5 EVALUATION OF ALTERNATIVES

This chapter begins by evaluating how well the Lynnwood Link Extension alternatives meet the project's Purpose and Need Statement. It then compares the environmental and transportation performance of the project alternatives, discusses their costs, and reviews other implementation issues.

5.1 Ability to Meet the Purpose and Need

The Purpose and Need Statement, presented in Chapter 1, is summarized in Table 5-1, which compares the No Build Alternative and light rail alternatives with the project's Purpose and Need. Each Purpose and Need objective is discussed further below.

Table 5-1. Consistency with Project Purpose and Need

Purpose and Need	No Build Alternative	Preferred Alternative	Other Light Rail Alternatives
Provide reliable, rapid, and efficient transit service with sufficient capacity to meet current and projected demand	No	Yes	Yes
Forecast year 2035 transit travel times on I-5 from Lynnwood to Northgate (AM peak period)	26 minutes	14 minutes	14 to 16 minutes
Forecast year 2035 transit travel times on I-5 from Northgate to Lynnwood (PM peak period)	24 minutes	14 minutes	14 to 16 minutes
Forecast year 2035 PM peak hour passenger load transit level of service at screenlines on I-5	LOS D–F	LOS A–C	LOS A–C
Create an alternative to travel on congested roadways	No	Yes	Yes
Support the region's adopted land use, transportation, and economic development plans	No	Yes	Yes
Extend the regional light rail system in support of the Sound Transit Long-Range Plan	No	Yes	Yes
Implement a financially feasible system that seeks to preserve and promote a healthy environment	No	Yes	Yes

Provide reliable, rapid, and efficient transit service with sufficient capacity to meet current and projected demand

All of the light rail alternatives would offer reliable, rapid, and efficient transit service with sufficient capacity to meet current and projected demand. They would be very reliable because they would operate outside of traffic. In contrast, under the No Build Alternative, bus service would be less reliable than today as traffic congestion increases on freeways and arterials in the project corridor.

Travel times to all regional destinations would be shorter with the light rail alternatives, with trips to Northgate and downtown Seattle 5 to 16 minutes faster

than the No Build Alternative depending on where a trip starts. The light rail alternatives also would expand the person-carrying capacity of the I-5 corridor and would reduce bus overcrowding as some riders shift from bus to light rail.

Create an alternative to travel on congested roadways

All of the light rail alternatives would bypass congested roadways by operating on an exclusive at-grade or elevated guideway. With light rail operating at least every 10 minutes for the majority of the day and offering faster travel times than bus service, travelers would have a more time-competitive and reliable alternative to driving on congested roadways.

Support the region's adopted land use, transportation, and economic development plans

To address future population and employment growth, all regional, state, and local land use and transportation plans include a goal of improving transit accessibility and encouraging transit use; in addition, economic development plans call for reducing congestion to increase mobility of goods and services. All of the light rail alternatives support these long-range planning goals, and they are generally consistent with the land use plans and policies of the jurisdictions served by the project. Local and regional plans anticipate growth in urban centers that are connected by high quality transit. In the project corridor, the major urban growth centers are at Lynnwood and Northgate, which would be connected by light rail. Other station areas included in local jurisdictions' transit-supporting plans or policies include the NE 145th Street Station (Preferred Alternative and Alternatives A1, A3, A10, and A11) and NE 185th Street Station (all light rail alternatives) in Shoreline; the Mountlake Terrace Transit Center or Freeway Station in Segment B; and the 220th Street SW Station (an option for the Preferred Alternative and part of Alternative B2A) in Mountlake Terrace.

Light rail construction and operation would directly support economic development goals by creating jobs. Moreover, light rail can encourage future private development and investment near stations if supportive land use designations are in place, which would result in further economic benefits and advance the region's economic development plans.

Extend the regional light rail system in support of the Sound Transit Long-Range Plan

Sound Transit's Long-Range Plan calls for extending regional transit north to Everett. Any of the light rail alternatives would help implement the Long-Range Plan.

Implement a financially feasible system that seeks to preserve and promote a healthy environment

All of the light rail alternatives have project construction and operating costs similar to those considered in the financial plan developed as part of the ST2 program. Compared to the No Build Alternative's all-bus system, the light rail alternatives would be more efficient and financially feasible to operate, particularly as the demand for transit service increases. The transit system with the No Build Alternative would also become increasingly expensive to operate given increased congestion and travel times, which would be in addition to the service hours needed to meet projected travel demand. The light rail alternatives would create environmental benefits through air quality and greenhouse gas improvements, cleanup of previously contaminated sites, reduced noise, and improved stormwater management. They would also best support regional plans to manage growth and reduce the environmental problems associated with sprawl.

5.2 Comparison of Ridership, Environmental Impacts, and Benefits of Light Rail Alternatives

This section summarizes the ridership, environmental impacts, and benefits that differentiate the light rail alternatives. While this discussion focuses on their major differences, a complete summary of all environmental issues is provided in the Summary to this Final EIS.

5.2.1 Segment A: Seattle to Shoreline

Table 5-2 displays the key measures that differentiate the seven alternatives being considered in Segment A, including cost, transportation, and environmental performance. The alternatives represent two basic types of choices:

- Would it be better to have the alternatives at-grade wherever possible, with limited elevated sections, or would it be better to be mostly elevated?
- Should there be two or three stations, and where should they be placed?

As Table 5-2 shows, all Segment A alternatives would have a similar number of residential displacements due to property acquisitions. While all of the alternatives seek to minimize property acquisitions by using WSDOT right-of-way as much as possible, in some locations, there is not sufficient room to accommodate any of the alternatives without requiring other property. The primary differences in right-of-way needs are at the stations, although the elevated alternatives (A3, A7, and A11) would be able to avoid impacts in some areas. There would be similar numbers of properties affected by the difference in choices for stations with park-and-rides at NE 145th Street (Preferred Alternative, A1, A3, A10, and A11) and NE 155th Street

Table 5-2. Comparison of Segment A Alternatives

	Alternative	Preferred Alternative	A1	A3	A5	A7	A10	A11
	Stations	Two: NE 145th and NE 185th Streets	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
	Profile	Mixed At-Grade and Elevated	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]	2014 dollars (in millions)	$730 to $840	$760 to $880	$790 to $910	$740 to $850	$830 to $950	$750 to $860	$850 to $970
Ridership	2035 daily boardings (net)[c]	12,600 (13,000[d])	12,600	9,500	13,000	10,900	10,900	10,900
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 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 145th Street: limited NE 185th Street: limited-moderate
Transportation	Number of intersections requiring mitigation	2 (3[d])	5	6	7	7	4	4
	I-5 bridges rebuilt	NE 130th Street	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 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 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[e]	69	69	73	89	77	96	84
Property	Number of parcels affected	130	115	107	128	117	122	107
	Number of residences displaced	121	111	107	123	116	118	107
	Businesses and institutions displaced	0	0	0	0	0	0	0

Table 5-2. Comparison of Segment A Alternatives

	Alternative	Preferred Alternative	A1	A3	A5	A7	A10	A11
	Stations	Two: NE 145th and NE 185th Streets	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
	Profile	Mixed At-Grade and Elevated	Mixed At-Grade and Elevated	Mostly Elevated	Mixed At-Grade and Elevated	Mostly Elevated	Mixed At-Grade and Elevated	Mostly Elevated
Category[a]	Measure							
	Estimated WSDOT right-of-way needed (acres)	19	26	20	20	19	25	20
Visual and Aesthetic Resources	Low-medium-high impact	Medium	Medium	High	Medium	High	Medium	High
Ecosystem Resources	Wetland/buffer acres affected	0.9 / 0.3	0.9 / 0.3	0.9 / 0.3	0.9 / 0.8	0.9 / 0.8	0.9 / 0.3	0.9 / 0.3
	Acres of forest vegetation removed	2	2	1	2	1	2	2
Noise	Number of properties affected before/after mitigation[f]	306 (309[d])/ 0	234 / 0	476 / 0	303 / 0	493 / 0	283 / 0	476 / 0
Vibration	Number of properties affected before/after mitigation	27 / 0	9 / 0	8 / 0	16 / 0	9 / 0	14 / 0	8 / 0
Parks and Recreational Resources	Resources directly affected	Ridgecrest Park, Shoreline Stadium	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, minus 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.

[d] Parentheses show when the 130th Street Station Option for the Preferred Alternative is included.

[e] Includes on-street and off-street parking. Does not include park-and-ride spaces.

[f] Includes park-and-ride noise impacts.

(A5 and A7). The NE 185th Street Station options would have different property impacts, depending on whether the parking is in a multistory garage on the west side of the freeway (Preferred Alternative and A1), on the east side with surface lots (A5 and A10), or in a parking structure to the east (A3, A7, and A11).

Transportation impacts would primarily occur at the station sites where some intersections would have increased delays, but Sound Transit would use mitigation measures to reduce delays to conditions similar to the No Build Alternative or better. Several of the alternatives have stations or alignments that would rebuild I-5 ramps at NE 130th Street or NE 145th Street, requiring FHWA and WSDOT approvals; these changes would not affect the performance of ramps or adjacent areas of the freeway.

All Segment A alternatives would require noise walls, barriers, and other mitigation measures to alleviate noise impacts at properties along the corridor. These measures would satisfactorily mitigate noise impacts to levels below FTA criteria. Similarly, all alternatives include design measures to reduce vibration to be below FTA's impact threshold.

Impacts on water resources and ecosystems would be relatively similar; the mostly elevated alternatives (A3, A7, and A11) would have more opportunities to avoid impacts through design.

Impacts on parks and recreation facilities would be generally similar among all Segment A alternatives, with all alternatives requiring 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. The Preferred Alternative and Alternative A1 include a roadway realignment that would affect a small part of the Shoreline Stadium parking lot, and the Preferred Alternative also has an option to develop a garage on the stadium's lot.

Overall, the mostly elevated alternatives (A3, A7, and A11) have higher costs but lower impacts compared with the mostly at-grade alternatives (including the Preferred Alternative), except for having higher visual impacts.

Among the station pairing choices, alternatives featuring a NE 130th Street Station as part of a three-station configuration in Segment A (A5, A10, and A11, and an option for the Preferred Alternative) rather than two stations (Preferred Alternative, A1, and A3) would have more access points but longer travel times and higher costs. Three stations could add about 400 daily boardings in Segment A because some users in north Seattle would find the NE 130th Street Station more convenient to use than the Northgate Station. While this is an increase in project ridership, it would not increase overall Link system ridership. Any three-station pairing would have about the same ridership and effects as any two-station combinations.

There are also tradeoffs between having a station at NE 145th Street or at NE 155th Street. The NE 145th Street Station alternatives (Preferred Alternative, A1, A3, A10, and A11) would displace residential properties, require street or interchange modifications, and place a multistory parking garage near residences. However, the station would serve several populous neighborhoods in Seattle and Shoreline, and it would have convenient 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 would lack I-5 access adjacent to the station. The City of Shoreline's planning policies identify stations at NE 145th Street and NE 185th Street, and the City has conducted station planning at those locations, including plans for higher density development at the NE 185th Street Station area. The City's policies do not anticipate a station at NE 155th Street, which would also need to be paired with a second station to allow light rail to serve Seattle neighborhoods.

The NE 130th Street Station (A3, A7, A10, and A11) would not appreciably increase environmental impacts or ridership compared with alternatives that do not include this station; it would mostly attract riders who would otherwise use the NE 145th Street Station or Northgate Station. While the NE 130th Street Station would increase costs, it could be paired with either a NE 145th Street Station or NE 155th Street Station with little difference in other effects.

The NE 185th Street Station would have similar ridership for all options. Costs and impacts tend to be the differentiating factors. At-grade alternatives (Preferred Alternative, A1, A5, and A10) would have more street and/or bridge reconstruction, while the elevated alternatives would have more visually prominent guideways and stations. The siting and configuration for parking elements is generally interchangeable among the alternatives, but the choices for structures or surface lots, as well as their siting, would determine which properties would be acquired. All of the alternatives would affect some residential properties; however, the alternatives with parking to the east of I-5 (A3, A5, A7, A10, and A11) would impact more residences.

5.2.2 Segment B: Shoreline to Mountlake Terrace

Table 5-3 displays the key measures that differentiate the four Segment B alternatives. These 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 the freeway; and whether they offer a station at 220th Street SW. The Preferred Alternative and B2A cross to the west of the freeway, affecting more properties, while Alternatives B1 and B4 stay in the median.

Table 5-3. Comparison of Segment B Alternatives

	Alternative	Preferred Alternative	B1	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 West Side	I-5 East Side to I-5 Median	I-5 East Side to I-5 West Side	I-5 East Side to I-5 Median
Category[a]	Measure				
Capital Cost[b]	2014 dollars (in millions)	$450 to $510	$390 to $450	$530 to $610	$360 to $410
Ridership	2035 daily boardings (net)[c]	5,100 (5,300)[d]	5,100	5,100	4,300
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	15 (21)[d]	5	18	6
	Number of residences displaced	3 (8)[d]	0	5	0
	Estimated WSDOT right-of-way needed (acres)	17	14	16	15
Transportation	Number of parking spaces removed	0	0	11	0
	I-5 bridges rebuilt	NE 195th Street	NE 195th Street	NE 195th Street	NE 195th Street
Ecosystem Resources	Wetland/buffer acres affected	0.8 / 1.6 (0.5 / 1.6)[d]	Less than 0.1 / 0.9	1.6 / 1.3	0.2 / 0.7
	Acres of forest vegetation removed	11 (11)[d]	5	11	3
Visual and Aesthetic Resources	Qualitative rating (low-medium-high impact)	High	Low	High	Low
Noise	Number of properties affected before/after mitigation[e]	217 (202)[d] / 0	122 / 0	192 / 0	110 / 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.

[d] The number in parenthesis is the Preferred Alternative with the optional station at 220th Street SW.

[e] Includes park-and-ride noise impacts.

The Preferred Alternative and B2A would have higher impacts on visual quality along I-5 from about 233rd Street SW to 220th Street SW. Existing dense vegetation would be cleared on the lower portion of the hillside on the west side of I-5, which would change the visual character of this area. 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. The median alignment for Alternatives B1 and B4 also would result in fewer noise impacts.

The vegetation removal mentioned above, where the Preferred Alternative and B2A alignments travel along the hillside west of I-5, would eliminate about 11 acres of forest cover compared to 5 acres with Alternative B1 and 3 acres with Alternative B4. Likewise, the Preferred Alternative 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. Also, Alternative B2A and the Preferred Alternative with the option for a 220th Street SW station would create the most impervious surface and would require more mitigation measures to protect water resources.

Transportation impacts would not differentiate the alternatives in Segment B except during construction, when 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 (Preferred Alternative, B1, and B2A) or its nearby freeway transit stop (Alternative B4); a freeway station would take longer for riders to access, which would reduce ridership. Alternative B2A and an option for the Preferred Alternative have an additional station at 220th Street SW, which could encourage transit-oriented development in this area, but the project's overall ridership would not notably increase. Although the added station would attract some riders, many of them would be riders switching from the Mountlake Terrace Transit Station and Lynnwood to the 220th Street SW Station. The longer travel time to stop at an added station would slightly lower overall ridership as well.

The Preferred Alternative and Alternatives B1 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.

5.2.3 Segment C: Mountlake Terrace to Lynnwood

Table 5-4 displays the key measures that differentiate the performance of the four Segment C alternatives, including environmental impacts and property acquisition.

Alternative C1 would affect the most properties because it would displace up to 77 residences and 31 businesses in a condominium complex and two business

parks. In contrast, the Preferred Alternative would displace nine businesses, 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, while the Preferred Alternative and Alternative C3 would have lower visual impacts.

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 over Scriber Creek Park. The Preferred Alternative would cross the southern end of the Scriber Creek wetland complex and would have less impact than Alternative C2, but more than Alternative C3.

Alternative C1 would have columns and a section of the elevated guideway within Scriber Creek Park along Cedar Valley Road. FTA has determined that converting part of the park to a transportation use would not be a minor impact, and a federal regulation known as Section 4(f) would require Sound Transit to choose other alternatives to avoid the use of parkland, unless Alternative C1 were redesigned to avoid the use of the park or Sound Transit mitigated the park impact to a *de minimis* level. Alternative C2 would not be in the park but the guideway and columns adjacent to the park would have visual impacts, primarily from the Scriber Creek Trail. The Preferred Alternative and Alternative C3 would not affect the park.

While all of the Segment C alternatives would serve the same area and have similar opportunities to support transit-oriented developments, the station site choices would provide different opportunities for developing the area over time. The Preferred Alternative would acquire four commercial properties to the north and east of the Lynnwood Transit Center and change those existing land uses; however, it would avoid cutting across property that the City of Lynnwood has identified for high-density development on the east side of 44th Avenue West.

The Preferred Alternative would have a plaza connecting to the intersection of 200th Street SW/Alderwood Mall Boulevard/44th Avenue West on the edge of the designated town center of Lynnwood, although the Alternative C1 station at 200th Street SW would be closest to the designated town center for Lynnwood. Alternative C1 would have the fewest impacts on the existing transit center and park-and-ride during construction. The Preferred Alternative and Alternatives C2 and C3 would temporarily reduce the current parking capacity at the 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 the light rail is built, or the transit center could be relocated later, potentially as part of future transit-oriented development plans. However, Alternative C3 has a tail track that cuts across a large parcel that would otherwise be available for future transit-oriented development.

Table 5-4. Comparison of Segment C Alternatives

	Alternative	Preferred Alternative	C1	C2	C3
	Station	At park-and-ride	200th Street SW	At transit center	At park-and-ride
Category[a]	Measure				
Capital Cost[b]	2014 dollars (in millions)	$340 to $380	$330 to $380	$300 to $340	$300 to $390
Ridership	2035 daily boardings (net)[c]	17,900 (17,200[d])	17,600 to 17,900	17,600 to 17,900	17,600 to 17,900
Station Area Transit-Oriented Development	Qualitative rating of potential under existing conditions (limited-moderate-strong)	Lynnwood Park-and-Ride: moderate-strong	200th Street SW Station: moderate-strong	Lynnwood Transit Center: moderate-strong	Lynnwood Park-and-Ride: moderate-strong
Property	Number of parcels affected	18	31	29	15
	Number of residences displaced	0	77	1	0
	Businesses and institutions displaced	9	31	3	1
	Estimated WSDOT right-of-way needed (acres)	2	1	1	3
Transportation	Realigned streets	---	---	---	208th Street SW
	Number of parking spaces removed	27	8	4	0
	Number of intersections requiring mitigation	3(4[f])	3	3	3
Ecosystem Resources	Wetland/buffer acres affected	0.7 / 1.0	Less than 0.1 – 0.2 / 0.7 - 1.1	0.9-1.1 / 0.6 – 1.1	0.2 – 0.3/ 1.0 - 1.7
	Acres of forest vegetation removed	2	1	1	1-2
Visual and Aesthetic Resources	Qualitative rating (low-medium-high impact)	Medium	High	High	Medium
Noise	Number of properties affected before/after mitigation[e]	115 / 0	226–234 / 0	148–151 / 0	29–79 / 0
Vibration	Number of properties affected before/after mitigation	0 / 0	1-2 / 0	1-2 / 0	0 / 0
Parks and Recreational Resources	Resources affected	Interurban Trail, Scriber Creek Trail	Interurban Trail, Scriber Creek Park, Scriber Creek Trail	Interurban Trail, Scriber Creek Trail	Interurban Trail, Scriber Creek Trail
Section 4(f)	Resources involving a Section 4(f) use	None	Scriber Creek Park	None	None

[a] Only categories with noteworthy information, 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] Preferred Alternative, with optional stations in Segments A and B.

[e] Includes park-and-ride noise impacts.

[f] Includes option for added parking.

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

5.3 Other Considerations

This section identifies other issues Sound Transit considered while planning and evaluating the benefits and impacts of the Lynnwood Link Extension.

5.3.1 Costs and Funding

Tables 5-2 through 5-4 list estimated capital costs of the alternatives. With seven alternatives in Segment A, four in Segment B, and four in Segment C, there are many possible segment combinations that could be linked to create the full 8.5-mile extension from Northgate to Lynnwood, with total costs ranging from $1.4 billion to $2.0 billion, depending on the alternatives selected in each segment. The Preferred Alternative would have total costs of $1.5 to $1.7 billion.

These estimates capture the cost differences of the essential features of alternatives for the purpose of comparison. The project cost estimates include:

- Construction costs for facilities, including the trackway/guideway, stations, and anticipated mitigation requirements
- Contingencies that address the varying levels of uncertainty and construction risk that have been identified for alternatives
- Right-of-way acquisition costs, including temporary construction easements
- Costs for design, permitting, agency administration, and program management

Because the project is still in conceptual planning, these estimates include substantial contingencies that recognize the uncertainty around some key factors that affect cost, such as WSDOT/FHWA design requirements, construction methods, mitigation measures, and market factors.

All of the light rail alternatives are estimated to cost about $16 million per year to operate and maintain, varying by several hundred thousand dollars depending on how many stations are included. Major operating costs include labor and benefits, electric power, insurance, and parts and equipment to run and maintain the trains, guideway, systems, and stations.

Project costs and revenues available to cover those costs were major considerations for the Sound Transit Board when it identified a Preferred Alternative for the Final EIS, which included four stations out of a possible six. However, the Board also requested further study of two stations as options for the Preferred Alternative. One of the purposes of the project is to support the implementation of the Sound Transit Long-Range Plan. The Long-Range Plan emphasizes cost-effective and efficient

transportation solutions, and it calls for a financially feasible system that is affordable to build, run, and use.

Sound Transit's financial plan currently includes $1.322 billion for this project (as indicated in Sound Transit's 2013 Transportation Improvement Program). Additional funding or cost reductions (including those that may be found through advanced design to reduce risk assumptions and related contingencies) would be needed for all of the alternatives.

Cost Tradeoffs

As noted, there are relatively small differences in operating costs among the alternatives. Capital cost differences are more pronounced; major cost tradeoffs among alternatives are summarized below.

Segment A: Seattle to Shoreline

A major cost driver in Segment A is the amount of guideway that is elevated, which is more expensive than at-grade. The Preferred Alternative and Alternatives A1, A5, and A10 place more of the guideway and at least one of their stations at-grade; however, they would require rebuilding three or four bridges that cross I-5. Alternatives A3, A7, and A11 elevate more of the guideway to cross over bridges to avoid the impacts of rebuilding them. The mostly elevated alternatives are $30 million to $80 million more expensive than the more at-grade alternatives because the cost of the elevated guideways and stations is higher than the cost of rebuilding the bridges.

The number of stations also affects costs. The Preferred Alternative and Alternatives A1 and A3 include two stations, while Alternatives A5, A7, A10, and A11 include three. The Preferred Alternative also has an option to add a third station at NE 130th Street. Including a third station adds $30 million to $50 million to the overall cost.

Segment B: Shoreline to Mountlake Terrace

There are several cost tradeoffs among the alternatives in Segment B. Converting the Mountlake Terrace Freeway Station for light rail use in Alternative B4 would cost $20 million to $30 million less than building a new elevated station in the Mountlake Terrace Transit Center in the Preferred Alternative and Alternatives B1 and B2A. North of 236th Street SW, crossing all the way over I-5 and then running on mostly elevated structures along the west side of the freeway (Preferred Alternative and B2A) would cost about $40 million more than crossing only to the median and then running at-grade in the median to Lynnwood (B1 and B4). Finally, adding a station near 220th Street SW in Alternative B2A would cost approximately $50 million or more, and an option to add a station for the Preferred Alternative would be similar.

Segment C: Mountlake Terrace to Lynnwood

The cost ranges in Segment C reflect the length of elevated guideway, property acquisition costs, and the cost for modifying existing transit facilities. All alternatives in this segment are elevated and each includes an elevated station near the existing Lynnwood Transit Center. The cost of the Preferred Alternative would be similar to Alternative C1. They both have longer guideways and more property acquisitions than the other two alternatives, costing up to $30 million more than Alternatives C2 and C3. Alternative C2, which has less guideway and less property acquisition, is the least expensive of the alternatives.

Funding

Sound Transit funds its facilities, services, and programs through a combination of revenue sources, including voter-approved sales, motor vehicle excise and rental car taxes, state and federal grants, passenger fares, and bond proceeds. The Lynnwood Link Extension is one project in the overall $17.8 billion ST2 system expansion program approved by voters in 2008. Since that approval, the recession has required Sound Transit to lower the revenue forecast through 2023 by 30 percent. Sound Transit has responded to the reduced revenue by taking steps to control costs and realign the ST2 program to ensure that the majority of the ST2 program, including the Lynnwood Link Extension, can be delivered by 2023. However, financial challenges remain. Sound Transit's financial plan has assumed that the agency would secure at least $600 million in funding from FTA's nationally competitive Capital Investment and Grant Program. This funding will be required to build any of the Lynnwood Link Extension alternatives. Sound Transit believes this project will compete well nationally. The agency has secured similar size grants in the past, receiving $500 million to help fund the initial segment of Central Link and another $813 million to help fund the University Link project.

5.3.2 Commitment of Resources

If built, the Lynnwood Link Extension would have irreversible and irretrievable commitments of property and natural resources.

For this project, private properties with residential and commercial uses would be converted to transit use. The use of the WSDOT right-of-way for the project would also be a commitment of resources that could affect the costs and impacts of future projects in the corridor, including potential projects involving environmental improvements, such as stormwater management or habitat restoration. While WSDOT and Sound Transit have been collaborating to develop this project in a way that maintains WSDOT's flexibility to make future improvements, the project would ultimately need to secure FHWA's approval to use highway lands, considering factors such as safety, transportation and environmental performance, maintenance, and potential future improvement needs. FHWA must approve the detailed design

plans for the project, which would include permanent facilities as well as construction traffic plans.

The conversion of public or private lands to light rail use would permanently alter visual quality and character along the project corridor. This would result in some visual impacts that would not be mitigated by replacement vegetation and landscaping that must mature to be effective. The project would affect wetlands, wildlife habitat, aquatic resources, and highway beautification areas to varying degrees, depending on the alternative built. Mitigation measures would be employed, but some of these resources would be irretrievably altered.

Building the project also would irretrievably commit resources such as fuel and construction materials (e.g., aggregate for concrete, wood for forms and frames, and steel for rebar).

5.3.3 Benefits and Disadvantages of Delaying Project Implementation

As required under SEPA (WAC 197-11-440), Sound Transit has evaluated the benefits and disadvantages of delaying the project, compared with moving forward with it as planned.

If Sound Transit delays construction, this would temporarily avoid the long-term and construction-related environmental consequences associated with the project. Other long-term impacts such as visual impacts also would be delayed. Delays in acquiring properties could be seen as a benefit because property owners could reside on their property longer, but this could also create burdens on property owners or tenants, particularly if the project delays the acquisition and relocation processes. Delay in acquiring property also could make the acquisitions more expensive for Sound Transit.

The primary disadvantage of delaying the project would be the failure to address the growing transportation needs of the corridor communities and the region. Sound Transit and PSRC transportation plans, as well as the long-range planning, growth management, and economic development plans of the project corridor communities (see Section 4.2, Land Use) emphasize the need for a transportation alternative in the face of growing congestion along this major corridor.

A substantial delay in implementing the Lynnwood Link Extension would impair the region's ability to accommodate its projected growth in travel demand, population, and employment. The current high levels of congestion and unreliability for travelers in the I-5 corridor would worsen because travel demand is expected to continue growing. Increasing congestion would continue to degrade bus transit service. Increased traffic congestion could affect future economic development in the region because it could increase the cost of doing business, including costs for lost productivity and wasted

fuel. Increased business costs would make the project corridor communities comparatively less attractive as places to live or do business.

Finally, delays in addressing this transportation problem could change planned development patterns, leading to less dense development and lost opportunity to create transit-supported communities. This could hamper economic growth, worsen environmental conditions, and negatively affect the regional quality of life.

5.3.4 Areas of Controversy and Issues to be Resolved

Public and agency comments suggest limited project-related controversy in most areas. However, during the Draft EIS public review and comment period, Sound Transit and FTA received several hundred comments about potential impacts to the Seattle Latvian Evangelical Lutheran Church, which would have been relocated by some of the Segment A alternatives. The church, individuals, community organizations, and representatives of Latvia asked Sound Transit to explore additional options to avoid impacting the church. Following issuance of the Draft EIS and public comments, Sound Transit developed designs to realign a section of 3rd Avenue NE, which would maintain access to the church and avoid the need to relocate the church or its community hall.

Also in Segment A, two of the alternatives (A5 and A7) would include a station at NE 155th Street, which the City of Shoreline opposed in its comment letter during environmental scoping.

The Edmonds School District also has concerns about potential impacts to District properties. One of the Segment B alternatives (the 220th Street Station option for the Preferred Alternative), would affect the former Melody Hill School site. The District has plans to sell the site for other development. In Segment C, Alternatives C2, C3, and the Preferred Alternative would cross a District property that is to be developed as a bus base and district operations center. The District's comment letter on the Draft EIS stated concerns about any alternatives that would conflict with the development plans for the property, but also supported a City of Lynnwood proposal to modify Alternative C3. The Preferred Alternative now features several elements of that proposal, as refined by Sound Transit in coordination with the City and the District.

Public comments on the Draft EIS also highlighted impacts to Scriber Creek Park in Segment C, which many commenters and the City of Lynnwood described as particularly valued for its natural characteristics. Alternative C1 was the most criticized, followed by Alternative C2. FTA has determined that a Section 4(f) use would occur with Alternative C1 due to its impacts on Scriber Creek Park, and therefore other alternatives that avoid the use must be considered instead. The EIS includes proposed measures to mitigate impacts should Alternative C2 be selected. The Preferred Alternative and Alternative C3 would not impact Scriber Creek Park.

Alternatives C1 and C2's acquisition and relocation impacts to businesses and/or residents were also frequent topics in public comments on the project.

The City of Lynnwood and the Edmonds School District opposed the Lynnwood site alternative for Sound Transit's OMSF, which is a separate project that would support light rail operations and maintenance needs for the ST2 program of projects, including the Lynnwood Link Extension and the East Link Extension. In July 2014, Sound Transit identified a site in Bellevue as the Preferred Alternative for evaluation in the Final EIS, along with other alternatives. A final decision on the OMSF site will be made after the Final EIS is issued for that project in summer 2015.

Issues yet to be resolved relate to agreements that Sound Transit must secure from WSDOT and FHWA to use parts of the I-5 right-of-way permanently as well as during construction. In addition to needing approvals for the use of the right-of-way, Sound Transit would need approvals for modifying any I-5 interchange or other parts of the freeway, such as shoulders or existing noise walls; for constructing staging and access; for implementing any lane closures affecting the interstate highway; and for conducting any modifications that could affect highway operations or safety. Most of these approvals would occur during final design. Sound Transit has coordinated with FHWA and WSDOT to develop conceptual engineering definitions for the alternatives, but as final design progresses, FHWA or WSDOT could request modifications or place other restrictions on the project. Sound Transit has worked successfully with WSDOT and FHWA to obtain approvals for right-of-way use for other Sound Transit projects, but it would affect the project costs, construction impacts, and work schedule if Sound Transit is not able to use the right-of-way as anticipated in the current design of the alternatives.

As noted above in Section 5.3.1, 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 long-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. Consistency with the ST2 Plan would need to be further evaluated before any of these stations could be added to the Lynnwood Link Extension.