planned roadway projects are:

- Extending NE 15th Street and NE 16th Street with widths varying between three and five lanes between 116th and 132nd Avenues NE
- Widening 120th and 124th Avenues NE to five lanes
- Widening 130th Avenue NE to provide a center two-way left-turn lane
- Widening Northup Way between 120th and 124th Avenues NE to accommodate an additional eastbound lane
- Implementing a multimodal pedestrian corridor along 152nd Avenue NE with one vehicle lane in each direction and left-turn lanes, bicycle lanes, parking and sidewalks

With any Segment D alternative, roadway channelization generally would remain similar to the No Build Alternative because the alternatives are either outside the roadway right-of-way or, when the alternative is within the roadway, the channelization is replaced.

Traffic Control, Property Access, and Circulation

Impacts on property access and circulation in Segment D are expected to affect mainly NE 16th Street, 136th Avenue NE, NE 20th Street, NE 24th Street, and 152nd Avenue NE. Substantial sections of the light rail track for each of the alternatives in Segment D would be outside the roadway right-of-way.

Preferred NE 16th At-Grade Alternative (D2A)

Preferred Alternative D2A would be located north of the planned NE 15th Street extension and would be grade-separated beneath 120th and 124th Avenues NE, with minimal impacts on property access and circulation in this area. *Preferred Alternative D2A* would then transition to at-grade center-running on NE 16th Street and 136th Place NE, with signalized crossings at 130th Avenue NE, 132nd Avenue NE, 136th Place NE, and NE 20th Street. Where *Preferred Alternative D2A* would operate center-running along NE 16th Street and 136th Place NE, property access and circulation would be right-in/right-out except at signalized intersections, where U-turn movements are provided.

The D2A - 120th Station Design Option associated with *Preferred Alternative D2A* includes a gated at-grade crossing at 120th Avenue NE, while the D2A - NE 24th Design Option includes a gated crossing at 151st Avenue NE and driveways along the west side of 152nd Avenue NE are closed. Access to these properties would be provided at the intersection of 151st Avenue NE and NE 24th Street. Two driveways on the north side of NE 24th Street would be closed, but vehicle access to these properties would remain at one driveway and at the NE 24th Street and 151st Avenue NE intersection. Because there are up to two remaining access locations along NE 24th Street, no substantial impacts would be anticipated.

Other Segment D Alternatives

Alternative D2E would travel outside the roadway right-of-way for most of the route length, and traffic control treatments would be minimal. At the intersections of 151st and 152nd Avenues NE and NE 24th Street, light rail crossings signals and gates would be provided. Driveway access on the south side of NE 24th Street between 148th Avenue NE and 151st Place NE would be removed to prevent vehicles from crossing the at-grade track. Internal circulation within properties would be modified to allow access via 148th Avenue NE and/or 151st Place NE. Similarly, driveways on the west side of 152nd Avenue NE between NE 24th and NE 28th Streets would be closed. Vehicle circulation within the surrounding office park would be routed to 151st Place NE.

Alternative D3 would have the most property access and circulation impacts because it would operate in the median along NE 16th and NE 20th Streets, prohibiting all midblock left-turn movements along these arterials between 120th Avenue NE and 136th Place NE along NE 16th Street, and between 136th Place NE and 152nd Avenue NE along NE 20th Street. Drivers would either be rerouted to the nearest signalized intersection to perform a U-turn movement, or they would adjust their travel patterns to use the surrounding street system. Signalized crossings would be provided along the NE 15th Street extension at 120th, 124th, 130th, and 132nd Avenues NE and at 136th Place NE. Signalized crossings would be provided along NE 20th Street at 140th Avenue NE and at the Ross Plaza entrance (14300 block). A signalized crossing would also be provided at the intersection of NE 24th and 152nd Avenue NE. North of NE 20th Street, Alternative D3

would proceed along 152nd Avenue NE as a median at-grade profile. This profile would prohibit midblock left-turn movements and potentially create U-turn movements at the signalized intersections of NE 24th and NE 26th Streets. Unlike Alternative D2E, the western property access along 152nd Avenue NE between NE 24th and NE 28th Streets would remain and allow right-in/right-out movements.

Alternative D5 would have the fewest property access and circulation impacts because most of the route is outside of arterial right-of-way. Similar to Alternative D2E, the driveways on the west side of 152nd Avenue NE between NE 26th and NE 28th Streets would be closed, and vehicle circulation would be routed to 151st Place NE.

For all Segment D alternatives, vehicle access to the park-and-ride at the Overlake Transit Center would be reconfigured to the NE 36th Street and 156th Avenue NE intersection.

Operations and Level of Service
Year 2030 intersection operations for the No Build Alternative and East Link are shown in Exhibit 3-25.

Intersection operations under the No Build Alternative in Segment D are expected to worsen as traffic volumes increase on the roadways. By year 2030, the following six intersections are expected to operate at LOS F:

- NE 20th Street and 140th Avenue NE
- NE 24th Street and 148th Avenue NE
- NE 24th Street and 152nd Avenue NE
- NE 40th Street and 156th Avenue NE
- NE 40th Street and 148th Avenue NE
- NE 36th Street and 156th Avenue NE

With East Link, the following intersections (including with the alternative where the impact occurs) would not meet agency standards and would operate worse than in the no-build condition:

- 120th Avenue NE and NE 16th Street (D2A – 120th Design Option, 2020 only)
- 148th Avenue NE and NE 20th Street (Alternative D3, year 2020 only)
- 151st Avenue NE and NE 24th Street (Alternative D2E)
- 152nd Avenue NE and NE 24th Street (*Preferred Alternative D2A*, D2A – NE 24th Design Option, Alternative D2E, and Alternative D5)

Preferred NE 16th At-Grade Alternative (D2A)
Intersection operations with *Preferred Alternative D2A* would operate similar to the No Build Alternative because this alternative would be either grade-separated from the roadway or, when at-grade, it generally would operate parallel to the major traffic movements and the number of roadway lanes provided would remain the same as the No Build Alternative.

With the D2A - 120th Station Design Option, the intersection of NE 15th Street and 120th Avenue NE would not meet City intersection LOS standards and would operate worse than the No Build Alternative condition in year 2020. By year 2030, the intersection would meet City LOS standards as a result of planned City of Bellevue improvements along 120th Avenue NE.

Although the *Preferred Alternative D2A* and the D2A - NE 24th Design Option would not cross the intersection of NE 24th Street and 152nd Avenue NE, this intersection would not meet City of Redmond intersection LOS standards because of additional trips associated with the Overlake Village Station. The intersection of NE 24th Street and 151st Avenue NE would also not meet City intersection LOS standards because of driveway closures along the west side of 152nd Avenue NE and train operations associated with the D2A - NE 24th Design Option.

With the *Preferred Alternative D2A* there is the potential to locate the park-and-ride lot at either the 130th Station or 120th Station. With either location, traffic operations, including the number of intersections failing to meet the intersection LOS standards, would be similar to the previously described analysis for the *Preferred Alternative D2A*.

Other Segment D Alternatives
Because Alternative D2E generally shares the same route as *Preferred Alternative D2A*, the intersection results are similar. Intersection operations would degrade at the intersections of NE 24th Street and 151st Avenue NE and NE 24th Street and 152nd Avenue NE due to signal adjustments necessary for safe operation of light rail as it transitions from the south side of NE 24th Street to the west side of 152nd Avenue NE.

Alternative D3 would be at-grade or in a trench throughout most of Segment D. Along 152nd Avenue NE, Alternative D3 would operate at-grade in the median until it becomes aligned with the west side of the road north of Microsoft Road. By operating in the median on 152nd Avenue NE, light rail trains would be able to travel with the north-south through traffic, minimizing impacts at NE 24th Street and 152nd Avenue NE intersection. Otherwise, there would be little difference in intersection operations from the No Build Alternative.

Because Alternative D5 would be primarily elevated or within SR 520 right-of-way, there would be little difference in intersection operations from the No Build Alternative except at NE 24th Street and 152nd Avenue NE, where additional trips from the nearby Overlake Village Station would cause an increase in delay compared to the no-build condition.

Under any Segment D alternative, AM peak hour intersection operations along 156th Avenue NE and NE 40th Street would vary only slightly when compared to the no-build condition. In 2030, no intersections would fail to meet intersection operating standards in the build condition and none would operate worse than the no-build condition.

Interim Terminus Stations

The 120th, 130th, Overlake Village, and Overlake Transit Center Stations are potential interim termini. Even though ridership at these interim termini stations would increase by up to 1,500 (Table 3-27), only the Overlake Village Station warranted further traffic impact analysis. This additional ridership at the Overlake Village Station would be largely comprised of people using bus service; therefore, bus services would be increased to accommodate this additional ridership. This increase in bus service would have minimal impact on vehicle operations. Therefore, no change in intersection LOS is expected. The increase in bus service at the Overlake Village Station would be mainly with routes to and from the north along 156th Avenue NE.

Segment E

In Downtown Redmond, Cleveland Street and Redmond Way currently operate as a one-way couplet with traffic operating eastbound and westbound, respectively. In the future no-build condition, these two streets are planned to be converted to two-way operations, with Redmond Way providing one through lane and one left-turn pocket in both directions at intersections and Cleveland Street providing one lane in each direction. In addition, right-turn pockets will be provided for the eastbound and westbound approach at the intersection of Redmond Way and 164th Avenue NE. 164th Avenue NE will be extended between NE 76th Street and Cleveland Street. Bear Creek Parkway and 161st Avenue NE will also be extended to intersect south of the former BNSF Railway right-of-way.

With any Segment E alternative, roadway channelization generally remains similar to the No Build Alternative, as the alternatives are either outside the roadway right-of-way or when the alternative is within the roadway the channelization is replaced.

Traffic Control, Property Access, and Circulation

The alternatives in Segment E follow a general route that parallels SR 520 for a large portion of the segment length and use a substantial portion of existing former BNSF Railway right-of-way parallel to NE Redmond Way, so property access and circulation issues would generally be minimal.

Preferred Marymoor Alternative (E2)

For *Preferred Alternative E2,* light rail crossing gates would replace the existing railroad gates and serve as traffic controls along the former BNSF Railway corridor (at the 161st Avenue NE, Leary Way, 164th Avenue NE, 166th Avenue NE, and 170th Avenue NE crossings). *Preferred Alternative E2* would not affect the roadway channelization along the Segment E roadways. There would be no property access or circulation impacts with the *Preferred Alternative E2*.

The E2 – Redmond Transit Center Design Option would extend from *Preferred Alternative E2* and into Downtown Redmond along 161st Avenue NE between Cleveland and NE 85th Streets. The E2 – Redmond Transit Center Design Option would have more impacts on property access and circulation than *Preferred Alternative E2* because this design option would be at-grade in the median of 161st Avenue NE, restricting midblock property access to only right-in and right-out movements. To minimize vehicle recirculation, NE 83rd Street and 161st Avenue NE would be signalized, and U-turn movements would be allowed at the intersection of NE 85th Street and 161st Avenue NE.

Other Segment E Alternatives

With Alternative E1, properties with access on the south side of Redmond Way near the 159th Place NE intersection might have their access altered to accommodate the light rail track. West Lake Sammamish Parkway and the former BNSF Railway right-of-way would be modified to accommodate the tracks along the road. With Alternative E4, access to a residential property along the south side of Leary Way, just west of the Sammamish River, could potentially be modified to accommodate the light rail tracks along the road. Similar to *Preferred Alternative E2*, both Alternatives E1 and E4 would have light rail crossing gates along the former BNSF Railway corridor (at the 164th Avenue NE, 166th Avenue NE, and 170th Avenue NE crossings). Alternative E1 would have additional crossings at 161st Avenue NE and NE Leary Way, while Alternative E4 would have additional crossings at the intersection of Bear Creek Parkway and NE Leary Way and along NE 76th Street between NE Leary Way and 164th Avenue NE.

A service access road would be constructed near the SR 520 eastbound on-ramp and West Lake Sammamish Parkway to allow access to a traction power substation. However, this access point would be used by service vehicles only, and it would not likely affect circulation or property access near the on-ramp.

Traffic control and circulation along the former BNSF Railway corridor would be the same under all Segment E alternatives.

Operations and Level of Service

Year 2030 intersection operations in Segment E for the No Build Alternative and East Link are shown in Exhibit 3-26. As traffic volumes increase in 2020 and 2030, the intersection LOS results for the No Build Alternative would worsen from existing conditions. In the year 2020, three intersections are expected to operate at LOS F. By year 2030, two additional intersections for a total of five intersections are expected to operate at LOS F:

- NE Leary Way and West lake Sammamish Parkway
- NE 76th Street and 170th Avenue NE
- Avondale Road NE and Union Hill Road
- SR 202 and East Lake Sammamish Parkway (180th Avenue NE)
- NE 85th Street and 164th Avenue NE

With East Link, the following intersections (including the alternative where the impact occurs) would not meet agency standards and would operate worse than in the no-build condition in both 2020 and 2030:

- NE 76th Street and 170th Avenue NE (all Segment E alternatives)
- SR 202 and East Lake Sammamish (all Segment E alternatives)
- NE 70th Street and 176th Avenue NE (*Preferred Alternative E2* and E2 – Redmond Transit Center Design Option)

With East Link, the following intersections (including the alternative where the impact occurs) would not meet agency standards and would operate worse than in the no-build condition in year 2030 only:

- Redmond Way and 161st Avenue NE (E2 – Redmond Transit Center Design Option)
- SR 202 and NE 70th Street (all Segment E alternatives)

Preferred Marymoor Alternative (E2)

Intersection operations with the *Preferred Alternative E2* would be similar to the no-build condition except at the following four intersections where operations are expected to be worse and fail to meet City LOS standards: NE 76th Street and 170th Avenue NE, SR 202 and NE 70th Street, NE 70th Street and 176th Avenue NE, and SR 202 and East Lake Sammamish Parkway (180th Avenue NE). These impacts are due to the increase in traffic associated with the SE Redmond Station and the at-grade light rail crossing adjacent to the NE 76th Street and 170th Avenue NE intersection.

For the E2 – Redmond Transit Center Design Option, the intersection operations would be similar to those of *Preferred Alternative E2*, except at the Redmond Way and 161st Avenue NE intersection. This intersection is expected to operate at LOS F in 2030 because of roadway modifications along 161st Avenue NE to accommodate the median track alignment.

Independent of the *Preferred Alternative E2* alignment adjacent to NE 76th Street, the intersection signal phasing and operations along NE 76th Street would be similar as discussed under the *Preferred Alternative E2* and E2 – Redmond Transit Center Design Option.

Other Segment E Alternatives

With Alternative E1, intersection operations in year 2020 would be similar to the No Build Alternative except at the intersections of NE 76th Street at 170th Avenue NE and SR 202 at East Lake Sammamish Parkway. These two intersections would fail to meet intersection LOS standards. In year 2030, intersection operations would be similar to the No Build Alternative except at the two already identified as failing in year 2020 and at the intersection of SR 202 at NE 70th Street, which would fail to meet intersection LOS standards. These impacts are due to the increase in traffic associated with the SE Redmond Station and the at-grade light rail crossing adjacent to the NE 76th Street and 170th Avenue NE intersection.

Year 2020 and 2030 intersection operations with Alternative E4 would be similar to those of Alternative E1.

Interim Terminus Stations

The SE Redmond and Redmond Town Center stations are potential interim termini. The SE Redmond Station is not expected to generate enough automobile trips beyond the full-length alternative to warrant further traffic analysis because the full-length analysis assumed the SE Redmond Park–and-Ride will be at capacity. From Table 3-27, only the Redmond Town Center Station would generate enough additional PM peak-hour vehicles trips as an interim terminus to warrant further traffic analysis. Intersections near the Redmond Town Center Station are expected to meet City of Redmond LOS standards in the future except the intersection of NE 76th Street and 170th Avenue

NE. The increase in delay at this intersection is attributed to the at-grade light rail crossing adjacent to the intersection, similar to all Segment E Alternatives.

Maintenance Facilities

The potential maintenance facility sites in segments D and E are not expected to adversely affect intersection operations, property access, or traffic circulation. The *Transportation Technical Report* provides a detailed discussion of the traffic circulation at each of these potential maintenance facilities.

All maintenance facility alternatives would have approximately 60 parking stalls for employees and visitors. Maintenance facility staff shift hours would be similar to Central Link operation and maintenance facilities—6:00 a.m. to 2:00 p.m. and 2:00 p.m. to 10:00 p.m. These shift hours occur outside the peak periods, so little shift traffic is expected to occur during the peak hour. Fewer than 10 vehicle trips would occur to and from the maintenance facilities during the peak periods. These trips would include visitors and deliveries to and from the maintenance facilities.

Light rail vehicle storage track would be located along the former BNSF Railway right-of-way within Segment D. Light rail vehicles entering or exiting this vehicle storage track would have no impact on traffic operations as this activity would occur outside of vehicle roadways. Parking and limited office space for vehicle maintenance, such as cleaning, would occur at this location, but no impacts on traffic operations are anticipated.

3.6.3.3 Traffic Safety

This section provides a safety impact assessment of each alternative. The safety impact assessments are based upon *Integration of Light Rail Transit into City Streets* (Korve et al., 1996) and *Light Rail Service, Vehicular and Pedestrian Safety* (TRB, 1999). The *Transportation Technical Report* provides further discussion of safety impacts.

No substantial change from the existing accident conditions is expected with the No Build Alternative in any segment. Overall, the project-generated trips created by the East Link alternatives are not expected to increase the accident rates for automobiles because the roadway conditions would remain similar to or improve compared to the No Build Alternative.

Many of the at-grade alternatives (*Preferred Alternatives B2M* [when connecting to *Preferred Alternative C11A*], *C11A*, and *D2A* and Alternatives B1, B2A, B3, C9A, and E2 – Redmond Transit Center Design Option) would operate in the roadway median for some portion along the route and resemble the current light rail train operations along the 4-mile track in the center median of Martin Luther King Jr. Way in Seattle. During the first year of revenue service of the Central Link system (July 2009 through June 2010), seven light rail train and vehicle accidents and one light rail train and pedestrian accident occurred, and overall corridor accidents per year decreased from 327 (before light rail) to 134 (after light rail). The light rail train accidents constitute about 6 percent of the total number of accidents along the corridor, and the corridor total was reduced by close to 60 percent once the light rail train revenue service began. The light rail train median barrier, which restricts vehicle turns to signalized intersections, is considered one of the contributing factors in the overall accident reduction along the corridor. Additionally, none of the light rail train-related accidents were considered life-threatening, and all of the light rail train-vehicle accidents involved vehicles illegally turning.

Segment A, *Preferred Interstate Alternative (A1)*

The proposed alternatives in Segment A consist of an at-grade profile located on I-90. Impacts on traffic safety on arterial and local streets are not expected because the proposed alternative would not operate on or require any right-of-way from local streets in the city of Seattle or the city of Mercer Island.

Segment B

Preferred 112th SE Modified Alternative (B2M)

The *Preferred Alternative B2M* when connecting to *Preferred Alternative C11A* would operate at-grade in the median along 112th Avenue SE, which would have a greater potential for vehicle-train accidents at roadway crossings than routes outside the roadway right-of-way. At-grade crossings occur south of SE 15th Street and at SE 8th Street. However, potential safety benefits related to eliminating midblock turning movements could reduce the overall accident rate. The *Preferred Alternative B2M* when connecting to *Preferred Alternative C9T* would operate at-grade and side-aligned, with crossings at SE 15th Street and SE 8th Street. An option to close the minor approach at SE 15th Street would result in only one crossing at SE 8th Street under *Preferred Alternative B2M* when connecting to *Preferred Alternative C9T.*

Other Segment B Alternatives

Alternatives B7 and B2E are expected to have minimal or no impact on the number of accidents because the light rail profile is separate from other travel modes. Alternatives B2A and B3 have some at-grade median sections with similar safety characteristics and numbers of crossings to the *Preferred Alternative B2M* with a connection to *Preferred Alternative C11A*. Alternative B1 has the greatest length of median at-

grade design with seven crossings along Bellevue Way, but there would be the potential for an overall decrease in the accident rate through the elimination of mid-block turning accidents and protecting all left-turn movements on Bellevue Way, similar to the accident experience with Central Link along Martin Luther King Jr. Way in Seattle.

Segment C

Preferred 108th NE At-Grade Alternative (C11A)

The *Preferred Alternative C11A* would operate at-grade in the median along a portion of 112th Avenue SE, 108th Avenue NE, and NE 6th Street, with crossings at SE 6th Street, Main Street, NE 2nd Street, NE 4th Street, NE 6th Street, and 110th Avenue NE. These crossings would have a greater potential for vehicle-train accidents than routes outside the roadway right-of-way. However, potential safety benefits related to eliminating midblock turning movements could reduce the overall accident rate similar to the Central Link accident experience along Martin Luther King Jr. Way.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, no impact on accidents along 112th Avenue SE would be expected because the light rail profile would be grade-separated.

Preferred 110th NE Tunnel Alternative (C9T)

The *Preferred Alternative C9T* operates at-grade and side-aligned, with one signalized crossing along 112th Avenue SE, and grade-separated elsewhere in Segment C. At this crossing the train would operate in its own signal phase, so no substantial change in the number of accidents is expected.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, no effect on accidents along 112th Avenue SE would be expected because the light rail profile would be grade-separated.

Other Segment C Alternatives

Alternative C4A operates at-grade along 108th Avenue NE and 110th Avenue NE with crossings at Main, NE 2nd, NE 4th, NE 6th, NE 8th, NE 10th, and NE 12th Streets. These crossings would have a greater potential for vehicle-train accidents than routes outside the roadway right-of-way, but the design minimizes the interaction between at-grade light rail trains and vehicles. Converting both 108th and 110th Avenues NE to one-way vehicle streets, in the opposite direction of the light rail train, would reduce the number of movements that cross the light rail tracks and allow drivers to see approaching trains. Business driveways that cross the light rail track would potentially be closed if an alternate access to the business is available.

Alternatives C1T, C2T, C3T, C7E, C8E, and C14E are either tunnel or elevated alternatives mainly outside the roadway right-of-way. The biggest safety issue expected would be column placement in side-aligned elevated sections to avoid blocking driver visibility at intersections and driveways. For elevated sections in medians, column placement is not expected to create driver visibility issues because left turns between the columns would be prohibited and left turns at intersections would be controlled by traffic signals.

For alternatives with a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, no impact on accidents along 112th Avenue SE would be expected because the light rail profile would be grade-separated. For alternatives with a connection to Alternative B2A, operations would be median at-grade for a short distance and then transition to side-aligned elevated, and would have a similar accident experience as Central Link along Martin Luther King Jr. Way.

Alternative C9A would have safety characteristics along 110th Avenue NE similar to the P*referred Alternative C11A* along 108th Avenue NE.

Segment D

Preferred NE 16th At-Grade Alternative (D2A)

The *Preferred Alternative D2A* would operate primarily grade-separated or outside the roadway, but it has some sections of at-grade median operations along NE 16th Street and 136th Place NE with crossings at 130th Avenue NE, 132nd Avenue NE, NE 16th Street, and NE 20th Street. These at-grade median sections would have a greater potential for vehicle-train accidents than routes outside the roadway right-of-way. However, potential safety benefits related to the elimination of midblock turning movements could reduce the overall accident rate similar to the Central Link accident experience along Martin Luther King Jr. Way.

The D2A – 120th Station and NE 24th design options would have safety characteristics similar to *Preferred Alternative D2A* except with the one additional at-grade gated crossing in each design option.

Other Segment D Alternatives

Alternatives D2E and D5 would mostly operate outside of the roadway right-of-way; consequently, no substantial changes are expected in the accident frequency. In the elevated sections of Alternative D2E, columns would be placed so that driver visibility at driveways and intersections would not be obstructed. The at-grade crossing of 151st Avenue NE and 152nd Avenue NE would be gated and signalized for Alternative D2E.

Alternative D3 includes segments within the roadway right-of-way. Alternative D3 operates in the median on NE 16th Street, 136th Place NE, and 152nd Avenue NE with crossings at 120th, 124th, 130th, 132nd, and 140th

Avenues NE; NE 16th and NE 20th Streets; and the 14300 block (Ross Plaza) of NE 20th Street. These at-grade median sections would have a greater potential for vehicle-train accidents than routes outside the roadway right-of-way. However, potential safety benefits related to eliminating midblock turning movements could reduce the overall accident rate similar to the accident experience along Martin Luther King Jr., Way. Alternative D3 also operates in a retained cut on NE 20th Street and 152nd Avenue NE. Some at-grade crossings would also be gated. Providing traffic signals and/or gates at crossings minimizes the risk of increasing the accident frequency.

Spillover Parking. Transit riders that park on-street near park-and-ride lots due to the lot being full.

Hide-and-Ride Parking. Transit riders who park on-street near a transit stop and board transit.

Segment E

Preferred Marymoor Alternative (E2)

Preferred Alternative E2 would mostly operate outside roadway right-of-way, and combined with the use of gated crossings, the risk of increasing the accident frequency would be minimal. Therefore, no substantial change in the number of accidents is expected. At-grade crossings would occur at 170th, 166th, 164th, and 161st Avenues NE and Leary Way NE.

Under the E2 – Redmond Transit Center Design Option, a portion of the alternative would be within the 161st Avenue NE right-of-way. Even so, the accident frequency is not expected to substantially change. Any accidents that occur in this median at-grade section would likely be relatively minor due to the low speed of the light rail train as it is entering and exiting the station. Additional at-grade crossings with this design option would occur at Redmond Way NE; and Cleveland, NE 83rd, and NE 85th Streets.

Other Segment E Alternatives

The Redmond Way (E1) and Leary Way (E4) Alternatives would have the same safety characteristics as *Preferred Alternative E2.*

Maintenance Facilities

No substantial changes are expected in the accident frequency along the roadways surrounding the maintenance facilities. Two maintenance facilities would have track crossing roadways: Maintenance Facility 3 (MF3), where track would spur off the main light rail track and cross NE 20th Street, and the SE Redmond Maintenance Facility (MF5), where track would cross NE 70th Street. Light rail trains would not cross these roads frequently and they would be protected with gates, so there would be no expected change in roadway safety conditions.

3.6.3.4 Parking

This section describes the key impacts on parking due to light rail within each segment, including on- and off-street parking removal and the potential for hide-and-ride and spillover parking impacts. Section 3.6.5 discusses possible parking mitigation strategies to reduce the hide-and-ride potential. Table 3-28 lists the parking impacts from each alternative. These are briefly discussed in the following subsections. This parking assessment is based on the current level of design completed for each alternative. In subsequent design refinements, the on- and off-street parking impacts may be adjusted. Parking impacts for each alternative are discussed in further detail in the *Transportation Technical Report* (Appendix H1). Table 3-29 lists the existing and proposed park-and-ride stalls and the forecasted PM peak-period (3-hour) vehicle usage at station park-and-ride facilities for years 2020 and 2030.

Segment A, *Preferred Interstate 90 Alternative (A1)*

There would be no direct on-street or off-street parking impacts associated with the *Preferred Alternative A1* or any of the design options in Segment A. The potential for hide-and-ride parking impacts at the Rainier Station is expected to be high because there is a substantial amount of surrounding on-street parking available to accommodate riders. At the Mercer Island Station, there is a low potential for impacts with alternatives that include the South Bellevue Station (*Preferred Alternative B2M* and Alternatives B1, B2A, B2E, and B3). The location of the South Bellevue Station, which is proposed to provide over 1,400 stalls, provides riders with a higher-parking capacity option for drivers along I-90. In addition, although the current demand for the Mercer Island Park-and-Ride is near its parking capacity, there is minimal parking spillover into the surrounding areas due to the restricted parking, which indicates that the future level for hide-and-ride impacts is low.

For Alternative B7, there could be a slightly greater potential for spillover parking at the Mercer Island Station because the forecasted auto usage is higher than the Mercer Island Park-and-Ride capacity. Because the current park-and-ride lot is almost fully utilized and this alternative does not include a nearby light rail station with a park-and-ride lot, there might be a potential for parking spillover in the unoccupied on-street parking spaces (see Table 3-25). However, the City of Mercer Island recently implemented restricted (time-limited) parking in selected areas surrounding the Town Center, and those restrictions combined with the enforced RPZs in the residential neighborhoods north of I-90 would limit hide-and-ride parking at the Mercer Island Station.

TABLE 3-28
Parking Impacts by Alternative

Alternative	Parking Spaces Removed	
	On-Street	Off-Street[e]
Segment A		
Preferred Alternative A1	0	0
Segment B		
Preferred Alternative B2M to *Preferred Alternative C11A*	0	20
Preferred Alternative B2M to *Preferred Alternative C9T*	0	20
Alternative B1	0	57
Alternative B2A	0	7
Alternative B2E	0	18
Alternative B3	0	3
B3 - 114th Extension Design Option	0	73
Alternative B7	0	18
Segment C[a,b]		
Preferred Alternative C11A	10	340 to 360
Preferred Alternative C9T[c]	0	385 to 410
Alternative C1T	0	158
Alternative C2T	0	82 to 172
Alternative C3T	0	26 to 106
Alternative C4A	11	39 to 94
Alternative C7E	0	198 to 226
Alternative C8E	0	92 to 125
Alternative C9A	20	315 to 345
Alternative C14E	0	220
Segment D[a]		
Preferred Alternative D2A and D2A – 120th Station Design Option	30	376
D2A – NE 24th Design Option	30	382
Alternative D2E	0	348 to 356
Alternative D3	30	808 to 816
Alternative D5	0	239
Segment E[b]		
Preferred Alternative E2	0	20
E2 - Redmond Transit Center Design Option	16	94
Alternative E1	0	37
Alternative E4	0	45

[a] The range of off-street parking removal is due to connectors with Segments B and C.

[b] Segment C and E on-street parking is the total of unrestricted and restricted on-street parking. Restricted parking includes all parking spaces with special-use restrictions, such as drop-off/loading zones.

[c] C9T – East Main Station Design Option connecting from Preferred Alternative B2M would have no change in impacts on either Preferred Alternative C9T or B2M.

[e] Includes parking spaces removed at the station areas.

Notes: Indicated parking impacts are permanent displacements. Parking losses associated with construction are not included.

Segment B

Preferred 112th SE Modified Alternative (B2M)

Preferred Alternative B2M would remove 20 off-street parking spaces in properties along Bellevue Way SE and 112th Avenue SE and zero on-street spaces.

Other Segment B Alternatives

The B3 – 114th Extension Design Option is expected to require removing the most parking spaces of the eight alternatives proposed in Segment B. Most of these spaces are located in the Wilburton Park-and-Ride. Among the alternatives in Segment B, Alternative B3 would remove the fewest parking spaces, which are located in the Mercer Slough Park. None of the alternatives in Segment B are expected to remove on-street parking. No on- or off-street spaces would be removed for the proposed stations. There is a low potential for parking spillover to occur at the South Bellevue Station in year 2020, but there is some potential for parking spillover at this station in year 2030 when the expected 1,560 autos exceeds the proposed parking (approximately 1,400 stalls). Even though there could be a potential for spillover by year 2030, the potential spillover is expected to be low.

The South Bellevue Park-and-Ride lot is currently at capacity and there is minimal parking spillover in the nearby residential areas because most of the parking in the area is not easily identifiable and/or accessible from Bellevue Way. This is illustrated by the low on-street parking utilization in the Enatai neighborhood (Table 3-29). In addition, the City of Bellevue constructed a sidewalk and eliminated on-street parking on 112th Avenue SE, south of the South Bellevue park-and-ride, to remove the potential for hide-and-ride parking near the station.

At the SE 8th Station, there would be a low potential for hide-and-ride parking because of the recently established residential parking zone for the Surrey Downs neighborhood. Additionally, this parking is not easily accessible to the SE 8th Station location. At the 118th Station, there is a low potential for hide-and-ride impacts because the park-and-ride lot is expected to accommodate year 2020 and 2030 auto demand.

Segment C

Preferred 108th NE At-Grade Alternative (C11A)

Preferred Alternative C11A would remove approximately 10 on-street parking spaces—located along 108th Avenue NE—and 340 off-street parking spaces. These off-street parking spaces are parcels along 108th, 112th, and 116th Avenues NE and Main and NE 2nd Streets. With a connection to Alternative B3, B3 - 114th Extension Design Option or B7, 10 on-street parking spaces and 360 off-street parking spaces would be removed.

TABLE 3-29
Existing and Proposed Park-and-Ride Parking Stalls and Forecasted Auto Use

Station	Alternative	Total Existing Parking Stalls	Total Proposed Parking Stalls	2020 Park-and-Ride Auto Demand[a]	2030 Park-and-Ride Auto Demand[a]
Mercer Island[b]	*Preferred Alternative A1*	447	447	390	460
South Bellevue	*Preferred Alternative B2M* and Alternatives B1, B2A, B2E, and B3	519	1,400	1,310	1,560
118th	Alternative B7	-	1,030	580	760
130th[c]	*Preferred Alternative D2A* and Alternatives D2E and D3	-	300	270	380
Overlake Village	All D alternatives	203	203	260	480
Overlake Transit Center	All D alternatives	170	320	460	670
SE Redmond	All E alternatives	-	1,400	1,030	1,030
Redmond Transit Center	E2 – Redmond Transit Center Design Option	377	377	150	180

[a] The 3-hour PM peak-period park-and-ride auto demand from Sound Transit's transit ridership model; 3-hour PM peak-period is a close representation of daily park-and-ride demand.

[b] The park-and-ride auto demand is associated with Alternative B7. With any Segment B alternative that includes a South Bellevue Station, the park-and-ride forecast is less than the proposed number of parking stalls.

[c] With *Preferred Alternative D2A*, there is the potential to locate the park-and-ride lot at either the 130th Station or 120th Station. With either location, park-and-ride auto demand would be similar.

Preferred 110th NE Tunnel Alternative (C9T)
With *Preferred Alternative C9T*, no on-street parking spaces would be removed, but 385 off-street parking spaces would be removed, the highest of any Segment C alternative. These removed off-street parking spaces would be associated with parcels along 112th Avenue NE, Lake Bellevue Drive, and 116th Avenue NE and would include parking spaces for approximately 105 vehicles and 20 motorcycles at the Bellevue City Hall parking garage.

Other Segment C Alternatives
The parking impacts associated with each alternative in Segment C depend upon the connection to Segment B alternatives. For example, either Alternative C3T or C4A would remove the fewest off-street stalls of any Segment C alternative, depending on their connection to Segment B. Seven unrestricted on-street spaces and four on-street spaces that have been designated as short-term loading zones would be removed under Alternative C4A.

Alternative C9A would remove the most off-street parking spaces after *Preferred Alternatives C9T* and *C11A*. Additionally, approximately 20 on-street parking spaces would also be removed under Alternative C9A. Impacts on the Bellevue City Hall parking garage would be less than those described with *Preferred Alterative C9T*.

The design of the Bellevue Transit Center Station with the Alternative C3T would require the removal of off-street parking spaces in a private parking lot on the northeast corner of the NE 6th Street and 108th Avenue NE intersection. For Alternative C7E, this station is expected to require the removal of parking spaces on the southeast corner of the intersection of NE 6th Street and 112th Avenue NE.

No impacts on parking spaces are expected with the construction of the Old Bellevue, East Main, 108th, Hospital or Ashwood/Hospital stations for any alternative in Segment C.

In general, the stations in Segment C are designed to accommodate bus transfers, pedestrians, and bicyclists. These stations would not be attractive stations for auto access (and the potential for hide-and-ride parking) due to the surrounding congestion and restricted public parking opportunities. At the Old Bellevue, Ashwood/Hospital, and Bellevue Transit Center stations, there is some available nearby on-street parking; however, there is a low potential for hide-and-ride parking at these stations because most of the on-street parking provided in this area is either restricted or in private lots that are monitored. There is also a low potential for hide-and-ride parking at the East Main and Hospital stations because of the minimal amount of available on-street parking surrounding the stations. At the 108th Station, hide-and-ride parking would be unlikely because the City of Bellevue has established a residential parking zone in the Surrey Downs neighborhood.

Segment D

Preferred NE 16th At-Grade Alternative (D2A)

Preferred Alternative D2A would remove approximately 376 off-street parking spaces and 30 on-street parking spaces located on the north side of NE 16th Street between 132nd and 134th Avenues NE and on the east side of 136th Place NE between NE 16th and NE 20th Streets. The largest off-street parking impacts occur at the light industrial properties on the southwest end of Segment D near 120th Avenue NE between NE 14th and NE 15th Streets.

With the D2A – 120th Design Option, parking impacts would be similar to *Preferred Alternative D2A*. With the D2A - NE 24th Design Option, 382 parking spaces would be removed.

Other Segment D Alternatives

Alternative D3 would remove a relatively high number of off-street parking spaces, the largest being associated with a commercial space on the northwest corner of the intersection of NE 20th Street and 152nd Avenue NE. At an adjacent shopping center on the northeast corner of the intersection of NE 20th Street and 148th Avenue NE, parking spaces would be removed by Alternative D3. Alternative D3 would also require the removal of off-street parking spaces on multiple properties located along 152nd Avenue NE between NE 20th Street and NE 24th Street.

Alternatives D2E and D3 would affect the parking at light industrial properties at the southwest end of Segment D near 120th Avenue NE between NE 14th Street and NE 15th Street. Alternative D3 would have similar on-street parking impacts as *Preferred Alternative D2A*. Alternative D5 would remove the fewest off-street stalls of the Segment D alternatives.

Several areas where parking would be removed are near the 130th Station and the Overlake Village Station. Twenty off-street parking spaces near the 130th Station would be removed with *Preferred Alternative D2A,* D2E and Alternative D3. All of these affected parking spaces are located between 130th and 132nd Avenues NE, near NE 16th Street.

For *Preferred Alternative D2A,* the Overlake Village Station is located approximately 450 feet further north on the west side of 152nd Avenue NE from the existing Overlake Village Park-and-Ride. The *Preferred Alternative D2A* would remove parking spaces located in off-street parking lots adjacent to SR 520 and west of 152nd Avenue NE. For Alternative D2A – NE 24th Design Option and Alternative D2E, the design of the Overlake Village Station would require the removal of parking spaces located in private off-street parking lots on the northwest corner of the intersection of NE 24th Street and 152nd Avenue NE. Alternative D5 would affect the same private parking lots, but the number of affected parking spaces would vary depending on which of the two potential station locations is chosen. The design of the Overlake Village Station associated with Alternative D3 requires the removal of parking spaces located in private lots along 152nd Avenue NE, north of NE 24th Street.

At the 130th, Overlake Village, and Overlake Transit Center stations, there is a potential for parking spillover because the future parking forecast is higher than the station's parking capacity. However, because there is a minimal amount of available on-street parking surrounding these stations, there is a low potential for hide-and-ride impacts. At the Overlake Transit Center, while the potential spillover could infringe on nearby private businesses, they are currently monitored. Therefore, hide-and-ride parking near this station is expected to be low.

Although there is currently available on-street parking that surrounds the 120th Station, planned land use and transportation changes surrounding the Bel-Red area could result in a decrease of available on-street parking and therefore a lower potential for hide-and-ride impacts. In Segment D, because there are numerous private parking lots surrounding the stations, measures such as security enforcement or time-limited parking by private owners would minimize the potential for hide-and-ride activities.

Segment E

Preferred Marymoor Alternative (E2)

Preferred Alternative E2 would have the least impact on parking of the four Segment E alternatives. A total of 20 off-street private parking spaces and zero on-street parking spaces would be removed under *Preferred Alternative E2*.

The E2 – Redmond Transit Center Design Option would have the greatest impact on parking of the four Segment E alternatives due to impacts along 161st Avenue NE. A total of 94 off-street private parking spaces and 16 on-street parking spaces would be removed. All of the on-street parking impacts would be located along 161st Avenue NE between NE 83rd and NE 85th Streets.

If the *Preferred Alternative E2* alignment adjacent to NE 76th Street requires the roadway to be reconstructed, its on-street parking may be removed.

Other Segment E Alternatives

Alternatives E1 and E4 would remove slightly more off-street parking than *Preferred Alternative E2* with 37 and 45 spaces, respectively.

The only station that would remove parking spaces in Segment E is the Redmond Transit Center Station with the E2 – Redmond Transit Center Design Option. This station would remove 30 off-street parking spaces located on the west side of 161st Avenue NE between NE 80th and NE 83rd Streets.

At the two stations with park-and-ride lots, Redmond Transit Center and SE Redmond, the expected auto forecasts would be less than the available parking capacity; therefore, there is a low potential for parking spillover at these stations. In addition, with the low amount of on-street parking available near the SE Redmond Station, there would not likely be hide-and-ride impacts at this station even if the parking demand exceeded the park-and-ride capacity.

At the Redmond Town Center and Downtown Redmond Stations, with no proposed park-and-ride lot and with a substantial amount of available on-street parking surrounding the station, high potential for hide-and-ride impacts could occur. However, the City of Redmond has recently implemented a restricted (time-limited) parking policy for much of their downtown area. This would limit hide-and-ride activity. Hide-and-ride parking could also occur in the neighboring retail center, but with the current security enforcement and planned time-limited parking, the potential for hide-and-ride activities in this development would be minimized. Owners of other private parking lots near the stations could implement measures such as security enforcement or time-limited parking that would minimize the potential for hide-and-ride activities in their parking lots.

3.6.4 Construction Impacts

Construction of the project alternatives would result in temporary impacts on arterials, local streets, and parking within the construction areas. While the overall construction duration would be about 7 years, most impacts would occur during the civil construction period (i.e. light rail and/or roadway construction) that would range from approximately 2 to 5 years in any given portion of the corridor.

Construction activities expected to have roadway impacts include utility relocation, roadway construction, light rail construction, truck hauling, demolition, and construction staging. The impacts from truck hauling were evaluated based on the number of truck trips and potential haul routes as discussed in the following subsection. For discussion of construction impacts on I-90, I-405, and SR 520, refer to Section 3.5; for construction impacts on transit, refer to Section 3.4. The *Transportation Technical Report* provides further discussion of the roadway impacts, including haul routes and truck trips, associated with the construction of each alternative.

3.6.4.1 Truck Volumes and Haul Routes

The exact number of construction truck trips that would be needed for the construction of each alternative is dependent on many variables that cannot be fully determined or finalized at this time, but an estimate was prepared to understand potential East Link Project construction impacts on the local and regional transportation system.

A range of truck trips is provided in Table 3-30 based on estimated quantities for the main trip generation activities, including imported fill material, concrete, asphalt concrete pavement, and excavated material that would be generated for the construction of each alternative. Truck trips associated with activities such as miscellaneous deliveries have not yet been quantified and are excluded from this estimate.

Preliminary truck haul routes were identified using the classified truck routes from WSDOT, King County, and the cities of Seattle, Bellevue, and Redmond, and are shown in Appendix G1. In general, multiple truck haul routes are proposed for each alternative based on access to regional transportation facilities and the alternative's route. Final truck haul routes would be determined in conjunction with the affected jurisdictions through the project's permitting processes.

Segment A

In Segment A, a relatively low amount of truck activity (less than 20 trucks per day) is expected because the alternative requires minimal excavation and import of loose materials. Trucks would access and use I-90 as a haul route. Trucks might also access a potential construction staging site within the I-90 right-of-way along Dearborn Street. In Segment A, the most intensive period of truck trips would last approximately 2 years.

Segment B

Of the alternatives in Segment B, *Preferred Alternative B2M* connecting to *Preferred Alternative C11A* would likely require the most truck trips due to the amount of excavation and asphalt concrete pavement required. With this alternative, between 80 and 90 truck trips per day are estimated to be needed to access Bellevue Way SE, SE 8th Street, 112th Avenue SE, and 118th Avenue SE from I-90 and I-405. For all the Segment B alternatives, the trucks would access construction areas from these same streets. In Segment B, the most intensive period of truck trips would last approximately 2 to 3 years.

TABLE 3-30
Average Truck Trips for Construction of Alternatives

Alternative	Average Truck Trips To and From Location[a]	
	Per Day	Per Hour[b]
Segment A		
Preferred Alternative B, A, C	12 to 14	1 to 2
Segment B		
Preferred Alternative B2M to *Preferred Alternative C9T*	60 to 70	6 to 7
Preferred Alternative B2M to *Preferred Alternative C11A*	80 to 90	8 to 9
Alternative B1	54 to 66	5 to 7
Alternative B2A	35 to 42	3 to 4
Alternative B2E	18 to 23	2
Alternative B3	26 to 32	3
Alternative B7	24 to 30	2 to 3
Segment C		
Preferred Alternative C9T[c]	75 to 85	7 to 9
Preferred Alternative C11A	35 to 40	3 to 4
Alternative C1T	135 to 165	13 to 17
Alternative C2T	100 to 120	10 to 12
Alternative C3T	140 to 170	14 to 17
Alternative C4A	105 to 130	10 to 13
Alternative C7E	20 to 30	2 to 3
Alternative C8E	100 to 125	10 to 13
Alternative C9A	25 to 30	2 to 3
Alternative C14E	40 to 45	4 to 5
Segment D		
Preferred Alternative D2A	85 to 95	8 to 10
D2A – NE 24th Design Option	95 to 105	9 to 11
Alternative D2E	25 to 30	2 to 3
Alternative D3	50 to 60	5 to 6
Alternative D5	20 to 30	2 to 3
Segment E		
Preferred Alternative E2	55 to 65	5 to 7
E2 – Redmond Transit Center Design Option	55 to 70	5 to 7
Alternative E1	50 to 65	5 to 7
Alternative E4	50 to 60	5 to 6

[a] Truck trips presented are for connections to alternatives in adjacent segments that would produce the highest truck volumes.

[b] Assuming a minimum of 10 construction hours per day.

[c] C9T – East Main Station Design Option connecting from *Preferred Alternative B2M* only would have no change in impacts on either *Preferred Alternative C9T* or *B2M*.

Note: For haul origin/destination and preliminary truck haul routes for each alternative, refer to the Appendix H1, Transportation Technical Report, and the conceptual design drawings in Appendix G1.

Segment C

In Segment C, Alternative C3T would likely result in the greatest number of truck trips per day of the alternatives in Segment C. Between 140 and 170 truck trips per day would be required to access 108th Avenue NE and 112th Avenue NE between SE 8th and NE 12th Streets. In Segment C, the most intensive period of truck trips would last approximately 3 years for surface and elevated alternatives and approximately 4 years for tunneled alternatives. Generally, truck trips would access Segment C construction areas from I-405 via SE 8th, NE 4th, and NE 8th Streets.

Segment D

The D2A – NE 24th Design Option would require the most truck trips of all Segment D alternatives due to the amount of retained-cut, fill, and elevated structure. Between 95 and 105 truck trips per day could be expected with this alternative. In Segment D, the most intensive period of truck trips would last approximately 3 to 4 years. Generally, truck trips would access Segment D construction areas from SR 520 via 124th and 148th Avenues NE and NE 40th Street.

Segment E

In Segment E, each alternative would require about the same number of truck trips: between 50 and 70 trips per day. In Segment E, the most intensive period of truck trips would last approximately 2 to 3 years. These trips would likely be routed on a frontage road along SR 520 and along SR 202, West Lake Sammamish Parkway NE, and other streets.

Maintenance Facilities

For the proposed maintenance facilities in Segment D, the 116th Maintenance Facility (MF1) is expected to have the greatest number of truck trips, up to 140 per day. MF1 is located between 116th Avenue NE and the former BNSF Railway and has auto access to 120th Avenue NE. Truck trips are assumed to use the SR 520 interchange with 124th Avenue NE to deliver and haul materials. In Segment E, the SE Redmond Maintenance Facility (MF5) would require about 25 trips per day. The suggested truck route for this facility would use the SR 520 interchange with SR 202. The most intensive period of truck trips would last approximately 2 years.

3.6.4.2 Roadway and Parking Impacts

Construction impacts are estimated based on the level of design completed to date and the known construction activities. Traffic maintenance and construction plans would continue to be refined through the final design and permitting stages of this project and subject to approval by WSDOT and the cities of Bellevue, Seattle, Mercer Island, and

Redmond. The construction impacts, including construction truck traffic level, type and duration of road closure, availability of detour routes, and potential for neighborhood traffic intrusion, are detailed by segment in Table 3-31. Detour routes are available near most alternatives, but for detour routes that require longer out-of-direction travel, potential detour routes are identified. For roadways classified as collector or local arterials, these roads could be signed to only provide local access.

This section also discusses potential impacts for each of the maintenance facilities. For the preferred alternatives in Segments B and C, a PM peak-hour traffic analysis on the local streets and arterials is provided assuming the preliminary lane closures and possible detour routes described during the civil construction period. This was not performed for the preferred alternatives in Segments D and E as any roadway impacts would be on relatively low-volume local and collector streets therefore impacts to traffic would be less. This analysis is compared with the 2020 no-build condition, which indicates how the roadway conditions would change during the construction period. For nonpreferred alternatives, relative comparisons with the impacts described for the preferred alternatives are provided, where applicable.

For the discussion of the construction impacts on transit service and facilities, and to regional highways (I-90, I-405, SR 520), refer to sections 3.4.4 and 3.5.3.4, respectively.

Impacts Common to All Segments

In all segments, construction would affect roads, close lanes, require detours, and alter traffic patterns. Cross streets that intersect the alternatives would likely be partially closed for short durations to construct the track or other associated features through the intersection. Likewise, temporary closures of private driveways and any roads that need to be paved would also occur. If driveway closures are required, then property access to residences and businesses would be maintained to the extent possible. If alternative access is not available, then the specific construction activity would be reviewed to determine if it could occur during nonbusiness hours, or if parking could be provided at an alternative location.

A relatively high number of construction workers (producing traffic and requiring parking) would be needed to construct the project. The largest number of employees at any given site is anticipated during two periods: excavation for tunnel or retained-cut activities, and construction of the guideway and stations, especially if grade-separated. Contractors and construction workers parking near designated construction staging areas could affect area parking supply during heavy construction periods by using unrestricted on-street parking in residential or other areas near the construction site. The contractor is generally responsible for providing parking for construction workers where necessary. It is expected that some worker parking could be accommodated at the staging areas and along the route. Sound Transit or its contractors may lease parking for construction workers near construction sites. Sound Transit may acquire additional properties for temporary use for contractor parking.

Segment A, *Preferred Interstate 90 Alternative (A1)*

Within Segment A, short-term roadway shoulder and/or lane closures may occur on Rainier Avenue South, 23rd Avenue South, 77th Avenue SE and 80th Avenue SE for station area construction.

Segment B

Preferred 112th SE Modified Alternative (B2M)

Preferred Alternative B2M connecting to either *Preferred Alternative C11A* or *C9T* would result in construction impacts along Bellevue Way, south of 112th Avenue SE and along 112th Avenue SE north of Bellevue Way SE.

Along Bellevue Way SE, between the South Bellevue Park-and-Ride and 112th Avenue SE, one lane would likely be closed for most of the civil construction period, and additional lane closures could be required at certain times depending on the construction activity. To construct the improvements on Bellevue Way SE south of the South Bellevue Park-and-Ride, *Preferred Alternative B2M* would close lanes on Bellevue Way SE for short periods to install the traffic signals and perform the necessary roadwork.

Civil construction activities would likely close one northbound lane along Bellevue Way SE for the *Preferred Alternative B2M* with additional lane closures possible at times. Motorist information and advance signing would be provided to encourage usage of parallel routes, such as I-405. Even with signed detour routes, congestion would likely increase for northbound traffic on Bellevue Way SE between I-90 and 112th Avenue SE, and therefore, up to two intersections would operate at LOS F compared with one intersection in the no-build condition during the civil construction period. Additionally, increased congestion would be expected along the signed alternate routes. The potential for traffic to cut through the Enatai neighborhood and travel along 108th Avenue SE to bypass the construction zone along Bellevue Way SE during the afternoon peak would be low because cut-through routes in this area are limited and circuitous.

TABLE 3-31
Roadway Construction Impacts by Segment

Segment/Location	Alternative	Roadway Classification	Construction Truck Traffic[a]	Road Closure[b]	Detour of Traffic		On-Street Parking Loss?[c]	Bus Route Impact?
					Detour Route Available?[e]	Neighborhood Traffic Intrusion		
Segment A, Interstate 90								
Rainier Avenue South	*Preferred Alternative A1*	Principal arterial	Low	Partial, short-term	Yes	Low	No	Yes
23rd Avenue South	*Preferred Alternative A1*	Principal arterial	Low	Partial, short-term	Yes	Low	No	Yes
77th Avenue SE	*Preferred Alternative A1*	Principal arterial	Low	Partial, short-term	Yes	Low	No	Yes
80th Avenue SE	*Preferred Alternative A1*	Principal arterial	Low	Partial, short-term	Yes	Low	No	Yes
Refer to Section 3.5.3.4 for I-90 mainline construction impacts								
Segment B, South Bellevue								
Bellevue Way (south of 112th Avenue SE)	*Preferred Alternative B2M*	Principal arterial	Moderate	Partial, long-term	Yes, via I-405	Low	No	Yes
	Alternative B1	Principal arterial	Moderate	Partial, long-term	Yes, via I-405	Moderate	No	Yes
	Alternative B2A	Principal arterial	Low	Partial, long-term	Yes, via I-405	Moderate	No	Yes
	Alternative B2E	Principal arterial	Low	Partial, long-term	Yes, via I-405	Moderate	No	Yes
	Alternative B3	Principal arterial	Low	Partial, long-term	Yes, via I-405	Moderate	No	Yes
Bellevue Way (north of 112th Avenue SE)	Alternative B1	Principal arterial	Moderate	Partial, long-term	Yes	Moderate	No	Yes
112th Avenue SE	*Preferred Alternative B2M* to *Preferred Alternative C9T*[d]	Principal arterial	Moderate	Partial, long-term	Yes	Low	No	Yes
	Preferred Alternative *B2M* to *Preferred Alternative C11A*	Principal arterial	Moderate	Partial, long-term	Yes	Moderate	No	Yes
	Alternative B2A	Principal arterial	Low	Partial, long-term	Yes	Moderate	No	Yes
	Alternative B2E	Principal arterial	Low	Partial, short-term	Yes	Moderate	No	Yes
	Alternative B3	Principal arterial	Low	Partial, long-term	Yes	Moderate	No	Yes
118th Avenue SE	Alternative B7	Collector arterial	Low	Partial, long-term	Yes	Low	No	No
Segment C, Downtown Bellevue								
Bellevue Way	Alternative C1T	Principal arterial	High	Partial, long-term	Yes	Moderate	No	Yes
106th Avenue NE	Alternative C2T	Local arterial	Moderate	Partial, long-term	Yes	Low	No	Yes

TABLE 3-31 CONTINUED
Roadway Construction Impacts by Segment

Segment/Location	Alternative	Roadway Classification	Construction Truck Traffic[a]	Road Closure[b]	Detour of Traffic		On-Street Parking Loss?[c]	Bus Route Impact?
					Detour Route Available?[e]	Neighborhood Traffic Intrusion		
108th Avenue NE	Alternative C3T	Minor arterial	High	Partial, short-term with possible full, short-term	Yes	Low	No	No
108th Avenue NE (Main Street to NE 6th Street)	*Preferred Alternative C11A*	Minor arterial	Moderate	Partial, long-term	Yes	Low	Yes	Yes
108th Avenue NE (Main Street to NE 12th Street)	Alternative C4A	Minor arterial	High	Partial, long-term with possible full, short-term	Yes	Low	Yes	No
110th Avenue NE (Main Street to NE 6th Street)	*Preferred* Alternative *C9T*[d] and Alternative C9A	Minor arterial	High	Partial, long-term with possible full, short-term	Yes	Low	Yes	Yes
110th Avenue NE (Main Street to NE 12th Street)	Alternative C4A	Minor arterial	High	Partial, long-term with possible full, short-term	Yes	Low	yes	Yes
110th Avenue NE (NE 2nd Street to NE 12th Street)	Alternative C8E	Minor arterial	High	Partial, long-term	Yes	Low	No	Yes
112th Avenue SE (south of Main Street)	*Preferred Alternatives C11A* and *C9T*[d]	Principal arterial	Moderate	Partial, short-term	Yes	Low	No	Yes
112th Avenue SE (south of Main Street)	Alternatives C2T, C3T, C4A, C7E, and C9A (with *Preferred Alternative B2M and* Alternative B2A or B2E	Principal arterial	Moderate	Partial, long-term	Yes	Low	No	Yes
112th Avenue NE (north of Main Street)	Alternative C7E	Principal arterial	Low	Partial, short-term	Yes	Low	No	No
Main Street	*Preferred Alternatives C11A* and *C9T*[d] and Alternatives C4A and C9A	Minor arterial	Moderate	Partial, short-term	Yes	Low	No	Yes
NE 2nd Street (110th Avenue NE to 112th Avenue NE)	Alternative C8E	Minor arterial	Moderate	Partial, short-term	Yes	Low	No	No
NE 12th Street	Alternatives C4A, C3T, and C8E	Principal arterial	Moderate	Partial, short-term	Yes	Low	No	No
NE 6th Street (between Bellevue Way and 106th Avenue NE)	Alternative C1T	Local arterial	High	Full, long-term	Yes	Low	No	Yes
NE 6th Street (between 110th Avenue NE and I-405)	*Preferred Alternatives C11A* and *C9T*[d] and Alternatives C1T, C2T, and C9A	Minor arterial	Moderate	Partial, long-term	Yes	Low	No	Yes

TABLE 3-31 CONTINUED
Roadway Construction Impacts by Segment

Segment/Location	Alternative	Roadway Classification	Construction Truck Traffic[a]	Road Closure[b]	Detour of Traffic		On-Street Parking Loss?[c]	Bus Route Impact?
					Detour Route Available?[e]	Neighborhood Traffic Intrusion		
114th Avenue NE	Alternatives C8E and C14E	Minor arterial	Low	Partial, long-term	Yes	Low	No	No
Segment D, Bel-Red/Overlake								
NE 16th Street (between 120th Avenue NE and 124th Avenue NE)	Alternatives D2E and D3	Local arterial	Low	Partial, long-term	Yes	Low	No	No
NE 16th Street (between 132nd Avenue NE and 136th Place NE)	*Preferred Alternative D2A,* D2A – 120th Station and NE 24th Design Options, and Alternatives D2E and D3	Local arterial	Low	Partial long-term, and full, short-term	Yes	Low	Yes	Yes
136th Place NE (between NE16th Street and NE 20th Street)	*Preferred Alternative D2A,* D2A – 120th Station and NE 24th Design Options, and Alternatives D2E and D3	Collector arterial	Low	Partial long-term, and full, short-term	Yes	Low	Yes	Yes
NE 20th Street (between 136th Avenue and 152nd Avenue NE)	Alternative D3	Minor arterial	Moderate	Partial, long-term	Yes	Moderate	No	Yes
NE 24th Street (between 148th Avenue NE and 152nd Avenue NE)	Alternatives D2E and D2A - NE 24th Design Option	Minor arterial	Low	Partial, long-term	Yes	Low	No	Yes
151st Place NE at NE 24th Street	Alternatives D2A - NE 24th Design Option and D2E	Minor arterial	Low	Full, short-term	Yes	Low	No	No
152nd Avenue NE (north of NE 24th Street)	Alternative D2A - NE 24th Design Option and D2E	Local arterial	Low	Partial, long-term	Yes	Low	No	Yes
152nd Avenue NE (between NE 20th Street and SR520)	Alternative D3	Local arterial	Moderate	Partial, long-term	Yes	Low	No	Yes
Microsoft Road	All Segment D Alternatives	Local arterial	Low	Partial, short-term	Yes	Low	No	No
Segment E, Downtown Redmond								
NE 40th, NE 51st, and NE 60th Streets overcrossings	All Segment E alternatives	Collector arterial	Moderate	Partial, short-term	Yes, via nearest overcrossing	Moderate	No	No
Leary Way, 164th and 166th Aves NE, 170th Avenue NE crossings	All Segment E alternatives	Local arterial	Moderate	Partial, short-term	Yes	Low	No	Yes
NE Leary Way	Alternative E4	Principal arterial	Moderate	Partial, long-term	Yes	Low	No	Yes
NE 70th Street	All Segment E alternatives	Local arterial	Moderate	Full, short-term	Yes	Low	Yes	No
161st Avenue NE (between Redmond Way and NE 85th Street)	E2 – Redmond Transit Center Design Option	Collector arterial	Moderate	Full, long-term	Yes	Moderate	Yes	Yes

TABLE 3-31 CONTINUED
Roadway Construction Impacts by Segment

Segment/Location	Alternative	Roadway Classification	Construction Truck Traffic[a]	Road Closure[b]	Detour of Traffic		On-Street Parking Loss?[c]	Bus Route Impact?
					Detour Route Available?[e]	Neighborhood Traffic Intrusion		
SR 520 on- and off-ramps at SR 202	*Preferred Alternative E2* and Alternative E2 – Redmond Transit Center Design Option and E4	State highway	Moderate	Partial, long-term	Yes, via West Lake Sammamish Parkway or SR 520 terminus	Low	No	No

[a] Low truck traffic is associated with alternatives that would have minimal fill, excavation, and concrete work; high truck traffic is associated with major fill, excavation, and concrete work. Moderate is between these two boundaries.

[b] Partial road closure assumes some lanes are open to traffic. Short- and long-term durations were determined to be less than or more than 1 year. Full short-term closures would be required for specific activities like station construction, retained cut and fill construction, column drilling, or girder placement, and can be as short as 1 night/day closure or as long as less than 1 year.

[c] On-street parking loss is characterized for street parking only and does not consider that some off-street parking might be lost due to the location of construction and staging areas.

[d] C9T – East Main Station Design Option connecting from *Preferred Alternative B2M* only would have no change in impacts on either *Preferred Alternative C9T* or *B2M*.

[e] Roadways classified as collector or local arterial could be signed to only provide local access during East Link civil construction. Additionally, if detour routes within the immediate vicinity are not available possible routes are suggested.

For *Preferred Alternative B2M* connecting to *Preferred Alternative C11A*, lane closures along 112th Avenue SE could include one northbound and one southbound lane from Bellevue Way SE to SE 6th.

For *Preferred Alternative B2M* connecting to *Preferred Alternative C9T*, one lane of 112th Avenue SE from Bellevue Way SE to SE 6th could be closed for some of the civil construction period. Similar to the construction impacts on Bellevue Way SE, depending on the construction activity, more or fewer lanes could be closed along 112th Avenue SE for short periods.

During construction along 112th Avenue SE for *Preferred Alternative B2M* connecting to *Preferred Alternative C11A*, traffic diversions to other parallel arterials, such as Bellevue Way SE and SE 8th Street, and regional facilities, such as I-405, would be likely. Although congestion would likely increase in the northbound and southbound directions on 112th Avenue SE, the number of intersections along 112th Avenue SE not meeting the City of Bellevue LOS threshold would be similar to the no-build condition. The probability of traffic using 108th Avenue SE between Bellevue Way SE and Main Street to bypass the construction zones along 112th Avenue SE would be discouraged by the existing traffic-calming devices (slow speeds and speed bumps) and motorist information and advance signing directing vehicles to other arterials and regional facilities.

For Preferred Alternative *B2M* connecting to *Preferred Alternative C9T,* some increase in congestion for the northbound traffic during the afternoon peak is expected with a northbound lane closed, but it would have lower impacts compared to *Preferred Alternative B2M* connecting to *Preferred Alternative C11A*.

Other Segment B Alternatives

With Alternative B1, construction impacts would affect Bellevue Way throughout the segment and would likely close multiple lanes (one northbound and one southbound lane) for some of the civil construction duration; also, additional lane closures could be required at certain times depending on the construction activity. Under Alternatives B2A, B2E, B3, and B3 - 114th Extension Design Option, construction impacts would occur along Bellevue Way south of 112th Avenue SE, and along 112th Avenue SE north of Bellevue Way. Alternatives B2A, B3, and B3 - 114th Extension Design Option would have roadway impacts similar to Alternative B1, and Alternative B2E would have roadway impacts similar to *Preferred Alternative B2M* along Bellevue Way south of 112th Avenue SE. Along 112th Avenue SE, these four alternatives (B2A, B3, B3 – 114th Extension Design Option, and B2E) would likely have impacts similar to those under *Preferred Alternative B2M*. Alternative B7 would result in construction impacts on 118th Avenue SE with short-term lane closures at certain times depending on the construction activity.

Detour routes for the Segment B alternatives along Bellevue Way and/or 112th Avenue SE (B1, B2A, B2E, B3, and B3 – 114th Extension Design Option) would be similar to *Preferred Alternative B2M*. Detour routes for Alternative B7 construction activities include I-405, Bellevue Way, and 112th Avenue SE, but would likely not be required because the traffic volumes on 118th Avenue SE are relatively low compared to volumes on Bellevue Way and 112th Avenue SE.

Traffic congestion for the alternatives along Bellevue Way SE or 112th Avenue SE is expected to be similar to or worse than the *Preferred Alternative B2M* depending on the number of lane closures. Traffic congestion with any lane closures proposed for Alternative B7 would likely be limited to along 118th Avenue SE.

Segment C

Preferred 108th NE At-Grade Alternative (C11A)

Preferred Alternative C11A would affect 112th Avenue SE near SE 6th Street, 108th Avenue NE between Main Street and NE 6th Street, and NE 6th Street between 108th and 112th Avenues NE. One or more lanes along 112th Avenue SE south of SE 6th Street would be closed for a short time for construction of the rail crossing from the median to the west side. For some of the *Preferred Alternative C11A* civil construction period, one eastbound lane on Main Street between 108th and 112th Avenues NE would likely be closed, but more or fewer lanes could be closed for short terms, depending on construction activities. Construction activities would close lanes along 108th Avenue NE. Property access to the residences and businesses along 108th Avenue NE between Main and NE 6th Streets would be maintained to the extent possible, either through access on 108th Avenue NE or alternative routes. Changes in property access would be coordinated with the appropriate residences and businesses. With any of the lane closures in downtown Bellevue, motorist information and advance signing would be provided that would encourage travel on parallel streets, and signal operations could be modified to optimize vehicle flow during construction.

Even with vehicles diverted to parallel streets, increased congestion would likely occur on 108th Avenue NE, and one intersection would operate at LOS F with the lane closures. In addition to 108th Avenue NE, 106th and 110th Avenues NE would likely also experience some increase in congestion as vehicles are detoured to avoid 108th Avenue NE.

Up to two additional intersections on these parallel streets between Main Street and NE 8th Street would operate at LOS F compared with the no-build condition.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, *Preferred Alternative C11A* would result in short-term temporary lane closures on 112th Avenue SE south of Main Street during the construction of the elevated track across 112th Avenue SE.

Preferred 110th NE Tunnel Alternative (C9T)
Preferred Alternative C9T would affect 112th Avenue SE near SE 6th Street, 110th Avenue NE between Main and NE 6th Streets, and NE 6th Street between 110th and I-405. One or more lanes along 112th Avenue SE south of SE 6th Street would be closed for the short-term construction of the at-grade crossing through the intersection of 112th Avenue SE and SE 6th Street. *Preferred Alternative C9T* would likely close one eastbound lane on Main Street between 110th and 112th Avenues NE, but more or fewer lanes also could be closed, depending on the construction approach. Construction activities would close some and possibly all lanes at times along 110th Avenue NE between Main and NE 6th Streets. Property access to the residences and businesses along 110th Avenue NE between Main and NE 6th Streets would be maintained to the extent possible either through access on 110th Avenue NE or alternative routes. Changes in property access would be coordinated with the appropriate residences and businesses. With any of the lane closures in downtown Bellevue, motorist information and advance signing would be provided that would encourage travel on parallel streets, and signal operations could be modified to optimize vehicle flow during construction.

Even with vehicles diverted to parallel streets, congestion would likely increase on 110th Avenue NE. In addition to 110th Avenue NE, 108th and 112th Avenues NE would likely also experience some increase in congestion as vehicles are detoured to avoid 110th Avenue NE. Up to three additional intersections, compared with the no-build condition, along these parallel streets between Main Street and NE 8th Street would operate at LOS F.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, *Preferred Alternative C9T* would have impacts similar to *Preferred Alternative C11A* crossing 112th Avenue SE.

Other Segment C Alternatives
Alternative C1T would affect Bellevue Way and NE 6th Street, and Alternative C2T would have impacts along 112th Avenue SE, 106th Avenue NE, and NE 6th Street along the alignment. Construction activities under Alternatives C1T and C2T would close lanes on the affected roadways. Property access to the residences and businesses along affected roadways would be maintained to the extent possible through those roadways or alternative routes. Increased congestion would likely occur along Bellevue Way under Alternative C1T and 106th Avenue NE under Alternative C2T. Adjacent roads would also likely experience increased congestion due to the lane closures. Alternative C3T would have impacts along the alignment on 112th Avenue SE, 108th Avenue NE, and NE 12th Street, but because of its construction methods, there would be fewer impacts along 108th Avenue NE relative to the Alternative C1T and Alternative C2T roadway impacts. For Alternative C3T, one or more lanes along 112th Avenue SE might be closed for a short time to construct the light rail crossing of 112th Avenue SE. One westbound lane on NE 12th Street between 108th and 112th Avenues NE would likely be closed, more or fewer lanes could be closed for short periods, depending on construction activities.

Alternative C4A would have impacts along 112th Avenue SE, Main Street, 108th Avenue NE, 110th Avenue NE, and NE 12th Street. Along 112th Avenue SE and NE 12th Street, impacts would be similar to those of Alternative C3T. Along Main Street, impacts would be similar to those under *Preferred Alternative C11A*. Along 108th and 110th Avenues NE, multiple lanes would be closed in order to convert the two-way traffic to a one-way couplet and to construct the light rail. Increased congestion would likely occur along both of these streets during the road modification and light rail civil construction periods.

With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, Alternative C4A impacts would be similar to those under *Preferred Alternative C11A* crossing 112th Avenue SE.

Alternative C7E would have impacts along 112th Avenue NE. Likely one northbound lane on 112th Avenue NE from the southern Segment C boundary to NE 12th Street would be closed during construction activities. With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, no additional roadway impacts would be experienced.

Alternative C8E would have impacts along the alignment on 114th Avenue, NE 2nd Street, 110th Avenue NE between NE 2nd Street and NE 12th Street, and NE 12th Street. One lane on 114th Avenue SE and one or more lanes on 110th Avenue NE would likely be closed during construction activities.

Alternative C9A would have impacts along 112th Avenue SE, 110th Avenue NE between Main and NE 6th Street, and NE 6th Street between 110th Avenue NE and 112th Avenue NE. With a connection to Alternative B3, B3 - 114th Extension Design Option, or B7, Alternative C9A would have construction impacts along 112th Avenue SE similar to *Preferred Alternative C11A*.

Alternative C14E would have impacts along 114th Avenue NE. Property and emergency access along 114th Avenue NE between Main and NE 6th Streets would be maintained either through access on 114th Avenue NE or alternate routes. This is not expected to create traffic impacts beyond this roadway.

Detour routes would be determined through final design and construction permitting. Because of the gridded street network in Downtown Bellevue, detour routes would likely be provided via adjacent parallel streets. Neighborhood traffic intrusion would range from low to moderate, depending on whether the construction activity occurs near residential areas to the north and south of downtown, but for most of the construction period neighborhood traffic intrusion would be minimal. Where partial and full roadway closures occur, increased congestion can be expected at adjacent intersections as vehicles avoid construction areas.

Within Segment C where tunneled alternatives cross roadways, short-term full street closures would likely occur. These closures are necessary for material excavation at these locations, such as the intersections of Main, NE 2nd, and NE 4th Streets with 110th Avenue NE under *Preferred Alternative C9T.*

Segment D

Preferred NE 16th At-Grade Alternative (D2A)

Preferred Alternative D2A would have roadway impacts along NE 16th Street (between 132nd Avenue NE and 136th Place NE), 136th Place NE, and Microsoft Road. At-grade crossings would occur at 130th Avenue NE, 132nd Avenue NE, 136th Place NE, and NE 20th Street. Property access along NE 16th Street and 136th Place NE would be maintained to the extent possible through access either on these streets or on an alternate route, depending on the construction activity. However, short periods of full closures might occur along NE 16th Street and 136th Place NE. Increases in congestion are expected to remain isolated to these low-volume roadways and not extend into surrounding arterials.

The D2A – 120th Design Option would have impacts similar to the *Preferred Alternative D2A* with an additional at-grade crossing at 120th Avenue NE. The D2A – NE 24th Design Option would have roadway impacts similar to those under *Preferred Alternative D2A*, except that one lane along NE 24th Street and 152nd Avenue NE could be closed for most of the civil construction period and additional lane closures could be required at certain times, depending on the construction activity.

Detours would be available through many of the parallel arterial routes available in Segment D. The potential for detoured traffic and construction vehicles in neighborhood areas would be low because there is not a substantial amount of residential development in the area and the construction would occur on or near designated truck routes. There would be some on-street parking loss associated with construction impacts within Segment D.

Other Segment D Alternatives

Alternative D2E would have impacts along NE 16th Street, 136th Place NE, NE 24th Street, 152nd Avenue NE, and Microsoft Road. Alternative D3 would have impacts along NE 16th Street, 136th Place NE, NE 20th Street, 152nd Avenue NE, and Microsoft Road with at-grade crossings of 120th Avenue NE, 124th Avenue NE, 130th Avenue NE, 132nd Avenue NE, 136th Place NE, NE 20th Street, 140th Avenue NE, Ross Plaza entrance (14300 block), and NE 24th Street.

With Alternatives D2E and D3, impacts along the existing NE 16th Street and 136th Place NE would be similar to those under *Preferred Alternative D2A.* Along NE 24th Street and 152nd Avenue NE, Alternative D2E impacts would be similar to those under D2A – 24th Design Option. Alternative D3 could have multiple lanes closed along NE 20th Street and 152nd Avenue NE for most of the civil construction period, and additional lane closures could be required at certain times, depending on the construction activity. During periods of multiple lane closures, increased traffic congestion and poor intersection operations would likely occur along NE 20th Street.

Alternative D5 would have impacts along Microsoft Road similar to the *Preferred Alternative D2A*.

Traffic detours would be available under Alternative D3 during the construction along NE 20th Street and 152nd Avenue NE. Motorist information and signs directing vehicles to other arterials (NE 24th Street, Bel-Red Road, and 156th Avenue NE) would be provided. All other alternatives would have detours similar to those under *Preferred Alternative* D2A, with the exception of Alternative D5, which would have no detours.

Segment E

Preferred Marymoor Alternative (E2)

Preferred Alternative E2 would have impacts at the SR 520 on- and off-ramps at SR 202 and with the at-grade crossings at Leary Way, 164th Avenue NE, 166th Avenue NE, and 170th Avenue NE. All Segment E alternatives would have grade-separated crossings of NE 40th, NE 51st, and NE 60th Streets, with multiple lanes closed for most of the civil construction period, and additional lane closures could be required at certain times depending on the construction activity. Increased traffic congestion would likely occur during multiple lane closures on the NE 40th Street overpass during civil construction activities. Detours to adjacent SR 520 crossings and interchanges would be provided. NE 70th Street would be a full closure also for all Segment E alternatives.

The E2 – Redmond Transit Center Design Option would have the same impacts as *Preferred Alternative E2,* in addition to impacts along 161st Avenue NE between Redmond Way and NE 85th Street. 161st Avenue NE would likely be closed for most of the civil construction period. Property access along 161st Avenue NE between Redmond Way and NE 85th Street would be maintained to the extent possible either through access on 161st Avenue NE or alternative routes.

Detours through the commercial areas would occur along parallel routes (160th or 164th Avenues NE if 161st Avenue NE is closed). Throughout Segment E for all Segment E alternatives, the potential for traffic to detour through residential neighborhoods is low as most of the construction activities occur along SR 520 and in Downtown Redmond. There would be some on-street parking loss associated with construction impacts within Segment E.

If the *Preferred Alternative E2* alignment adjacent to NE 76th Street requires the roadway to be reconstructed, it would be constructed prior to the East Link construction along this section of roadway.

Other Segment E Alternatives

Alternative E1 would have impacts at the Leary Way, 164th Avenue NE, 166th Avenue NE, and 170th Avenue NE crossings, and on NE 70th Street. The Leary Way Alternative (E4) would have impacts along Leary Way, 164th Avenue NE, 166th Avenue NE, 170th Avenue NE, and NE 70th Street, and at the SR 520 on- and off-ramps at SR 202. Many of the construction impacts and potential detours under Alternatives E1 and E4 would be similar to *Preferred Alternative E2*.

Maintenance Facilities

Constructing the maintenance facilities would temporarily close streets that intersect the track leading to and from the maintenance facility. These closures would most likely occur during off-peak hours to avoid traffic disruptions and would generally last for less than a week. Also, private driveways and any roads that need to be paved could be temporarily closed. Otherwise, there would be no impacts from construction of the maintenance facilities.

3.6.5 Potential Mitigation

This section discusses mitigation for impacts on intersection LOS and parking during project operation, and mitigation for impacts during project construction. Final mitigation would be coordinated with each affected jurisdiction through subsequent phases of this project.

3.6.5.1 Intersection Level of Service

Arterial and local street mitigation is potentially required at intersections where the intersection LOS with the East Link Project, compared with the no-build condition, would degrade to levels that do not meet the LOS standards of the jurisdiction. The intersections that are potentially affected and their related improvements are discussed in the following subsections.

Segment A

In Segment A, no mitigation would be required in the City of Seattle. However, several intersections on Mercer Island might potentially require turn pockets or traffic signal improvements to adjust for the change in travel patterns to and from the island. Improvements at intersections within the City of Mercer Island's jurisdiction would include:

- West Mercer Way and 24th Avenue SE: Provide southbound left-turn pocket (*Preferred Alternative A1* and both eastbound HOV off-ramp design options at Mercer Island).
- 80th Avenue SE and SE 27th Street: Install a traffic signal (*Preferred Alternative A1* and both eastbound HOV off-ramp design options at Mercer Island).
- 77th Avenue SE and Sunset Highway: Install a traffic signal (design option that provides an eastbound HOV off-ramp at 77th Avenue SE).
- 77th Avenue SE and North Mercer Way: Install a traffic signal (*Preferred Alternative A1* and both eastbound HOV off-ramp design options at Mercer Island).

Improvements at intersections within WSDOT's jurisdiction include:

- 77th Avenue SE and I-90 eastbound HOV off-ramp: Install a traffic signal (design option that provides an eastbound HOV off-ramp at 77th Avenue SE).
- 77th Avenue SE and I-90 eastbound off-ramp: Install a traffic signal (*Preferred Alternative A1* and design option that provides no eastbound HOV off-ramp at Mercer Island).
- 76th Avenue SE/North Mercer Way and I-90 Westbound on-ramp: Modify the westbound channelization to provide left-turn pocket and through/right shared lane (*Preferred Alternative A1* and both eastbound HOV off-ramp design options at Mercer Island).

All of these improvements would improve the AM and PM peak-hour intersection delay to the same as or better than the no-build conditions. Sound Transit would be responsible for implementing improvements at the WSDOT-controlled intersections prior to East Link opening service. Sound Transit would contribute a proportionate share of costs to improve project-affected intersections controlled by Mercer Island. Sound Transit's contribution would be determined by the project's ratio of trips at the intersection or another equitable method. Through this contribution, the City of Mercer Island may determine other improvements than the intersection modifications listed that are more compatible with Downtown Mercer Island. Refer to Appendix H1, *Transportation Technical Report*, for the intersection results with these proposed intersection improvements.

Segment B

Depending on the Segment B alternative, the project would potentially require mitigation at the following intersections (with *Preferred Alternative B2M*, no intersection mitigation is required):

- 112th Avenue SE and Bellevue Way SE: Provide a northbound right-turn pocket (Alternatives B1, B2A, B3 and B3 – 114th Extension Design Option).
- 112th Avenue SE and SE 15th Street: Install a traffic signal (Alternatives B1, B2E, and B7).
- Coal Creek Parkway and I-405 southbound ramps: Provide an additional westbound left-turn pocket (Alternative B7).
- 118th Avenue SE and SE 8th Street/I-405 southbound on ramp: Provide a northbound right-turn pocket (Alternative B7).

While not considered mitigation, as part of the East Link Project, two roadway options that modify Bellevue Way SE near the South Bellevue Station are proposed for alternatives that include this station. These modifications are proposed to improve the station and neighborhood access and are described in Section 3.6.3.2.

Segment C

Depending on which Segment C alternative is selected, the project would potentially require mitigation at the following intersections:

- Bellevue Way and Main Street: Provide a northbound right-turn pocket (Alternative C1T).
- 112th Avenue NE and NE 12th Street: Provide a westbound right-turn pocket (Alternatives C3T, C7E, and C8E).
- 112th Avenue NE and Main Street: Provide an eastbound right-turn pocket (*Preferred Alternative C11A*).
- 110th Avenue NE and NE 8th Street: Provide an eastbound right-turn pocket (Alternatives C4A and C9A). Provide a northbound right-turn pocket (Alternative C8E).
- 108th Avenue NE and NE 12th Street: Provide a northbound right-turn pocket (Alternative C4A).

Additionally, at the intersections listed below, mitigation to better use the roadway capacity could be implemented, such as providing active traffic management strategies. For example, active signing could be installed to more effectively route vehicles to less congested streets, turn movements could be restricted during congested periods, or adaptive signal controllers could be installed to better respond to changing traffic conditions:

- Main Street and 108th Avenue NE (*Preferred Alternative C11A)*
- NE 4th Street and 108th Avenue NE (*Preferred Alternatives C11A* and *C9T*, and Alternatives C1T, C2T, C3T, C8E, and C9A)
- NE 6th Street and 110th Avenue NE (Alternative C9A)
- NE 8th Street and 112th Avenue NE (Alternatives C4A and C8E)

Segment D

Depending on which Segment D alternative is selected, the project would potentially require mitigation at the following intersections:

- 120th Avenue NE and NE 16th Street: Provide a southbound right-turn pocket (D2A – 120th Design Option, year 2020 only; once background improvements along 120th Avenue NE are completed this intersection will operate acceptably with the project).
- 152nd Avenue NE and NE 24th Street: Provide a southbound right-turn pocket (All Segment D alternatives except Alternative D3). This or a similar intersection improvement would be coordinated with the City of Redmond.
- 148th Avenue NE and NE 20th Street: Accelerate planned eastbound and westbound left-turn improvements by year 2030 (Alternative D3).

Alternative D2E would require mitigation at the intersections of 151st and 152nd Avenues NE on NE 24th Street. The increase in delay would result from the two intersections being closely spaced and the intersection phasing and timing needed so that the light rail train can safely travel across NE 24th Street. As the light rail train approaches this street crossing, the traffic signals would only serve the westbound approach at 151st Avenue NE and the eastbound approach at 152nd Avenue NE to release any stopped or queued vehicles in this roadway section. Once the section is clear of vehicles, the light rail train could then proceed. While this might not substantially delay the light rail train, it might create unacceptable vehicle operations on NE 24th Street. If the track were to be realigned through the NE 24th Street and NE 152nd Avenue NE intersection, then it would remove the need to provide a vehicle clearance phase prior to the train arriving. With this realignment the alternative would be similar to Alternative D3, north of the intersection of 152nd Avenue NE and NE 24th Street.

Segment E

Depending on which Segment E alternative is selected, the project would potentially require mitigation at the following intersections:

- NE 76th Street and 170th Avenue NE: Install a traffic signal (all Segment E alternatives and Redmond Town Center interim terminus station).
- SR 202 and NE 70th Street: Provide a southbound right-turn pocket (all Segment E alternatives).
- Redmond Way and 161st Avenue NE: Provide a westbound right-turn pocket (E2 – Redmond Transit Center Design Option only); this improvement might be included as part of the City's future roadway improvements, but has yet to be designed.
- SR 202 and East Lake Sammamish Parkway: Rechannelize to provide an additional southbound through lane (all Segment E alternatives).
- NE 70th Street and 176th Avenue NE: Install a traffic signal (*Preferred Alternative E2*, E2 – Redmond Transit Center Design Option).

3.6.5.2 Parking

Mitigation may be required where there are potential impacts on parking around stations. The potential for hide-and-ride activities near stations and the best ways to mitigate such activities is specific to each area surrounding a station. Stations that may generate hide-and-ride users are locations where the auto forecast is higher than the available parking at the station, or the station does not provide parking, and there is a substantial amount of on-street parking available surrounding the station. The station most likely to generate hide-and-ride impacts is the Rainier Station. At the Mercer Island and South Bellevue stations, the parking analysis determined a low potential for hide–and-ride impacts. However, given the locations of these stations, Sound Transit will evaluate hide-and-ride impacts within one year of East Link operations. If impacts are determined, Sound Transit would implement appropriate mitigation measures as discussed in this section.

Prior to implementing any parking mitigation measures, Sound Transit would inventory on-street parking around each of the three stations listed up to one year prior to the start of light rail revenue service. These inventories would document the current on-street parking supply within a quarter-mile radius of the stations. Based on the inventory results, Sound Transit and the local jurisdiction would work with the affected stakeholders to identify and implement appropriate mitigation measures, if necessary.

Parking control measures could consist of parking meters, restricted parking signage, passenger and truck load zones, and residential parking zone (RPZ) signage. Other parking mitigation strategies could include promotion of alternative transportation services (e.g., encourage the use of buses, vanpool or carpool services, walking, or bicycle riding).

For parking controls agreed to with the local jurisdiction and community, Sound Transit would be responsible for the cost of installing the signage or other parking controls and any expansion of the parking controls for one year after opening the light rail system. The local jurisdictions would be responsible for monitoring the parking controls and providing all enforcement and maintenance of the parking controls. The local residents would be

responsible for any RPZ-related costs imposed by the local jurisdiction.

3.6.5.3 Construction Mitigation

All mitigation measures associated with East Link Project construction would comply with local regulations governing construction traffic control and construction truck routing. Sound Transit would finalize detailed construction mitigation plans in coordination with local jurisdictions and WSDOT during the final design and permitting phase of the project. Mitigation measures for traffic impacts due to light rail construction could include the following:

- Follow standard construction safety measures, such as installation of advance warning signs, highly visible construction barriers, and the use of flaggers.
- Use lighted or reflective signage to direct drivers to truck haul routes and enhance visibility during nighttime work hours.
- Use temporary reflective truck prohibition signs on streets with a high likelihood of cut-through truck traffic.
- In areas with high levels of traffic congestion, schedule traffic lane closures and high volumes of construction traffic during off-peak hours to minimize delays where practical.
- Communicate public information through tools such as print, radio, posted signs, websites and email to provide information regarding street closures, hours of construction, business access, and parking impacts.
- Coordinate access closures in person with affected businesses and residents. If access closures are required, property access to residences and businesses would be maintained to the extent possible. If access to the property is not able to be maintained, the specific construction activity would be reviewed to determine if it could occur during nonbusiness hours, or if the parking and users of this access (for example deliveries) could be provided at an alternative location.
- Where necessary, ensure that the contractor is responsible for providing parking areas for construction workers.

For potential transit (and associated park-and-ride) and regional highway (I-90, I-405, and SR 520) mitigation during East Link Project construction, refer to Sections 3.4 and 3.5, respectively.

3.7 Nonmotorized Facilities

3.7.1 Methodology

Within the study area, Sound Transit inventoried existing nonmotorized facilities consisting of sidewalks, designated bicycle routes, marked bicycle lanes, and regional multiuse trails. Sidewalks were inventoried and evaluated along arterial streets within an area 0.5 mile from proposed stations, and bicycle routes were inventoried within an area one mile from stations. Missing sidewalk areas were identified on either one or both sides of arterial streets in consideration of local agency comprehensive plan and transportation element policies.

Regional multiuse trails as well as local agency-recommended school walk routes were identified and analyzed for any potential impacts based on their proximity to stations. Surrounding land uses, sidewalk and bicycle facilities and their barriers were included in the nonmotorized analysis evaluating the existing and future nonmotorized activity surrounding each proposed station. Tables 7-6, 7-9, 7-11, 7-13, and 7-15 in Section 7 of the *Transportation Technical Report* (Appendix H1) provide further detail on the pedestrian and bicycle activity discussed in this section. Pedestrian LOS was also analyzed within 300 feet of station entrances using the methodology from the *Highway Capacity Manual* (TRB, 2000) and the *Transit Capacity and Quality of Service Manual* (Transit Cooperative Research Program, 2003). For a more in depth discussion on nonmotorized facilities refer to Section 7 in the *Transportation Technical Report* (Appendix H1).

3.7.2 Affected Environment

3.7.2.1 Pedestrian Activity, Sidewalks, and School Walk Routes

Sidewalks are available along most arterial streets within the study area, providing sufficient pedestrian connections. Generally, there are only a few areas that are missing sidewalks on one or both sides of the street. Exhibits 7-1 through 7-12 in Section 7 in the *Transportation Technical Report* (Appendix H1) provide further detail on the sidewalks and trails in the study area. Streets that lack sidewalks are typically in residential neighborhoods, on local access streets, or on streets with low pedestrian volumes. The following subsections describe the pedestrian activity, sidewalks, and crosswalks in each segment.

Pedestrian Level of Service

A measure of the walking conditions on a sidewalk, route, or path. LOS A represents ample spacing between pedestrians on a sidewalk or path, allowing for free-flow walk speeds. LOS F represents unavoidable crowding between pedestrians on a sidewalk or path, preventing free-flow walking speed and movement.

Segment A

The Rainier Station in Segment A is located between the Central Area and North Rainier Valley neighborhoods in Seattle. Pedestrians using bus facilities in this area mostly originate from or are destined to the surrounding neighborhoods, including the International District. A few small segments with missing sidewalks, less than .25 mile in length, were identified along Rainier Avenue South. Crosswalks are present at most arterial intersections in this area. Sidewalks are present along both sides of Rainier Avenue S, south of I-90. North of I-90, sidewalks are present along the western side of Rainier Avenue South. On the east side of Rainier Avenue South, under I-90, the sidewalk terminates and connects to a paved trail that continues into Judkins Park and Playfield. The crosswalk and sidewalk configuration in this area is discontinuous and, therefore, can create slightly longer walking distances for pedestrians. Additionally, there is a midblock crossing on 23rd Avenue South connecting South Day Street to the western portion of the I-90 Lid Park and Rainier Station. Generally, pedestrian and bicycle circulation in this area is from residents and some commercial users as well as recreational users where Judkins Park connects to the I-90 trail.

On Mercer Island, a more walkable area has been created in the northern part of the island as a result of recent mixed-use developments at the Mercer Island Town Center, completion of the new Mercer Island Park-and-Ride Lot, and improvements in pedestrian connectivity between the Town Center and North Mercer Island. Nearly all of the commercial activity in Mercer Island is centralized at the Mercer Island Town Center, making it a common destination for residents and pedestrians. The Mercer Island I-90 Lid Park provides multiple connection points across I-90 between North Mercer Island and the Town Center and provides the largest area of nonmotorized recreational use on Mercer Island.

Sidewalks located along 76th Avenue SE, 77th Avenue SE, and 80th Avenue SE provide pedestrian and bicycle connectivity across I-90. Crosswalks and wider sidewalks are present throughout most of the commercial area on Mercer Island in addition to some pedestrian-friendly roadway elements such as bulb-outs and street trees.

School walk routes are not present on arterial streets within Segment A.

Segment B

The South Bellevue Park-and-Ride Lot is the primary transit facility serving the South Bellevue neighborhoods. Pedestrian activity around this park-and-ride area is not as high as in other areas in the study area because of the surrounding residential neighborhoods and Mercer Slough Nature Park. Crosswalks are located at the signalized entrance to the park-and-ride lot. Sidewalk is absent along the western side of Bellevue Way SE, south of 112th Avenue SE, because of right-of-way constraints associated with the topography. Common walking origins or destinations in this area include the Enatai neighborhood, nearby office parks, and the Mercer Slough recreational area.

The existing sidewalks surrounding the proposed 118th and SE 8th stations are generally present along arterial streets, although sidewalks are absent on the east side of 114th Avenue NE (along I-405) and 118th Avenue SE because of right-of-way constraints. At the interchange of SE 8th Street and I-405, crosswalks are marked along the north side of SE 8th Street, although they are absent along the south side of SE 8th Street.

In Segment B, a missing sidewalk was also identified on SE 25th Street, which serves the school walk route for Enatai Elementary School. Most of the school walk routes for this school are located on collector and local residential streets.

Segment C

The highest pedestrian activity in Segment C and in the study area is focused around the Bellevue Transit Center in Downtown Bellevue. Currently, almost 700 pedestrians during the PM peak hour cross through the intersection of 108th Avenue NE and NE 6th Street (adjacent to the Bellevue Transit Center). Many pedestrians using this transit center originate from or are destined to nearby employers throughout downtown. An east-west pedestrian pathway provides connectivity between the Bellevue Transit Center and the Bellevue Square Mall/Lincoln Square and surrounding retail uses. Sidewalks and crosswalks are generally present throughout Segment C.

The City of Bellevue has installed or signalized several midblock crosswalks within the downtown area to improve the connectivity between major destinations and land uses.

East of I-405, pedestrian activity occurs near the Overlake Hospital. Crosswalks and sidewalks are present along 116th Avenue NE. Pedestrian connectivity between Downtown Bellevue and the Overlake Hospital area is limited to a few connections across I-405. Crosswalks and sidewalks are also present along NE 8th Street east of I-405, although there is a considerable distance between the crosswalk locations at the 116th and 120th Avenue NE intersections.

Sidewalks are present along arterials that serve the Bellevue High School walk route in Segment C. Similarly to the other segments, many of the school walk routes are located on collector and local streets.

Segment D

Pedestrian activity in Segment D is lower than in the other segments. Most pedestrian activity in Segment D occurs east of 140th Avenue NE near the area surrounding Overlake Village, where retail, medical, and commercial uses are more predominant, and between the Overlake Transit Center and surrounding commercial and office land uses. More sidewalks and traffic signals are present in these areas than in the western part of Segment D.

Pedestrian activity in the Bel-Red area between 116th and 140th Avenues NE is minimal because much of the current land use consists of light industrial, office park, and commercial uses. Either no sidewalk is provided or large portions of missing sidewalk occur on both sides of arterial streets in this area (120th, 124th, 130th, and 136th Avenues NE). Additionally, long walking distances between the two east-west arterials, Bel-Red Road and NE 20th Street, discourage pedestrian activity in this area. However, there are sidewalk facilities on both sides of NE Bel-Red Road and NE 20th Street. Crosswalks are located at all signalized intersections in Segment D.

School walk routes are not present on arterial streets within segment D.

Segment E

Pedestrian activity is high within the Downtown Redmond, Redmond Town Center, and Marymoor Park areas because sidewalks, bicycle lanes, and recreational facilities have contributed to a more walkable area. Sidewalks are generally present within Segment E, although there are some sidewalks gaps on Bear Creek Parkway and 166th Avenue NE between Redmond Town Center and Downtown Redmond. Although the Redmond Town Center and Marymoor Park are popular pedestrian destinations, they are separated by SR 520, which presents a barrier for pedestrians wishing to cross between the two areas. The Sammamish River Trail passes beneath SR 520 at the West Lake Sammamish Parkway interchange and provides a pedestrian connection between the park and Downtown Redmond. Crosswalks are present at all signalized intersections in Segment E with the

exception of the SR 520 entrance/exit ramps along NE 76th St and NE Redmond Way.

A school walk route for the Redmond Elementary School is located within a 0.5-mile radius of the Redmond Town Center Station.

3.7.2.2 Bicycle Routes, Bicycle Lanes, and Multiuse Trails

Trails used only for recreation are not addressed in this section. For information about recreational facilities, see Section 4.17, Parkland and Open Space, of the Final EIS. The exhibits in Section 7 of the *Transportation Technical Report* (Appendix H1) indicate where existing bicycle facilities are present for arterials within the study area.

Throughout the East Link study area, while there are bicycle lanes present on some arterials, designated and signed bicycle routes are located on most arterial or collector streets. Some arterials in the study area also have a wide shoulder that allows bicycle activity. Designated bicycle routes, marked bicycle lanes, and regional multiuse trails include 12th Avenue South in Seattle; the I-90 trail (includes North Mercer Way) on Mercer Island; Bellevue Way, 108th Avenue SE, 112th Avenue SE, 118th Avenue SE, NE 20th and 24th Streets, and 140th Avenue NE in Bellevue; and 156th Avenue, West and East Lake Sammamish Parkway, and SR 202/Redmond Way in Redmond.

In Seattle, 12th Avenue South is a designated bicycle route, and there are marked bicycle lanes on South Dearborn Street and Martin Luther King Jr. Way South. East-west bicycle connectivity to these streets is achieved primarily through routes on collector and local streets. There are bicycle facilities and sidewalk facilities on both sides of most arterial streets on Mercer Island, including North Mercer Way, Island Crest Way, and 78th Avenue SE. Bicycle activity in Segment B occurs more frequently along the I-90 Trail through Bellevue, within the local street network in the Enatai and Beaux Arts neighborhoods, and within the Mercer Slough recreational area. There are designated routes on some arterial streets in Segment C along 112th and 116th Avenues NE that connect to the SR 520 multiuse trail. Within Segment D, designated bike routes are present on some local and arterial streets north of NE 24th Street in the Cherry Crest neighborhood. The SR 520 multiuse trail provides most of the continuous bicycle coverage through Segment D. In the City of Redmond, bicycle lanes are present along segments of NE 85th Street, NE 83rd Street, and 171st Avenue NE. Most other streets through Downtown Redmond are designated bicycle routes. The Sammamish River Trail, Bear Creek Parkway Trail, and Marymoor Park trail network are bicycle facilities.

Multiuse trails provide regional mobility for nonmotorized users. There are several regional multiuse trails within the study area, and some of the accesses to these trails are located within close walking or bicycle distance to the stations, providing transit commuters with a location to easily transfer to and from nonmotorized modes. Regional multiuse trails located in the project vicinity include the I-90 Multiuse Regional Trail (Mountains to Sound Greenway), Mercer Slough Nature Park and Multiuse trails, SR 520 Regional Trail, Bridle Crest Trail, Sammamish River Trail, East Lake Sammamish Trail, and Bear Creek Trail. These trails are connected to one another by local designated bicycle routes. In Segment D, access to the SR 520 Regional Trail is provided along various arterials in the area. In Segment E, the SR 520 Regional Trail is accessible through public park areas and a few access points along the trail from designated bicycle routes on arterial streets.

3.7.3 Environmental Impacts

In the no-build condition, pedestrian and bicycle facilities would improve with numerous planned improvements included in agency long-range plans. The East Link Project would support, and in most cases enhance, these improvements as the project proposes a number of nonmotorized amenities in and around stations to minimize impacts on pedestrian and bicycle circulation, both during construction and after light rail is operational.

Transit facility designs would be flexible, allowing each station to reflect and fit into the community it serves while providing standard features to facilitate smooth and accessible transfers for transit customers from one type of transportation to another. Standard design features would include the following:

- Security and safety design standards
- Easy-to-read and consistent signs
- Pedestrian-friendly design and full access for people with disabilities
- Bicycle access and storage
- Sidewalks immediately adjacent to stations as shown on the conceptual design drawings in Appendix G1

Each station would provide bicycle storage, including racks and often lockers. The proposed number of bicycle facilities at the light rail stations is listed in the tables in the Environmental Impacts discussion of Section 7.0 of the *Transportation Technical Report*

(Appendix H1). Stations would include additional capacity for further expansion of bicycle racks and lockers in the future. Because of the proximity of some stations to regional trails such as the I-90 Regional Trail, the East Lake Sammamish Trail, and the potential BNSF Railway trail, wayfinding signage for nearby regional trails and other local destinations could be incorporated into station site design elements.

Estimates of PM peak-period pedestrian and bicycle trips generated by each station, as shown in Table 3-32, were used to qualitatively assess the degree of nonmotorized user activity in station areas. As expected, the stations with the highest number of pedestrian and bicycle trips—East Main, Old Bellevue, Bellevue Transit Center, and Overlake Transit Center—are located near major employment and residential areas (Downtown Bellevue and Overlake).

TABLE 3-32
PM Peak-Period (3-Hour) Pedestrian and Bicycle Trips Generated at Stations

Station	2020 Pedestrian and Bicycle Trips[a,b]	2030 Pedestrian and Bicycle Trips[a,b]
Segment A		
Rainier Station (*Preferred Alternative A1*)	600	660
Mercer Island Station (*Preferred Alternative A1*)	360	490
Segment B		
South Bellevue (*Preferred Alternative B2M* and Alternatives B1, B2A, B2E, B3, and B3 – 114th Extension Design Option)	90	130
SE 8th (*Preferred Alternative B2M* to *Preferred Alternative C9T* and Alternatives B2A and B2E)	240	290
118th (Alternative B7)	280	420
Segment C		
108th (*Preferred Alternative C11A*)	970	1,210
East Main (*Preferred Alternative C9T* and Alternatives C3T, C4A, C2T, C7E, C8E, and C9A)	970	1,450
Old Bellevue (Alternative C1T)	890	1,200
Bellevue Transit Center (*Preferred Alternatives C11A* and *C9T* and Alternatives C1T, C2T, C3T, C4A, C7E, C8E, C9A, and C14E)	3,150	3,770
Ashwood/Hospital (Alternatives C3T, C4A, C7E, and C8E)	580	580
Hospital (*Preferred Alternatives C11A* and *C9T* and Alternatives C1T, C2T, C9A, and C14E)	380	910
Segment D		
120th (*Preferred Alternative D2A*, D2A – 120th Design Option (Alternatives D2E and D3)	360	430
130th (*Preferred Alternative D2A* and Alternatives D2E and D3)	320	730
Overlake Village (*Preferred Alternative D2A*, D2A - NE 24th Design Option, and Alternatives D2E, D3, and D5)	220	500
Overlake Transit Center (All Segment D Alternatives)	730	1,120
Segment E		
Redmond Town Center (Alternatives E1 and E4 and E2 – Redmond Transit Center Design Option)	280	320
SE Redmond (*Preferred Alternative E2* and Alternatives E1 and E4)	70	70
Downtown Redmond (*Preferred Alternative E2*)	320	380
Redmond Transit Center (E2 – Redmond Transit Center Design Option)	110	140

[a] Pedestrian and bicycle trips reported for the alternative with the highest ridership.
[b] Trips include both boarding and alighting (exiting).

Although the East Link Project would substantially increase the number of pedestrians in and around the stations, sidewalks and intersection crossings throughout the study area were shown to operate at pedestrian LOS C or better with both the No Build Alternative and East Link. LOS C or better means that there is enough spacing between pedestrians on the sidewalk so that they are able to walk freely at their own speed, with an ability to cross paths without potential collisions with other pedestrians. The pedestrian location in the study area that is expected to operate at LOS C is the 108th Avenue NE and NE 6th Street intersection near the Bellevue Transit Center. The pedestrian LOS at all other locations is expected to operate at LOS B or better.

The following subsections describe the pedestrian and bicycle circulation and conditions by segment during East Link operation. Impacts during construction are also addressed.

3.7.3.1 Segment A, *Preferred Interstate 90 Alternative (A1)*

Pedestrian Circulation

With the project, during the PM peak period, the pedestrian activity at the Rainier Station would be split evenly by year 2030 between people boarding and alighting (exiting) light rail and would be a little less than half of the total person trips at this station. Most of these trips would likely be destined for the surrounding residential neighborhoods, which constitute close to 70 percent of the surrounding land uses, during the PM peak period. Some trips might also be destined for the surrounding commercial and retail land uses along Rainier Avenue South. Overcrowding on sidewalks or at crosswalks is not expected as a result of the activity in the station area.

Pedestrian and bicycle connectivity to the I-90 Lid Park and I-90 Trail from Rainier Station is provided by the midblock crosswalk on 23rd Avenue South. Existing pedestrian access points to the I-90 Regional Trail from South Irving Street would not be affected. Crosswalks at the Rainier Station and the I-90 ramp areas would be maintained and walking distances surrounding the station would not change from existing conditions. Adding wayfinding signage along Rainier Avenue South would help pedestrians navigate through the I-90 ramp area as there are long distances between crosswalks. Nearby school walk routes along local and collector streets would not likely be affected because bus routes serving the Rainier Station would not use these residential local and collector streets.

At the Mercer Island Station, the PM peak-period activity would be split evenly between people boarding and alighting light rail, indicating there would be people destined to the surrounding residential areas and people boarding from the commercial land uses at Mercer Island Town Center.

The access to the Mercer Island Station would be located along 80th Avenue SE. If the passenger drop-off/pick-up area is located along 77th Avenue SE, station access would also be provided along this street. If the passenger drop-off/pick-up area is not located along 77th Avenue SE, then it would remain in the Mercer Island Park-and-Ride lot. An additional station access is being evaluated that would provide a pedestrian bridge extending over eastbound I-90, improving station access to and from the Mercer Island Town Center. About 25 percent of the riders at the station would be expected to use this bridge during the 3-hour peak period. Because *Preferred Alternative A1* is located on I-90, walking distances, sidewalks, and crosswalks on the arterial streets are expected to remain similar to no-build conditions. Overcrowding on sidewalks is not expected near the Mercer Island Station.

School walk routes are not present within walking distance of the Mercer Island Station.

Bicycle Circulation

The proposed bicycle facilities at the Segment A stations are shown in Table 7-6 in Section 7 of the *Transportation Technical Report* (Appendix H1).

The future bicycle circulation on arterial streets surrounding the Rainier and Mercer Island stations would remain similar to existing conditions with and without the project.

With East Link, new access points to the I-90 Trail at the 23rd Avenue South entrance to Rainier Station would be created, increasing the transferability between transit and nonmotorized modes at this location and likely resulting in increased recreational or commuter bicycle activity surrounding the station.

On Mercer Island, locally designated bicycle routes are present on N Mercer Way, 77th Avenue SE, and 80th Avenue SE. Bicycle circulation surrounding the Mercer Island Station would be similar to existing and no-build conditions.

There is no expected change in bicycle circulation along I-90 with the East Link Project, although an increased number of bicycle commuters transferring to and from light rail can be expected because both stations are also conveniently located close to the I-90 Multiuse Regional Trail. Bicycle connection to the I-90 Regional Trail from the Rainier Station would be located at the 23rd Avenue South station entrance,

where bicyclists can access the I-90 Lid Park and follow the I-90 Multiuse Regional Trail to the Mt. Baker bicycle and pedestrian tunnel.

3.7.3.2 Segment B

Pedestrian Circulation

Preferred 112th SE Modified Alternative (B2M)

With light rail, most trips at the South Bellevue Station with *Preferred Alternative B2M* would consist of people making transfers among different motorized modes (i.e., automobile or bus); therefore, most pedestrian activity at the South Bellevue Station would occur within the station and park-and-ride lot areas. Much of the land use surrounding the station is a combination of residential and recreational uses. Generally, the pedestrian circulation between the South Bellevue Station and the surrounding neighborhoods is disconnected because of the uphill terrain west of the station. Pedestrian circulation and safety surrounding the South Bellevue Station would improve compared with existing conditions with City of Bellevue's planned sidewalk improvements on 108th and 113th Avenues SE. In addition, the East Link project would not preclude any future improvements planned along Bellevue Way SE.

With *Preferred Alternative B2M*, connecting to either *Preferred Alternative C9T* or *C11A*, a pedestrian and bicycle access to Lincoln Plaza on the east side of 112th Avenue SE would be closed. Alternative access would be available within 300 feet of the existing driveway on SE 6th Street. An option with *Preferred Alternative B2M* connecting to *Preferred Alternative C9T* would close the east approach at SE 15th Street to the Bellefield Office Park. This closure would recirculate pedestrians entering or exiting the office park to the intersection of 114th Avenue SE and SE 8th Street.

Most of the estimated PM peak-period person trips at the SE 8th Station with *Preferred Alternative B2M* connecting to *Preferred Alternative C9T* would consist of pedestrians accessing the station from the surrounding office parks or the South Bellevue neighborhoods. Similar to the other stations in South Bellevue, the SE 8th Station presents longer walking distances because the average block length surrounding this station is longer than other segments. Pedestrian circulation and safety surrounding the SE 8th Station would improve compared with existing conditions with planned sidewalk improvements on SE 8th Street. Access to the at-grade SE 8th Station would be improved with a new crosswalk on the north leg of SE 8th Street.

Overcrowding on sidewalks near the South Bellevue and SE 8th Stations is not expected with *Preferred Alternative B2M*. Crosswalks would be maintained at signalized intersections; therefore, new midblock pedestrian crossings would not be needed within Segment B.

Road widening at intersections related to the at-grade median profile of the *Preferred Alternative B2M* connecting to *Preferred Alternative C11A* would cause increases in walking distances and wait times at crosswalks along 112th Avenue SE.

Other Segment B Alternatives

For Alternatives B2A, B2E, B3, and B3 – 114th Extension Design Option, pedestrian access and circulation at the South Bellevue Station would be similar to conditions under *Preferred Alternative B2M*. The at-grade South Bellevue Station in Alternative B1 would require an increase in the crossing times for pedestrians to walk safely across Bellevue Way at the South Bellevue Station (and throughout the segment).

With Alternative B7, pedestrian facilities would not be affected because most of this alternative is outside the roadway right-of-way. At the 118th Station with Alternative B7, most transit users would consist of riders transferring between light rail and other motorized modes, so most of the pedestrian circulation would occur within the station area. The proximity of I-405 and lack of residential land use immediately surrounding the station do not encourage walk routes. Therefore, substantial pedestrian activity beyond the immediate station area is not expected except to the commercial land uses along SE 8th Street. Pedestrian circulation and safety surrounding the 118th SE Station would improve with planned sidewalk improvements on 114th and 118th Avenues SE at locations immediately surrounding the stations, although crosswalks are not presently provided at the station site, limiting pedestrian mobility.

The existing crosswalk locations would not change with any of the Segment B alternatives except for the new crosswalk on the north leg of 112th Avenue SE and SE 8th Street to improve pedestrian access to the SE 8th Station.

East Link is not expected to affect the Enatai Elementary School walk route.

Bicycle Circulation

Bicycle circulation within Segment B is likely to improve in the no-build condition (compared to existing conditions) with planned improvements along 108th Avenue SE, Bellevue Way, 112th Avenue SE, SE 8th Street, 114th Avenue SE, and the former BNSF Railway. The City of Bellevue 2009 *Pedestrian and Bicycle Transportation Plan Report* identifies future connections between the I-90 Trail and other existing

regional and local trails that might increase the number of trail users (City of Bellevue, 2009).

The proposed BNSF Railway Trail, a major multiuse trail, would follow the existing BNSF Railway corridor located along the easternmost boundary of Segment B, proceed through Segments C and D, and terminate in Segment E where it would connect with the East Lake Sammamish Trail. Sound Transit is currently coordinating with the Port of Seattle and King County to cooperatively plan the future trail, possibly including passenger rail and light rail in the same right-of-way while maintaining the ability to provide future freight use.

In general, bicycle circulation with the project would remain similar to the no-build conditions. Bicycle storage and wayfinding at Segment B stations would be provided. Refer to Table 7-9 in Section 7 of the *Transportation Technical Report* (Appendix H1) for the proposed bicycle facilities at the Segment B stations.

Preferred 112th SE Modified Alternative (B2M)
With *Preferred Alternative B2M*, the South Bellevue station would be located near the Mercer Slough where bicyclists could connect to the I-90 Trail and the 118th Avenue SE Regional Multiuse Trail. As a result, an increase in bicycle activity on these trails would likely occur.

Impacts on trails in Segment B would include acquiring right-of-way along 112th Avenue SE for the *Preferred Alternative B2M*. This alternative would require using narrow portions of the Mercer Slough Park's western boundary, requiring a portion of the Heritage Trail that is within the Mercer Slough to be relocated. Impacts on the I-90 Trail at the I-405 interchange are not expected with the *Preferred Alternative B2M*.

A pedestrian and bicycle access to Lincoln Plaza on the east side of 112th Avenue SE would be closed with *Preferred Alternative B2M*. Alternative access would be available within 300 feet on SE 6th Street. An option with *Preferred Alternative B2M* connecting to *Preferred Alternative C9T* would close the east approach at SE 15th Street to the Bellefield Office Park. This closure would recirculate bicyclists entering or exiting the Bellefield Office Park to the intersection of 114th Avenue SE and SE 8th Street. This would affect bicycle mobility between the Bellefield Office Park and areas to the south.

Other Segment B Alternatives
Similar to *Preferred Alternative B2M*, impacts to trails along Bellevue Way and near the South Bellevue Station would occur under Alternatives B1, B2A, B2E, B3, and B3 – 114th Design Option. Alternatives B2A and B2E would close the pedestrian and bicycle access to the Lincoln Plaza on the east side of 112th Avenue SE, similar to *Preferred Alternative B2M.*

Under Alternative B7, existing bicycle access to the east side of the Mercer Slough Nature Park along 118th Avenue SE would be maintained and would connect to the Mercer Slough Trails and I-90 Regional Trail.

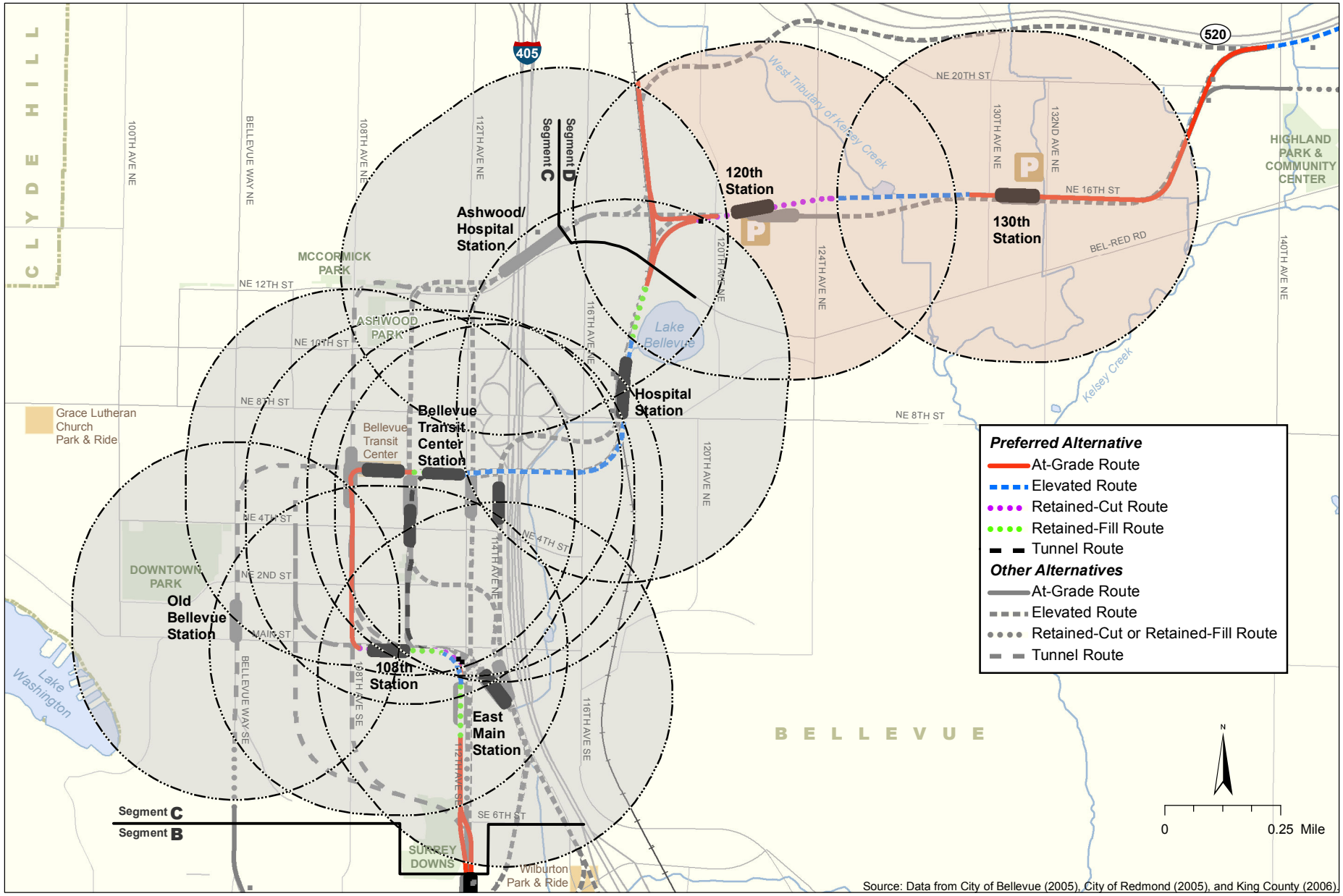
3.7.3.3 Segment C

The East Link Project would serve Downtown Bellevue, one of the major business and employment centers in the Puget Sound region. Compared to other segments, pedestrian activity is much higher in Downtown Bellevue. To provide adequate sidewalk circulation, future development projects or planned city capital improvements are expected to fill in the identified missing sidewalk segments within the downtown area, although nearly all the streets in Downtown Bellevue already provide continuous sidewalks on both sides of the street. In general, pedestrian circulation conditions under any Segment C alternative would not differ substantially except for the changes described in the following subsections. Street widening would generally be minimal due to right-of-way constraints; therefore, pedestrian crossing distances are generally similar to no-build conditions.

As shown in Exhibit 3-27, among the proposed stations in Segment C, the light rail stations located closer to the existing Bellevue Transit Center would be expected to attract more riders because those stations would better serve Downtown Bellevue as a result of their proximity to denser employment and residential areas. The farther east the stations are located from Downtown Bellevue, the less pedestrian activity would be expected. Because the Ashwood/Hospital Station would be within walking distance from both Overlake Hospital and Downtown Bellevue, it would have more pedestrian activity in connection with downtown than the Hospital Station; however, the Hospital Station would have the potential for higher pedestrian activity in connection with the planned redevelopment of the Wilburton area. These trends are discussed in Section 3.4.3.6, Light Rail Ridership.

Pedestrian Circulation

Preferred 108th NE At-Grade Alternative (C11A)
Preferred Alternative C11A would not impact pedestrian facilities. The midblock crossing on 108th Avenue NE between NE 2nd and 4th Streets would be maintained and signalized to provide a safe crossing. At the 112th Avenue SE and SE 6th Street intersection, pedestrians and bicyclists would cross the at-grade light rail tracks on the west side of 112th Avenue SE.



Source: Data from City of Bellevue (2005), City of Redmond (2005), and King County (2006).

Pedestrian Walking Area Segment C (0.35 mile)

Pedestrian Walking Area Segment D (0.35 mile)

Traction Power Substation

Proposed Station

New and/or Expanded Park-and-Ride Lot

NOTE: To account for a street grid system, a radius of 0.35 mile was used in place of a radius of 0.50 mile.

Exhibit 3-27 **Pedestrian Walking Areas by Stations in Downtown Bellevue and Bel-Red Area Segments C and D**
East Link Project

Similarly, pedestrians would cross the at-grade light rail tracks on the southeast corner of Main Street and 108th Avenue. Features such as fencing, signing, pavement markings, warning bells, and traffic signals would be provided at these locations for pedestrian safety.

Although this alternative is an at-grade profile, street widening would be minimal because of right-of-way constraints; therefore, relatively small changes to pedestrian crossing distances are expected. However, some increase in crosswalk distances would occur at Main Street and 108th Avenue NE and along NE 6th Street to accommodate the light rail track alignment.

The 108th Station location with *Preferred Alternative C11A* would not affect pedestrian facilities because it is located off-street, south of Main Street. This station location would be convenient to a higher percentage of the Downtown Bellevue residents and employment centers compared to the East Main Station location.

The Bellevue Transit Center Station area would have the highest number of PM peak-period pedestrian trips compared to other East Link stations, as close to 3,800 pedestrians and bicyclists would use this station in 2030. This would be about 60 percent of the estimated total PM peak-period person trips at this station. Most pedestrian activity at this station would be people boarding light rail in the PM peak period, mainly people walking from the surrounding office and commercial land uses. This degree of activity would be consistent with an urban downtown environment that is expected to become denser in the future.

Major pedestrian crossings and sidewalks near the Bellevue Transit Center Station area for *Preferred Alternative C11A* would provide sufficient pedestrian space, although sidewalks and intersections connecting to entrances to the Bellevue Transit Center Station on 108th and 110th Avenues NE would experience some pedestrian crowding during peak periods. In the no-build condition, the sidewalks near the Bellevue Transit Center would degrade from existing conditions to LOS C but would continue to operate well as pedestrian activity is expected to continue moving freely. With East Link, the pedestrian LOS near the Bellevue Transit Center would continue to operate no worse than LOS C. Any crowding would generally be contained within the station near the platforms. The location of the Bellevue Transit Center Station with *Preferred Alternative C11A* would be the most convenient for bus connections and would serve the majority of downtown Bellevue residents and employment centers.

Preferred Alternative C11A also would serve the Hospital Station located north of NE 8th Street, east of 116th Avenue NE. The location of the Hospital Station is near the Overlake Hospital area and other retail and commercial land uses. Pedestrian trips are estimated to comprise about 60 percent of the future PM peak-period person trips and primarily include people leaving Overlake Hospital and the surrounding office, retail, and commercial areas and boarding light rail. This station's location would also serve the Wilburton neighborhood, where future nonmotorized improvements are planned by others near the station to improve the connectivity for pedestrians and bicyclists navigating along NE 8th Street (sidewalk improvements) and along the former BNSF Railway corridor (BNSF Railway regional multiuse trail).

With connections to Alternatives B3, B7, or B3 – 114th Design Option, *Preferred Alternative C11A* would serve the East Main Station. Pedestrian trips are estimated to comprise close to 70 percent of the future PM peak-period person trips, with most of these being people boarding light rail. These pedestrians are expected to originate from the adjacent residential and commercial areas. Topography constraints to the west into central downtown Bellevue may limit pedestrian activity.

Preferred 110th NE Tunnel Alternative (C9T)

Because *Preferred Alternative C9T* profiles would be mostly elevated and tunnel north of Main Street, there would be minimal impacts on pedestrian circulation. Impacts on crosswalks are not expected with the *Preferred Alternative C9T* except along NE 6th Street, which would be widened to accommodate the tunnel portal and, therefore, would require slightly longer distances for pedestrians to cross. At the at-grade light rail crossing at the SE 6th Street and 112th Avenue SE intersection, pedestrians and bicyclists would cross over the tracks on both sides of 112th Avenue SE. Features such as fencing, signing, pavement markings, warning bells, and traffic signals would be provided for pedestrian safety.

Major pedestrian crossings and sidewalks near the Bellevue Transit Center Station area for *Preferred Alternative C9T* provide sufficient pedestrian space, although sidewalks and intersections connecting to entrances to the Bellevue Transit Center Station along 110th Avenue NE would experience some pedestrian crowding during peak periods. Pedestrian access between Bellevue Transit Center Station and the Bellevue Transit Center would be through the northern station entrance on the north side of NE 4th Street with a crossing at NE 6th Street and 110th Avenue NE to access the Bellevue Transit Center bus platform. The design option to include an additional

northern entrance of the Bellevue Transit Center Station to the west side of 110th Avenue NE would provide a more direct bus transfer connection between the Bellevue Transit Center Station and the Bellevue Transit Center bus platforms.

Preferred Alternative C9T would also serve the Hospital Station. Pedestrian activity in and around this station would be similar to *Preferred Alternative C11A*.

With the option to connect to Alternative B3, B3 – 114th Design Option, or B7, *Preferred Alternative C9T* would serve the East Main Station, and nonmotorized activity would be similar to *Preferred Alternative C11A*. Nonmotorized activity for the East Main Street Station design option under *Preferred Alternative C9T* would be similar to a connection with Alternative B3, B3 - 114th Extension Design Option, or B7 that have an East Main Station.

Other Segment C Alternatives

The Bellevue Way Tunnel Alternative (C1T) is the only alternative that would include the underground Old Bellevue Station. Much of the pedestrian activity at the Old Bellevue Station would be a result of neighboring commercial and residential land uses surrounding the station. The location of this station is expected to capture a portion of pedestrian activity on the fringe of Downtown Bellevue that would otherwise require farther walking distance to the Bellevue Transit Center.

Alternatives C2T, C3T, C4A, C7E, C8E, and C9A would serve the East Main Station, depending on the connections from Segment B (Alternative B3, B3 – 114th Design Option, or B7). Pedestrian activity at this station would be similar to that of *Preferred Alternative C9T* (with connections to Alternatives B3, B3 – 114th Design Option, and B7). Alternative C14E would not include an East Main Station.

Pedestrian circulation at the Bellevue Transit Center Station for Alternatives C1T, C2T, and C3T would be similar to that of the *Preferred Alternative C9T,* although Alternatives C1T and C2T would have a more direct connection to the Bellevue Transit Center. At-grade Alternatives C4A and C9A would have slightly different pedestrian circulation and access at the Bellevue Transit Center Station than *Preferred Alternative C11A*. While both of these alternatives are within one block of the Bellevue Transit Center, the station is not directly integrated with the Bellevue Transit Center; therefore, connections with other transit services are not as convenient as with *Preferred Alternative C11A*. Additionally, Alternative C4A includes two stations, one on 108th Avenue NE and one on 110th Avenue NE, as track is only provided in one direction along each of these streets. Pedestrian access between Bellevue Transit Center Station and the Bellevue Transit Center for Alternative C9A would be through the western station entrance located at NE 6th Street and 110th Avenue NE, with one crossing at NE 6th Street and 110th Avenue NE to connect the station with the bus platforms. With any of these alternatives, major pedestrian crossings and sidewalks near the Bellevue Transit Center Station would experience some pedestrian crowding during peak periods. Alternative C8E would have similar pedestrian circulation at the Bellevue Transit Center Station under *Preferred Alternative C9T.* Although it is an elevated station and Alternative C9T is a tunnel station, both would have similar pedestrian effects.

Alternatives C7E and C14E are both elevated profiles outside the downtown core; therefore, minimal impacts to the pedestrian circulation and connectivity in downtown Bellevue are expected. To provide a connection between the Bellevue Transit Center and the Bellevue Transit Center Station (along 112th Avenue NE [C7E] or 114th Avenue NE [C14E]) an elevated and covered moving walkway would be constructed as part of these two alternatives. With the Bellevue Transit Center station location further east than other Segment C alternatives, the pedestrian connections would not be as convenient and the distances to many locations in Downtown Bellevue would be greater with these two alternatives.

Most pedestrian trips during the PM peak-period at the Ashwood/Hospital Station would consist of people leaving Overlake Hospital and the surrounding office and commercial areas. Pedestrian access to this station would be provided on both sides of I-405. The Hospital Station would have a similar amount of pedestrian activity as the Ashwood/Hospital Station because they both capture the land uses along 116th Avenue NE. Alternatives C3T, C4A, C7E, and C8E would serve the Ashwood/Hospital Station, while Alternatives C1T, C2T, C9A, and C14E would serve the Hospital Station. Pedestrian activity at the Hospital Station for Alternatives C1T, C2T, C9A, and C14E would be similar to *Preferred Alternatives C11A* and *C9T*.

Similar to *Preferred Alternative C11A*, most of Alternatives C4A, C8E, and C9A would be within the roadway right-of-way in Downtown Bellevue. Even so, these alternatives would generally not increase the pedestrian crossing distances at intersections because roadway widening is constrained by the available right-of-way. Crosswalk locations along 108th and 110th Avenues NE with the Couplet Alternative (C4A) would remain but would require signal phasing

adjustments. Similar to *Preferred Alternative C9T*, crosswalk impacts are not expected with the tunnel alternatives (C1T, C2T, and C3T) because these alternatives would be mainly underground in Downtown Bellevue. Alternatives C1T, C2T, and C9A would become elevated on NE 6th Street, east of 110th Avenue NE, and similar to *Preferred Alternatives C11A* and *C9T*, some roadway widening is proposed. This would lengthen the pedestrian crossing distances on this street. Alternatives C7E and C14E would not impact pedestrian crossings because most of the alternative would be outside the roadway right-of-way.

The school walk route along 108th Avenue SE is not expected to be affected by any of the Segment C alternatives because it is located south of Main Street.

Bicycle Circulation

With East Link, bicycle circulation through Downtown Bellevue would remain similar to existing conditions and the No Build Alternative. Currently, nearly all arterial streets in the downtown area are designated bicycle routes and the City of Bellevue plans to provide bicycle improvements along 112th Avenue NE north of NE 12th Street and along 108th Avenue NE in Downtown Bellevue in the future.

Bicycle storage and wayfinding at Segment C stations would be provided. Refer to Table 7-11 in Section 7 of the *Transportation Technical Report* (Appendix H1) for the proposed bicycle facilities at the Segment C stations.

Preferred 108th NE At-Grade Alternative (C11A)

Preferred Alternative C11A would not likely affect bicycle facilities as a wide vehicle lane in both directions would be provided on 108th Avenue NE to accommodate bicyclists. Additionally, the location of the 108th, Bellevue Transit Center, and Hospital stations would not likely affect bicycle facilities. At the at-grade crossings, the light rail tracks would be designed so that bicyclists along designated bicycle routes cross the light rail tracks at a perpendicular angle (to the extent possible) for bicyclist safety.

With a connection to Alternative B3, B7, or B3 - 114th Design Option, *Preferred Alternative C11A* would not affect bicycle facilities along 112th Avenue SE.

Preferred 110th NE Tunnel Alternative (C9T)

Preferred Alternative C9T is mostly comprised of elevated and tunnel profiles north of Main Street and an at-grade profile south of Main Street, thereby resulting in minimal bicycle circulation impacts. At the at-grade crossing at SE 6th Street and 112th Avenue SE, bicycle routes would be designed so that bicyclists cross the light rail tracks at a perpendicular angle for bicyclist safety.

With a connection to Alternatives B3, B7, or B3 - 114th Design Option, *Preferred Alternative C9T* would not affect bicycle facilities along 112th Avenue SE.

Other Segment C Alternatives

The other Segment C alternatives with elevated profiles (Alternatives C7E, C8E, and C14E) and tunnel profiles (Alternatives C1T, C2T, and C3T) would have minimal impacts on downtown bicycle circulation. Crosswalk access for bicyclists would operate under the same conditions as pedestrian access previously described.

Alternative C4A would change circulation patterns for bicyclists traveling on 108th Avenue NE and 110th Avenue NE by converting these streets to a one-way couplet. This could create some recirculation of bicycle activity because cyclists would not have the ability for two-way travel on these streets. The side-track alignment Alternative C4A creates the potential for bicyclists to turn across the light rail tracks.

Alternative C9A would not affect planned bicycle facilities, similar to *Preferred Alternative C11A*.

With any of the Segment C alternatives that include a connection to Alternative B3, B7, or B3 - 114th Design Option, similar effects on bicycle facilities along 112th Avenue SE would occur as with the *Preferred Alternative C11A*.

3.7.3.4 Segment D

In the Bel-Red area, the pedestrian and bicycle facilities planned as part of the City of Bellevue's Bel-Red Subarea Plan would support the East Link project. Implementing the Bel-Red Subarea Plan would improve the pedestrian and bicycle connections in this area, as the planned high-density, transit-oriented land uses would be expected to substantially increase the pedestrian and bicycle activity.

Pedestrian Circulation

Preferred NE 16th At-Grade Alternative (D2A)

In the Bel-Red area, the 120th and 130th stations would support the pedestrian facilities planned as part of the transportation and land use projects in the City of Bellevue's Bel-Red Subarea Plan. Implementing the Bel-Red Subarea Plan would improve the pedestrian connections near the station areas.

More than half the transit users at the 120th Station during the PM peak period would be walk and bicycle trips that would likely originate from the surrounding planned commercial, retail, and office land uses.

The D2A - 120th At-Grade Design Option would provide a slightly more convenient pedestrian and bicycle access to the street system because it is at-grade compared with the *Preferred Alternative D2A* retained-cut 120th Station.

Pedestrian activity would be higher at the 130th Station, and most of the trips would consist of pedestrians or bicyclists, with most boarding light rail during the PM peak period. Many of the light rail boardings would likely originate from nearby commercial, retail, and office parks planned as part of the redevelopment strategy in the Bel-Red Subarea Plan.

The 120th Station and 130th Station are within moderately close walking distance of each other. This is illustrated in Exhibit 3-27. Pedestrians would access the station that is closest to their walk route. The western edge of the 120th Station walking area is constrained by terrain and presents a barrier to effectively connect with this station. These factors would likely be the cause of the lower level of pedestrian activity at the 120th Station.

At the Overlake Village Station, the future PM peak volumes of pedestrians would primarily consist of riders transferring between light rail and other modes. Many of the pedestrian trips would originate from nearby office park, commercial, and mixed land uses. For improved bicycle and pedestrian connections between the Overlake Village Station (associated with *Preferred Alternative D2A*) and the commercial properties north of SR 520, the City of Redmond could build a new nonmotorized, multiuse bridge over SR 520.

At the Overlake Transit Center Station, about two-thirds of the transit riders would transfer among modes and the remaining third would be pedestrians and bicyclists. Most of the pedestrian activity at this station in the PM peak period is expected to consist of commuters coming from large employment centers near the station and boarding light rail. To help facilitate pedestrian movements across 156th Avenue NE, the project would provide another crosswalk at the intersection of NE 38th Street and 156th Avenue NE. For improved bicycle and pedestrian connections between the Overlake Transit Center Station and the properties west of SR 520, a new nonmotorized, multiuse bridge over SR 520 could be constructed by others.

Currently, there are limited sidewalks and crosswalks on NE 16th Street between 132nd Street and 136th Place NE and on 136th Place NE between NE 16th and NE 20th Streets. The *Preferred Alternative D2A* would provide sidewalks on both streets, and crosswalks would be located at the NE 16th Street and 132nd Avenue NE and at the NE 16th Street and 136th Place NE intersections. Increases in the pedestrian crossing distance would occur along NE 16th Street and 136th Place NE. Additionally, planned improvements included in the Bel-Red Subarea Plan would provide sidewalks and crosswalks near both 120th and 130th stations with the NE 15th/16th Street extension project being designed by the City of Bellevue.

Sidewalks at the intersections nearest to all station entrances for *Preferred Alternative D2A* would operate at LOS A in the no-build and build conditions, indicating that pedestrian flows to and from the station would occur without crowding (refer to the *Transportation Technical Report* [Appendix H1] for a more detailed discussion of pedestrian LOS).

There would be no impacts on any school walk routes with the *Preferred Alternative D2A*.

Other Segment D Alternatives

Similar to the *Preferred Alternative D2A*, the pedestrian facilities planned as part of the City of Bellevue's Bel-Red Subarea Plan would support and connect to the 120th and 130th stations for Alternatives D2E and D3. Because neither the 120th Station nor 130th Station is considered with Alternative D5, there would be no nonmotorized benefits to East Link Project with the Bel-Red Subarea Plan.

The PM peak-period pedestrian trips generated at the 120th Station for Alternatives D2E and D3 would be similar to the trips generated at the 120th Station with the *Preferred Alternative D2A*. The 130th Station pedestrian trips for Alternatives D2E and D3 would be similar to the 130th Station trips generated with *Preferred Alternative D2A*.

Pedestrian circulation to and from the private properties west of 152nd Avenue NE, near the Overlake Village Station, would be relocated to 151st Avenue NE with Alternatives D2A – NE 24th Design Option, D2E, and D5 as these alternatives prohibit pedestrians from crossing the tracks. This would create some out-of-direction travel for pedestrians. Alternative D3 would provide an additional crosswalk north of the Overlake Village Station at NE 26th Street to accommodate pedestrian movements to and from the station platform.

Pedestrian circulation at the Overlake Transit Center for Alternatives D2E, D3, and D5 is similar to the conditions for *Preferred Alternative D2A*.

Similar to *Preferred Alternative D2A*, sidewalks would be provided on NE 16th Street between 132nd Street

and 136th Place NE and on 136th Place NE between NE 16th and NE 20th Streets for Alternatives D2E and D3. Increases in pedestrian crossing distances would occur at the signalized intersections along NE 16th Street and 136th Place NE (similar to *Preferred Alternative D2A*) and at the NE 24th Street and 152nd Avenue NE intersection with Alternatives D2E and D3. In addition, with Alternative D3, increases in pedestrian crossing distances would occur along NE 20th Street between 136th Place NE and 152nd Avenue NE.

Similar to *Preferred Alternative D2A*, sidewalks at the intersections nearest to all the Alternative D2E, D3, and D5, station entrances would operate at LOS A in the no-build and build conditions (see Table F-4 in Appendix F of the *Transportation Technical Report* [Appendix H1]).

There would be no impacts on any school walk routes with Alternatives D2E, D3, and D5.

Bicycle Circulation

The stations in Segment D would have minimal to no impacts on existing bicycle circulation. All arterial streets are part of a designated bicycle route network; however, bicycle circulation is currently limited because designated bicycle lanes are not present on arterial streets. In the future, substantial bicycle facility improvements are included in the City of Bellevue's Bel-Red Subarea Plan. These improvements would support and connect the 120th and 130th stations.

Bicycle storage and wayfinding at Segment D stations would be provided. The proposed bicycle facilities at the Segment D stations are shown in Table 7-13 in Section 7 of the *Transportation Technical Report* (Appendix H1).

Preferred NE 16th At-Grade Alternative (D2A)

Similar to the pedestrian circulation, bicycle facilities planned as part of the City of Bellevue's Bel-Red Subarea Plan would support and connect to the 120th and 130th stations. Both of these stations would be close to the SR 520 Multiuse Regional Trail; however, trail access would be limited to public park areas, and direct access from arterial streets would be constrained by terrain and private properties.

Bicycle circulation conditions near the Overlake Village Station and Overlake Transit Center Station would be similar to existing conditions. The City of Redmond could construct a new nonmotorized, multiuse bridge over SR 520 to improve nonmotorized connections between the Overlake Village Station (associated with *Preferred Alternative D2A*) and the commercial properties north of SR 520. Additionally, improved bicycle and pedestrian connections between the Overlake Transit Center Station and the properties west of SR 520, could occur if a new nonmotorized, multiuse bridge over SR 520 were built by others.

Even though the Overlake Village and Overlake Transit Center Stations are located close to the SR 520 Regional Multiuse Trail, access between the trail and these stations would be indirect as trail users would need to cross SR 520 unless the nonmotorized bridges proposed by others were to be built.

Other Segment D Alternatives

All other Segment D alternatives except Alternative D5 (D2A – 120th and 24th Design Options, D2E, and D3) would have bicycle impacts at the 120th and 130th stations similar to those of *Preferred Alternative D2A*.

Similar to the pedestrian circulation, because neither 120th Station nor 130th Station is considered with Alternative D5, there would be no nonmotorized benefits with this alternative in conjunction with the Bel-Red Subarea Plan.

All other Segment D alternatives would have bicycle impacts at the Overlake Village and Overlake Transit Center similar to those of the *Preferred Alternative D2A*.

3.7.3.5 Segment E

Pedestrian and bicycle circulation and connectivity within Segment E would be improved with development projects or planned city capital improvements.

Pedestrian Circulation

Preferred Marymoor Alternative (E2)

Preferred Alternative Marymoor (E2) would be the only Segment E alternative that would serve the at-grade Downtown Redmond Station. This station would have the highest PM peak-period bicycle and pedestrian trips compared with the other Segment E stations as it surrounds major commercial and retail areas. This is indicated in Table 3-32. If light rail riders were to park at the Redmond Transit Center, then they would need to cross SR 202 to access this station. Most light rail riders at this station would likely make bus transfers or walk to and from the surrounding commercial and retail areas.

Preferred Alternative E2 would also serve the SE Redmond Station. The pedestrian activity at the SE Redmond Station would primarily be within the facility and occur at the park-and-ride area as a result of many people transferring from light rail to autos. This travel pattern would be expected because the surrounding land uses include industrial and commercial buildings. Pedestrian circulation near this station would also be limited by wide, multilane arterials with heavy traffic volumes and by the

proximity to SR 520, which is a physical barrier to travel to and from Downtown Redmond.

The future BNSF Railway regional multiuse trail would provide pedestrian access to and from both of these stations. With *Preferred Alternative E2*, crossings at 161st, 164th, 166th, and 170th Avenues NE and NE Leary Way would be maintained. Gates would be installed at at-grade intersections and at driveways along the BNSF Railway corridor through Downtown Redmond. Pedestrian crosswalks at these locations would be maintained.

Other Segment E Alternatives

The Redmond Way Alternative (E1), E2 - Redmond Transit Center Design Option, and Leary Way Alternative (E4) would serve the at-grade Redmond Town Center Station. Most light rail pedestrian activity at the Redmond Town Center Station would be similar to the Downtown Redmond Station with *Preferred Alternative E2*. Close to one-third of the riders at the Redmond Town Center Station would likely walk to and from the surrounding commercial and retail areas.

With the Alternative E2 – Redmond Transit Center Design Option, while 35 percent of the future PM peak-period person trips at the Redmond Transit Center Station would be pedestrians or bicyclists there are less than 150 walk and bike trips forecasted at this station. This is likely because of the nearby Redmond Town Center Station. The highest pedestrian activity at the Redmond Transit Center Station would occur within the station at the park-and-ride lot, as many riders would be transferring between modes.

Pedestrian circulation and connectivity at the SE Redmond Station for Alternatives E1 and E4 would be similar to those discussed for *Preferred Alternative E2*.

In terms of pedestrian crosswalk conditions, minimal increases in walking distances are expected only with the Alternative E2 - Redmond Transit Center Design Option, along 161st Avenue NE, from Cleveland Street to NE 85th Street.

Similar to *Preferred Alternative E2*, Alternatives E1 and E4 would use the former BNSF Railway right-of-way. Both of these alternatives would have street crossings at 164th, 166th, and 170th Avenues NE. Alternative E1 would have additional street crossings at 161st Avenue NE and NE Leary Way, similar to *Preferred Alternative E2*. Alternative E4 would have additional crossings at Bear Creek Parkway and NE 76th Street. Pedestrian crosswalks at these locations would be maintained. To provide safe vehicle and pedestrian movements across the tracks, gates would be installed at at-grade intersections and driveways along the corridor through Downtown Redmond. At the Redmond Transit Center, pedestrian access to the station platform would occur at the crosswalks at NE 80th and 83rd streets.

The recommended school walk route for Redmond Elementary School consists of collector and local streets in residential areas of Segment E, and impacts on the walk route are not expected as none of the East Link alternatives would cross these routes.

Bicycle Circulation

With the East Link Project, circulation for bicyclists in Segment E would likely not differ greatly from circulation under the No Build Alternative. Future bicycle improvement projects would enhance bicycle circulation by improving access to Marymoor Park and the Sammamish Regional Multiuse Trail system. These bicycle facilities are close to the proposed stations; however, direct access to them would be hindered by SR 520, especially from the Redmond Town Center.

Bicycle storage and wayfinding would be provided at Segment E stations. The proposed bicycle facilities at the Segment E stations are shown in Table 7-15 in Section 7 of the *Transportation Technical Report* (Appendix H1).

Preferred Marymoor Alternative (E2)

The *Preferred Alternative E2* would not preclude the potential development of a multiuse trail located along the former BNSF Railway tracks parallel to light rail tracks. Developing a multiuse trail in this corridor would create a pedestrian and bicycle connection between the Bear Creek Trail and Lake Sammamish.. The trail would be directly accessible from the SE Redmond Station and Downtown Redmond Station and allow nonmotorized commuters to transfer to light rail.

Other Segment E Alternatives

The bicycle lanes along 161st Avenue NE would be maintained with Alternative E2 – Redmond Transit Center Design Option to ensure nonmotorized connectivity between the Redmond Transit Center Station and the nearby Sammamish Regional Multiuse Trail and proposed multiuse trail located along the former BNSF Railway corridor.

Similar to the *Preferred Alternative E2*, Alternatives E2 – Redmond Transit Center Design Option and E1 and E4 would not preclude the potential multiuse trail located along the former BNSF Railway corridor. The trail would be directly accessible from SE Redmond Station and Redmond Town Center Station and would allow nonmotorized commuters to transfer to light rail.

3.7.3.6 Construction Impacts

Potential construction impacts for pedestrian and bicycle circulation could occur along streets with partial or full closures because these types of construction areas may restrict or provide detour routes for pedestrians and/or bicyclists. Regional multiuse trails might experience some temporary construction impacts due to their proximity to the alternatives. Section 3.6 discusses and Table 3-31 lists the streets with expected closures during construction. Sound Transit would minimize disruptions to the sidewalk or bicycle network and provide detours as practical during construction.

In Bellevue, a number of bicycle facilities are planned as part of the City's future transportation improvement projects within the study area (Exhibits 7-9 through 7-11 in Appendix H1 [*Transportation Technical Report*]). If these projects are completed before light rail construction, then the bicycle lanes and routes that are located within or adjacent to light rail construction areas could be temporarily affected during construction and would be closed or detours would be provided, depending on the type of construction activity. In Segments B, C, D, and E, the potential multiuse trail along the former BNSF Railway corridor would be affected in some areas if constructed prior to East Link.

In Redmond, most arterials are designated as existing bicycle routes or provide bike lanes. Similar to the potential impacts on bicycle facilities in Bellevue, some bicycle facilities in Redmond would be temporarily closed or detours provided during construction.

Segment A, *Preferred Interstate 90 Alternative (A1)*

The portion of the I-90 Multiuse Regional Trail located on the I-90 bridge would not be affected by light rail construction.

Segment B

Preferred 112th SE Modified Alternative (B2M)

Near the I-90 and Bellevue Way interchange, the I-90 Trail could be temporarily affected by construction associated with any of the Segment B alternatives. During construction, temporary trail closures or detours could occur where the trail is close to the I-90 and Bellevue Way ramps, and near the western boundary of the Mercer Slough Nature Park.

During the civil construction period for *Preferred Alternative B2M*, the sidewalk on the eastern side of Bellevue Way SE and 112th Avenue SE would likely close and require detours. A portion of the Periphery Loop Trail would be closed during construction and require detours. Impacts on the trail network within the Mercer Slough Nature Park are not expected.

Other Segment B Alternatives

During the civil construction period along Bellevue Way for Alternatives B1, B2A, B2E, and B3, the sidewalk along Bellevue Way SE and 112th Avenue SE would likely close and require detours similar to *Preferred Alternative B2M*. Impacts on the Periphery Loop Trail and Mercer Slough Nature Park trail network would be similar to *Preferred Alternative B2M*.

The 118th Avenue Regional Multiuse Trail could be temporarily affected near I-90 by construction associated with Alternative B7. Also with construction of Alternative B7, short-term nonmotorized construction impacts would occur with the elevated portion of the Alternative B7 construction along 118th Avenue SE.

Segment C

Preferred 108th NE At-Grade Alternative (C11A)

With the construction of *Preferred Alternative C11A*, sidewalks along 112th Avenue SE, Main Street, 108th Avenue NE, and NE 6th Street would likely remain open on at least one side and, to the extent possible, pedestrian connections would be maintained at intersections. Pedestrian access to buildings would also be maintained.

Preferred 110th NE Tunnel Alternative (C9T)

During construction for the *Preferred Alternative C9T*, sidewalks along 112th Avenue SE, Main Street, 110th Avenue NE, and NE 6th Street would likely remain open on one side during construction. Pedestrian connections would be maintained at intersections to the extent possible. Pedestrian access to buildings would also be maintained.

Other Segment C Alternatives

Civil construction activities with Alternatives C1T, C2T, and C3T would likely close sidewalks on at least one side of the street along the construction route, although pedestrian connections would be maintained, to the extent possible, at intersections. The pedestrian connection along NE 6th Street would be maintained with Alternative C1T and C2T construction either along this route or nearby depending on the construction activity.

During the civil construction period of Alternative C4A, the sidewalk would likely be closed on one side of 108th and 110th Avenues NE and along one side of Main and NE 12th Streets between 108th and 112th Avenues NE.

Alternative C9A would have nonmotorized construction impacts similar to *Preferred Alternative C9T*.

There would be minimal impacts on pedestrians and bicyclists during construction of Alternatives C7E and C14E. The bicycle route along 114th Avenue SE between SE 6th and Main Streets would likely be rerouted along SE 6th Street and 112th Avenue SE during construction of Alternative C14E. Construction associated with Alternative C8E would likely close sidewalks on one side along the construction route of NE 2nd Street, 110th Avenue NE, and NE 12th Street.

Segment D

Civil construction impacts on the SR 520 Multiuse Regional Trail are not expected because the East Link Project does not require widening or realignment of SR 520 and does not require relocation of the trail. The SR 520 trail in Segment D is located along the north side of SR 520, and construction impacts are not foreseen because the alternatives in Segment D are located on the south side of SR 520.

The construction of a pedestrian bridge across SR 520 to the Overlake Village Station with the *Preferred Alternative D2A* and/or to the Overlake Transit Center (all Segment D alternatives) would create short-term lane closures on SR 520.

Preferred NE 16th At-Grade Alternative (D2A)

In Segment D, sidewalk, associated with the construction of the *Preferred Alternative D2A* (and both the D2A – 120th and NE 24th Design Options) would likely remain open on one side of the road along NE 16th Street between 132nd Street and 136th Place NE, and 136th Place NE and the west side of Microsoft Road.

Other Segment D Alternatives

Similar sidewalk closures along NE 16th Street between 132nd Street and 136th Place NE, 136th Place NE, and Microsoft Road would likely occur under Alternatives D2E and D3. Along the proposed NE 15th Street between 120th and 124th Avenues NE, sidewalk closures would be likely under Alternatives D2E and D3.

Sidewalks on one side of 24th Street between 148th Avenue NE and 152nd Avenue NE would likely be closed with Alternative D2A - NE 24th Design Option and Alternative D2E. Alternative D3 would likely have sidewalk closures along NE 20th Street between 136th Place NE and 152nd Avenue NE and along 152nd Avenue NE.

Alternative D5 would likely have sidewalk closures along the west side of 152nd Avenue NE and Microsoft Road.

Segment E

The elevated alternatives in Segment E would cross the Sammamish River Trail, resulting in minor short-term trail detours. Alternative E1 would cross the Bridle Crest Trail and the Bear Creek Trail. Alternative E1 would require minor realignment of the East Lake Sammamish Trail in the area along the former BNSF Railway tracks. With Alternative E2 - Redmond Transit Center Design Option, the sidewalk along 161st Avenue NE would be closed.

3.7.4 Potential Mitigation

No adverse impacts have been identified due to East Link operations and therefore no mitigation to nonmotorized facilities is proposed. As described in Section 3.7.3, Sound Transit would provide pedestrian and bicycle improvements at East Link stations. Sound Transit would work with the local agencies regarding alternatives and stations that are located within the median of roadways so that the most appropriate treatments are provided for safe and effective pedestrian crossings and access. These treatments could include painted crosswalks or signals, street lighting, warning lights or bells, or signage.

During construction, Sound Transit would minimize potential impacts on pedestrian and bicycle facilities by providing detours or clearly delineated facilities within construction areas, such as protected walkways, and notify the public as appropriate. For example, with the sidewalk closed along Bellevue Way SE during the construction of the *Preferred Alternative B2M*, methods to maintain pedestrian access could include the use of a protected walkway adjacent to the construction area or a similar provision.

Multiuse trails that may be affected by construction would generally be kept open for use, but detours would be provided when trails are closed unless they are closed for short durations or in areas where a detour option is not feasible. Public notification efforts would be conducted for temporary trail closures during construction.

3.8 Freight Mobility and Access

3.8.1 Methodology

Truck routes within the study area were identified and analyzed to compare potential impacts on freight movement from the No Build Alternative and the East Link Project. Freight movements were analyzed along I-90, on arterial and local routes, and on railways. Additional truck data and analysis are provided in Appendix H1, *Transportation Technical Report*.

3.8.2 Affected Environment

Truck mobility within the Puget Sound region is largely supported by a system of designated truck routes consisting of freeways and arterial streets that connect major freight destinations. WSDOT has adopted the Freight Goods Transportation System (FGTS), which classifies roadways according to the amount of annual tonnage transported along these roads. All interstates and state routes are designated as truck routes, and each jurisdiction locally determines its designated truck route system on arterial streets according to the FGTS classification. Within the study area, I-90 and I-405 are designated as T-1 freight routes, which indicate that over 10,000,000 gross tons of freight goods are moved every year. SR 520 is classified as a T-2 freight route, indicating between 4,000,000 and 10,000,000 gross tons of freight goods are moved yearly.

Within the East Link study area, there are key freight corridors that serve not only the Puget Sound region but also national and international markets, such as I-90 and I-405. There also are many local truck routes that facilitate the flow of deliveries to local businesses. These transportation corridors are vital to the movement of freight and goods among major transportation hubs such as the Port of Seattle, the Seattle-Tacoma International Airport (Sea-Tac Airport), and other business and consumer destinations. Within the East Link study area, freight goods and services are only transported on roadways, although some of the freight transported on I-90 and the other highways (I-405 and SR 520) in the study area is associated with marine facilities, such as the ports of Tacoma and Seattle.

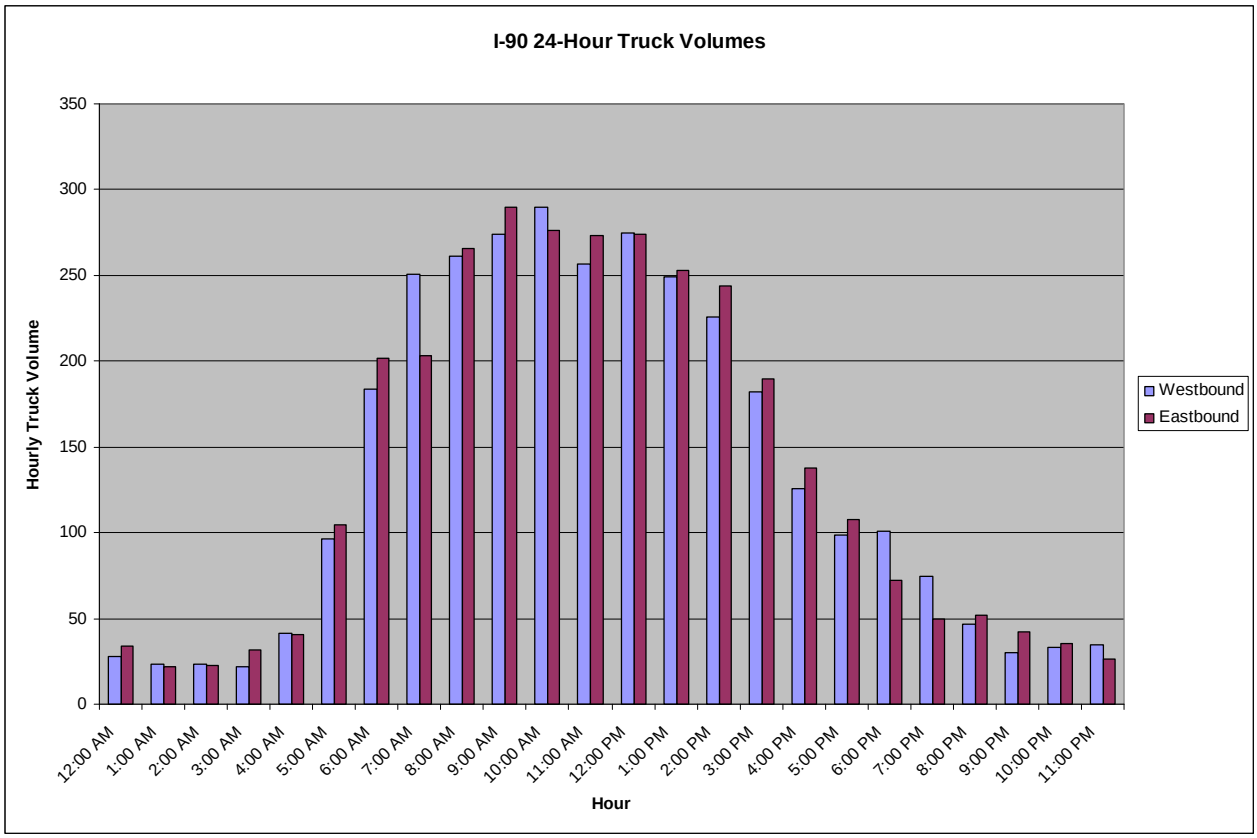
3.8.2.1 Regional Highways

In Segment A (see Exhibit 3-1), I-90 is a key east-west truck route within the study area, connecting local, interstate, and regional freight with the ports of Seattle and Tacoma and surrounding industrial areas. Following I-5, I-90 is the second most heavily used highway for truck movements in Washington (WSDOT, 2008). From 1993 to 2003, I-90 truck traffic grew by 72 percent (WSDOT, 2008).

Overall, about 6,300 trucks travel on I-90 across Lake Washington each day. This is about 4.5 percent of the approximately 140,000 vehicles that travel on the I-90 floating bridges every day. About half of the trucks are considered small-sized, which includes vehicles such as delivery vans and recreational vehicles. Approximately 12 percent of the total trucks crossing I-90 are large-sized tractor-trailer trucks. Trucks over 10,000 pounds (e.g., tractor-trailers) only travel on the outer I-90 mainline roadways because vehicles over 10,000 pounds are prohibited from using the reversible center lanes. Trucks under 10,000 pounds (e.g., delivery and recreational vehicles) are allowed to use the center roadway if they are either a high-occupancy vehicle or heading to/from Mercer Island. Therefore, there is only a small percentage of trucks in the reversible center roadway compared with the outer roadways in the study area. Throughout an average day, slightly over 100 small-sized trucks use the center roadway. This is about one percent of all the vehicles in this roadway.

About two-thirds of the trucks on I-90 travel during nonpeak hours, indicating many trucks avoid the more heavily congested times of the day. The highest amount of truck activity on I-90 crossing Lake Washington occurs during the period from late morning to mid-day. During the early afternoon, truck volumes dramatically decreases they avoid the afternoon peak period. Only about 3 percent of total traffic during the PM peak period is trucks. Exhibit 3-28 shows hourly truck volumes throughout the day.

During the AM peak period, about 40 percent of the trucks crossing Lake Washington on I-90 are heading to or from east of I-405, with many passing over Snoqualmie Pass. Overall, about 800 trucks travel on the I-90 mainline during the AM 2-hour peak period. This percentage of trucks continuing east on I-90 increases in the PM peak period to just over 50 percent, but, as described in the previous paragraph, the total number of trucks decreases dramatically in this period to about half, as approximately 400 trucks travel on I-90 during the PM peak period.



Source: Sound Transit, 2007
Note: I-90 total daily volume is approximately 140,000

EXHIBIT 3-28
I-90 Existing 24-Hour Truck Volumes

3.8.2.2 Arterials and Local Streets

In Seattle, most of the arterial streets within the study area (such as Rainier Avenue South, 4th Avenue South, and South Dearborn Street) are designated as Major Truck Streets, for which standards for design provide for higher volume truck travel. On Mercer Island, no roadways are identified as truck routes.

In Segments B and C, many of the arterial roadways with access to and from I-90 or I-405 are designated trucks routes, including Bellevue Way SE, 112th Avenue SE, SE 8th Street, NE 4th Street, and NE 8th Street. In addition, NE 12th Street is a truck route connecting Bellevue Way, 112th Avenue NE, and 116th Avenue NE, which are also designated as truck routes in Bellevue. Within Segment C, trucks mainly serve the commercial, office, and retail areas for delivery trips.

Within Segment D, Bel-Red Road is identified as a truck route. Other truck routes that access the commercial and industrial land uses along the Bel-Red corridor are 116th, 120th, 124th, and 148th Avenues NE. 148th Avenue NE, with access to SR 520, is also a designated truck route within Segment E. Also in Segment E, 148th Avenue NE and a small section of NE 51st Street are designated as truck routes in the city of Redmond. Near Downtown Redmond, West Lake Sammamish Parkway and SR 202 are designated truck routes that serve the commercial, retail, and office land uses.

3.8.2.3 Rail Freight

Within the study area, the only rail-line is the former BNSF Railway, which travels through Segments B, C, and D. There are no rail freight operations within Segments A and E. The Port of Seattle has acquired the former BNSF Railway right-of-way from Snohomish to north Renton, including a spur from Woodinville to Redmond. The Port of Seattle intends to secure the corridor for potential future freight rail use but is also interested in optimizing the use of this corridor for other transportation modes compatible with freight rail (Port of Seattle, 2008). The former BNSF Railway no longer is used for freight movements as the Wilburton Tunnel that crosses over southbound I-405 was recently removed, and therefore the rail corridor is no longer continuous.

3.8.3 Environmental Impacts

3.8.3.1 Impacts during Operation

Freight on Regional Highways

Future truck travel was analyzed along I-90 to understand future conditions with and without the project. This analysis provided 2-hour peak truck travel time data that are presented in Table 3-33.

As further described in this section, the East Link Project would have an overall beneficial impact on trucks traveling on I-90. As more people choose to use light rail, truck travel times during peak hours would be maintained or improve overall, and the ability for trucks to cross Lake Washington on I-90 would be maintained. Future traffic forecasts indicate that the average annual truck traffic growth by year 2030 on I-90 in the study area will be about 2 percent or less during the AM and PM peak periods. Growth in the peak periods between years 2020 and 2030, especially the PM peak period, is expected to minimize, as traffic congestion on I-90 will be much worse than it is today, and, therefore, a higher percentage of trucks are expected to cross Lake Washington during off-peak times. With more congestion in the future, there will be fewer uncongested off-peak hours available for truck travel in the no-build condition.

With either No Build Alternative (with Stages 1 and 2 of the I-90 Two-Way Transit and HOV Operations Project, or with Stages 1-3), afternoon and morning truck travel times in 2030 are expected to take 35 to 75 percent longer than at present due to increasing congestion. Overall, average (combined westbound and eastbound) truck travel time between I-405 and I-5 in the no-build condition would take approximately 24 minutes in the morning peak and 27 minutes in the afternoon peak.

With the East Link project, truck access to and from the I-90 westbound and eastbound outer roadways would be unchanged because none of the general-purpose ramps to and from I-90 would be modified with the project. Regarding truck travel times, the average truck travel time in the morning and afternoon peak periods would be 23 and 22 minutes, respectively, between I-405 and I-5, compared with 24 minutes in the morning peak and 27 minutes in the afternoon peak with either No Build Alternative (see Table 3-32). This equates to a comparable travel time in the morning peak and a 5-minute travel time savings in the afternoon peak. Most of the travel time improvement in the afternoon peak is in the westbound direction as a result of people shifting to ride light rail as their transportation mode, combined with the fact that truck access and circulation on the outer roadways would not be affected by East Link**.**

In addition to truck travel times, Table 3-32 also provides information on how many trucks would travel on I-90 during peak periods in 2030. Overall, the number of trucks traveling on I-90 in the morning and afternoon peak periods would be more with the project compared with the No Build Alternative when Stages 1 through 2 of the I-90 Two-Way Transit and HOV Operations Project are completed and similar when compared with the No Build Alternative when Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project are completed.

TABLE 3-33
2030 2-Hour Peak-Period I-90 Bridge Truck Volumes and Travel Times

Period	Direction	No Build Alternative[a]		No Build Alternative[b]		East Link	
		Number of Trucks[c]	Travel Time[d] (min)	Number of Trucks[c]	Travel Time[d] (min)	Number of Trucks[c]	Travel Time[d] (min)
AM Peak	Westbound	410	30	440	27	430	25
	Eastbound	480	18	570	21	620	22
AM Peak Total		**890**	**24**	**1,010**	**24**	**1,060**	**23**
PM Peak	Westbound	450	33	470	32	660	25
	Eastbound	340	21	570	22	370	20
PM Peak Total		**790**	**27**	**1040**	**27**	**1,020**	**22**

[a] With Stages 1 and 2 I-90 Two-Way Transit and HOV Operations Project.
[b] With Stages 1 through 3 of the I-90 Two-Way Transit and HOV Operations Project.
[c] Based on I-90 throughput data from the VISSIM analysis at the I-90 Lake Washington bridges.
[d] Travel times are between I-405 (Bellevue) and I-5 (Seattle).

More trucks would cross I-90 in the non-peak directions (eastbound in the morning and westbound in the afternoon) because congestion would improve with people riding light rail instead of driving. In the peak directions, a similar to less number of trucks would cross I-90 because congestion would remain

similar with the project as the reversible center roadway would be closed to vehicles.

Currently, during non-peak periods auto congestion on I-90 is substantially reduced even though truck traffic is at much higher levels. Because congestion is less during these periods, the project, compared with the no-build condition, is not expected to have an impact on truck travel times during these periods. Thus, the bulk of the truck traffic would remain unaffected by the project.

The design options to potentially close the eastbound HOV direct-access off-ramp or westbound HOV direct-access on-ramp with Bellevue Way and design options for the eastbound HOV off-ramp at Mercer Island are not expected to cause impacts or circulation changes for trucks because these ramps are restricted to HOV and transit usage. Similarly, closing the Mercer Island ramps to and from the reversible center roadway is not expected to cause truck circulation impacts because similar access would be provided on the outer roadways.

Freight on Arterials and Local Streets

The alternatives in the East Link Project are not anticipated to negatively affect truck circulation or routes on the local street network. In some locations, local designated truck routes would cross or travel alongside of light rail at-grade profiles. At these locations, intersection conditions with East Link would be similar to those under the No Build Alternative. Some intersection operations may improve through mitigation for the East Link Project. Additionally, many of the at-grade alternatives that travel through intersections would be accommodated within the existing traffic signal operations. Therefore, disturbances caused by the light rail would be minimized, although slight delays could occur on the side streets when light rail travels through the intersection.

Rail Freight

Within Segment A, no rail freight impacts are expected. Within Segments B, C, and D, rail freight along the former BNSF Railway corridor is not anticipated to occur in the near-term future because of the recent I-405 expansion that removed a segment of rail line. The project, however, would not preclude future rail freight operations on the former BNSF Railway tracks. There are no rail freight operations within Segment E.

3.8.3.2 Impacts During Construction

This section discusses activities that could occur during construction and the associated impacts on freight. Construction impacts on trucks could include changes in travel time, truck routes, or business access.

Sound Transit would coordinate with WSDOT on incident management, construction staging, and traffic control permitting where the light rail construction might affect freight traffic. Sound Transit would also coordinate with WSDOT to disseminate construction closure information to the freight community.

Interstate 90

In Segment A, the I-90 Two-Way Transit and HOV Project would be completed before East Link is constructed on I-90 and Mercer Island. Therefore, truck travel times during the East Link construction period for the AM and PM peak periods would be similar to or less than the truck travel times with the No Build Alternative when only Stages 1 and 2 of the I-90 Two-Way Transit and HOV Project are built.

Similarly, compared to the No Build Alternative when Stages 1 through 3 of the I-90 Two-Way Transit and HOV Project are built, truck travel times during East Link construction would be similar or improved. Overall, a similar or increased number of trucks would cross Lake Washington during East Link construction compared with either No Build Alternative.

Most truck trips currently travel on I-90 during non-peak periods, when congestion is substantially reduced. Since congestion is less during these periods, project construction is not expected to have an impact on travel times for most truck traffic.The D2 Roadway would also be closed for light rail construction of the *Preferred Alternative A1*. This closure would not impact trucks as they are prohibited from using the D2 Roadway.

At the Bellevue Way interchange with I-90, the I-90 westbound mainline, HOV direct-access ramps, and ramps to and from I-90 to the east would experience short-term partial closures (likely during the nighttime) to construct the elevated structures for Alternatives B2A, B2E, B3, and B7 and *Preferred Alternative B2M*. The Bellevue Way Alternative (B1) would not require these closures because it is at-grade underneath the mainline roadway. These closures are not expected to affect trucks because alternative routes are available and truck traffic using these ramps is relatively low.

Other Regional Freeways

Elevated portions of the alternatives in Segment C over I-405 would likely result in multiple lane closures of I-405 at night, causing trucks to potentially detour and be delayed. Likewise, elevated portions of Alternatives E1 and E4 that would cross over SR 520 near the West Lake Sammamish Parkway interchange

and the elevated portion of Alternative E1 that would cross SR 520 near the SR 202 interchange would close multiple lanes of SR 520 at night, causing trucks to potentially detour with added delay.

Arterials and Local Streets

Segment A

In Segment A, no truck impacts are expected on the arterial and local streets because light rail construction of the *Preferred Alternative A1* would be on the D2 Roadway and the I-90 reversible center roadway. Closing ramps to and from the I-90 reversible center roadway and constructing the Rainier and Mercer Island stations are not expected to affect trucks along arterials and local streets.

Segment B

Constructing all Segment B alternatives, except Alternative B7, would cause detours and lane closures on arterials and local streets, which could delay truck traffic on Bellevue Way and 112th Avenue SE. However, most of the businesses in South Bellevue are professional offices that do not rely heavily on trucks.

Segment C

Segment C at-grade (*Preferred Alternative C11A* and Alternatives C4A and C9A) and tunnel alternatives that require substantial cut-and-cover construction (*Preferred Alternative C9T* and Alternatives C1T and C2T) would have similar impacts on freight mobility and access on their construction routes. For these alternatives, short-term traffic detours and lane closures are expected. These might affect trucks and could require temporary alternate business access.

Constructing the Alternative C1T along Bellevue Way and NE 6th Street and Alternative C2T along Main Street, 106th Avenue NE, and NE 6th Street would require the largest amount of cut-and-cover tunnel construction. Converting 108th and 110th Avenues NE to one-way operations under Alternative C4A would require traffic detours and lane closures that might affect trucks and might temporarily alter business access.

Along elevated routes in Segment C, some impacts are anticipated as a result of lane closures and access restrictions needed for elevated structure construction. For Alternative C8E, impacts could occur along 110th Avenue NE because of lane closures.

For any of these alternatives, access to the businesses along streets with construction activities would be maintained to the extent possible either through existing or alternative access. Any access closures would be coordinated with the affected business.

Segment D

In Segment D, loss of parking, construction traffic, and lane closures could affect trucks along portions of NE 16th Street, 136th Place NE, NE 20th Street, 152nd Avenue NE, and NE 24th Street. Each alternative within Segment D would cause temporary detours and lane closures along some of these streets. Alternative D3 is expected to have the longest impact because it includes at-grade and retained-cut construction in the median of NE 20th Street. This construction could cause longer impacts on trucks than the other alternatives because other alternatives do not travel along NE 20th Street. *Preferred Alternative D2A* would have the second least impacts on trucks with impacts mainly along NE 16th Street and 136th Place NE. Alternative D5 would likely have the least impacts because most of it would be built adjacent to SR 520.

For the portions of the Segment D and E alternatives adjacent to SR 520, streets that currently provide access to properties would be rebuilt, as appropriate.

Segment E

In Segment E, the potential loss of lanes on Leary Way with Alternative E4 and 161st Avenue NE between Redmond Way and NE 85th Street with the Alternative E2 – Redmond Transit Center Design Option could have a slight impact on trucks. No substantial impacts are expected with the other Segment E alternatives during construction.

Maintenance Facilities

The impacts on trucks from constructing the maintenance facilities (potential detours and/or lane closures) are considered minimal because construction is expected to occur for about one year or less.

Rail Freight

Rail freight would not be affected in any segment during construction because the only rail line near East Link construction—the former BNSF Railway line in Segments B, C, and D—is closed.

3.8.4 Potential Mitigation

The East Link Project is not expected to require mitigation during operation to improve freight mobility and access because truck routes would be maintained and mobility would be improved with the project.

During East Link construction, adverse truck impacts would likely be associated with delays and restricted access for business deliveries on arterials and local streets near surface construction activities. The cut-and-cover tunnels and stations in Segment C would likely have the greatest impact on nearby businesses in terms of restricted access. To minimize these impacts,

Sound Transit would work specifically with affected businesses throughout the construction period to maintain access as much as possible to each business.

During East Link construction associated with I-90, SR 520, or I-405, Sound Transit would coordinate with freight stakeholder groups by providing construction information to WSDOT for use in the state's freight notification system. Sound Transit would provide information in a format required by WSDOT and compensate WSDOT for any direct costs associated with use of the freight notification system for East Link construction.

3.9 Navigable Waterways

3.9.1 Affected Environment

Lake Washington is the largest navigable waterway in the study area. Navigation on Lake Washington is restricted to recreational users; commercial activity is prohibited except for some fishing by the Muckleshoot Indian Tribe in the tribe's "usual and accustomed" fishing area. The tribe conducts a fishing event in July in consultation with the Washington Department of Fish and Wildlife (WDFW).

Boaters can cross under I-90 at two locations on Lake Washington: under the east end of the I-90 bridges between Seattle and Mercer Island, and under the East Channel Bridge between Mercer Island and Bellevue.

Other water bodies located in the study area include smaller lakes, streams, and river bodies, including Mercer Slough, Mercer Slough East Creek, East Lake Bellevue, Sturtevant Creek, Kelsey Creek, Goff Creek, Sears Creek, Bear Creek, and the Sammamish River. Mercer Slough and the Sammamish River are navigable to nonmotorized watercraft; the other water bodies are not navigable.

3.9.2 Environmental Impacts

3.9.2.1 Operational Impacts

The operation of the East Link Project in Segment A would not affect navigation on Lake Washington.

Impacts on navigability in Segment B are not anticipated with *Preferred Alternative B2M* and Alternatives B1, B2A, B2E, B3, and B3 - 114th Extension Design Option because they are located outside the navigable waterways of the Mercer Slough Nature Park. The elevated profile of Alternative B7, adjacent to the I-90 overpass, would cross Mercer Slough East; however, recreational navigability on the Mercer Slough under I-90 would not be affected by this alternative.

The project alternatives in Segments D and E are not expected to impact navigability of water bodies crossed by these alternatives because most of these water bodies are not navigable. Alternatives crossing the Sammamish River would be elevated crossings, thus maintaining recreational navigability.

3.9.2.2 Construction Impacts

Some in-water work is anticipated to occur in Lake Washington along I-90, and some construction work could be conducted from a barge. Neither of these activities would affect navigability of the lake.

Over-water construction of Alternative B7 might result in short durations of restricted recreational boating inside Mercer Slough near and under the Alternative B7 crossing.

Similarly, constructing the *Preferred Alternative E2* and Alternatives E1 and E4 might restrict nonmotorized boating on the Sammamish River at light rail crossings for short periods.

3.9.3 Potential Mitigation

During East Link operation, no mitigation of impacts on navigable waterways would be required.

During construction, Sound Transit would minimize impacts on the navigability of the Mercer Slough (Alternative B7) and the Sammamish River (all Segment E alternatives) waterway crossings by minimizing work from within the waterways.

If any barging of construction equipment or materials is required on Lake Washington in July, Sound Transit would consult with the Muckleshoot Indian Tribe to avoid conflict with their tribal fishing event.