SUMMARY

S.1 LYNNWOOD LINK EXTENSION

The Central Puget Sound Regional Transit Authority (Sound Transit) is proposing to build and operate the Lynnwood Link Extension, which would expand the regional light rail system from Seattle to Lynnwood, Washington. The proposed project would be in the cities of Seattle and Shoreline in King County and in Mountlake Terrace and Lynnwood in Snohomish County.

The Lynnwood Link Extension is a step in implementing the Puget Sound Regional Council's (PSRC) *VISION 2040* (PSRC 2009) and the Sound Transit 2005 *Regional Transit Long-Range Plan* (Sound Transit Long-Range Plan) (Sound Transit 2005a), both of which call for the eventual extension of mass transit service beyond Lynnwood to Everett.

Sound Transit and the Federal Transit Administration (FTA) are preparing this environmental impact statement (EIS) in compliance with the National Environmental Policy Act (NEPA) and the Washington State Environmental Policy Act (SEPA). FTA is the federal lead agency under NEPA, and Sound Transit is the state lead agency under SEPA.

S.1.1 Project Area

The proposed Lynnwood Link Extension would begin at Northgate in north Seattle and end at the Lynnwood Transit Center (Figure S-1). The project would be about 8.5 miles long, generally following Interstate 5 (I-5), the major north-south route through the state. This corridor is in one of the most densely developed urban areas in

the Pacific Northwest and is part of a longer north-south commuter corridor connecting Tacoma, Seattle, and Everett. Roadways in this corridor are heavily congested during peak travel periods. Congestion is expected to worsen as the region accommodates 20 percent more people and nearly 40 percent more jobs through 2040.

The Lynnwood Link Extension would connect to Central Link, the spine of the regional light rail system. The initial sections of Central Link are already operating between downtown Seattle and Sea-Tac International Airport. Light rail sections from downtown Seattle to the north are under construction. University Link from downtown Seattle to the University of Washington is to open in 2016, and the extension to Northgate is to open in 2021. With the Lynnwood Link Extension and the other projects in the Sound Transit 2 (ST2) program approved by voters in 2008, Sound Transit is developing nearly 36 new miles of service to the north, south, and east, resulting in 55 miles of light rail. The ST2 program of projects included light rail from the Northgate Transit Center to the Lynnwood Transit Center, with intermediate stations serving north Seattle, Shoreline, and Mountlake Terrace.

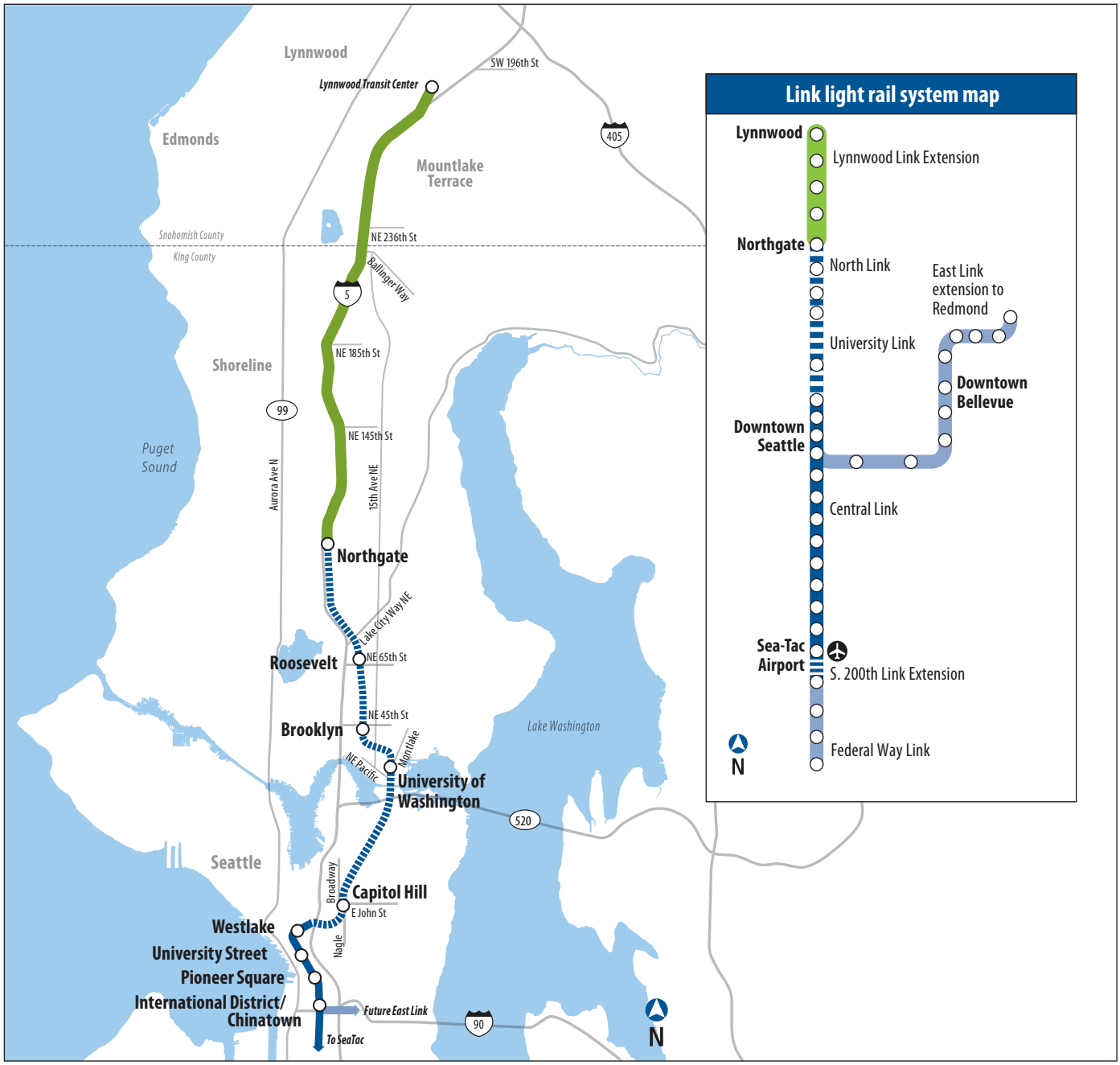
S.2 PURPOSE AND NEED FOR THE LYNNWOOD LINK EXTENSION

The purpose of the Lynnwood Link Extension is to expand the Sound Transit Link light rail system from Northgate in Seattle north into Shoreline, Mountlake Terrace, and Lynnwood in Snohomish County in order to:

- Provide reliable, rapid, and efficient peak and off-peak transit service of sufficient capacity to meet the existing and projected demand for travel to and from the corridor communities and other urban centers in the central Puget Sound area.
- Create an alternative to travel on congested roadways and improve regional multimodal transportation connections.
- Support the adopted land use, transportation, and economic development plans of the region and the corridor communities.
- Advance the long-range vision, goals, and objectives for transit service established by the Sound Transit Long-Range Plan for high-quality regional transit service connecting major activity centers in King, Pierce, and Snohomish counties.
- Implement a financially feasible system that seeks to preserve and promote a healthy environment.

The project is needed to:

- Address increasingly unreliable travel times for transit trips that now rely on the corridor's highly congested roadway and high-occupancy vehicle (HOV) lanes.
- Address overcrowding caused by insufficient transit capacity.
- Create a reliable alternative to automobile trips on I-5 and State Route (SR) 99, the two primary highways serving the project corridor, which are unreliable and over capacity throughout large portions of the day.
- Increase mobility, access, and transportation capacity for the 20 percent growth in population and 40 percent growth in employment projected in the regional growth and activity centers in the corridor and the region, consistent with PSRC's *VISION 2040* and *Transportation 2040*, as well as related county and city comprehensive plans.
- Create the transit infrastructure needed to support the development of Northgate and Lynnwood—the corridor's two designated regional growth centers.
- Advance the long-range vision of the Sound Transit Long-Range Plan for a future extension of mass transit north to Everett.



DATA SOURCES: (Sound Transit)

Legend

- Lynnwood Link Extension
- Under construction
- Link in service
- In planning

Figure S-1. Regional Setting

- Ensure long-term regional mobility, multimodal connectivity, and convenience for the corridor's citizens and communities, which include travel-disadvantaged residents and low-income and minority populations.

- Help the state and region reduce transportation-related energy consumption and decrease harmful greenhouse gas emissions in the atmosphere, in accordance with the Revised Code of Washington (RCW) 47.01.440, and as outlined in Chapter 70.235 RCW (Limiting Green House Gas Emissions).

S.3 ALTERNATIVES CONSIDERED

This Draft EIS compares the environmental effects of a No Build Alternative and multiple light rail alternatives for the Lynnwood Link Extension. The alternatives were defined by the Sound Transit Board of Directors (Board) after previous planning and alternatives analysis considered other corridors and transit modes (as described in Section S.4), and environmental scoping.

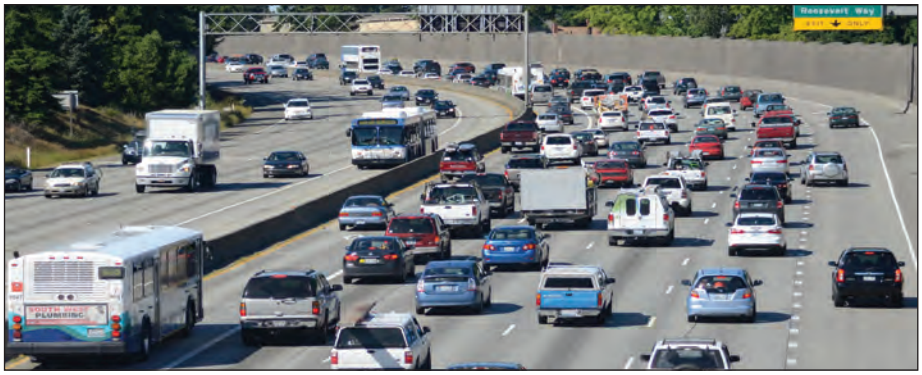
S.3.1 No Build Alternative

The No Build Alternative represents the existing transportation system without the Lynnwood Link Extension. It includes other committed transportation projects identified in the *Metropolitan Transportation Plan* adopted by PSRC in 2010 (*Transportation 2040*). It also assumes growth in regional population and employment through 2035. Under the No Build Alternative, Sound Transit would still build and operate the Northgate Link, East Link, and South Link light rail extensions contained in the ST2 program.

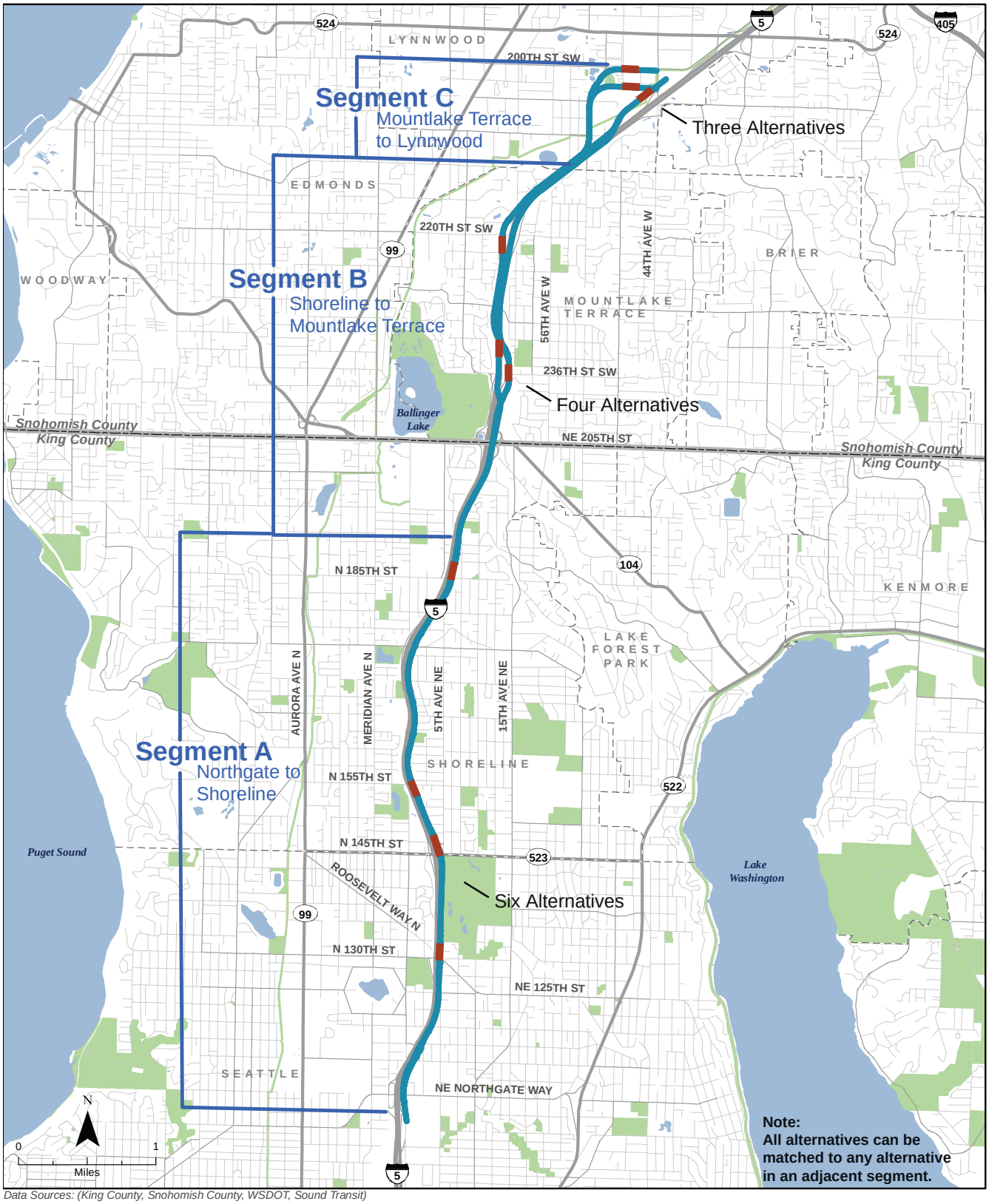
S.3.2 Light Rail Alternatives

The light rail alternatives are grouped in three geographic segments—A, B, and C—as shown in Figure S-2. They generally follow the I-5 corridor from the Northgate Transit Center in Seattle to the Lynnwood Transit Center. The summaries below describe key features of the range of alternatives that Sound Transit is considering. These alternatives have some features, such as stations or parking facilities, which could work for other alternatives in a segment. Light rail trains would operate weekdays between 5:00 am and 1:00 am daily, running as often as every 4 minutes each way during peak periods, and every 7.5 minutes in the early morning or late at night.

The alternatives present a variety of ways Sound Transit could approach the design, construction, and operation of the proposed project. They show how light rail could be developed mostly adjacent to I-5 and how the profile for light rail might vary based on existing conditions, such as bridges, interchanges, and other infrastructure and environmental or community features. They reflect how topography and various station choices affect alignment decisions, and they illustrate different ways light rail could cross I-5 to ultimately reach the project's terminus station in Lynnwood.



I-5 north of Northgate in Seattle



Data Sources: (King County, Snohomish County, WSDOT, Sound Transit)

Figure S-2. Alternatives by Segments

At-grade or Elevated Profiles: While all of the alternatives would have light rail in an exclusive right-of-way (separated from other traffic), some are mostly at-grade and others are mostly elevated. These choices are largely related to existing transit facilities, topography, right-of-way, and freeway features such as interchanges and bridges. At-grade alternatives can have the advantage of lower construction and operating costs compared with elevated alternatives, but they can require rebuilding bridges, ramps, or interchanges, which can increase costs and impacts. At-grade alternatives can also result in some property or environmental impacts that could be reduced or avoided by an elevated alternative. However, elevated alternatives can cause more noise and visual impacts than at-grade alternatives.

Number and Location of Stations: For Segments A and B, the range of alternatives reflects questions about how many stations should be developed. The alternatives define where stations could be located; what type of profile is proposed (at grade or elevated); and the approach to other features such as access, parking, or other existing infrastructure, including transit centers. At-grade stations are generally less expensive to construct and operate, while elevated stations can have a smaller footprint and other elements beneath them.

At-grade Light Rail Train

Elevated Light Rail Train with Overhead Catenary Wires

In Segment A, the alternatives present choices about whether two or three stations should be built and where they should be located (NE 130th Street, NE 145th Street, NE 155th Street, or NE 185th Street). In Segment B, the alternatives feature a station at the Mountlake Terrace Transit Center or at the nearby freeway station, and one of the alternatives includes an additional station at 220th Street SW. In Segment C, all of the alternatives include a single elevated station in Lynnwood, but its location varies relative to the existing Lynnwood Transit Center or its park-and-ride lots. One alternative would locate the light rail station north of the existing transit center, another has the station just south of the transit center, and a third locates the light rail station on the parking lot south and east of the existing transit center.

Parking Facilities: The alternatives present several ways for the proposed project to address the need for parking. The approach varies by station location along the project's length, and the proposed capacity and location of parking facilities consider factors such as expected demand, street and freeway access, and urban setting and plans. Some alternatives feature several approaches to parking, such as garages and surface lots. In Segment A, most of the parking facilities would be on the east side of I-5 near the stations, but one alternative has a west side

garage at NE 185th Street. In Segments B and C, parking would be provided at stations west of I-5, except for the Mountlake Terrace Transit Center options.

SEGMENT A: SEATTLE TO SHORELINE

Segment A has six alternatives connecting Northgate in Seattle to NE 185th Street in Shoreline, all on the east side of I-5. These alternatives differ from each other in three key ways: the extent to which they are at-grade or elevated, the number of stations (two versus three), and the locations of stations. Some stations also feature park-and-rides with different parking options. Figures S-3, S-4, and S-5 show the potential Segment A station sites.

Key Characteristics of the Segment A Alternatives

	A1	A3	A5	A7	A10	A11
Profile						
Mostly At-grade	•		•		•	
Mostly Elevated		•		•		•
Stations*						
130th			G	E	G	E
145th	E	E			E	E
155th			E	E		
185th	G	E	G	E	G	E

*E = Elevated; G = At-grade

Alternative A1: At-grade/Elevated with NE 145th and NE 185th Street Stations. Alternative A1 (Figure S-3) connects to the light rail guideway of the Northgate Link Extension near NE 104th Street. It is elevated from Northgate until about NE 117th Street, and then stays mostly at-grade except for sections between NE 130th Street through NE 145th Street, and at NE 155th Street and NE 175th Street. In addition to the stations shown on Figure S-3, key features include a replaced NE 117th Street bridge over I-5; a reconfigured NE 130th Street interchange; realignments for parts of 1st Avenue NE, 5th Avenue NE, and 7th Avenue NE in Shoreline; and a replaced NE 185th Street bridge over I-5.

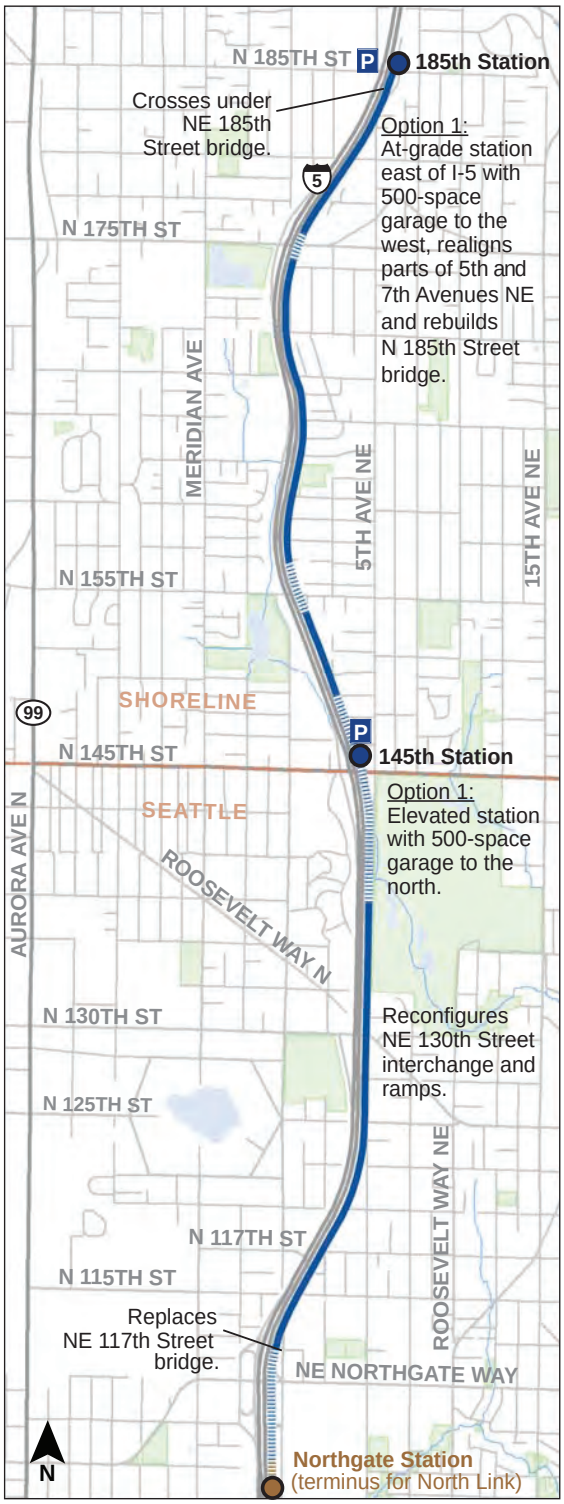
Alternative A3: Mostly Elevated with NE 145th and NE 185th Street Stations. Alternative A3 is similar to Alternative A1, but the alignment is mostly elevated, except from about NE 150th Street to about NE 173rd Street. This alternative features different station configurations at its NE 145th Street and NE 185th Street Stations (see Figure S-3). It avoids the NE 117th Street bridge by crossing over the road and to the east, and it modifies the ramps at the NE 145th Street interchange.

Alternative A5: At-grade/Elevated with NE 130th, NE 155th, and NE 185th Street Stations. Alternative A5 is largely based on Alternative A1, except that it has stations at NE 130th and NE 155th Streets (instead of a station at NE 145th Street), and with a different option for a NE 185th Street Station (see Figure S-4). Other key elements include a shift east around the NE 117th Street bridge at I-5, changes at the NE 130th Street interchange, and realignments for parts of 1st Avenue NE and 7th Avenue NE in Shoreline.

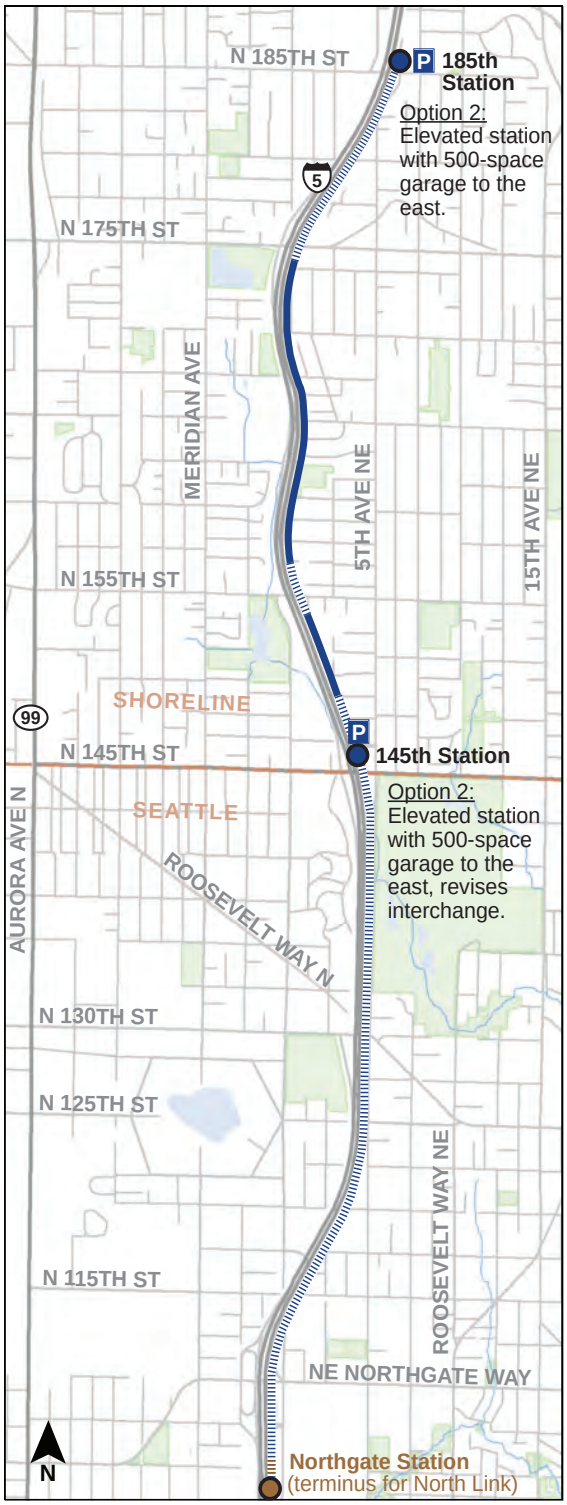
Alternative A7: Mostly Elevated with NE 130th, NE 155th, and NE 185th Street Stations. Alternative A7 combines station choices similar to Alternative A5, with the mostly elevated guideway found with Alternative A3, including elevated sections over the NE 117th Street overpass, and the NE 130th Street off-ramp and bridge (see Figure S-4).

Alternative A10: At-grade/Elevated with NE 130th, NE 145th, and NE 185th Street Stations. Alternative A10 is based on Alternative A1 but with three stations, and different station configurations and parking options, as shown on Figure S-5.

Alternative A11: Mostly Elevated with NE 130th, NE 145th, and NE 185th Street Stations. Alternative A11 is based on Alternative A3 but would add the NE 130th Street Station found with Alternative A7; see Figure S-5.



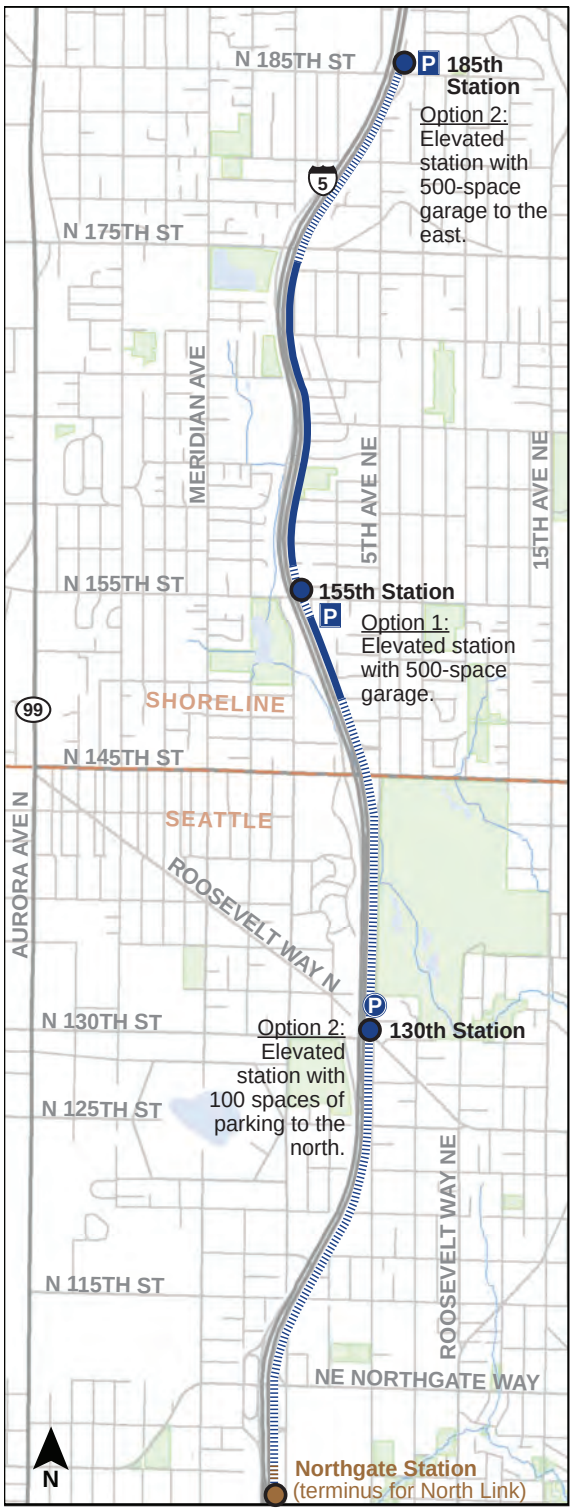
A1: AT-GRADE/ELEVATED TO NE 145th AND NE 185th STATIONS



A3: MOSTLY ELEVATED TO NE 145th AND NE 185th STATIONS

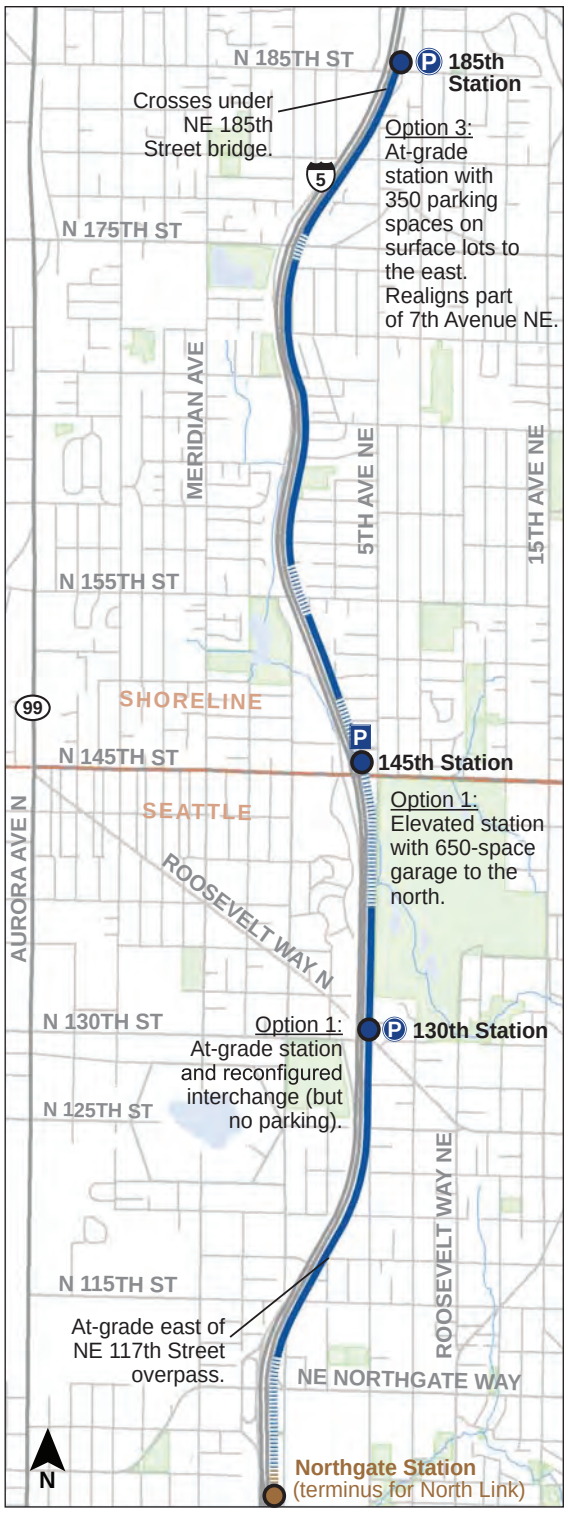
Figure S-3. Alternatives A1 and A3

A5: AT-GRADE/ELEVATED WITH NE 130th, NE 155th AND NE 185th STATIONS

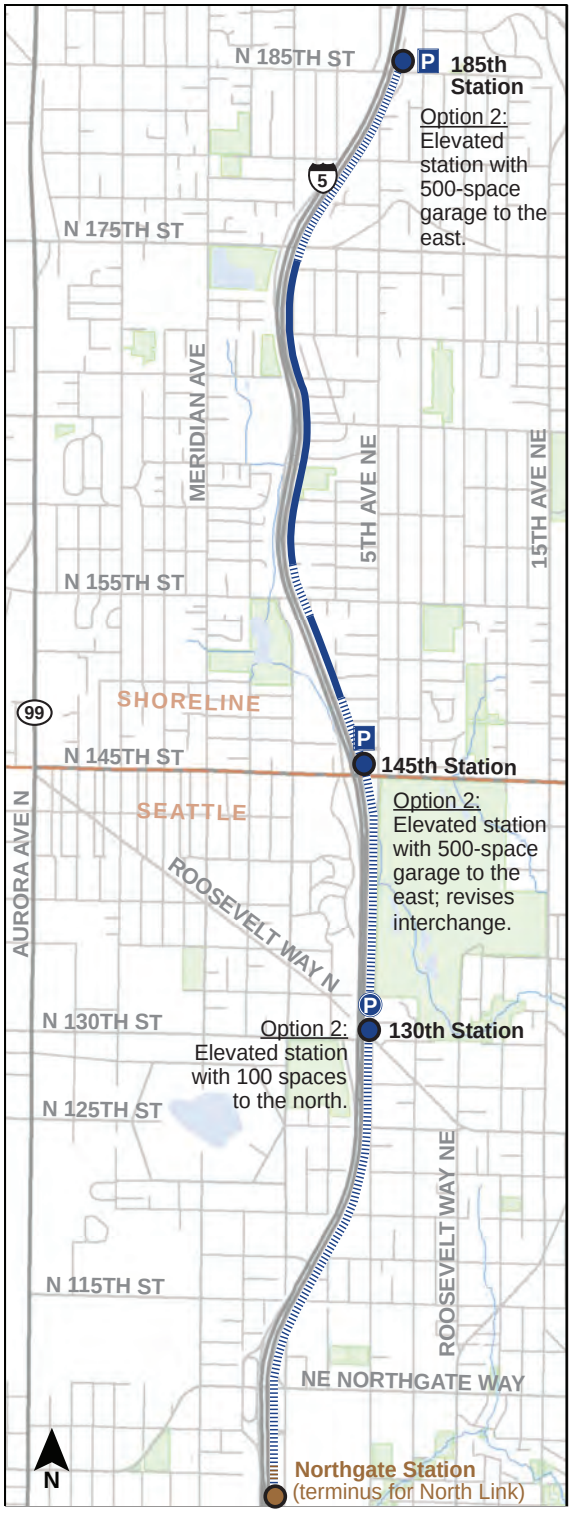


A7: MOSTLY ELEVATED WITH NE 130th, NE 155th AND NE 185th STATIONS

Figure S-4. Alternatives A5 and A7



A10: AT-GRADE/ELEVATED WITH NE 130th, NE 145th AND NE 185th STATIONS



A11: MOSTLY ELEVATED WITH NE 130th, NE 145th AND NE 185th STATIONS

Figure S-5. Alternatives A10 and A11

SEGMENT B: SHORELINE TO MOUNTLAKE TERRACE

There are four alternatives proposed for Segment B from NE 185th Street in Shoreline to 212th Street SW in Mountlake Terrace. All alternatives begin on the east side of I-5 and end either in the I-5 median or on the west side of I-5. These alternatives have at-grade and elevated sections along their alignment, but all are elevated as they enter Mountlake Terrace. After that, the median alignments are generally at-grade while the west side alignments are both at-grade and elevated. Three of the alternatives feature a station at the existing Mountlake Terrace Transit Center and park-and-ride (NE 236th Street), while one places a station at the Mountlake Terrace Freeway Station in the I-5 median. One alternative also features an additional station at 220th Street SW. Figures S-6 to S-7 show the Segment B alternatives.

Key Characteristics of the Segment B Alternatives				
	B1	B2	B2A	B4
Mountlake Terrace Station				
Transit Center	•	•	•	
Freeway Station				•
Alignment North of Mountlake Terrace Station				
Freeway Median	•			•
West side		•	•	
Additional Station at 220th Street SW			•	

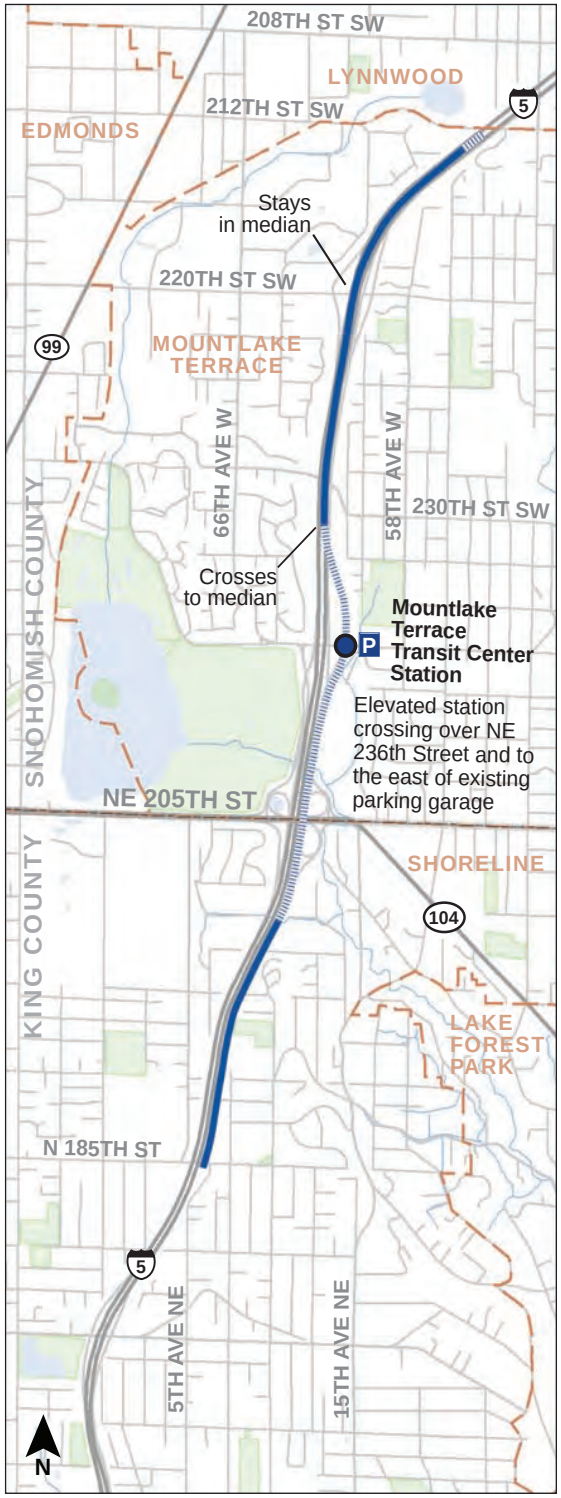
Alternative B1: East Side to Mountlake Terrace Transit Center to Median. Alternative B1 begins north of the NE 185th Street Station and would be either in a retained cut or elevated guideway along the east side of I-5, depending on its Segment A connection (see Figure S-6). It crosses below a replaced NE 195th Street pedestrian bridge and then is largely elevated to a station on the east side of the Mountlake Terrace Transit Center. It then crosses over the northbound lanes of I-5, enters the freeway median, and drops to at-grade. The alignment continues at-grade in the median of I-5, generally at the level of the southbound I-5 lanes, north to approximately 212th Street SW.

Alternative B2: East Side to Mountlake Terrace Transit Center to West Side. Alternative B2 is the same as Alternative B1 between NE 185th Street and the Mountlake Terrace Transit Center Station (see Figure S-6). North of the station it crosses over all I-5 lanes to align along the west side of I-5, where it continues north with ground-level sections until it crosses over 220th Street SW and the I-5 freeway ramps. Alternative B2 then descends to follow the east side of 60th Avenue West, and runs mostly at-grade along the west side of I-5 before finishing with an elevated guideway over 212th Street SW.

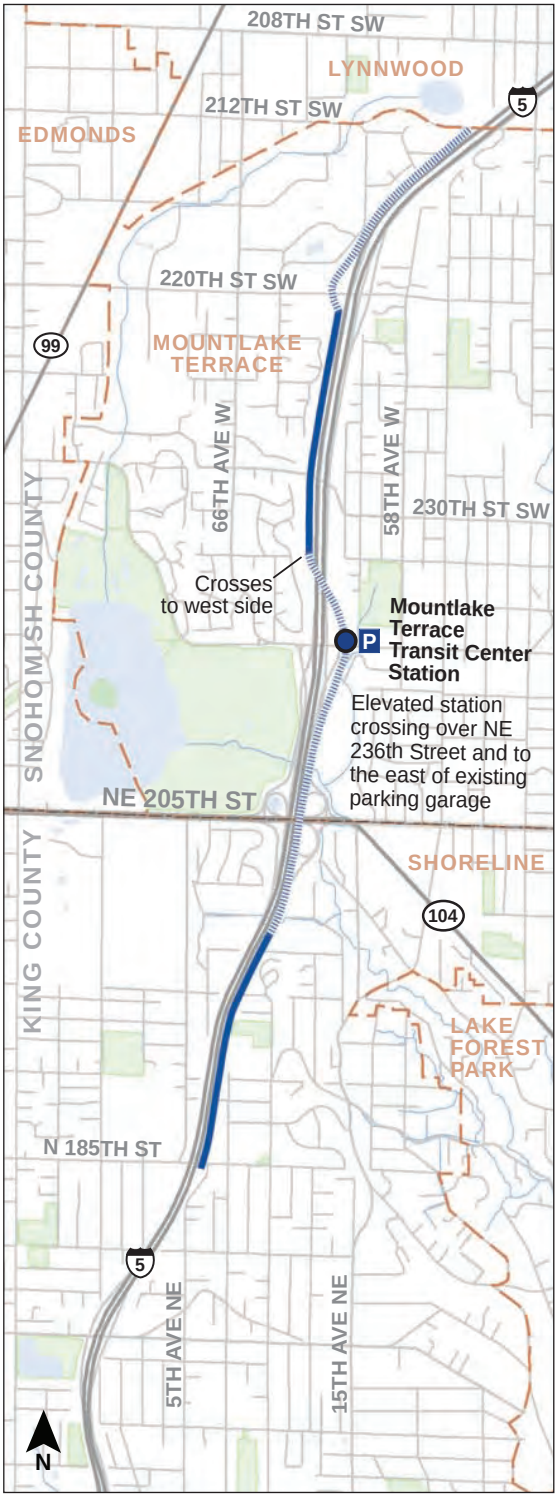
Alternative B2A: East Side to Mountlake Terrace Transit Center to West Side with 220th Street SW Station. Alternative B2A is the same as Alternative B2, except it includes a station with a park-and-ride at 220th Street SW, as shown on Figure S-7.

Alternative B4: East Side to Mountlake Terrace Freeway Station to Median. Alternative B4 (see Figure S-7) is the same as Alternative B1 from the NE 185th Street Station to about the Lake Ballinger Way/SR 104 interchange, where it crosses over to the I-5 median and under the 236th Street SW overpass to reach the Mountlake Terrace Freeway Station. North of the Mountlake Terrace Freeway Station, the Alternative B4 alignment is similar to Alternative B1.

Mountlake Terrace Transit Center

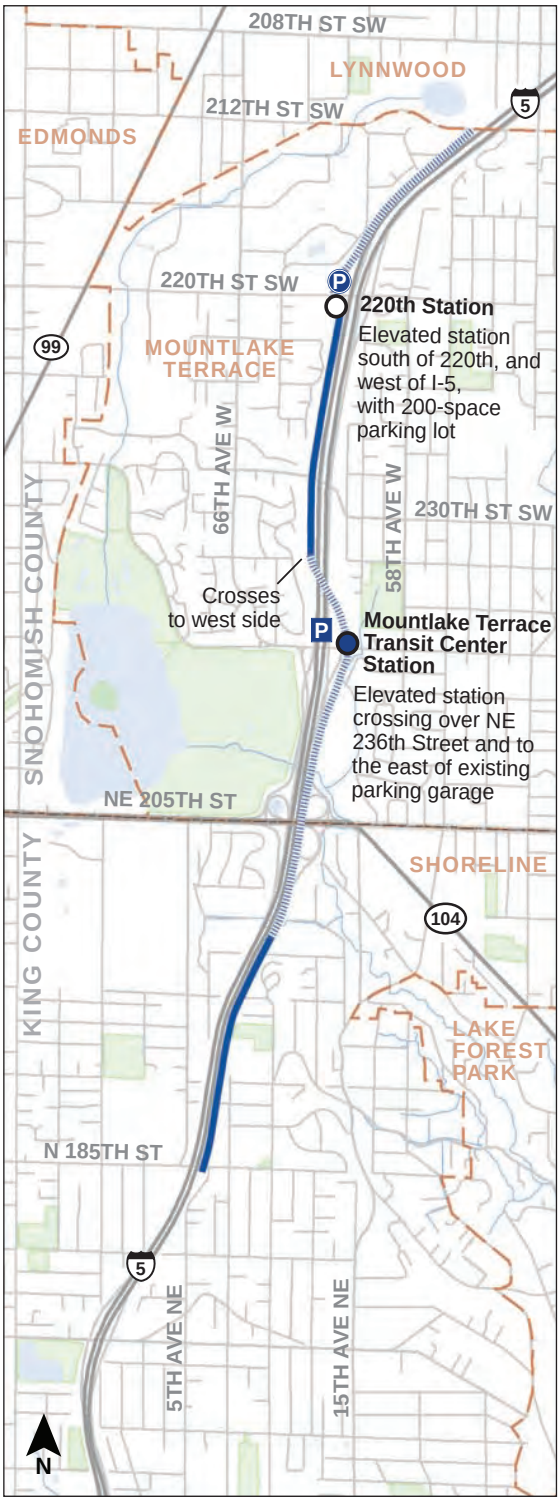


B1: EAST SIDE TO MOUNTLAKE TERRACE TRANSIT CENTER TO MEDIAN

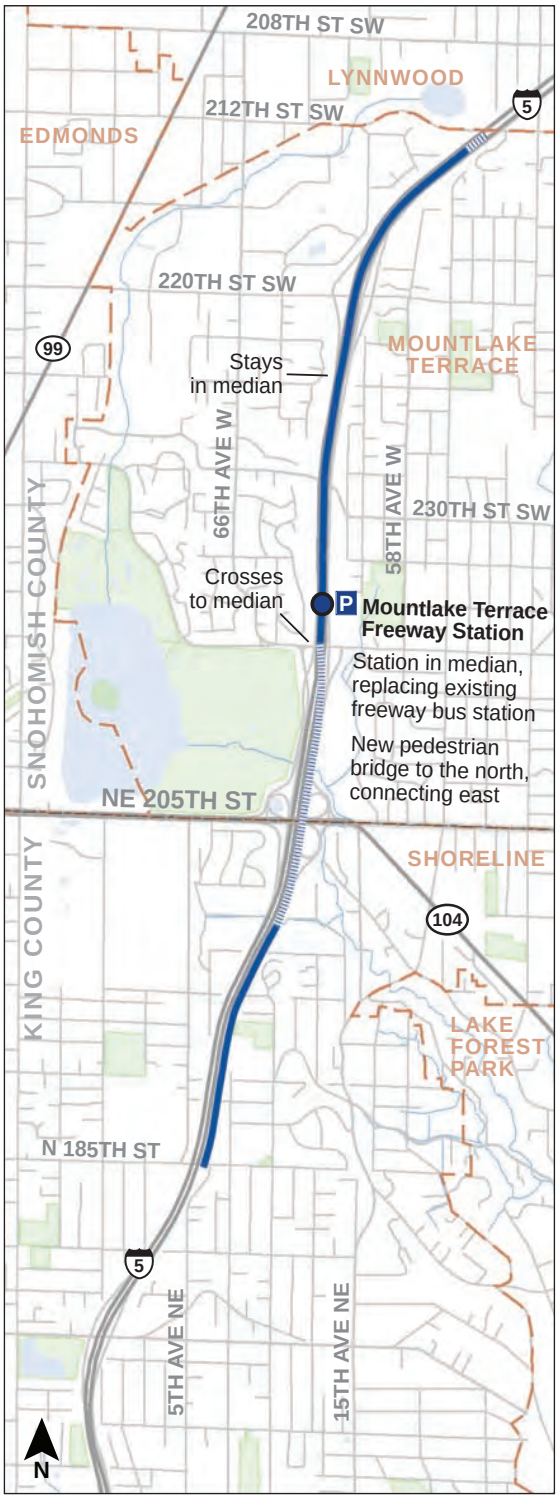


B2: EAST SIDE TO MOUNTLAKE TERRACE TRANSIT CENTER TO WEST SIDE

Figure S-6. Alternatives B1 and B2



B2A: EAST SIDE TO MOUNTLAKE TERRACE TRANSIT CENTER TO WEST SIDE WITH 220TH ST SW STATION



B4: EAST SIDE TO MOUNTLAKE TERRACE FWY STATION TO MEDIAN

Figure S-7. Alternatives B2A and B4

SEGMENT C: MOUNTLAKE TERRACE TO LYNNWOOD

In Segment C, three alternatives depart from the I-5 median or west side of I-5 but use different alignments to reach the Lynnwood Transit Center, with different stations and park-and-ride options at the project's north terminus. Figure S-8 shows the Segment C alternatives, which are all elevated.

Key Characteristics of the Segment C Alternatives			
	C1	C2	C3
Station Location			
200th Street SW	•		
Lynnwood Transit Center		•	
Lynnwood Park-and-Ride			•

Lynnwood Transit Center

Alternative C1: 52nd Avenue West to 200th Street SW. Alternative C1 (see Figure S-8) begins with two alignment options to connect with Segment B alternatives. Option 1 transitions from at-grade in the I-5 median (connecting to Alternative B1 or B4), and Option 2 continues elevated on the west side of I-5 (when connecting to Alternative B2). Both are elevated along the east side of 52nd Avenue West and Cedar Valley Road. Alternative C1 turns east over the corner of Scriber Creek Park and runs along the south side of 200th Street SW to its elevated 200th Street SW Station with tail tracks near 48th Avenue West.

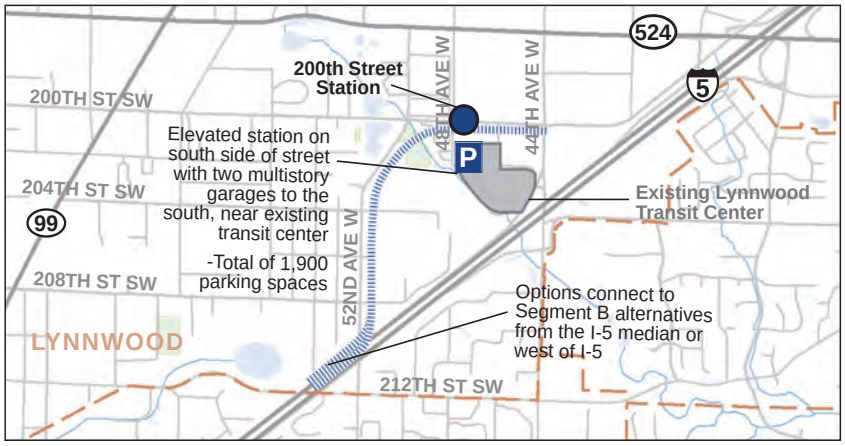
Alternative C2: 52nd Avenue West to Lynnwood Transit Center. Alternative C2 and its options from I-5 are the same as Alternative C1 to 52nd Avenue West, but it turns northeast to cross south of Scriber Creek Park to a station south of the existing Lynnwood Transit Center. Tail tracks would extend beyond the station. Figure S-8 shows the alignment, station, and the park-and-ride.

Alternative C3: Along I-5 to Lynnwood Park-and-Ride. Alternative C3 also features two options for connections to Segment B alternatives. Option 1 transitions from the I-5 median and crosses over the southbound I-5 lanes to the west side of I-5; Option 2 is already on the west side of I-5. At 208th Street SW, Alternative C3 crosses the Interurban right-of-way and parallels I-5 to the Lynnwood Park-and-Ride Station south of 48th Avenue SW, east of the existing Lynnwood direct access ramp. Tail tracks would extend across 44th Avenue West. As shown in Figure S-8, the Lynnwood Park-and-Ride Station has two design options: one leaves the existing transit center as it is, and the other relocates it adjacent to the light rail station.

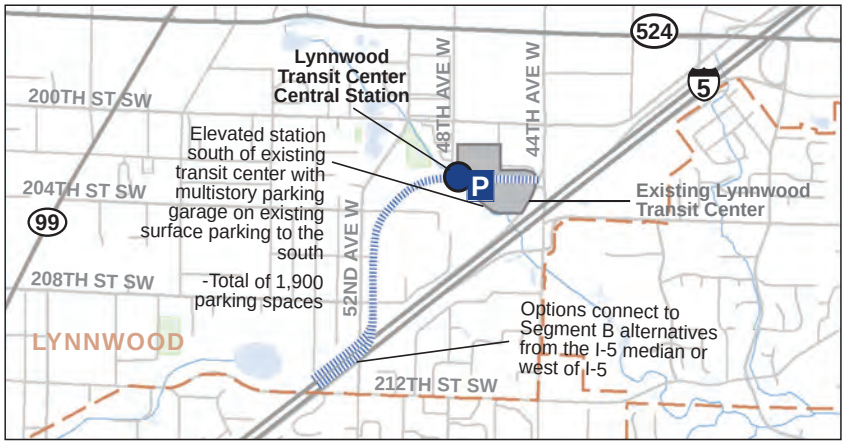
S.3.3 Construction

Sound Transit plans to start construction in 2018 and open the line for service by 2023. The light rail project would be built in sections, with major construction activities typically lasting approximately 2 years in any given area, although more complex elements such as stations, major structures, and systems would take longer. In addition to the right-of-way needed to build the alignments and stations, Sound Transit would also need areas to stage construction activities. Where possible, Sound Transit would locate most of its construction staging areas on available right-of-way or on properties it would need to acquire anyway for permanent facilities; however, other sites along the corridor could also be needed.

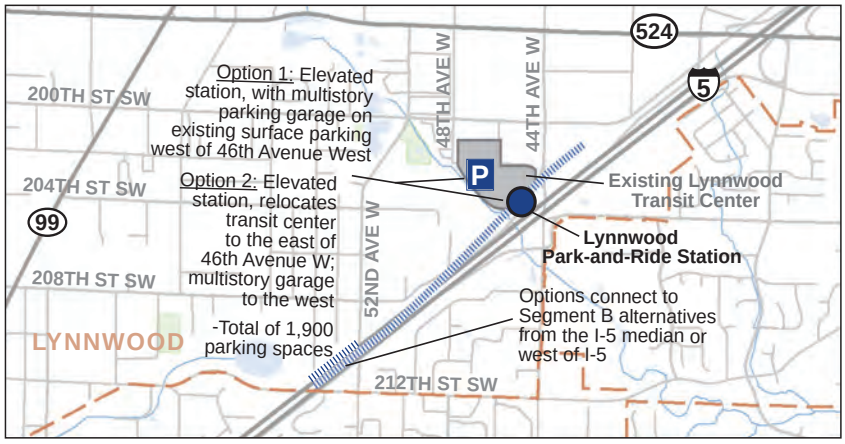
Elevated guideways, station areas, and retaining wall construction usually have the most intense construction activities because they are more complex and need greater volumes of materials,



C1: 52ND AVE W TO 200TH ST STATION



C2: 52ND AVE W TO LYNNWOOD TRANSIT CENTER STATION



C3: ALONG I-5 TO LYNNWOOD PARK-AND-RIDE STATION

Figure S-8. Alternatives C1, C2, and C3

equipment, and workers. Some streets would be partially or fully closed to through traffic, and I-5 lane closures would be needed; however, local access would be maintained. Trucks and heavy equipment would be used throughout much of the construction period.

In Segment A, the alternatives with a NE 130th Street Station (A5, A7, A10, and A11), or a NE 145th Street Station (A1, A3, A10, and A11) would have longer construction periods and more I-5 lane or street closures and detours. Alternative A1 would also reconstruct the NE 185th Street overpass, with potential I-5 lane closures. In Segment B, the alternatives all cross over part or all of I-5 but at different locations. Alternative B4 has a median station that would close the existing freeway transit station during construction, affecting express bus service at that location. In Segment C, all of the alternatives have an option to cross I-5 lanes from a median alignment, which would require I-5 lane closures.

S.4 ALTERNATIVES DEVELOPMENT

Sound Transit has built on several decades of previous planning and environmental review to define the alternatives for this Draft EIS. A light rail connection between King and Snohomish counties was part of the 1996 Regional Transit System Plan and EIS (Sound Transit 1996), which resulted in the Sound Move program. The Sound Transit Regional Transit Long-Range Plan (adopted July 7, 2005) and its Final Supplemental EIS on the Regional Transit Long-Range Plan (June 2005) formed the basis for the ST2 Plan. The ST2 Plan identified the project that is now the Lynnwood Link Extension (Sound Transit 2005a, 2005b, 2008).

In 2010, Sound Transit conducted early scoping and an Alternatives Analysis that considered a broad range of alternatives for the project, including light rail and bus rapid transit alignments along I-5, SR 99, and other arterials in the project area. The September 2011 *Alternatives Analysis Report and SEPA Addendum* identified the most promising alternatives for further study in this EIS. Sound Transit and FTA conducted the environmental scoping process for the EIS from September 30, 2011, through October 31, 2011. In December 2011, the Sound Transit Board approved Motion M2011-87, which directed Sound Transit to study light rail alternatives along I-5. The motion also removed from further consideration previously studied alternatives such as bus rapid transit and light rail alignments along SR 99 and 15th Avenue NE.

In response to the Sound Transit Board's direction, Sound Transit performed additional planning and analysis on light rail alternatives that included station sites and alignments on the east and west sides of I-5. The Board then approved Motion M2012-17, which identified the alignment and station alternatives now considered in the Draft EIS. Chapter 2 of the Draft EIS provides more information about the alternatives development process, including the alternatives Sound Transit removed from further consideration.

S.5 TRANSPORTATION EFFECTS

This section summarizes conditions by 2035 with the light rail alternatives in place compared with the No Build Alternative. For context, the project corridor is already highly congested. Travel on I-5 through the corridor currently takes up to three times longer during peak hours than at some other times. Currently, average speeds during peak periods along I-5 range from 23 miles per hour (mph) to 40 mph, which makes travel times highly variable and unpredictable. Vehicles in the HOV lanes move somewhat better, but peak period travel times for HOVs are still more than double compared to free flow. By 2035, conditions on I-5 are expected to worsen as 4 to 12 percent more vehicles attempt to use the corridor during peak hours, which is already at 98 percent or more of its capacity today.

About 20,000 transit riders travel daily north and south on the I-5 corridor between Seattle and Lynnwood. Buses can use HOV lanes in some but not all sections. Travel times are not reliable, in part because of a reversible center roadway

between Northgate and Seattle. The lack of reliability is a major problem for both riders and transit operators.

TRANSIT RIDERSHIP, TRAVEL TIMES, AND SERVICE QUALITY

By 2035, between 60,000 and 70,000 transit trips are expected on the Lynnwood Link Extension each day, compared to about 34,000 trips using buses in the corridor north of Northgate for the No Build Alternative.

Transit travel times to regional destinations would be shorter and much more reliable with any of the light rail alternatives, with trips to Northgate from Lynnwood up to 12 minutes faster and trips to downtown Seattle from Lynnwood up to 16 minutes faster than with the No Build Alternative in the morning peak period. In addition, the light rail alternatives would provide more frequent service, more passenger capacity, and more reliable operations with light rail separated from traffic—all of which would markedly improve transit service quality.

The Lynnwood station would be the busiest of the new light rail line, with nearly 20,000 boardings daily. In general, the different alignments would have similar ridership, but some of the station options would have more riders than others; in particular, the station at the Mountlake Terrace Transit Center would have more riders than a station in the median of I-5. While the median station would serve the same area, it would require longer walks, creating a longer total travel time for riders compared to a station at the transit center and park-and-ride.

REGIONAL TRAVEL

By 2035, ridership on any of the light rail alternatives would help reduce travel in the region by more than 300,000 miles per day, compared with the No Build Alternative, and riders would save about 30,000 hours in travel time daily.

AUTOMOBILE TRAVEL THROUGH THE PROJECT CORRIDOR

During the morning and evening peak hours, freeway travel times with the light rail alternatives would be similar to or slightly better than with the No Build Alternative in most locations. Freeway congestion and unreliable travel times would still occur, but there would be an alternative to using the freeway or other street routes.

FREEWAY OPERATIONS

By 2035 with the No Build Alternative, freeway operations would worsen over today's already congested conditions. Depending on the location, traffic volumes would increase 4 percent to 12 percent during the peak periods, and average speeds would drop to about 25 mph. The freeway would be at or over capacity during the heaviest travel times.

The light rail alternatives would result in similar conditions in most locations, and congested conditions would still remain.

The Segment A light rail alternatives with a station at NE 145th Street (A1, A3, A10, and A11) would slightly increase traffic and congestion in that interchange area, compared to the No Build Alternative. The Segment A alternatives that would modify the NE 130th Street interchange without a station would improve traffic flow in that area (A1 and A10), while the elevated alternatives with a station at NE 130th Street (A7 and A11) but with no changes to the interchange could result in slightly slower I-5 traffic near NE 130th Street.

Other interchanges or freeway conditions north of NE 145th Street to Lynnwood would likely not be appreciably affected by the light rail alternatives compared to the No Build Alternative.

ARTERIALS AND LOCAL STREETS

With the No Build Alternative in 2035, traffic volumes would increase by about 0.6 percent to 1.3 percent per year, which would cause delays at more of the intersections in the study area than compared to today. The light rail alternative would draw more trips to station areas, which

could increase intersection delays in some locations. However, the alternatives could mitigate the impacts by adding turn lanes or modifying intersections.

In Segment A, all of the light rail alternatives would require mitigation to address congestion at five to eleven intersections. The alternatives with three stations (A5, A7, A10 and A11) have the highest numbers of affected intersections.

In Segment B, one intersection would be below standard with the No Build Alternative and with all the light rail alternatives. Since this intersection would operate the same in 2035 with or without the project, no mitigation is proposed.

In Segment C, five intersections would operate below service standards with the No Build Alternative. Two additional intersections would have worsened operations with all the light rail alternatives. Mitigation measures would address these impacts.

OTHER TRANSPORTATION EFFECTS

Sound Transit also examined potential impacts on property access and circulation, nonmotorized facilities, parking, freight, and safety and found there would be no substantial impacts from the Lynnwood Link Extension. However, where interchange modifications are being considered, potentially at NE 130th Street and NE 145th Street, the Washington State Department of Transportation (WSDOT) and the Federal Highway Administration (FHWA) could consider modifying local street access, which could include restricted turn movements, driveway consolidation, alternative access for some properties or property acquisitions.

CONSTRUCTION IMPACTS

Project construction could increase congestion and delays for travel on I-5 and local streets, resulting in slower trips for vehicles and transit. Sound Transit would typically have construction sites within the WSDOT right-of-way on I-5 and from local streets or acquired properties adjacent to the project corridor; trucks and equipment would need access to the construction areas. All the light rail alternatives would generate truck trips throughout much of the construction period to haul debris and deliver materials and equipment.

Construction could cause short-term lane closures or restrictions on I-5, particularly when light rail structures are being built over travel lanes or interchanges, or when ramps are being modified; some of the closures, while short term, could increase congestion and delays. For the alternatives that would rebuild I-5 overcrossings, closures of the crossing streets during construction would also require detours. Alternatives that realign or reconstruct local streets would require closures and detours, some of which could last for several months. For light rail structures above local streets, Sound Transit would also need to implement short-term closures and detours.

The alternatives that would place light rail stations or facilities at existing transit centers or park-and-rides could temporarily reduce parking supply and alter access or transit service. This would be expected at the NE 130th Street and NE 145th Street Stations in Segment A. In Segment B, Alternatives B1, B2, and B2A would temporarily reduce surface parking east of the existing garage at the Mountlake Terrace Transit Center. Alternative B4 would close the Mountlake Terrace Freeway Station, which would affect transit service to the transit center and park-and-ride. In Segment C, all the alternatives would temporarily reduce transit parking, but the Lynnwood Transit Center and most of the park-and-ride would still operate throughout project construction.

S.6 ENVIRONMENTAL EFFECTS

The Draft EIS discusses the project's impacts at two levels: the full project from Northgate to Lynnwood, and then by segment, where there would be some localized differences in impacts. Table S-1 compares the overall environmental effects of the No Build Alternative against the full project, while Tables S-2 to S-4 provides measures of impacts by individual alternative in each segment, showing primary differences

in environmental impacts. The sections below briefly summarize the primary types of impacts by environmental topic and note where some alternatives would have different impacts compared with others.

Acquisition, Displacement, and Relocations. While the alternatives are designed to use I-5 and other public rights-of-way as much as possible, acquisitions would be required along sections of the entire project corridor. Between 66 and 166 properties could be fully acquired, depending on the alternative choices, and between 60 and 85 additional properties could be partly acquired. Property impacts would be greatest in Segment A, where the I-5 right-of-way is the narrowest. Most of the acquisitions would be residential properties, but a church would also be affected by the Segment A at-grade alternatives. In Segment B, considerably fewer parcels would be affected, and the Segment B alternatives would largely avoid displacements. Segment C would require acquisitions of commercial and residential parcels, and Alternative C1 would have notably more acquisitions and displacements than the other alternatives. Sound Transit will compensate owners for acquired properties and will offer relocation assistance to the displaced users, consistent with the agency's acquisition and relocation policies and federal requirements.

Land Use. Land use would not be adversely affected as a result of the Lynnwood Link Extension. Acquisitions, both full and partial, in all segments would represent only a small portion of the land available. All alternatives would be generally consistent with regional and local plans and policies. Indirectly, land use changes could occur in station areas, such as at the Mountlake Terrace Transit Center or its freeway station, at NE 145th Street or NE 185th Street, at 220th Street SW, or at the Lynnwood station, where local plans or policies allow redevelopment with mixed-use, higher-density, transit-oriented development.

Economics. Property acquisition would displace some businesses in Segment C and employees could be affected by business disruptions or relocations. Local jurisdictions would have a slight initial reduction in property tax revenue as land is converted to a transportation use. The project could provide economic benefits to local economies due to increased activity in station areas. Construction could also temporarily improve economic activity through construction employment as well as the purchase of materials, although the beneficial effects could extend for many years. However, construction activities could also temporarily affect the visibility and patronage of some businesses nearest to the light rail route, primarily in Segment C.

Neighborhoods. The proposed project would be on the borders of existing neighborhoods and would have minor effects on community facilities or services. In Segment A, an ethnic Latvian Evangelical Lutheran Church could be displaced by Alternatives A1, A5, or A10, although this impact could be avoided by redesigning the church's access. Alternative B2A would displace five residences. Alternative C1 would displace a condominium complex and over 30 businesses. Temporary construction impacts, including dust, noise, and traffic congestion, would affect the edges of neighborhoods adjacent to the alternative alignments in all segments.

Visual and Aesthetic Resources. Visual impacts would be caused by removing mature trees and dense vegetation that currently screen parts of I-5. Some of the alternatives would have light rail guideways or stations that would be prominent in views by residents, park users, or travelers, particularly when the alternatives are elevated near neighborhoods or public areas with established views. This scenario occurs for all alternatives in Segment A, for Alternatives B2 and B2A in Segment B, and for Alternatives C1 and C2 in Segment C. Much of the southern end of the project corridor has noise walls along the east side of I-5 and most would need to be relocated, which could require new or taller noise walls. During construction, views would also be affected

as Sound Transit clears the right-of-way and constructs the new facilities.

Simulated View of Light Rail near NE 143rd Street

Air Quality and Greenhouse Gas Emissions. The light rail alternatives would decrease pollutants and greenhouse gases from vehicle emissions on the regional level compared with the No Build Alternative. The project would be consistent with federal air quality standards at local and regional levels. During construction, there would be increased emissions from construction equipment and trucks, as well as more fugitive dust and particulates associated with grading and excavation.

Noise and Vibration. There are residences and other noise- and vibration-sensitive properties along the entire project corridor. Most of the properties that would need mitigation from noise impacts are in Segment A, but some noise impacts needing mitigation are projected along Segments B and C. Mitigation for long-term vibration impacts would also be needed in Segment A. With potential mitigation measures that would include noise walls beside the light rail alignment, noise barriers along elevated guideways, residential sound insulation, and vibration-dampening design measures, there would be no remaining long-term impacts. Construction-related noise and vibration would be produced by heavy equipment and construction tools, and most noise would be generated during the early phases of construction.

Ecosystem Resources. There would be no adverse impacts on threatened or endangered species. The light rail alternatives would cross several streams and tributaries in the project corridor, including Thornton Creek, McAleer Creek, and Scriber Creek, and would affect aquatic resources, vegetation, habitat, streams, wetlands, and buffers. The range of impacts among the light rail alternatives would be similar, and in most locations the impacts could be avoided or reduced through further design measures. In Segment B, Alternative B2A would have more potential impacts to a wetland area, and in Segment C, Alternative C2 would have more potential impacts on Scriber Creek and its wetlands than the other alternatives.

Wetland Near Scriber Creek in Lynnwood

Water Resources. There would be no water quality impacts resulting from stormwater because Sound Transit would comply with local government stormwater management requirements. However, the project would increase the amount of existing impervious surface areas. The Segment C alternatives could place structures in the Scriber Creek floodplain, but Sound Transit would provide compensatory floodplain storage. Construction impacts would be controlled by permit requirements and best management practices.

Energy Impacts. There would be no long-term energy impacts compared with the No Build Alternative because the light rail alternatives would result in lower energy consumption regionally. Construction would temporarily increase energy consumption but would not notably alter regional energy supply or demand.

Geology and Soils. The project is in a seismically active area; therefore, localized geologic hazards and risks are possible. However, the use of engineering measures would reduce the risk of harm from seismic events.

Hazardous Materials. Contaminated soil or groundwater is anticipated on several sites that could be acquired, but these sites would be remediated before or during light rail construction, which would be a beneficial effect. Segment C alternatives would require the acquisition of several sites with known or likely contamination.

Cultural, Archaeological, and Historic Resources. Five historic resources in the Area of Potential Effects are eligible for listing on the National Register of Historic Places, including Northgate Elementary, the Northgate Plaza Apartments, a former parsonage in Seattle, a residence in Shoreline, and a former school in Mountlake Terrace. None of the light rail alternatives would physically alter any of the historic structures or acquire historic property; no adverse impacts would occur. There would be no adverse impacts on known archaeological sites, and no traditional cultural properties have been identified in the project corridor.

Parks and Recreational Resources. There are numerous parks and recreational resources near the light rail alternative routes. In Segment A, Jackson Park Golf Course would be affected by changed views, mostly with the elevated alternatives, but there would be no direct physical impacts on the park. All Segment A alternatives would place light rail along the western edge of Ridgecrest Park, which would change views and remove mature trees. Alternative A1 would require a corner of a parcel containing the Shoreline Stadium. In Segment B, North City Park would have partially changed views but no direct physical impacts. In Segment C, elevated guideways with all the light rail alternatives would cross the Interurban Trail. Alternative C1 would cross over a corner of Scriber Creek Park, and Alternative C2 would cross near the park; both would have visual impacts.

Simulation of Jackson Park Golf Course with Elevated Alternatives

Other Environmental Impacts. There would be no adverse impacts from electromagnetic fields or to public services, safety and security, or utilities.

S.6.1 Potential Mitigation Measures

Sound Transit is committed to meeting the federal, state, and local environmental regulations and permit requirements that would apply to the project. The project would include reasonable mitigation measures to avoid significant adverse impacts where possible. The Draft EIS identifies potential mitigation measures that Sound Transit could apply to avoid or reduce the impacts identified for the project alternatives. The Record of Decision will explicitly make mitigation measures a condition of any federal approval the project receives. A number of the mitigation measures would also be further detailed through final design and permitting. Several environmental elements analyzed in the EIS would have no adverse impacts requiring mitigation after standard project measures are applied, including cultural, archaeological, and historic resources; electromagnetic fields; geology and soils; energy; and water resources. The following discussion summarizes key areas where mitigation measures are expected to be needed.

Transportation. Where alternatives would worsen highly congested intersections that do not meet the standards of local jurisdictions, Sound Transit would work with local jurisdictions to develop mitigation measures such as added turn lanes, intersection/signalization improvements, traffic management, or other strategies.

Table S-1. Summary of Environmental Effects of No Build versus Light Rail Alternatives (All Segments)

Project Resource	Comparison Factor	No Build Alternative	Light Rail Alternatives
Transportation	Daily corridor ridership for 2035	33,800 riders on buses	60,000 to 70,000 riders on light rail
	Vehicle Miles of Travel (VMT) for 2035	98,870,000	98,550,000 to 98,560,000
	AM peak travel time for 2035 – Lynnwood to Downtown Seattle	43 minutes	27–29 minutes
	Transit travel time savings at AM peak	0	14–16 minutes
Acquisitions, Displacements, and Relocations	Total property acquisitions (full or partial)	0	126–251
Land Use	Consistency with Regional and Local Growth Management Plans	Low	High
Water Resources	Change in impervious surfaces	No direct change	41 to 54 acres, mostly non-pollutant generating surfaces
Ecosystem Resources	Total acres of ecosystem resources affected	0	9.6–24
Air Quality and Greenhouse Gases	Annual carbon dioxide equivalent reduction (2035)	No reduction	71,905 metric tons
Energy	Regional transportation energy consumption 2035 (per thousand British thermal units)	500,802	498,353
Electromagnetic Fields (EMF)	Potential for EMF exposure impacts	No new sources	No impacts
Geology and Soils	Risk of worsening geologic and soils conditions	None	None to low
Public Services and Utilities	Demand for services	Population growth and development could increase demand	Development could increase demand for services; all alternatives would be similar
	Potential for service disruption during light rail operation	Not applicable	Unlikely

Table S-2. Comparison of Segment A Alternatives

Alternative		A1	A3	A5	A7	A10	A11
Stations		Two: NE 145th and NE 185th Streets	Two: NE 145th and NE 185th Streets	Three: NE 130th, NE 155th, and NE 185th Streets	Three: NE 130th, NE 155th, and NE 185th Streets	Three: NE 130th, NE 145th, and NE 185th Streets	Three: NE 130th, NE 145th, and NE 185th Streets
Alignment		Mixed At-Grade and Elevated	Mostly Elevated	Mixed At-Grade and Elevated	Mostly Elevated	Mixed At-Grade and Elevated	Mostly Elevated
Category[a]	**Measure**						
Capital Cost Range[b]	2012 dollars (in millions)	$670 to $770	$700 to $810	$650 to $750	$740 to $850	$660 to $750	$750 to $870
Ridership	2035 daily boardings (net) [c]	10,600	10,600	11,000	11,000	11,000	11,000
Station Area Transit-Oriented Development	Qualitative rating of potential under existing conditions (limited-moderate-strong)	NE 145th Street: limited NE 185th Street: limited-moderate	NE 145th Street: limited NE 185th Street: limited-moderate	NE 130th Street: limited NE 155th Street: limited NE 185th Street: limited-moderate	NE 130th Street: limited NE 155th Street: limited NE 185th Street: limited-moderate	NE 130th Street: limited NE 145th Street: limited NE 185th Street: limited-moderate	NE 130th Street: limited NE 155th Street: limited NE 185th Street: limited-moderate
Transportation	Number of intersections requiring mitigation	5	7	11	9	10	8
	I-5 bridges rebuilt	NE 117th, NE 130th, and NE 185th Streets	---	NE 130th Street	---	NE 130th Street	---
	I-5 ramps relocated	NE 130th Street north off-ramp	NE 145th Street north on-ramp	NE 130th Street north off-ramp	---	NE 130th Street north off-ramp	NE 145th Street north on-ramp
	Realigned streets	1st Avenue NE 5th Avenue NE 7th Avenue NE	1st Avenue NE	1st Avenue NE 7th Avenue NE	1st Avenue NE	1st Avenue NE 7th Avenue NE	1st Avenue NE
	Number of parking spaces removed[d]	29	73	89	77	96	84
Property	Number of parcels affected	114	106	127	116	121	106
	Number of residences displaced	111	107	122	115	118	107
	Businesses and institutions potentially displaced	1	0	1	0	1	0
	Estimated WSDOT right-of-way needed (acres)	26	20	20	19	25	20

Alternative		A1	A3	A5	A7	A10	A11
Stations		Two: NE 145th and NE 185th Streets	Two: NE 145th and NE 185th Streets	Three: NE 130th, NE 155th, and NE 185th Streets	Three: NE 130th, NE 155th, and NE 185th Streets	Three: NE 130th, NE 145th, and NE 185th Streets	Three: NE 130th, NE 145th, and NE 185th Streets
Alignment		Mixed At-Grade and Elevated	Mostly Elevated	Mixed At-Grade and Elevated	Mostly Elevated	Mixed At-Grade and Elevated	Mostly Elevated
Category[a]	**Measure**						
Visual and Aesthetic Resources	Low-medium-high impact	Medium	High	Medium	High	Medium	High
Ecosystem Resources	Wetland / buffer acres affected	0.7 / 0.8	0.7 / 0.7	0.7 / 1.2	0.7 / 1.2	0.7 / 0.7	0.7 / 0.7
	Acres of vegetation removed	2	1	2	1	2	2
Noise	Number of properties affected before mitigation[e]	198	366	244	382	231	361
	Number of properties affected after mitigation	0	0	0	0	0	0
Vibration	Number of properties affected before/ after mitigation	8 / 0	2 / 0	14 / 0	3 / 0	13 / 0	2 / 0
Parks and Recreational Resources	Resources directly affected	Ridgecrest Park, Shoreline Stadium	Ridgecrest Park	Ridgecrest Park	Ridgecrest Park	Ridgecrest Park	Ridgecrest Park

a Only categories with notable impacts or differences among alternatives are shown; Chapters 3 and 4 include the full results for all environmental topics.
b Range reflects contingencies for a conceptual level design. Figures rounded to the nearest $10 million.
c The net boardings reflect ridership at all the segment stations, less the drop in ridership that would occur at the Northgate Station; the more sizeable drop is with a station located at NE 130th Street, which overlaps more with the Northgate Station ridership area than a station at NE 145th Street. All Segment A alternatives with three stations have a lower net ridership than the two station alternatives.
d Includes on-street and off-street parking. Does not include park-and-ride spaces.
e Includes park-and-ride noise impacts.

Table S-3. Comparison of Segment B Alternatives

Alternative		B1	B2	B2A	B4
Stations		One: Mountlake Terrace Transit Center	One: Mountlake Terrace Transit Center	Two: Mountlake Terrace Transit Center and 220th Street SW	One: Mountlake Terrace Freeway Station
Alignment		I-5 East Side to I-5 Median	I-5 East Side to I-5 West Side	I-5 East Side to I-5 West Side	I-5 East Side to I-5 Median
Category[a]	**Measure**				
Capital Cost[b]	2012 dollars (in millions)	$340 to $390	$390 to $450	$450 to $520	$310 to $360
Ridership	2035 daily boardings (net) [c]	4,600	4,600	4,800	3,600
Station Area Transit-Oriented Development	Qualitative rating of potential under existing conditions (limited-moderate-strong)	Mountlake Terrace Transit Center: moderate-strong	Mountlake Terrace Transit Center: moderate-strong	Mountlake Terrace Transit Center: moderate-strong 220th Street SW: moderate	Mountlake Terrace Freeway Station: moderate
Property	Number of parcels affected	5	18	18	6
	Number of residences displaced	0	5	5	0
	Estimated WSDOT right-of-way needed (acres)	14	15	16	15
Transportation	Number of parking spaces removed[d]	0	7	11	0
Ecosystem Resources	Wetland / buffer acres affected	Less than 0.1 / 0.6	0.5 / 1.3	1.7 / 0.9	0.1 / 0.7
	Acres of vegetation removed	5	11	11	3
Visual and Aesthetic Resources	Qualitative rating (low-medium-high impact)	Low	High	High	Low
Noise	Number of properties affected before mitigation[d]	135	177	175	129
	Number of properties affected after mitigation	0	0	0	0

a Only categories with notable impacts or differences among alternatives are shown; Chapters 3 and 4 include full results.
b Range reflects contingencies for a conceptual level design. Figures rounded to the nearest $10 million.
c Net boardings within the segment, less any reduction in ridership that could occur in other segments with an additional station. Adding station at 220th Street SW reduces ridership at Lynnwood by 200 daily boardings.
d Includes park-and-ride noise impacts.

Table S-4. Comparison of Segment C Alternatives

Alternative		C1	C2	C3
Stations		200th Street SW	At transit center	At park-and-ride
Category[a]	Measure			
Capital Cost[b]	2012 dollars (in millions)	$300 to $350	$270 to $310	$270 to $340
Ridership	2035 daily boardings (net) [c]	19,400 to 19,800	19,400 to 19,800	19,400 to 19,800
Station Area Transit-Oriented Development	Qualitative rating of potential under existing conditions (limited-moderate-strong)	200th Street SW Station: moderate-strong	Lynnwood Transit Center: moderate-strong	Lynnwood Park-and-Ride: moderate-strong
Property	Number of parcels affected	106	29	15
	Number of residences displaced	77	1	0
	Businesses and institutions displaced	31	3	1
	Estimated WSDOT right-of-way needed (acres)	1	1	3
Transportation	Realigned streets	---	---	208th Street SW
	Number of parking spaces removed	8	4	0
Ecosystem Resources	Wetland / buffer acres affected	Less than 0.1 / 0.5 - 0.9	0.9-1.0 / 0.5 – 0.9	0.2 / 0.5 - 1.0
	Acres of vegetation removed	1	1	1-2
Visual and Aesthetic Resources	Qualitative rating (low-medium-high impact)	High	High	Medium
Noise	Number of properties affected before mitigation[d]	286–293	109–116	6–20
	Number of properties affected after mitigation	0	0	0
Parks and Recreational Resources	Resources directly affected	Interurban Trail, Scriber Creek Park, Scriber Creek Trail	Interurban Trail, Scriber Creek Trail	Interurban Trail, Scriber Creek Trail

a Only categories with notable impacts or differences among alternatives are shown; Chapters 3 and 4 include full results.
b Range reflects contingencies for a conceptual level design. Figures rounded to the nearest $10 million.
c Ridership range reflects total boardings at this station, but adjusted to reflect ridership changes caused by additional station(s) in Segment A or B and their effect on ridership in this segment.
d Includes park-and-ride noise impacts.

Acquisitions, Displacements, and Relocations. Sound Transit would provide compensation and relocation assistance to parties affected by property acquisitions, consistent with Sound Transit policy and applicable federal regulations.

Noise and Vibration. Noise and vibration impacts would be mitigated by installing vibration reduction measures, such as special track work, noise walls (either at-grade or as part of elevated guideways), building insulation, or other measures.

Visual Quality. For areas where high impacts are anticipated, Sound Transit would apply design or aesthetic treatments to reduce the impacts of the project facilities, and provide landscaping and other screening features.

Ecosystem Resources. During conceptual design, final design, and permitting, Sound Transit will first strive to avoid and minimize ecosystem impacts. If impacts are unavoidable, Sound Transit would mitigate impacts in accordance with applicable federal regulations and local critical area ordinances and their permit requirements. For example, Sound Transit is committed to no net loss of wetland functions and wetland areas on a project-wide basis.

Parks and Recreational Facilities. Mitigation measures could be compensation or replacement for directly affected properties, restoration or enhancement for any affected features or facilities, or landscaping. For parks or trails affected during construction, signage, detours, and other measures would help avoid temporary closures of the properties.

Hazardous Materials. Any hazardous materials sites in the construction area would be investigated and addressed to avoid the potential for exposure or spread of hazardous materials during construction.

Construction. Detailed construction mitigation would help minimize or avoid construction impacts for each area of the environment. This includes transportation mitigation to reduce the potential for delays due to truck traffic, detours, and lane or street closures. To minimize impacts on communities, businesses, and public services, Sound Transit's would have a 24-hour construction hotline for the project. Construction period outreach and communication would include notices of key construction activities, such as changes to transportation facilities or routes. Best management practices for construction would be applied to reduce impacts on air quality and water quality, and from noise and vibration or hazardous materials.

S.6.2 Section 4(f)

Section 4(f) refers to a U.S. Department of Transportation (USDOT) statute that restricts FTA's ability to approve a project that adversely affects significant parks, recreation resources, fish and wildlife refuges, and historic properties. Table S-5 lists the Section 4(f) properties that the project may potentially impact or "use." If the impact would be minor and not alter the resource's functions and characteristics, Section 4(f) procedures allow *de minimis* impact findings, with concurrence from the official with jurisdiction over the Section 4(f) resource; otherwise, the project must consider avoidance alternatives.

S.6.3 Environmental Justice

The Lynnwood Link Extension would be in or near some neighborhoods with minority and low-income populations. Presidential Executive Order 12898, Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations, and USDOT Order 5610.2 direct Sound Transit and FTA to identify and meaningfully engage low-income and minority populations, and to consider environmental effects that could fall predominantly on those populations.

The environmental justice analysis indicates the proposed project would not result in disproportionately high and adverse effects on minority and low-income populations after all mitigation, enhancements, and offsetting benefits are considered. Construction and operation impacts could affect areas with minority or low-income populations, but planning and

Table S-5. Potential Section 4(f) Impacts

Section 4(f) Resource	Alternatives	Potential Use
Ridgecrest Park, City of Shoreline	All Segment A Alternatives	Anticipated *de minimis*. Preliminary concurrence on *de minimis* received from City of Shoreline. Light rail facility would be located on western part of the park, removing trees that provide an existing visual buffer. Park would experience property and visual impacts but this would not impair park functions.
Shoreline Stadium, Shoreline Public Schools	Alternative A1	Anticipated *de minimis*. Preliminary concurrence on de minimis received from Shoreline School District. Minor right-of-way acquisition would affect a parcel and parking near the stadium.
Interurban Trail, Snohomish County Public Utility District, City of Lynnwood	All Segment C Alternatives	Temporary occupancy. Elevated guideway over trail, with temporary trail closures. Visual impacts, but the trail's primary functions, features, and attributes would be retained.
Scriber Creek Trail, City of Lynnwood	Alternatives C2 and C3	Temporary occupancy. Elevated guideway over trail, with temporary trail closures. Visual impacts, but the trail's functions, features, or attributes would be retained.
Scriber Creek Park, City of Lynnwood	Alternative C1	Potential *de minimis* with Alternative C1 after applying mitigation. Guideway and structures would cross a corner of the park, removing trees and vegetation, and creating visual impacts. Coordination continuing with City of Lynnwood.

outreach, proposed design measures, mitigation measures, and best management practices would reduce or minimize environmental impacts, avoiding high and adverse environmental impacts.

Proposed mitigation and enhancement measures would be applied across all neighborhoods. In addition, the populations that could be affected by construction and operation of the Lynnwood Link Extension are in areas that would benefit from improved access to transit, improved transit reliability, reduced travel time, and increased regional access.

S.6.4 Ability of Alternatives to Meet the Purpose and Need

The project's Purpose and Need, detailed in Chapter 1 of the Draft EIS, is summarized in Table S-6, to show how effective the light rail alternatives would be in meeting the purpose and need of the project.

S.6.5 Estimated Project Costs

With six alternatives in Segment A, four in Segment B, and three in Segment C, there are 72 possible segment combinations that could be linked to create the full 8.5-mile extension from Northgate to Lynnwood, with total capital costs ranging from $1.2 billion to $1.7 billion, depending on the choice of alternatives. The

Table S-6. Consistency with Project Purpose and Need

Purpose and Need	No Build Alternative	All Light Rail Alternatives
Provide reliable, rapid, and efficient transit service with sufficient capacity to meet current and projected demand	No	Yes
Forecast year 2035 transit travel times from Lynnwood to Northgate (AM peak period)	26 minutes	14 to 16 minutes
Forecast year 2035 transit travel times from Northgate to Lynnwood (PM peak period)	24 minutes	14 to 16 minutes
Provide a mobility alternative to travel on congested roadways	No	Yes
Support the region's adopted land use, transportation, and economic development plans	No	Yes
Extend the regional light rail system in support of the Sound Transit Long-Range Plan	No	Yes
Implement a financially feasible system that seeks to preserve and promote a healthy environment	No	Yes

estimated capital cost of each light rail alternative is presented in Tables S-2, S-3, and S-4. All of the light rail alternatives are estimated to cost about $15 million per year to operate and maintain, but their costs would vary by several hundred thousand dollars annually, depending on how many stations are included. Chapter 5 provides additional details.

S.7 COMPARISON OF ALTERNATIVES

This section summarizes the primary differences in ridership, environmental impacts, and benefits among the light rail alternatives.

S.7.1 Segment A: Seattle to Shoreline

All Segment A alternatives would displace a similar number of residences through acquisitions. The primary differences in property impacts are at the stations, although the elevated alternatives would be better able to avoid impacts in some areas.

All Segment A alternatives would replace existing noise walls and install new noise walls, barriers, and other mitigation for noise impacts. The mostly elevated alternatives (A3, A7, and A11) would have the most noise impacts. Impacts with the elevated alternatives would require mitigation on the structure. All alternatives also replace existing noise walls in some locations.

All alternatives would acquire an edge of Ridgecrest Park in Shoreline. The mostly elevated alternatives (A3, A7, and A11) would have more impacts on views from the Jackson Park Golf Course. Alternative A1 has a roadway realignment that would affect part of the Shoreline Stadium parking lot.

Alternatives featuring three (A5, A7, A10, and A11) stations rather than two (A1 and A3) would have higher costs. While three stations would slightly increase ridership in Segment A, the extra station would slightly lengthen travel times.

The NE 145th Street Station alternatives (A3, A7, and A11) would displace residential properties, require street or interchange modifications, and place a multistory parking garage near residences. However, it would serve several populous

neighborhoods in Seattle and Shoreline, and it would have direct I-5 access. The NE 155th Street Station (A5 and A7) would also displace residences and add a multistory garage in a mostly residential area, but it would not have direct I-5 access.

The NE 130th Street Station (A3, A7, and A11) would increase costs, but it could be paired with either a NE 145th Street or NE 155th Street Station with little difference in other environmental effects. It would slightly increase boardings in Segment A but it would not notably increase system ridership because it would cause riders to shift from Northgate Station.

The NE 185th Street Station would have similar ridership for all options. At-grade alternatives (A1, A5, and A10) would have more street and/or bridge reconstruction, while the elevated alternatives would have more visually prominent guideways and an elevated station. While all of the alternatives would displace residential properties, the alternatives with parking to the east of I-5 (A3, A5, A7, A10, and A11) would displace more residences.

S.7.2 Segment B: Shoreline to Mountlake Terrace

The Segment B alternatives vary in their station location at the Mountlake Terrace Transit Center, whether they continue north in the I-5 median or cross to the west side of I-5, or whether they offer a station at 220th Street SW. Alternatives B2 and B2A would cross to the west of the freeway, while Alternatives B1 and B4 would stay in the median.

Alternatives B2 and B2A would have higher visual impacts as a result of the elevated guideway crossing over I-5 and their proximity to residences from 233rd Street SW to 220th Street SW. Existing dense vegetation would be cleared on the west side of I-5. Alternatives B1 and B4 would have lower visual impacts because more of their alignments would be in the I-5 median, although Alternative B4 would have a prominent pedestrian bridge over I-5.

Alternative B2 and B2A alignments along the hillside west of I-5 would remove about 11 acres of forest cover compared with 5 acres with Alternative B1 and 3 acres with Alternative B4. Alternatives B2 and B2A would affect the most wetlands and wetland buffer because they would cross a large portion of the second largest wetland in the study area. Alternative B2A would create the most impervious surface and require more mitigation measures to protect water resources.

During construction, Alternative B4 would need to close the bus ramps at the current freeway transit stop for the Mountlake Terrace Transit Center. This would affect transit service to the transit center for several years.

The Segment B alternatives would have different ridership, depending on whether a station is sited at the Mountlake Terrace Transit Center (Alternatives B1, B2, and B2A) or its nearby freeway transit stop (Alternative B4); a freeway station would take longer for riders to access, which would comparatively reduce ridership. Alternative B2A would provide an additional station at 220th Street SW, but the project's overall ridership would not notably increase. The added station would attract riders, but there would then be fewer riders boarding at the Mountlake Terrace Transit Center and Lynnwood.

Alternatives B1, B2, and B2A would best support potential transit-oriented developments in Mountlake Terrace's planned town center because their station would be east of I-5, at the existing park-and-ride, with an entrance south of 236th Street SW. This would be closer to the planned town center than the Alternative B4 freeway station.

S.7.3 Segment C: Mountlake Terrace to Lynnwood

Alternative C1 would displace a condominium complex and two business parks, displacing up to 77 residences and 31 businesses. In contrast, Alternative C3 would displace one business, and Alternative C2 would displace three businesses, with no residential impacts.

Alternatives C1 and C2 would have higher visual impacts because of the elevated guideway near residential properties and Scriber Creek Park.

Alternative C2 would cross the Scriber Creek wetland complex and affect the largest amount of stream and wetland buffer area. Alternative C1 would cross north of the wetlands. Alternative C3 would cross near the southern end of the Scriber Creek wetland complex.

As for Scriber Creek Park, Alternative C1 would have columns and a section of the elevated guideway within the park along Cedar Valley Road, which would alter this corner of the park. Alternative C2 would not be in the park but would have visual impacts, primarily along the Scriber Creek Trail. Alternative C3 would not affect the park.

All of the Segment C alternatives would serve the same area and have similar opportunities to support transit-oriented developments, but the station site choices would offer different opportunities for developing the area over time. The Alternative C1 station at 200th Street SW would be closer to the designated town center for Lynnwood. This alternative would have few impacts on the existing transit center and park-and-ride during construction, but it would displace more existing uses than the other two alternatives. Alternatives C2 and C3 would temporarily reduce the current parking capacity at the Lynnwood Transit Center for the construction of a park-and-ride garage. Alternative C3 also has the option to relocate the existing transit center at the same time as light rail is built, or the transit center could be relocated later, potentially as part of future transit-oriented development plans. However, Alternative C3's tail track would transect a large parcel that would otherwise have more area available for future transit-oriented development.

In other respects, including transportation performance, accessibility, and overall transit-oriented development, the Segment C alternatives would have similar effects.

S.8 PUBLIC AND AGENCY INVOLVEMENT

Sound Transit and FTA have been engaging the public and agencies since the start of early scoping for the project's alternatives analysis in 2010. They initiated the Draft EIS with formal public environmental scoping in September and October of 2011, which included meetings with the public and agencies as well as an open comment period and public notices and advertisements. Sound Transit continued to host public events and meet with agencies and interested groups as the Draft EIS was being prepared in 2012 and early 2013. The release of the Draft EIS comes with a formal public review and comment period, including meetings and hearings, as described in Section S.11, Next Steps. Chapter 6 of the Draft EIS has additional details about the project's public involvement and agency coordination plan, including how Sound Transit and FTA are engaging low-income and minority populations in the project.

S.9 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

Public and agency comments suggest limited project-related controversy. In Segment A, two of the alternatives (A5 and A7) feature a station at NE 155th Street, which the City of Shoreline opposed in a comment letter during environmental scoping. In Segment C, the Edmonds School District has concerns about potential use of its property by Segment C alternatives. The City of Lynnwood and the Edmonds School District have expressed concerns about the Lynnwood site alternative for Sound Transit's Link Operations and Maintenance Satellite Facility, a separate project that would support the operations of the Lynnwood Link Extension and planned systemwide service for ST2. Site alternatives for the maintenance facility are also being considered in Bellevue. Additional areas of controversy might be identified during the Draft EIS comment period.

Issues yet to be resolved relate to agreements that Sound Transit must secure to be able to use parts

of the I-5 right-of-way for the project, to modify any I-5 interchanges, or to modify other parts of the freeway, such as shoulders. These approvals would be made by WSDOT and FHWA during final design, and these agencies could request modifications or place other conditions on the project. If Sound Transit is not able to use the right-of-way as anticipated in the current design of the alternatives, this could affect the project's costs and impacts. However, Sound Transit has worked successfully with WSDOT and FHWA to obtain approvals for right-of-way use for other Sound Transit projects.

Project funding also remains an issue to be resolved. Sound Transit is proposing the project as a candidate for FTA's New Starts grants program. Recent legislation has changed some of the requirements for the program, and its longer-term funding levels are not known.

Potential stations at NE 130th Street, NE 155th Street, and 220th Street SW were not evaluated in the ST2 planning process, which analyzed ridership and cost for each station, and are not currently included in the ST2 Plan. Further evaluation of consistency with the ST2 Plan would be required before any of these stations could be added to the Lynnwood Link Extension, or before the NE 145th Street Station could be replaced or eliminated.

S.10 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

With the avoidance, mitigation, and minimization measures detailed in Chapter 3, Transportation Impacts and Mitigation, and Chapter 4, Environmental Impacts and Mitigation, significant adverse impacts would be avoided for most alternatives. However, some impacts might not be mitigated. Mature vegetation would be removed for all alternatives and replaced by light rail facilities, and there would be related loss of habitat. This would also result in longer-term visual impacts that would not be immediately mitigated by replacement vegetation or landscaping. Temporary construction impacts, such as freeway lane closures, street closures, or truck traffic, could cause congestion and inconveniences in some locations, and these impacts could be significant.

S.11 NEXT STEPS

The next steps for the Lynnwood Link Extension are described in the following paragraphs. Figure S-9 presents a project schedule summary.

DRAFT EIS

The Draft EIS will be available for an extended comment period of 60 days (45 days are required) that includes a public hearing and other opportunities for the public and agencies to comment in person or in writing. The comment period will begin on July 26, 2013 and end on September 23, 2013. The Draft EIS Fact Sheet provides further details on how to comment, and the times and locations for the public hearings.

After the close of the Draft EIS comment period, the Sound Transit Board will consider public and agency comments received as well as the information in the Draft EIS. The Board will then identify a Preferred Alternative for the Final EIS, which will be evaluated along with the other alternatives. The final decision on the project alternative to be built will not be made until after the Final EIS is issued.

FINAL EIS

The Final EIS will analyze the Preferred Alternative along with the other proposed light rail alternatives and No Build Alternative, and it will respond to the comments received on the Draft EIS. Work on the Final EIS is anticipated to begin in the latter part of 2013, with publication in 2014.

SOUND TRANSIT DECISION

Following review of the Final EIS, the Board will select the project alternative to be built.

RECORD OF DECISION

FTA will issue the Final EIS and publish its Record of Decision (ROD) for the project. The ROD is expected to document findings by FTA that the project has met the requirements of

NEPA and related environmental regulations. It will describe FTA's decision on the project, alternatives considered, the public opportunity to comment, the public and agency comments and responses, the basis for the decision to approve the project, and the mitigation measures required. Other federal agencies responsible for issuing permits or approvals for the project also have NEPA responsibilities and may issue their own environmental determinations. These determinations are expected to occur later, following the Final EIS and FTA ROD.

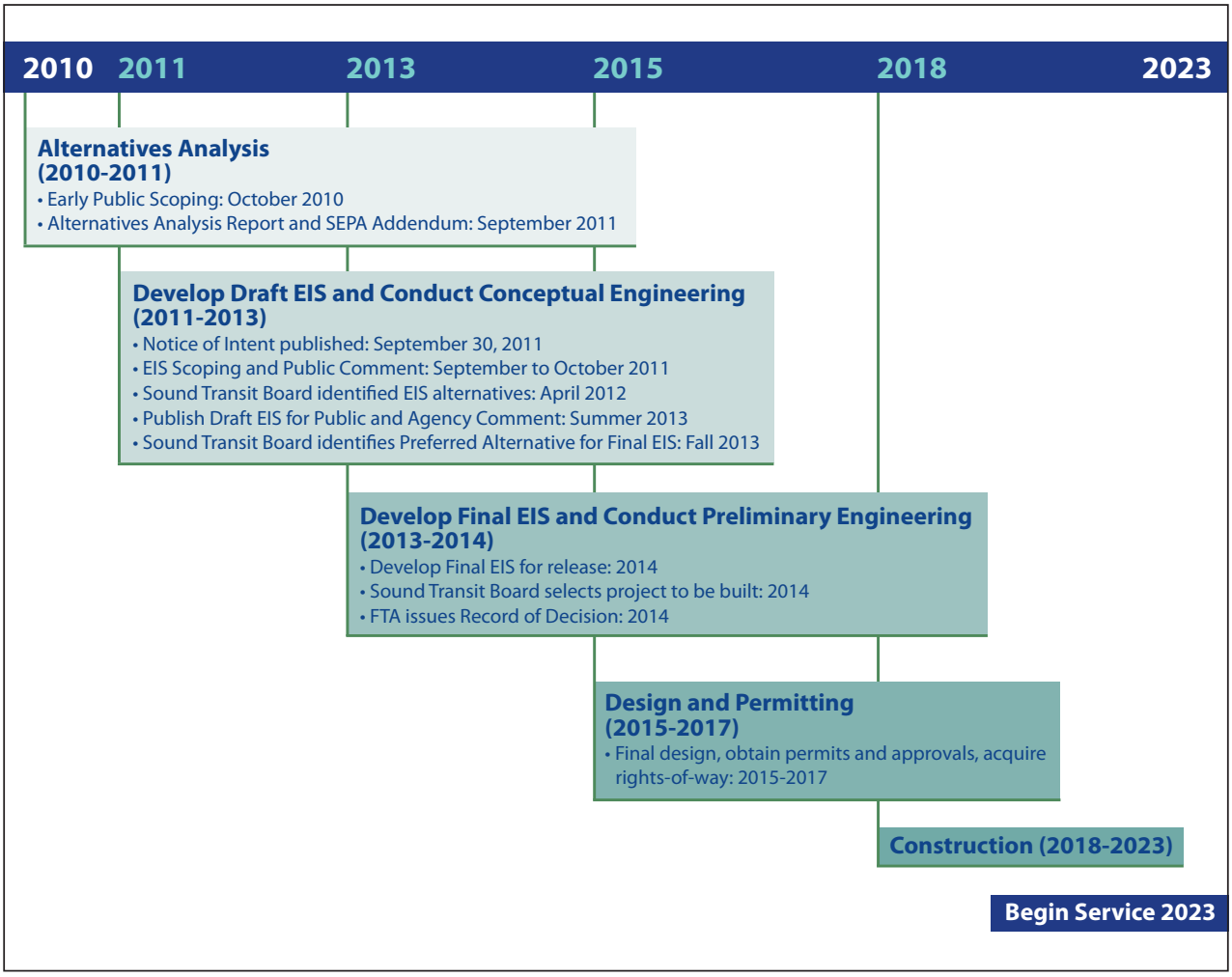


Figure S-9. Project Schedule