Initial Assessment Alternatives Development and Screening

November 2020
Summary

Introduction and Background

Sound Transit completed an alternatives evaluation process for the West Seattle and Ballard Link Extensions project in 2019. Through this process, alternatives suggested during early scoping were refined through a three-level evaluation process with public input and recommendations by a Stakeholder Advisory Group (SAG) and an Elected Leadership Group (ELG). Following completion of the alternatives evaluation and scoping under the National and State Environmental Policy Acts (NEPA and SEPA), the Sound Transit Board considered public and agency input and then identified preferred and other alternatives for study in an Environmental Impact Statement (EIS) in May 2019.

At that time, the Sound Transit Board also directed staff to conduct initial assessments of the following potential new alternatives suggested during the scoping period to establish whether further study in the Draft EIS would be appropriate:

- Yancy/Andover Elevated
- Pigeon Point Tunnel
- SODO Elevated
- 20th Avenue Tunnel Ballard

This Initial Assessment Alternatives Development and Screening Report documents the findings of the development, evaluation and screening process for the four potential new alternatives identified by the Sound Transit Board as potentially appropriate for further study in the Draft EIS (along with two options that arose during this study process).

Initial Assessment Alternatives and Findings

Yancy/Andover Elevated

The Yancy/Andover Elevated Alternative would head west from Delridge Way SW in the vicinity of SW Andover Street and follow Avalon Way SW to an Avalon Station in the vicinity of SW Avalon Way and 35th Avenue SW. It would be similar to an alternative that had been studied and dismissed in the Level 1 screening process, but was reintroduced in response to the ongoing concerns about residential effects.

The costs for this alternative would be similar to the ST3 Representative Project. Positives include fewer residential displacements and visual effects in the Delridge/Youngstown neighborhood and fewer acres of parks and recreational resources affected. Negatives include potentially greater effects on businesses and freight, a less accessible Delridge Station, and increased residential effects along Avalon Way.

The Sound Transit Board acted in October 2019 to advance this alternative for study in the Draft EIS.

Pigeon Point Tunnel

The Pigeon Point Tunnel Alternative would cross the Duwamish Waterway on the south side of the West Seattle Bridge, turn toward the southwest and tunnel under the Pigeon Point neighborhood, emerging on the west side of the hill in the vicinity of Delridge Way SW and SW Genesee Street.

This alternative would have fewer business and freight effects, fewer visual effects because of the tunnel, and locate the Delridge station in a more accessible location further south. However, the alternative is estimated to cost approximately $900 million more (+$200 million for Pigeon Point Tunnel and +$700 million for West Seattle Junction Tunnel) than the ST3 Representative Project, and presents greater schedule risks. Tunnel alternatives at this location were not identified or analyzed in the ST3 Plan.

The Sound Transit Board did not advance this alternative for study in the Draft EIS.

SODO Elevated

The SODO Double Elevated Alternative would elevate both the new light rail line and the existing light rail line in SODO. This would achieve full grade separation between light rail and the road network, improving reliability for both, and would facilitate transit integration with the E3 busway maintained and a platform closer to S Lander Street. However, the SODO Double Elevated Alternative would require two shutdowns of Central Link during construction and would cost $300 million more than the ST3 Representative Project (approximately $500 million more than the preferred alternative, SODO At-Grade).

The SODO Partial Elevated Alternative was developed in response to some of the challenges associated with the SODO Double Elevated Alternative. This alternative would elevate only the new light rail line and leave the existing light rail line at grade in SODO. This alternative would remove the at-grade crossing at S Holgate Street, but would maintain the at-grade crossing of S Lander Street with the existing light rail line. This alternative would also facilitate transit integration with the E3 busway maintained and a platform closer to S Lander Street, and it would be less disruptive to existing service during construction. Cost estimates for this alternative are similar to the ST3
Representative Project, and approximately $200 million more than the preferred alternative, SODO At-Grade.

The Sound Transit Board did not advance the SODO Double Elevated Alternative, but did advance the SODO Partial Elevated Alternative for study in the Draft EIS.

20th Avenue Tunnel Ballard

The 20th Avenue Tunnel Ballard - BNSF Portal Alternative was proposed to provide a station at NW Market Street and 20th Avenue NW, which is closer to the core of the Ballard Hub Urban Village than other station alternatives to the east. This alternative would also allow a shorter tunnel under Salmon Bay. This alternative would turn northwest on an elevated structure north of Interbay Station and transition to a tunnel portal on BNSF property in the vicinity of W Emerson Street, then cross under Salmon Bay in a tunnel and follow 20th Avenue NW to a tunnel Ballard Station at 20th Avenue NW and NW Market Street. This alternative encountered engineering constraints, including a conflict with a major sewer pipeline, as well as the requirement for a long-span elevated structure with a large foundation to cross the BNSF tracks. These constraints led to a refinement to the alternative.

The 20th Avenue Tunnel Ballard - Thorndyke Portal Alternative would enter a tunnel portal just north of Interbay Station and cross under Salmon Bay west of the Ballard Bridge and transition west to align with 20th Avenue NW, ending at the same Ballard Station location at 20th Avenue NW and NW Market Street.

Both 20th Avenue Tunnel Ballard alternatives would result in a Ballard Station closer to the core of the Ballard Hub Urban Village. However, both alternatives also present construction challenges and additional residential and business property effects due to the constrained right-of-way along 20th Avenue NW. The 20th Avenue Tunnel Ballard - BNSF Portal Alternative is estimated to cost approximately $750 million more than the ST3 Representative Project and the 20th Avenue Tunnel Ballard - Thorndyke Portal Alternative is estimated to cost approximately $450 million more than the ST3 Representative Project. Tunnel alternatives at this location were not identified or analyzed in the ST3 Plan.

The Sound Transit Board did not advance either of the 20th Avenue Tunnel Ballard alternatives for study in the Draft EIS.

Next Steps

The alternatives chosen by the Sound Transit Board will be added to the set of alternatives that were advanced for further study at the end of the Level 3 screening and incorporated into the Draft EIS.
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## Acronyms and Abbreviations

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<th>Description</th>
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<tbody>
<tr>
<td>CE</td>
<td>Conceptual Engineering</td>
</tr>
<tr>
<td>CID</td>
<td>Chinatown – International District</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>ELG</td>
<td>Elected Leadership Group</td>
</tr>
<tr>
<td>HCT</td>
<td>High Capacity Transit</td>
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<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>ROD</td>
<td>Record of Decision</td>
</tr>
<tr>
<td>SAG</td>
<td>Stakeholder Advisory Group</td>
</tr>
<tr>
<td>SEPA</td>
<td>State Environmental Policy Act</td>
</tr>
<tr>
<td>SODO</td>
<td>South of Downtown</td>
</tr>
<tr>
<td>ST3</td>
<td>Sound Transit 3 Plan</td>
</tr>
<tr>
<td>WSBLE</td>
<td>West Seattle and Ballard Link Extensions</td>
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1 INTRODUCTION

1.1 Overview

Sound Transit is advancing the West Seattle and Ballard Link Extensions (WSBLE) Project through Phase 2, Draft Environmental Impact Statement (EIS) and Conceptual Engineering (CE), of project development. The purpose of the WSBELE Project is to expand the Link light rail system from downtown Seattle to West Seattle and Ballard and to increase capacity and connectivity for regional connections. During Phase 1, Alternatives Development, Sound Transit assessed the "representative project" included in the Sound Transit 3 (ST3) Plan and further refined the specific route, station locations, and other project elements based on additional public engagement and technical analysis. The ST3 Representative Project itself is the result of extensive, years-long planning and public involvement work. This work included carrying out high-capacity transit (HCT) studies, updating the agency’s long-range plan, and developing the financing plan for the ST3 Plan approved by voters in 2016. During Phase 1, Sound Transit engaged the public and agencies in an intensive external engagement process that led to the Sound Transit Board identifying a set of preferred alternatives and other alternatives to evaluate in an EIS.

During Phase 1, project alternatives were developed through a three-level Alternatives Development process [See reports: Level 1 Alternatives Development and Screening – July 2018; Level 2 Alternatives Development and Screening – October 2018; and Alternative Development Report – February 2019] and the alternatives refined through this process were presented to the public for comment during the scoping period, between February and March of 2019.

The input received during scoping helped inform the Sound Transit Board action to identify a Preferred Alternative and other alternatives to study in an EIS. On May 23, 2019, the Sound Transit Board adopted Motion M2019-51, identifying the preferred alternative(s) and other alternatives for the West Seattle and Ballard Link Extensions Draft EIS.

In this motion, the Board also directed staff to conduct initial assessments of the following potential new alternatives suggested during the EIS scoping period to establish whether further detailed study in the Draft EIS is appropriate. This report summarizes the development of these alternatives and their evaluation results.

- Yancy/Andover Elevated
- Pigeon Point Tunnel
- SODO Elevated
- 20th Avenue Tunnel Ballard

During Phase 2, Sound Transit will complete a Draft EIS in accordance with National Environmental Policy Act (NEPA), State Environmental Policy Act (SEPA), and associated environmental regulations. This work involves developing conceptual engineering to a level sufficient to evaluate the environmental impacts of the project alternatives. The identified project impacts will be documented in the Draft EIS.

This Draft EIS and Conceptual Engineering phase concludes with a public and agency comment period and then advances into Phase 3, Final EIS and Preliminary Engineering, during which public and agency input on the Draft EIS will be incorporated, the design will be advanced, and the Sound Transit Board will make a final determination on which project alternative to construct. The FTA is then anticipated to issue a Record of Decision (ROD) for the project. The WSBELE Project study area is shown on Figure 1-1 (West Seattle and Ballard Link Extensions Study Area).

Figure 1-1 West Seattle and Ballard Link Extensions Study Area
The WSBLE Project would provide fast, reliable light rail connections to dense residential and job centers throughout the region and add a new downtown Seattle light rail tunnel to provide efficient operating capacity for the entire regional system. The West Seattle Extension would operate on a 4.7-mile guideway from downtown Seattle to West Seattle’s Alaska Junction neighborhood and include a new fixed span bridge across the Duwamish Waterway. The Draft EIS includes alternatives on the south and north side of the West Seattle Bridge and elevated and tunnel guideway alternatives in West Seattle Junction. The West Seattle Extension would serve the existing at-grade Stadium Station, an at-grade station at South of Downtown (SODO), an elevated station at Delridge, and either elevated or tunnel stations at Avalon and Alaska Junction.

The Ballard Extension would operate 7.1 miles, starting from downtown Seattle and extending to Ballard’s Market Street area. It would include a new 3.3-mile rail-only tunnel from the Chinatown-International District (CID) to South Lake Union and Seattle Center/Uptown. The Draft EIS includes alignment alternatives in Downtown, Interbay, and Ballard; different station depths in Chinatown-International District and Downtown; and fixed bridge and tunnel guideway alternatives across Salmon Bay. The Ballard Extension would serve six tunnel stations (at International District/Chinatown, Midtown, Westlake, Denny, South Lake Union, and Seattle Center); elevated, at-grade, or retained cut stations at Smith Cove and Interbay; and an elevated or tunnel station in Ballard.

1.2 Purpose of Report

This Initial Assessment Alternatives Development and Screening Report documents the findings of the alternatives development, evaluation and screening process for these “initial assessment” alternatives contained in the May 23, 2019, Board Motion. This is separate from the previous alternatives narrowing processes and is intended to evaluate these potential alternatives suggested during the EIS scoping period and compare them to the other alternatives already advanced for study in the Draft EIS. This report presents comparisons of these “initial assessment” alternatives to the alternatives from the Level 3 screening and evaluation. This is intended to provide the Sound Transit Board with information on how these new alternatives perform on the same set of criteria used in Level 3.

The preferred and other alternatives identified in Motion M2019-51 were extensively studied and screened before the scoping comment period, and that work is documented in Level 1 Alternatives Development and Screening (July 2018), Level 2 Alternatives Development and Screening (October 2018) and Alternatives Development Report (February 2019).

1.3 Report Organization

The Initial Assessment Alternatives Development and Screening Report is organized into the following sections:

- Section 1 (Introduction) provides an overview of the project and describes the purpose of this report.
- Section 2 (Initial Assessment Alternatives) describes the alternatives and the rationale that led to their development.
- Section 3 (Evaluation and Findings) presents the evaluation criteria, process and results.
- Section 4 (Sound Transit Board Action on the Alternatives) reports on the Sound Transit Board’s decision for each alternative.
- Section 5 (Next Steps) concludes with a summary of the next steps in the process for the alternatives to be studied in the Draft EIS.
2 INITIAL ASSESSMENT ALTERNATIVES

2.1 Yancy/Andover Elevated

2.1.1 Description

The Yancy/Andover Elevated Alternative would connect to the South Duwamish Crossing, locate the Delridge Station north of SW Andover Street, be elevated along SW Andover Street and Avalon Way SW and connect to an elevated Avalon Station. The alternative is described in Table 2-1 (Yancy/Andover Elevated Description) and shown in Figure 2-1 (Yancy/Andover Elevated Map).

The Yancy/Andover Elevated Alternative was compared to the performance of the Level 3 alternatives only within the area shown in the dashed box in Figure 2-1. This area and the Level 3 alternatives are described in Table 2-2 (Level 3 Alternatives Descriptions (for Yancy/Andover Elevated Comparison)) and shown in Figure 2-2 (Level 3 Alternatives Map (for Yancy/Andover Elevated Comparison)).

2.1.2 Rationale and History

During the scoping period, comments from the community expressed concerns with effects to the North Delridge/Youngstown and Pigeon Point neighborhoods and requested the study of alternatives to avoid these potential effects, including alignments along SW Yancy Street or SW Andover Street.

Specific requests called for a reconsideration of the Yancy Street/West Seattle Tunnel Alternative from Level 1, which had not been carried forward because it would have required a long tunnel and would have consolidated the Delridge and Avalon Stations, which would not be consistent with the ST3 Plan. The Yancy/Andover Elevated Alternative was developed as a means to follow a similar alignment to the Yancy Street/West Seattle Tunnel Alternative, but also include Delridge and Avalon Stations.

Table 2-1 Yancy/Andover Elevated Description

<table>
<thead>
<tr>
<th>INITIAL ASSESSMENT ALTERNATIVE</th>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yancy/Andover Elevated</td>
<td>Begins at west side of the Duwamish Waterway on a high-level, fixed bridge on south side of existing bridge</td>
<td>Elevated north of SW Andover Street, west of Delridge Way SW, oriented northeast-southwest</td>
</tr>
<tr>
<td></td>
<td>Rounds Pigeon Point, crosses to the west side of Delridge Way SW and continues west on an elevated guideway along SW Andover Street</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Turns south along SW Avalon Way in the vicinity of SW Yancy Street</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Travels south along SW Avalon Way on an elevated guideway and turns west at SW Genesee Street</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 2-2 Level 3 Alternatives Descriptions (for Yancy/Andover Elevated Comparison)

<table>
<thead>
<tr>
<th>ST3 Representative Project</th>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVALON STATION ELEVATED, DELRIDGE STATION NORTH OF ANDOVER</td>
<td>Begins at west side of the Duwamish Waterway on a high-level, fixed bridge on south side of existing bridge</td>
<td>Elevated on Delridge Way SW north of SW Andover Street</td>
</tr>
<tr>
<td></td>
<td>Rounds Pigeon Point, follows Delridge Way SW heading south on an elevated guideway and runs west along SW Genesee Street north of the West Seattle Golf Course</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>WEST SEATTLE ELEVATED/DOWNTOWN 6TH AVE/BALLARD ELEVATED</th>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVALON STATION ELEVATED, DELRIDGE STATION SOUTH OF ANDOVER</td>
<td>Begins at west side of the Duwamish Waterway on a high-level, fixed bridge on south side of existing bridge</td>
<td>Elevated on Delridge Way SW south of SW Andover Street</td>
</tr>
<tr>
<td></td>
<td>Rounds Pigeon Point, follows Delridge Way SW heading south on an elevated guideway and runs west along SW Genesee Street north of the West Seattle Golf Course</td>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>WEST SEATTLE TUNNEL/DOWNTOWN 5TH AVE/BALLARD TUNNEL</th>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVALON STATION TUNNEL, DELRIDGE STATION NORTH OF GENESEE</td>
<td>Begins at west side of the Duwamish Waterway on a high-level, fixed bridge on north side of existing bridge</td>
<td>Elevated on a diagonal between Delridge Way SW and 26th Avenue SW north of SW Genesee Street</td>
</tr>
<tr>
<td></td>
<td>Crosses over the West Seattle Bridge ramp and runs south on an elevated guideway on the west side of Delridge Way SW</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Turns on a diagonal heading southwest to SW Genesee Street</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Continues on an elevated guideway on the northern edge of the West Seattle Golf Course</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Descends into a tunnel, with tunnel portal near SW Avalon Way</td>
<td>-</td>
</tr>
</tbody>
</table>
Figure 2-1  Yancy/Andover Elevated Map
Figure 2-2  Level 3 Alternatives Map (for Yancy/Andover Elevated Comparison)
2.2 Pigeon Point Tunnel

2.2.1 Description

The Pigeon Point Tunnel Alternative would cross the Duwamish Waterway south of the existing West Seattle Bridge, tunnel beneath Pigeon Point and locate the Delridge Station further south than in the Level 3 alternatives. The alternative would connect to the ST3 Representative Project to the east and the Level 3 West Seattle tunnel alternatives to the west. The alternative is described in Table 2-3 (Pigeon Point Tunnel Description) and shown in Figure 2-3 (Pigeon Point Tunnel Map).

The Pigeon Point Tunnel Alternative was compared to the performance of the Level 3 alternatives only within the area shown in the dashed box in Figure 2-3. This area and the Level 3 alternatives are described in Table 2-4 (Level 3 Alternatives Descriptions (for Pigeon Point Tunnel Comparison)) and shown in Figure 2-4 (Level 3 Alternatives Map (for Pigeon Point Tunnel Comparison)).

2.2.2 Rationale and History

During the scoping period, comments expressed concern about neighborhood effects to the North Delridge/Youngstown and Pigeon Point neighborhoods. Specific requests called for a refinement of the Pigeon Ridge Tunnel alignment that was previously evaluated in Level 1 and Level 2 screening. This alignment would include a refined Duwamish crossing location and a tunnel through Pigeon Point with a further south Delridge station location.

Table 2-3 Pigeon Point Tunnel Description

<table>
<thead>
<tr>
<th>INITIAL ASSESSMENT ALTERNATIVE</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUTE DESCRIPTION</strong></td>
<td><strong>STATIONS</strong></td>
</tr>
<tr>
<td>• Spans the east Duwamish Waterway on a high-level, rail-only bridge on south side of existing West Seattle Bridge</td>
<td>Delridge Elevated on Delridge Way SW north of SW Avalon Street</td>
</tr>
<tr>
<td>• Turns toward the southwest crossing the west Duwamish Waterway on a high-level, rail-only bridge and enters a tunnel between 18th Avenue SW and 19th Avenue SW in the vicinity of SW Andover Street</td>
<td>Delridge Elevated on a diagonal between Delridge Way SW and 26th Avenue SW north of SW Genesee Street</td>
</tr>
<tr>
<td>• Exits the tunnel east of Delridge Way SW in the vicinity of SW Genesee Street</td>
<td>Delridge Elevated on Delridge Way SW</td>
</tr>
<tr>
<td>• Continues on an elevated guideway on the northern edge of the West Seattle Golf Course</td>
<td>Delridge Elevated oriented east-west along SW Genesee Street straddling Delridge Way SW</td>
</tr>
<tr>
<td>• Descends into a tunnel, with tunnel portal near SW Avalon Way</td>
<td>Delridge Elevated on Delridge Way SW</td>
</tr>
</tbody>
</table>

Table 2-4 Level 3 Alternatives Descriptions (for Pigeon Point Tunnel Comparison)

<table>
<thead>
<tr>
<th>ST3 Representative Project</th>
<th>DElRIDGE STATION NORTH OF ANDOVER, SOUTH DUWAMISH CROSSING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUTE DESCRIPTION</strong></td>
<td><strong>STATIONS</strong></td>
</tr>
<tr>
<td>• Spans the Duwamish Waterway on a high-level, fixed bridge on south side of existing bridge</td>
<td>Delridge Elevated on Delridge Way SW north of SW Andover Street</td>
</tr>
<tr>
<td>• Rounds Pigeon Point, follows Delridge Way SW heading south on an elevated guideway and runs west along SW Genesee Street north of the West Seattle Golf Course</td>
<td>Delridge Elevated on Delridge Way SW south of SW Andover Street</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>DElRIDGE STATION SOUTH OF ANDOVER, SOUTH DUWAMISH CROSSING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUTE DESCRIPTION</strong></td>
<td><strong>STATIONS</strong></td>
</tr>
<tr>
<td>• Spans the Duwamish Waterway on a high-level, fixed bridge on south side of existing bridge</td>
<td>Delridge Elevated on Delridge Way SW north of SW Andover Street</td>
</tr>
<tr>
<td>• Rounds Pigeon Point, follows Delridge Way SW heading south on an elevated guideway and runs west along SW Genesee Street north of the West Seattle Golf Course</td>
<td>Delridge Elevated on Delridge Way SW south of SW Andover Street</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
<th>DElRIDGE STATION NORTH OF GENESEE, NORTH DUWAMISH CROSSING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUTE DESCRIPTION</strong></td>
<td><strong>STATIONS</strong></td>
</tr>
<tr>
<td>• Spans the Duwamish Waterway on a high-level, fixed bridge on north side of existing bridge</td>
<td>Delridge Elevated on Delridge Way SW</td>
</tr>
<tr>
<td>• Crosses over the West Seattle Bridge ramp and runs south on an elevated guideway on the west side of Delridge Way SW</td>
<td>Delridge Elevated on Delridge Way SW</td>
</tr>
<tr>
<td>• Turns on a diagonal heading southwest to SW Genesee Street</td>
<td>Delridge Elevated on Delridge Way SW</td>
</tr>
<tr>
<td>• Continues on an elevated guideway on the northern edge of the West Seattle Golf Course</td>
<td>Delridge Elevated on Delridge Way SW</td>
</tr>
<tr>
<td>• Descends into a tunnel, with tunnel portal near SW Avalon Way</td>
<td>Delridge Elevated on Delridge Way SW</td>
</tr>
</tbody>
</table>
Figure 2-3  Pigeon Point Tunnel Map
Figure 2-4 Level 3 Alternatives Map (for Pigeon Point Tunnel Comparison)
2.3 SODO Elevated

The Sound Transit Board directed staff to conduct an initial assessment of elevating both the new and existing SODO stations and light rail lines, an alternative suggested during the scoping period. After some early analysis of the SODO Double Elevated alternative, several engineering challenges were identified. A second option, the SODO Partial Elevated Alternative, was then developed to meet the intent of the original alternative introduced during scoping. Both alternatives connect to the CID-5th Avenue Tunnel Alternative studied in Level 3. The following sections describe both the SODO Double Elevated and the SODO Partial Elevated alternatives.

2.3.1 SODO Double Elevated

2.3.1.1 Description

The SODO Double Elevated Alternative would elevate the new and existing SODO Stations and light rail lines. The alternative would maintain S Lander Street and S Holgate Street at-grade, with both light rail lines elevated overhead. S Holgate Street would be lowered to allow for adequate vertical clearance with the elevated guideway. The E3 busway would be maintained and the station platforms would be located closer to S Lander Street. The alternative would connect to the CID-5th Avenue Tunnel Alternative studied in Level 3. The alternative is described in Table 2-5 (SODO Double Elevated Description) and shown in Figure 2-5 (SODO Double Elevated Map).

The SODO Double Elevated Alternative would retain the E3 Busway and would locate both the new and existing SODO stations further south closer to S Lander Street.

The SODO Double Elevated Alternative was compared to the performance of the Level 3 alternatives only within the area shown in the dashed box in Figure 2-5. This area and the Level 3 alternatives are described in Table 2-6 (Level 3 Alternatives (for SODO Double and Partial Elevated Comparison)), and the Level 3 alternatives are shown in Figure 2-6 (Level 3 Alternatives Map (for SODO Double and Partial Elevated Comparison)).

2.3.1.2 Rationale and History

The SODO Double Elevated Alternative was proposed as an alternate means to achieve grade separation by elevating the light rail tracks over S Holgate and S Lander streets, rather than elevating S Holgate and S Lander streets over the tracks. This would result in similar reliability improvements for both light rail and roadway traffic, but leaving the cross streets at-grade could potentially avoid visual, construction and access effects associated with elevating the roadways.

The SODO Double Elevated Alternative was also proposed as a means to retain the E3 Busway. This, in combination with locating both the new and existing SODO stations further south closer to S Lander Street, was proposed to potentially improve bus-to-rail connections.

Scoping comments related to the SODO area supported moving the SODO Station closer to S Lander Street for easier and safer pedestrian access and expressed the importance of efficient transfers between the two light rail lines at SODO station. Some nearby businesses specifically supported elevating both sets of light rail lines and stations. There was also support for maintaining the E3 busway and avoiding the displacement of the buses currently using the E3 busway onto city streets.

Engineering constraints associated with this alternative, (see below, Section 2.3.2.2), led to the development of a refinement, called the SODO Partial Elevated.

### Table 2-5 SODO Double Elevated Description

<table>
<thead>
<tr>
<th>SODO Double Elevated INITIAL ASSESSMENT ALTERNATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ROUTE DESCRIPTION</strong></td>
</tr>
<tr>
<td><strong>West Seattle Extension</strong></td>
</tr>
<tr>
<td>- Begins at the existing Link light rail line to Everett at S Massachusetts Street heading south at-grade on existing line</td>
</tr>
<tr>
<td>- Transitions to a new elevated guideway within the E3 busway at approximately S Massachusetts Street</td>
</tr>
<tr>
<td>- Continues south along the E3 busway in an elevated guideway</td>
</tr>
<tr>
<td><strong>Ballard Extension</strong></td>
</tr>
<tr>
<td>- Begins at the existing Link light rail line from Tacoma at 6th Avenue S near S Forest Street</td>
</tr>
<tr>
<td>- Runs west on an elevated structure along S Forest Street and curves north following the existing light rail right-of-way</td>
</tr>
<tr>
<td>- Continues north on an elevated guideway along the existing light rail right-of-way to north of S Holgate Street</td>
</tr>
<tr>
<td>- Transitions to grade north of S Holgate Street</td>
</tr>
<tr>
<td><strong>STATIONS</strong></td>
</tr>
<tr>
<td>SODO: West Seattle</td>
</tr>
<tr>
<td>New elevated on West Seattle line shifted south closer to S Lander Street</td>
</tr>
<tr>
<td>SODO: Ballard</td>
</tr>
<tr>
<td>Rebuilt elevated on Ballard line shifted south closer to S Lander Street and adjacent to West Seattle Line</td>
</tr>
</tbody>
</table>
Figure 2-5  SODO Double Elevated Map
Table 2-6  Level 3 Alternatives Description (for SODO Double and Partial Elevated Comparison)

**ST3 Representative Project**
**ELEVATED WEST SEATTLE LINE, AT-GRADE BALLARD LINE**

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Seattle Extension</td>
<td>New elevated immediately west of existing station</td>
</tr>
<tr>
<td>Ballard Extension</td>
<td>New elevated immediately west of existing station</td>
</tr>
</tbody>
</table>

**West Seattle Elevated/Downtown 6th Ave/Ballard Elevated**
**AT-GRADE WEST SEATTLE AND BALLARD LINES**

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Seattle Extension</td>
<td>New at-grade immediately west of existing station</td>
</tr>
<tr>
<td>Ballard Extension</td>
<td>New at-grade immediately west of existing station</td>
</tr>
</tbody>
</table>

**West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel**
**AT-GRADE WEST SEATTLE AND BALLARD LINES, STATION CLOSER TO S LANDER STREET**

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Seattle Extension</td>
<td>New at-grade immediately west of Ballard Line station relocated south closer to S Lander Street</td>
</tr>
<tr>
<td>Ballard Extension</td>
<td>New at-grade immediately west of Ballard Line station relocated south closer to S Lander Street</td>
</tr>
</tbody>
</table>

Both extensions include elevated roadway overcrossings of S Holgate Street and S Lander Street over the light rail tracks.

Figure 2-6  Level 3 Alternatives Map (for SODO Double and Partial Elevated Comparison)
2.3.2 SODO Partial Elevated

After some early analysis of the Double Elevated Alternative, several engineering and operational challenges were identified (see below, Section 2.3.2.2). A second option, the SODO Partial Elevated Alternative, was then developed to meet the intent of the Board’s direction.

2.3.2.1 Description

The SODO Partial Elevated Alternative elevates the new light rail line and the SODO Station it serves, while maintaining the existing light rail line and station at-grade, similar to the ST3 Representative Project. S Lander Street would remain at-grade with an at-grade crossing of the existing light rail line. North of SODO Station, the new light rail line would transition from elevated to at-grade with both lines at-grade at S Holgate Street. S Holgate Street would be rebuilt as an overcrossing. Figure 2-7 (Street Overcrossing and Undercrossing Options for SODO Elevated and Partial Elevated Alternatives) illustrates the different light rail and roadway configurations of the at-grade, SODO Double Elevated, and SODO Partial Elevated alternatives.

The SODO Partial Elevated Alternative connects to the CID-5th Avenue Tunnel alternatives studied in Level 3. The alternative is described in Table 2-7 (SODO Partial Elevated Description) and shown in Figure 2-8 (SODO Partial Elevated Map).

The SODO Partial Elevated Alternative was compared to the performance of the Level 3 alternatives only within the area shown in the dashed box in Figure 2-8. This area and the Level 3 alternatives are described in Section 2.3.1.1 above, in Table 2-6 (Level 3 Alternatives (for SODO Double and Partial Elevated Comparison)), and shown in Figure 2-6 (Level 3 Alternatives Map (for SODO Double and Partial Elevated Comparison)).

The SODO Partial Elevated alternative would retain the E3 Busway and would locate both the new and existing SODO stations further south closer to S Lander Street.

2.3.2.2 Rationale and History

During the assessment of the SODO Double Elevated Alternative, engineering constraints were identified which presented challenges. Specifically, elevating the existing light rail line would require reconstruction of the existing light rail guideway on S Forest Street between the E3 busway and 6th Avenue S. This reconstruction would require extended shutdowns of the existing light rail service.

To address these constraints, the SODO Partial Elevated Alternative was developed. This alternative would address some of the community’s desires to eliminate an overpass at S Lander Street without requiring lengthy service shutdowns.

Scoping comments supported moving the SODO Station closer to S Lander Street for easier and safer pedestrian access and also expressed the importance of efficient transfers between the light rail lines at SODO station.

Table 2-7 SODO Partial Elevated Description

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>West Seattle Extension</strong></td>
</tr>
<tr>
<td>Begins at the existing Link light rail line to Everett at S Massachusetts Street heading south at-grade on existing line</td>
</tr>
<tr>
<td>Continues south at-grade along the E3 busway</td>
</tr>
<tr>
<td>Transitions to a new elevated guideway within the E3 busway south of S Holgate Street</td>
</tr>
<tr>
<td>Continues south along the E3 busway in an elevated guideway</td>
</tr>
</tbody>
</table>

| **Ballard Extension** |
| Begins at the existing Link light rail line from Tacoma at S Lander Street |
| Runs north at-grade along the existing light rail right-of-way to north of S Holgate Street |
| Includes an elevated roadway overcrossing of S Holgate Street over both the West Seattle Extension and Ballard Extension light rail tracks |

<table>
<thead>
<tr>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SODO - West Seattle</strong></td>
</tr>
<tr>
<td>New elevated on West Seattle line shifted south closer to S Lander Street</td>
</tr>
<tr>
<td><strong>SODO - Ballard</strong></td>
</tr>
<tr>
<td>Rebuilt at-grade on Ballard line shifted south closer to S Lander Street and adjacent to West Seattle Line</td>
</tr>
</tbody>
</table>

Figure 2-7 Street Overcrossing and Undercrossing Options for SODO Double Elevated and Partial Elevated Alternatives
Figure 2-8  SODO Partial Elevated Map
2.4 20th Avenue Tunnel Ballard

The 20th Avenue Tunnel Ballard Alternative would cross Salmon Bay in a tunnel and serve a Ballard Station in a tunnel in the vicinity of 20th Avenue NW and NW Market Street. Two alignment options were developed for the study.

During the scoping period there were comments focused on studying a tunnel alternative along 20th Avenue NW to directly serve the core of the Ballard Hub Urban Village. The alternative introduced was a refinement of a tunnel alignment that was previously evaluated in Level 1, but with a shorter tunnel under Salmon Bay.

The Alternative was developed initially with a tunnel portal located on BNSF property and, in response to engineering challenges with that approach, a refined alternative was developed with a tunnel portal shifted to a location north of Interbay Station and west of Thorndyke Avenue W. These two alternatives are discussed separately below.

2.4.1 20th Avenue Tunnel Ballard – BNSF Portal

2.4.1.1 Description

The 20th Avenue Tunnel Ballard – BNSF Portal Alternative would serve an elevated Interbay station at W Dravus Street; turn northwest and continue elevated over the BNSF tracks; descend into a tunnel portal on BNSF property; tunnel under Salmon Bay; and serve a tunnel station at 20th Avenue NW. The alternative is described in Table 2-8 (20th Avenue Tunnel Ballard—BNSF Portal Description) and shown in Figure 2-9 (NW 20th Avenue Tunnel Ballard – BNSF Portal Map).

The 20th Avenue Tunnel Ballard – BNSF Portal Alternative was compared to the performance of the Level 3 alternatives only within the area shown in the dashed box in Figure 2-9. This area and the Level 3 alternatives are described in Table 2-9 (Level 3 Alternatives Descriptions (for 20th Avenue Tunnel Ballard Comparison)), and the Level 3 alternatives are shown in Figure 2-10 (Level 3 Alternatives Map (for 20th Avenue Tunnel Ballard Comparison)).

2.4.1.2 Rationale and History

The 20th Avenue Tunnel Ballard Alternative was proposed to provide a station at NW Market Street and 20th Avenue NW, which is closer to the core of the Ballard Hub Urban Village than station alternatives to the east. The alternative would also allow a shorter tunnel under Salmon Bay.

The initial assessment of the 20th Avenue Tunnel Ballard – BNSF Portal Alternative encountered engineering constraints which led the development of the Thorndyke Portal refinement. Among these was the need to relocate a 144-inch diameter major King County sewer pipeline, while maintaining operation of the pipeline, which would present engineering complexity, schedule and cost risks to the project. Another engineering challenge encountered was the need for a long span elevated structure with large foundations to cross the BNSF tracks. These challenges led to the development of the Thorndyke Portal refinement, discussed below.

<table>
<thead>
<tr>
<th>Table 2-8 20th Avenue Tunnel Ballard – BNSF Portal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20th Avenue Tunnel Ballard – BNSF Portal</td>
</tr>
<tr>
<td>INITIAL ASSESSMENT ALTERNATIVE</td>
</tr>
<tr>
<td>ROUTE DESCRIPTION</td>
</tr>
<tr>
<td>• Begins in elevated guideway heading north on west side of</td>
</tr>
<tr>
<td>Interbay Golf Course</td>
</tr>
<tr>
<td>• Crosses over W Dravus Street and turns toward the northwest</td>
</tr>
<tr>
<td>on elevated guideway over the BNSF yard</td>
</tr>
<tr>
<td>• Descends into a tunnel headed northwest in the BNSF yard</td>
</tr>
<tr>
<td>south of W Emerson Street in the vicinity of 21st Avenue W</td>
</tr>
<tr>
<td>• Turns toward the north in a tunnel adjacent to 21st Avenue W</td>
</tr>
<tr>
<td>W and descends beneath Salmon Bay</td>
</tr>
<tr>
<td>• Tunnel aligns with 20th Avenue NW in Ballard and terminates</td>
</tr>
<tr>
<td>along 20th Avenue NW, with tail track in north-south</td>
</tr>
<tr>
<td>orientation north of NW Market Street</td>
</tr>
<tr>
<td>STATIONS</td>
</tr>
<tr>
<td>Interbay</td>
</tr>
<tr>
<td>Elevated north of W Dravus Street and east of BNSF Railway</td>
</tr>
<tr>
<td>Ballard</td>
</tr>
<tr>
<td>Tunnel beneath 20th Avenue NW straddling NW Market Street</td>
</tr>
</tbody>
</table>
Figure 2-9  20th Avenue Tunnel Ballard – BNSF Portal Map
### ST3 Representative Project

**MOVABLE BRIDGE, 15TH AVE BALLARD ELEVATED**

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Begins in elevated guideway heading north along 15th Avenue W in center of roadway&lt;br&gt;• Crosses Salmon Bay via movable bridge west of existing Ballard Bridge&lt;br&gt;• Continues in an elevated guideway on west side of 15th Avenue NW and crosses to east side of 15th Avenue NW&lt;br&gt;• Terminates north of NW Market Street, with tail track in north-south orientation on east side of 15th Avenue NW</td>
<td>Elevated station on 15th Avenue W straddling W Dravus Street Bridge&lt;br&gt;Elevated station on 15th Avenue NW south of NW Market Street</td>
</tr>
</tbody>
</table>

**West Seattle Elevated/Downtown 6th Ave/Ballard Elevated**

**FIXED BRIDGE, 14TH AVE BALLARD ELEVATED**

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Begins in elevated guideway heading north on west side of Interbay Golf Course&lt;br&gt;• Crosses over W Dravus Street and curves east into the triangle area and then passes over 15th Avenue W through Emerson interchange to align with 14th Avenue NW&lt;br&gt;• Crosses Salmon Bay via fixed bridge east of existing Ballard Bridge and continues in an elevated guideway on 14th Avenue NW&lt;br&gt;• Terminates north of NW Market Street and 14th Avenue NW with tail track in north-south orientation on 14th Avenue NW</td>
<td>Elevated station on 14th Avenue NW straddling NW Market Street</td>
</tr>
</tbody>
</table>

**West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel**

**14TH OR 15TH BALLARD TUNNEL**

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Begins at grade and in retained cut on the west side of Interbay Golf Course, passes under W Dravus Street and then curves east&lt;br&gt;• Descends into a tunnel beneath Salmon Bay, with tunnel portal between 15th Avenue W and Thorndyke Avenue W&lt;br&gt;• Curves north to align with 14th Avenue NW or 15th Avenue NW and continues in a tunnel under 14th Avenue NW or 15th Avenue NW&lt;br&gt;• Terminates north of NW Market Street with tail track in north-south orientation on 14th Avenue NW or 15th Avenue NW</td>
<td>Retained cut (trench) on Thorndyke Avenue W north of W Dravus Street&lt;br&gt;Tunnel beneath 14th Avenue NW straddling NW Market Street or beneath 15th Avenue NW south of NW Market Street</td>
</tr>
</tbody>
</table>
Figure 2-10 Level 3 Alternatives Map (for 20th Avenue Tunnel Ballard Comparison)
2.4.2 20th Avenue Tunnel Ballard – Thorndyke Portal

2.4.2.1 Description

The 20th Avenue Tunnel Ballard – Thorndyke Portal Alternative would serve an Interbay station in a retained cut trench at W Dravus Street; descend into a tunnel portal north of Interbay Station; tunnel under Salmon Bay; and serve a tunnel station at 20th Avenue NW. The alternative is described in Table 2-10 (20th Avenue Tunnel Ballard – Thorndyke Portal Description) and shown in Figure 2-11 (20th Avenue Tunnel Ballard – Thorndyke Portal Map).

The 20th Avenue Tunnel Ballard – Thorndyke Portal Alternative was compared to the performance of the Level 3 alternatives only within the area shown in the dashed box in Figure 2-11. This area and the Level 3 alternatives are described in Table 2-9 (Level 3 Alternatives Descriptions (for 20th Avenue Tunnel Ballard Comparison)), and the Level 3 alternatives are shown in Figure 2-10 (Level 3 Alternatives Map (for 20th Avenue Tunnel Ballard Comparison)).

2.4.2.2 Rationale and History

Engineering challenges associated with the 20th Avenue Tunnel Ballard Alignment – BNSF Portal, discussed earlier, led to the development of the Thorndyke Portal refinement, which avoids some of the engineering challenges of the BNSF Portal. However, it presents other complexities, which are discussed in the Evaluation Chapter below.

Table 2-10 20th Avenue Tunnel Ballard – Thorndyke Portal Description

<table>
<thead>
<tr>
<th>ROUTE DESCRIPTION</th>
<th>STATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begins at-grade heading north on west side of Interbay Golf Course</td>
<td>Retail cut (trench) north of W Dravus Street and east of BNSF Railway tracks</td>
</tr>
<tr>
<td>Crosses under W Dravus Street and descends into a tunnel, just north of W Dravus Street, west of Thorndyke Avenue W</td>
<td>Tunnel beneath 20th Avenue NW straddling NW Market Street</td>
</tr>
<tr>
<td>Tunnel descends beneath Salmon Bay, west of the Ballard Bridge, curves to the northwest, and then north to align with 20th Avenue NW</td>
<td></td>
</tr>
</tbody>
</table>
Figure 2-11 20th Ave Tunnel Ballard – Thorndyke Portal Map
3 EVALUATION AND FINDINGS

Purpose and Need

The evaluation of the Initial Assessment Alternatives was based on the Project’s Purpose and Need and the specific evaluation measures developed for each Purpose and Need element. The criteria are intended to evaluate how well each alternative achieves the purpose statements described in Table 3-1 (Purpose Statement, Screening Themes and Symbols).

Evaluation

The full detail of the evaluation criteria, detailed comparisons of all the alternatives, and the specific results for each alternative on each measure can be found in Appendix A of this report.

The performance of the Initial Assessment alternatives was evaluated against the performance of the Level 3 alternatives, within the limited areas that would be served by each new alternative. These areas are clearly shown in the dashed boxes in the Level 3 Alternatives maps associated with each Alternative in Section 2, above.

The evaluation measures that highlight key differences between the alternatives are reported in this section.

Table 3-1 Purpose Statement, Screening Themes and Symbols

<table>
<thead>
<tr>
<th>Purpose Statement</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide high quality rapid, reliable, and efficient peak and off-peak LRT service to communities in the project corridors as defined in ST3.</td>
<td>![Service performance and reliability in project corridor]</td>
</tr>
<tr>
<td>Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the projected transit demand.</td>
<td>![Improve Downtown capacity for regional connectivity]</td>
</tr>
<tr>
<td>Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit’s RTLP.</td>
<td>![Connect regional centers]</td>
</tr>
<tr>
<td>Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.</td>
<td>![Technically feasible and financially sustainable]</td>
</tr>
<tr>
<td>Expand mobility for the corridor and region’s residents, which include transit dependent, low-income and minority populations.</td>
<td>![Expand mobility for all]</td>
</tr>
<tr>
<td>Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.</td>
<td>![Encourage equitable and sustainable urban growth]</td>
</tr>
<tr>
<td>Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built, and social environments through sustainable practices.</td>
<td>![Promote a healthy built, natural, and social environment]</td>
</tr>
</tbody>
</table>
### 3.1 Yancy/Andover Elevated

The Yancy/Andover Elevated Alternative was compared to Level 3 alternatives in the area from West Marginal Way SW near the West Seattle Bridge to the vicinity of SW Avalon Way and SW Genesee Street. [See: Figure 2-2 (Level 3 Alternatives Map for Yancy/Andover Elevated Comparison)] in Section 2 above. Table 3-2 (Performance of Yancy/Andover Elevated Alternative Relative to Level 3 Alternatives) highlights the key evaluation measures that differentiate the Yancy/Andover Elevated Alternative from the Level 3 Alternatives in this area.

#### Summary of Findings

This alternative would reduce total potential residential effects in the Delridge area and avoid the West Seattle Golf Course. The tradeoffs to achieve these positives would include a less accessible Delridge station location, a potential increase in effects on businesses and freight, increased potential residential effects along Avalon Way, and a high, elevated guideway with additional curves which would reduce travel speeds.

More details for these and other measures can be found in Appendix A to this report.

#### Public Comment

The initial assessment of the Yancy/Andover Elevated alternative, as described above, was shared with the public between September 14 and October 4, 2019, to mixed feedback. Those who liked this alternative cited positives including:

- Potentially limits residential displacements in the Youngstown neighborhood
- Costs and schedule are comparable to the ST3 Representative Project
- Potentially better fit with the busier/denser corridor along Avalon Way SW, with fewer visual effects in the Youngstown neighborhood
- Avoids West Seattle Golf Course and Longfellow Creek

Members of the public who did not favor this alternative cited concerns including:

- Station located farther north is less accessible and offers less convenient bus-rail transfer opportunities
- Potential effects on businesses, including freight and industrial use
- Potential effects on high-density residential buildings along SW Avalon Way

#### Table 3-2 Performance of Yancy/Andover Elevated Alternative Relative to Level 3 Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need</th>
<th>YANCY/ANDOVER ELEVATED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technically feasible and financially sustainable</strong></td>
<td>Would require a high guideway and large structure with steeper track grades and additional curves resulting in limitations on train speeds and acceleration and limited flexibility for crossovers. Similar comparative capital cost estimate as ST3 Representative Project.</td>
</tr>
<tr>
<td><strong>Encourage equitable and sustainable urban growth</strong></td>
<td>Less convenient access for pedestrians, connecting bus riders and people with limited mobility. Station proximity to bridge and industrial area potentially reduces development opportunities and equitable development opportunities.</td>
</tr>
<tr>
<td><strong>Promote a healthy built, natural, and social environment</strong></td>
<td>Fewer acres of parks and recreational resources potentially affected and would avoid West Seattle Golf Course. Fewer potential visual effects and residential displacements in Youngstown neighborhood. More potential effects on freight movement and truck access. Greatest number of potential business displacements, including small businesses that mostly serve the local community.</td>
</tr>
</tbody>
</table>
3.2 Pigeon Point Tunnel

The Pigeon Point Tunnel Alternative was compared to Level 3 alternatives in a segment from the east side of the Duwamish Waterway to SW Genesee Street and 31st Avenue SW. (See: Figure 2-4 (Level 3 Alternatives Map) for Pigeon Point Tunnel Comparison) in Section 2 above). Table 3-3 (Performance of Pigeon Point Tunnel Alternative Relative to Level 3 Alternatives) highlights the key evaluation measures that differentiate the Pigeon Point Tunnel Alternative from the Level 3 Alternatives in this area.

Summary of Findings

The alternative would provide a more direct route, avoiding steep grades. It would have fewer potential business and freight effects and would avoid proximity to the West Seattle Bridge and the BNSF railroad bridge. The tunnel would lessen potential visual effects and the Delridge station would be more accessible because of the location further south and its lower height. The potential residential effects would be similar to the other alternatives but at different locations. The alternative would potentially affect less area in the Duwamish Greenbelt, but would bisect habitat areas in the Duwamish Greenbelt. The alignment would also be closer to a known archaeological site.

The cost of additional tunnels was not included or evaluated in the ST3 Plan and this alternative would require third-party funding. It is estimated to cost approximately $900 million more than the ST3 Representative Project for the two tunnels (+$200 million for Pigeon Point Tunnel and +$700 million for West Seattle Junction Tunnel).

More detail for these and other measures can be found in Appendix A to this report.

Public Comment

The initial assessment of the Pigeon Point Tunnel alternative was shared with the public between September 14 and October 4, 2019, to mixed feedback.

Those who liked this alternative cited potential positives including:

- Limiting potential residential displacements, effects on businesses and visual effects and disruption in the Youngstown neighborhood
- Serving more people with a Delridge Station further south which also provides more potential opportunities for transit-oriented development
- Avoiding construction close to the West Seattle Bridge

Members of the public who did not favor this alternative cited concerns including:

- Increased cost and longer project timeline
- Construction challenges and potential effects of a tunnel and its portals in the Pigeon Point neighborhood
- Potential effects on the West Duwamish Greenbelt
- Potential effects on other residential areas, including the Riverside neighborhood

Some members of the public preferred this alternative only if third-party funding could be secured and there were questions about the feasibility of connecting a Pigeon Point Tunnel to elevated alternatives for the Avalon and Alaska Junction stations. The proximity of Pigeon Point Tunnel portals to the Youngstown Cultural Arts Center was also a concern.

### Table 3-3 Performance of Pigeon Point Tunnel Alternative Relative to Level 3 Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PIGEON POINT TUNNEL</strong></td>
<td></td>
</tr>
<tr>
<td>Technically feasible and financially sustainable</td>
<td>Would avoid construction close to West Seattle Bridge and BNSF</td>
</tr>
<tr>
<td></td>
<td>Lower elevated guideway along SW Genesee Street</td>
</tr>
<tr>
<td></td>
<td>Larger radius curves would enable higher speeds; less steep track grades would result in better acceleration and flexibility for crossovers</td>
</tr>
<tr>
<td></td>
<td>Must connect to West Seattle Junction tunnel; higher schedule risk</td>
</tr>
<tr>
<td></td>
<td>Comparative capital cost estimate is $900 million higher than ST3 Representative Project over entire West Seattle Extension (includes $700 million for West Seattle Junction Tunnel and $200 million for Pigeon Point Tunnel); requires third-party funding; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology</td>
</tr>
<tr>
<td>Encourage equitable and sustainable urban growth</td>
<td>Delridge Station further south and straddling S Delridge Way would potentially increase pedestrian accessibility and provide good modal integration with buses on both sides of the street</td>
</tr>
<tr>
<td></td>
<td>Station with higher quality equitable development potential</td>
</tr>
<tr>
<td>Promote a healthy built, natural, and social environment</td>
<td>Would potentially bisect habitat areas of the West Duwamish Greenbelt; closer to known archaeological site</td>
</tr>
<tr>
<td></td>
<td>Fewest miles of elevated guideway near visually sensitive viewers</td>
</tr>
<tr>
<td></td>
<td>Minimal potential effects on truck movements and no direct effects expected to Terminal 5 or Terminal 18</td>
</tr>
<tr>
<td></td>
<td>Potential for visual, noise, and vibration effects on residences from elevated guideway, station and tunnel portal construction near the east side of Pigeon Point for the high-level, rail-only bridge and tunnel portal construction</td>
</tr>
<tr>
<td></td>
<td>Greatest potential amount of construction vehicles in Delridge and Pigeon Point neighborhoods for tunnel excavation material hauling</td>
</tr>
<tr>
<td></td>
<td>Construction could potentially affect the use of a portion of Youngstown Cultural Arts Center and Delridge Playfield, and could have greater construction effects on the West Seattle Golf Course</td>
</tr>
</tbody>
</table>
3.3 SODO Elevated

The SODO Double Elevated Alternative and the SODO Partial Elevated Alternative were compared to Level 3 alternatives in a segment from S Forest Street to S Massachusetts Street. [See Figure 2-6 (Level 3 Alternatives Map for SODO Double and Partial Elevated Comparison)] in Section 2 above. Table 3-4 (SODO Elevated Alternatives Relative to Level 3 Alternatives) highlights the key evaluation measures that differentiate the SODO Double Elevated and SODO Partial Elevated alternatives from the Level 3 Alternatives in this area.

Summary of Findings

SODO Double Elevated

The SODO Double Elevated Alternative would achieve full grade separation between light rail and the road network by elevating the new and existing SODO station and light rail lines. S Lander Street would remain at-grade and S Holgate Street would be lowered for guideway clearance. The SODO Double Elevated Alternative would facilitate transit integration by maintaining the E3 busway and shifting the SODO Station platform south, closer to S Lander Street. However, the SODO Double Elevated Alternative would require the construction of two elevated guideways in poor soils and would increase the potential for business effects. Furthermore, the alternative would require two shutdowns of Central Link during construction, and could disproportionately affect minority and low-income populations.

The SODO Double Elevated Alternative is estimated to cost approximately $300 million more than the ST3 Representative Project (approximately $500 million more than the preferred alternative, SODO At-Grade).

SODO Partial Elevated

Like the SODO Double Elevated Alternative, this alternative would facilitate transit integration, with the E3 busway maintained and a station platform shifted closer to S Lander Street. The SODO Partial Elevated Alternative would include a Holgate Street overcrossing, which would eliminate light rail/traffic conflicts, but would maintain one at-grade crossing at the existing light rail line at S Lander Street. This alternative would also require construction of an elevated guideway in poor soils and would have increased potential for business effects.

Cost estimates for this alternative are similar to the ST3 Representative Project (approximately $200 million more than the preferred alternative, SODO At-Grade).

More detail for these and other measures can be found in Appendix A to this report.

Public Comment

The initial assessments of the SODO Double Elevated and the SODO Partial Elevated alternatives were shared with the public between September 14 and October 4, 2019. General public comments included:

- Some support for lack of overpass at S Lander Street
- Preference to maintain the E3 busway
- Interest in preserving freight mobility
- Desire for good pedestrian access and connections
- Preference for improved bus-rail transfer opportunities

Table 3-4 Performance of SODO Elevated Alternatives Relative to Level 3 Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need</th>
<th>SODO DOUBLE ELEVATED</th>
<th>SODO PARTIAL ELEVATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service performance and reliability in project corridor</td>
<td>• No at-grade crossings; would provide greatest reliability, similar to the SODO at-grade alternatives</td>
<td>• One at-grade crossing but street overcrossing at S Holgate Street would improve reliability over existing</td>
</tr>
<tr>
<td>Improve Downtown capacity for regional connectivity</td>
<td>• Similar to at-grade alternatives, would facilitate connection between West Seattle and Ballard lines</td>
<td>• Similar to at-grade alternatives, would facilitate connection between West Seattle and Ballard lines</td>
</tr>
<tr>
<td>Encourage equitable and sustainable urban growth</td>
<td>• Longest section of elevated guideway in poor soils and adjacent to active Link tracks</td>
<td>• Elevated guideway in poor soils but less than ST3 Representative Project</td>
</tr>
<tr>
<td>Maintain E3 busway and relocate SODO station closer to S Lander Street</td>
<td>• Complex engineering to tie new curved structure at S Forest Street to existing Link light rail line</td>
<td>• Connection of new lines to existing lines could likely be done with short-term single track operations or potential off-peak closures, similar to other Level 3 alternatives</td>
</tr>
<tr>
<td>Maintain E3 busway and relocating alternative would include a Holgate Street overcrossing, which would eliminate light rail/traffic conflicts, but would maintain one at-grade crossing at the existing light rail line at S Lander Street.</td>
<td>• Temporary structure during construction would potentially slow existing trains for two years</td>
<td>• Similar comparative estimate as ST3 Representative Project</td>
</tr>
<tr>
<td>Maintain E3 busway and relocating SODO station closer to S Lander Street</td>
<td>• North Link light rail vehicles could not access Forest Street OMF for at least 4 to 6 weeks during construction</td>
<td>• Costs for this alternative are similar to the ST3 Representative Project (approximately $200 million more than the preferred alternative, SODO At-Grade.</td>
</tr>
<tr>
<td>Maintain E3 busway and relocating</td>
<td>• Comparative Estimate $300 million higher than ST3 Representative Project; requires third-party funding</td>
<td></td>
</tr>
<tr>
<td>Maintain E3 busway and relocating</td>
<td>• All alternatives would require vertical circulation (use of stairs or escalator) to transfer between trains or from trains to buses</td>
<td>• All alternatives would require vertical circulation (use of stairs or escalator) to transfer between trains or from trains to buses</td>
</tr>
<tr>
<td>Maintain E3 busway and relocating</td>
<td>• Maintaining E3 busway and relocating SODO station closer to S Lander Street would enable improved passenger transfer compared to other alternatives.</td>
<td>• Maintaining E3 busway and relocating SODO station closer to S Lander Street would enable improved passenger transfer compared to other alternatives.</td>
</tr>
<tr>
<td>Maintain E3 busway and relocating</td>
<td>More than approx. 500,000 sq. feet of potential business displacements, more than with the at-grade alternatives</td>
<td>More than approx. 500,000 sq. feet of potential business displacements, more than with the at-grade alternatives</td>
</tr>
<tr>
<td>Maintain E3 busway and relocating</td>
<td>Additional right-of-way potentially required, compared to at-grade alternatives</td>
<td>Additional right-of-way potentially required, compared to at-grade alternatives</td>
</tr>
<tr>
<td>Maintain E3 busway and relocating</td>
<td>Travel disruptions due to the potential need to shut down the existing light rail line would disproportionately affect minority and low-income populations</td>
<td>Less potential improvement to long-term freight mobility due to maintaining one at-grade light rail crossing at S Lander Street</td>
</tr>
</tbody>
</table>
SODO Double Elevated
The alternative received mixed feedback, with those favoring this alternative citing positives including:

- Not requiring street overpasses would avoid potential associated construction effects and short-term effects on traffic, freight movements, pedestrian safety, and business operations in the area
- Potential to reduce long-term effects on traffic, freight movements, pedestrian safety, and business operations in the area compared with the Partial Elevated alternative
- Potential to limit rail and vehicle conflict points

Concerns cited about the SODO Double Elevated Alternative included:

- Increased cost, noting the at-grade alternatives already provide desired grade separation between vehicles and trains
- Long-term service disruptions of existing light rail service during the construction of the alternative

SODO Partial Elevated
This alternative also received mixed feedback. Positives included:

- It would have fewer potential effects than the SODO Double Elevated Alternative with lower costs

Concerns included:

- Increases costs with limited improvement to transit reliability compared to the preferred SODO At-Grade Alternative, which already provides the desired grade separation between vehicles and trains
3.4 20th Avenue Tunnel Ballard

The 20th Avenue Tunnel Ballard – BNSF Portal and the 20th Avenue Tunnel Ballard – Thorndyke Portal alternatives were compared to Level 3 Alternatives in a segment from north of W Dravus Street in Interbay to the end of the line in Ballard. Table 3-5 (Performance of 20th Avenue Tunnel Ballard Alternatives Relative to Level 3 Alternatives) highlights the key evaluation measures that differentiate the 20th Avenue Tunnel Ballard – BNSF Portal and the 20th Avenue Tunnel Ballard – Thorndyke Portal alternatives from the Level 3 Alternatives in this area.

Summary of Findings

Both the 20th Avenue Tunnel Ballard alternatives would result in a Ballard Station closer to the core of the Ballard Hub Urban Village. Both the 20th Avenue Tunnel Ballard alternatives would also result in greater potential construction effects, property constraints/effects, and constructability challenges in the Ballard core.

20th Avenue Tunnel Ballard – BNSF Portal

The 20th Avenue Tunnel Ballard – BNSF Portal Alternative would require relocation of very large underground utilities in Interbay, adding potential constructability challenges; it would require a long span structure over the BNSF tracks and may require relocation of some BNSF operations; and it has greater potential residential effects due to the location of the tail track in the Ballard core.

The 20th Avenue Tunnel Ballard – BNSF Portal Alternative is estimated to cost approximately $750 million more than the ST3 Representative Project. The cost of additional tunnels was not included or evaluated in the ST3 Plan and this alternative would require third party funding.

The 20th Avenue Tunnel Ballard – BNSF Portal Alternative is similar to the Ballard Hub Urban Village Sustainable Urban Growth Plan in that it:
- Would serve greater potential population and employment densities
- Would require relocation of very large underground utilities in Interbay
- Would require underpinning W Dravus Street Bridge
- Would result in Interbay Station located in a deep trench
- Would require greater out-of-direction travel for connecting bus routes to continue north than other alternatives
- More challenging for future extension
- Would result in Ballard Station constrained by narrow right-of-way on 20th Avenue NW

20th Avenue Tunnel Ballard – Thorndyke Portal

The 20th Avenue Tunnel Ballard – Thorndyke Portal Alternative would require the relocation of large underground utilities in Interbay, adding potential constructability challenges, though less of a constraint than the 20th Avenue Tunnel – BNSF Portal Alternative; it may require a retrofit or reconstruction of the W Dravus Street and W Emerson Street bridges, which would add engineering complexity and risk, and it would require a longer tunnel under Salmon Bay. It would allow for a shorter tail track in the downtown Ballard core than the 20th Avenue Tunnel Ballard – BNSF Portal Alternative, reducing potential property effects.

The 20th Avenue Tunnel Ballard - Thorndyke Portal Alternative is estimated to cost approximately $450 million more than the ST3 Representative Project. The cost of additional tunnels was not included or evaluated in the ST3 Plan and this alternative would require third party funding.

Details for these and other measures can be found in Appendix A to this report.

Public Comment

The initial assessments of the 20th Avenue Tunnel Ballard – BNSF Portal and the 20th Avenue Tunnel Ballard – Thorndyke Portal alternative were shared with the Public September 14 through October 4, 2019. General public comments in support of the 20th Avenue Tunnel Ballard alternatives included:

- A station on 20th Avenue NW would be closer to the density of businesses and residences in the core of downtown Ballard
- Tunnel stations in Ballard would have better operations, require fewer potential property acquisitions or less disruption, and have fewer environmental effects and generate less noise compared to elevated alternatives

General public comments not in support of the 20th Avenue Tunnel Ballard alternatives included:

- The alternative would have additional cost compared to the other alternatives, increased technical risks, potential disruptions to businesses and residences, and would be less direct for future extensions

20th Avenue Tunnel Ballard – BNSF Portal

- Some support for a shorter tunnel route to Ballard
- Concerns about additional cost

20th Avenue Tunnel Ballard – Thorndyke Portal

- Concerns about additional cost

Table 3-5 Performance of 20th Avenue Tunnel Ballard Alternatives Relative to Level 3 Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need</th>
<th>BNSF PORTAL</th>
<th>THORNDYKE PORTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve Downtown capacity for regional connectivity</td>
<td>• Similar projected ridership for all alternatives</td>
<td></td>
</tr>
<tr>
<td>Connect regional centers</td>
<td>• Would serve greater potential population and employment densities</td>
<td>• Construction of Ballard Station constrained by narrow right-of-way on 20th Avenue NW</td>
</tr>
<tr>
<td>Technically feasible and financially sustainable</td>
<td>• Would require relocation of major 144-inch sewer pipeline with schedule/cost risk to maintain operation of pipeline during construction</td>
<td>• Would require relocation of 96-inch major sewer pipeline with schedule/cost risk to maintain operation of pipeline during construction</td>
</tr>
<tr>
<td>Encourage equitable and sustainable urban growth</td>
<td>• $750 million higher than ST3 representative project; requires third-party funding; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology</td>
<td>• $450 million higher than ST3 representative project; requires third-party funding; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology</td>
</tr>
<tr>
<td>Promote a healthy built, natural, and social environment</td>
<td>• Would be closer to core of Ballard Hub Urban Village</td>
<td>• Construction in core of the Ballard Hub Urban Village would potentially affect residences and businesses</td>
</tr>
<tr>
<td></td>
<td>• Would require greater out-of-direction travel for connecting bus routes to continue north than other alternatives</td>
<td>• Hauling of tunnel excavation material would potentially affect Interbay and Ballard neighborhoods</td>
</tr>
<tr>
<td></td>
<td>• Greater potential development opportunities as tunnel construction creates surplus land and zoning supports higher-density development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• More than 100 residential units potentially displaced; more than Thorndyke Portal Alternative due to the additional length of tail track required north of Ballard Station</td>
<td>• 25-100 residential units potentially displaced</td>
</tr>
</tbody>
</table>
3.5 Federal Transit Administration Feedback on Initial Assessment Alternatives

The FTA provided feedback on the Initial Assessment alternatives on October 4, 2019. In general, FTA expressed concern about the large number of alternatives, including the following points:

- Increased cost to conduct technical studies, draft, and finalize the EIS
- Increased schedule to complete the EIS
- Additional alternatives that would require third-party funding

FTA provided the following feedback on specific Initial Assessment alternatives.

Yancy/Andover Elevated or Pigeon Point Tunnel
- Concern: Alternatives that would have higher schedule risk
- Positive: Potential avoidance of Section 4(f) and historic properties

SODO Elevated
- Concern: The SODO Double Elevated alternative would require shut down of the Central Link service during construction
- Concern: Alternatives that would substantially affect the US Postal Service facility
- Positive: Alternatives that maintain the use of the E3 busway

20th Avenue Tunnel Ballard
- Concern: Alternatives that would require substantial BNSF property
- Positive: Alternatives that would avoid permanent in-water structures

5 NEXT STEPS

The alternatives identified by the Sound Transit Board on October 24, 2019 (Motion No. M2019-104) will be studied in the Draft EIS along with the alternatives the Board identified on May 23, 2019 (Motion No. M2019-51). All alternatives identified for study will undergo conceptual engineering to support the EIS analyses. During the design and environmental review of the alternatives, Sound Transit will engage affected communities in the project development process and receive feedback on the alignment, profile and station design. Sound Transit will also seek to avoid, minimize or mitigate potential impacts of the project as design progresses.

4 SOUND TRANSIT BOARD ACTION ON THE ALTERNATIVES

The Sound Transit Board met on Thursday, October 24, 2019, to identify whether or not to study any of the Initial Assessment alternatives in the Draft EIS.

Based on the Board's review of findings from the Initial Assessment, public and agency comments, input from FTA, and other information developed to date, the Sound Transit Board adopted Motion No. M2019-104, which identified the following alternatives for further study in the West Seattle and Ballard Link Extensions Draft EIS:

- Yancy/Andover Elevated
- SODO Partial Elevated (refinement)

The Board did not advance for study in the Draft EIS the following Initial Assessment alternatives:

- Pigeon Point Tunnel
- SODO Double Elevated
- 20th Avenue Tunnel Ballard – BNSF Portal
- 20th Avenue Tunnel Ballard – Thorndyke Portal (refinement)
APPENDIX A

Initial Assessment Maps, Criteria, and Evaluation Matrices
Initial Assessments

September 2019
Initial Assessment Results

Yancy / Andover Elevated
Pre Draft-EIS Initial Assessment Results

Yancy/Andover Elevated Alternative

Legend:

**ST3 Representative Project**
- Elevated alignment
- OMF connection (elevated)
- Elevated station

**Initial Assessment - Yancy/Andover Elevated**
- Elevated alignment
- Elevated station

Area evaluated

9-12-2019
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.

<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.</td>
<td>ST3 Consistency</td>
<td>Potential ST3 implementation schedule effects</td>
<td>Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks (e.g., right-of-way (ROW) acquisition needs, in-water work restrictions, regulatory compliance process, etc.)</td>
</tr>
<tr>
<td></td>
<td>Engineering constraints</td>
<td>Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints</td>
<td>Higher = Minimal engineering constraints, design meets full standards, likely acceptance by authority having jurisdiction, minimum ROW issues, and/or no unusual design considerations Medium = Moderate engineering constraints, design meets minimums, likely acceptance by authority having jurisdiction, but with additional mitigation and moderate ROW issues, and/or unusual design considerations Lower = Substantial engineering constraints, deviations to standards, authority having jurisdiction’s acceptance requires substantial mitigation, substantial ROW issues, and/or unique design considerations</td>
</tr>
<tr>
<td></td>
<td>Constructability issues</td>
<td>Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)</td>
<td>Higher = Lower construction complexity and construction risks (e.g., minimal utility conflicts, building impacts, impacts to existing infrastructure, etc.) Medium = Moderate construction complexity and construction risks Lower = Higher construction complexity requiring special mitigation and construction risks</td>
</tr>
<tr>
<td></td>
<td>Operational constraints</td>
<td>Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizontal curvature, movable bridge, etc.)</td>
<td>Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection</td>
</tr>
<tr>
<td></td>
<td>Financial Sustainability</td>
<td>Conceptual capital cost comparison</td>
<td>ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and Sound Transit unit pricing (2018$)</td>
</tr>
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</tbody>
</table>

The Pre-DEIS Initial Assessment is based on limited conceptual design and intended to inform comparison of potential benefits between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Yancy/Andover Elevated Page A-1
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Station Area Development Opportunities</strong></td>
<td>Development potential</td>
<td>Percent of properties with development potential based on zoned capacity and market conditions within 10-minute walkshed of stations (5-minute walkshed in downtown)</td>
<td>Higher = Greater than 20 percent of properties with development potential</td>
</tr>
<tr>
<td></td>
<td>Equitable development opportunities</td>
<td>Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration</td>
<td>Higher = Greatest opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration</td>
</tr>
<tr>
<td><strong>Environmental Effects</strong></td>
<td>National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks</td>
<td>Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle Landmark properties based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle Landmark data</td>
<td>Higher = 1 or less historic properties potentially affected</td>
</tr>
<tr>
<td></td>
<td>Parks and recreational resources</td>
<td>Number of and estimated acres of potential permanent impacts to parks and recreational resources</td>
<td>Higher = Less than 1.5 acres of potential permanent impacts to parks</td>
</tr>
<tr>
<td></td>
<td>Fish and wildlife habitats</td>
<td>Estimated acres of potential permanent impacts to fish and wildlife habitats using city of Seattle environmentally critical areas</td>
<td>Higher = Less than 1 acre of potential permanent fish and wildlife habitat impacts</td>
</tr>
<tr>
<td></td>
<td>Hazardous materials</td>
<td>Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites</td>
<td>Higher = 5 or less hazardous materials sites potentially affected</td>
</tr>
<tr>
<td></td>
<td>Visual</td>
<td>Assessment of length of elevated guideway adjacent to residential or other visually sensitive areas, including parks and historic properties and assessment of scale of elevated guideway in visually sensitive areas and potential impacts to State Environmental Policy Act (SEPA) Scenic Routes</td>
<td>Higher = 0.5 miles or less adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high in visually sensitive areas, and low potential to affect SEPA Scenic Routes</td>
</tr>
<tr>
<td></td>
<td>Property acquisitions and displacements</td>
<td>Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown)</td>
<td>Higher = Less than approximately 40 potential residential unit displacements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Square feet of potential business displacements (including maritime businesses); does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown)</td>
<td>Higher = Less than approximately 65,000 square feet of potential residential displacements</td>
</tr>
<tr>
<td>Purpose and Need / Evaluation Criteria</td>
<td>Measure</td>
<td>Methods</td>
<td>Thresholds</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>Environmental Effects (continued)</td>
<td>Community construction impacts</td>
<td>Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below</td>
<td>Higher = Lower potential for impacts to community relative to other alternatives&lt;br&gt;Medium = Moderate potential for impacts to community relative to other alternatives&lt;br&gt;Lower = More substantial potential for impacts to community relative to other alternatives</td>
</tr>
<tr>
<td></td>
<td>Burden on minority and low-income populations</td>
<td>Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities</td>
<td>Higher = Little to no potential impact to minority or low-income communities relative to other alternatives&lt;br&gt;Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives&lt;br&gt;Lower = Substantial potential for impacts to minority or low-income communities relative to other alternatives</td>
</tr>
<tr>
<td>Traffic Operations</td>
<td>Traffic circulation and access</td>
<td>Effects on traffic and transit (i.e., bus and streetcar) operations, including potential for lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken</td>
<td>Higher = Most of alignment is outside of roadway, with few to no changes in traffic patterns or access&lt;br&gt;Medium = Potential for changes in traffic patterns or access to some properties; could be mitigated with local circulation modifications&lt;br&gt;Lower = Substantial impacts to traffic circulation and/or access to many properties; mitigation likely requires substantial roadway improvements</td>
</tr>
<tr>
<td></td>
<td>Transportation facilities</td>
<td>Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities</td>
<td>Higher = Minor changes to transportation facilities, and/or moderate changes with opportunities to improve infrastructure&lt;br&gt;Medium = Moderate changes to transportation facilities, with more limited opportunities to improve infrastructure&lt;br&gt;Lower = Substantial changes to transportation facilities, with no or limited opportunities to improve infrastructure</td>
</tr>
<tr>
<td>Economic Effects</td>
<td>Freight movement and access on land and water</td>
<td>Effects on existing freight and future capacity expansion opportunities, including truck, rail and water freight; includes potential impacts during construction and operations</td>
<td>Higher = No or less than substantial effects on both land and water freight mobility and capacity expansion&lt;br&gt;Medium = Substantial effects on either land or water freight mobility and capacity expansion&lt;br&gt;Lower = Substantial effects on both land and water freight mobility and capacity expansion</td>
</tr>
<tr>
<td></td>
<td>Business and commerce effects</td>
<td>Effects on existing businesses, commercial areas and designated industrial centers, as well as future expansion opportunities; includes potential impacts during construction and operations</td>
<td>Higher = Minimal effects on local businesses, as well as commercial areas and designated industrial zones&lt;br&gt;Medium = Moderate effects on local businesses, as well as commercial areas and designated industrial zones&lt;br&gt;Lower = Substantial effects on local businesses, as well as commercial areas and designated industrial zones</td>
</tr>
</tbody>
</table>

NOTES:
1. Based on preliminary Purpose and Need Statement.
2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure: "Higher" = higher ability to achieve measure; "Medium" = moderate ability to achieve measure; "Lower" = lower ability to achieve measure; no weighting will be applied.
6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.

## Purpose and Need / Evaluation Measures

<table>
<thead>
<tr>
<th>Potential ST3 implementation schedule effects</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering constraints</td>
<td>Higher (includes entire West Seattle Extension)</td>
<td>Higher (includes entire West Seattle Extension)</td>
</tr>
<tr>
<td>Constructability issues</td>
<td>Lower</td>
<td>Lower</td>
</tr>
<tr>
<td>Operational constraints</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Conceptual capital cost comparison (2018$ in millions)</td>
<td>Higher</td>
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## Purpose and Need / Evaluation Measures

**Purpose and Need / Evaluation Measures**

- **Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

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<tr>
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<th>Visual effects (miles of sensitive viewers)</th>
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<th>Potential business displacements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Higher</td>
<td>1</td>
<td>1</td>
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</tr>
</tbody>
</table>

## Alternative Performance

**Purpose and Need / Evaluation Measures**

<table>
<thead>
<tr>
<th>Alternative Performance</th>
<th>Lower Performing</th>
<th>Medium Performing</th>
<th>Higher Performing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parks and recreational resources (acres)</td>
<td>3.0</td>
<td>3.1</td>
<td>1.7</td>
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<tr>
<td>Fish and wildlife habitats (acres)</td>
<td>2.5</td>
<td>2.5</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Hazardous materials sites</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Visual effects (miles of sensitive viewers)</td>
<td>Lower</td>
<td>Lower</td>
<td>Medium</td>
</tr>
<tr>
<td>Potential residential unit displacements</td>
<td>Lower</td>
<td>Lower</td>
<td>Lower</td>
</tr>
<tr>
<td>Potential business displacements</td>
<td>Lower</td>
<td>Medium</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Higher</td>
<td>1</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Higher</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Purpose and Need / Evaluation Measures</td>
<td>Level 3 Alternatives</td>
<td>Pre-DEIS Initial Assessment Alternatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------------------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST3 Representative Project</td>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
<td>Yancy-Andover Elevated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community construction impacts</td>
<td>Medium</td>
<td>Medium</td>
<td>Lower</td>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burden on minority and low-income populations</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic circulation and access effects</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects on transportation facilities</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects on freight movement</td>
<td>Lower</td>
<td>Medium</td>
<td>Medium</td>
<td>Lower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business and commerce effects</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Lower</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
### Purpose and Need / Evaluation Criteria / Measures

<table>
<thead>
<tr>
<th>ST3 Consistency</th>
<th>Potential ST3 implementation schedule effects</th>
<th>Technical Feasibility</th>
<th>Operational constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Implementation schedule anticipated to be similar to ST3 Plan</td>
<td>• Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at Pigeon Point in West Seattle</td>
<td>• Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle</td>
</tr>
<tr>
<td>Higher (includes entire West Seattle Extension)</td>
<td>• Higher Delridge Station at approximately 90 feet above ground level and 60 feet above Delridge Way SW results in more complex station structure</td>
<td>• Higher Delridge Station at approximately 90 feet above ground level and 60 feet above Delridge Way SW results in more complex construction</td>
<td>• Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle</td>
</tr>
<tr>
<td></td>
<td>• Lower elevated guideway along SW Genesee Street with adjacent residences and West Seattle Golf Course</td>
<td>• Higher elevated guideway with potentially larger foundation to fit within constrained right-of-way along SW Andover Street and SW Avalon Way with adjacent multi-story buildings on both sides</td>
<td>• Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to an elevated guideway in West Seattle</td>
</tr>
<tr>
<td></td>
<td>• Delridge Station at approximately 45-60 feet above Delridge Way SW with mezzanine</td>
<td>• Higher elevated guideway with potentially larger foundation</td>
<td>• Larger radius curves crossing West Seattle Bridge and avoiding Pigeon Point with the North Duwamish Waterway crossing would likely result in higher speeds</td>
</tr>
<tr>
<td>Lower (includes entire West Seattle Extension)</td>
<td>• Substantial support structure at Delridge Way SW and West Seattle bridge ramps</td>
<td>• Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization at Pigeon Point in West Seattle</td>
<td>• Potentially lower speeds due to additional curves combined with steep grades</td>
</tr>
<tr>
<td></td>
<td>• Construction constraints along SW Avalon Way SW with adjacent multi-story buildings on both sides</td>
<td>• Higher Delridge Station at approximately 90 feet above ground level and 60 feet above Delridge Way SW results in more complex construction</td>
<td>• Higher elevated guideway with potentially larger foundation to fit within constrained right-of-way along SW Andover Street and SW Avalon Way with adjacent multi-story buildings on both sides</td>
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Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.

### Technical Feasibility

<table>
<thead>
<tr>
<th>Delridge Station North of Andover</th>
<th>Delridge Station South of of Andover</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST3 Representative Project</td>
<td>ST3 Representative Project</td>
</tr>
<tr>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
</tr>
</tbody>
</table>

### Operational constraints

- Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle
- Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to an elevated guideway in West Seattle
- Larger radius curves crossing West Seattle Bridge and avoiding Pigeon Point with the North Duwamish Waterway crossing would likely result in higher speeds
- Potentially lower speeds due to additional curves combined with steep grades

### Conclusion

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Level 3 Alternatives</td>
<td>Similar to ST3 Representative Project (includes entire West Seattle Extension)</td>
<td>Similar to ST3 Representative Project (includes entire West Seattle Extension)</td>
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<td>Similar to ST3 Representative Project (includes entire West Seattle Extension)</td>
</tr>
<tr>
<td>Prestige</td>
<td>Avalon Station Elevated</td>
<td>Delridge Station North of Andover</td>
<td>Avalon Station Elevated</td>
<td>Delridge Station North of Genesee</td>
</tr>
<tr>
<td>Financial Sustainability</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Conceptual capital cost comparison (2018$ in millions)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>• Baseline for capital cost comparison to other alternatives</td>
<td>• Similar cost to ST3 Representative Project in West Seattle</td>
<td>• Approximately $1,000 million more than the ST3 Representative Project in West Seattle</td>
<td>• Cost for additional tunnel in West Seattle Junction not included in ST3 financial plan</td>
<td></td>
</tr>
</tbody>
</table>

**Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.**

<table>
<thead>
<tr>
<th>Segment Evaluated: SW Avalon Way and SW Genesee Street to West Marginal Way SW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose and Need / Evaluation Criteria / Measures</td>
</tr>
<tr>
<td>Passenger transfers</td>
</tr>
<tr>
<td>Modal Integration</td>
</tr>
<tr>
<td>Bus/rail and rail/rail integration</td>
</tr>
<tr>
<td>Bicycle infrastructure and accessibility</td>
</tr>
<tr>
<td>• Existing multi-use bike facilities within a 10-minute ride from stations include West Seattle Bridge Trail, Alki Trail and Duwamish River Trail</td>
</tr>
</tbody>
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<tr>
<td>Purpose and Need / Evaluation Criteria / Measures</td>
<td>Level 3 Alternatives</td>
<td>Lower</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td>Pedestrian and persons with limited mobility accessibility</td>
<td>Delridge Station North of Andover</td>
<td>• Delridge Station is sited closer to the West Seattle Bridge and West Seattle industrial areas, which results in fewer intersections, less sidewalk coverage and lower accessibility compared to all other alternatives</td>
<td>• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project</td>
<td>• Delridge Station is similar in location to the ST3 Representative Project alternative relative to the West Seattle Bridge and West Seattle industrial areas, resulting in fewer intersections and less sidewalk coverage than alternatives that shift Delridge Station further south</td>
</tr>
<tr>
<td>Pedestrian and persons with limited mobility accessibility</td>
<td>Avalon Station Elevated</td>
<td>• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project</td>
<td>• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to southern location</td>
<td>• Fewer properties with development opportunities due to proximity of Delridge Station to West Seattle Bridge</td>
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<tr>
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<td>• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to southern location</td>
<td>• Equitable development opportunities at Delridge Station are similar to other alternatives, but parcels are of higher value due to further south station location</td>
<td>• Fewer equitable development opportunities due to proximity of Delridge Station to West Seattle Bridge and industrial areas</td>
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<tbody>
<tr>
<td>Lower</td>
<td>Medium</td>
<td>Higher</td>
<td>Lower</td>
<td></td>
</tr>
<tr>
<td>National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project</td>
<td>No NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project</td>
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### Environmental Effects

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<tr>
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<td></td>
</tr>
<tr>
<td>Parks and recreational resources (acres)</td>
<td>3.0</td>
<td>3.1</td>
<td>1.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Approximately 3 acres of potential permanent impacts to the following parks: West Duwamish Greenbelt and West Seattle Golf Course</td>
<td>Approximately 3.1 acres of potential permanent impacts to the following parks: West Duwamish Greenbelt and West Seattle Golf Course</td>
<td>Approximately 1.7 acres of potential permanent impacts to the West Seattle Golf Course</td>
<td>Approximately 2.5 acres of potential permanent impacts to the West Duwamish Greenbelt</td>
<td></td>
</tr>
<tr>
<td>Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</td>
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</tr>
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<td>Revegetation with low-growing shrubs is expected to be possible</td>
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### Conclusion

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
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<thead>
<tr>
<th>Fish and wildlife habitats (acres)</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Approximately 2.5 acres of potential permanent habitat impacts</td>
<td>ST3 Representative Project: West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel: Avalon Station Elevated Delridge Station South of Andover</td>
</tr>
<tr>
<td>- Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</td>
<td></td>
<td>Less than approximately 0.5 acres of potential permanent habitat impacts</td>
</tr>
<tr>
<td>- Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment</td>
<td></td>
<td>North Duwamish Waterway crossing avoids Pigeon Point</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous materials sites</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 2 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</td>
<td>ST3 Representative Project: West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel: Avalon Station Elevated Delridge Station South of Andover</td>
</tr>
<tr>
<td>- 2 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visual effects (miles of sensitive viewers)</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Approximately 1 mile of elevated guideway near visually sensitive viewers</td>
<td>ST3 Representative Project: West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel: Avalon Station Elevated Delridge Station South of Andover</td>
</tr>
<tr>
<td>- Along SW Genesee Street/West Seattle Golf Course, approximately 900 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- There would be no elevated guideway over 75 feet above grade</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential residential unit displacements</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>- More than 60 potential residential unit displacements</td>
<td>ST3 Representative Project: West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel: Avalon Station Elevated Delridge Station South of Andover</td>
</tr>
<tr>
<td>- More than 60 potential residential unit displacements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential business displacements</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Fewer than 65,000 square feet of potential business displacements</td>
<td>ST3 Representative Project: West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel: Avalon Station Elevated Delridge Station South of Andover</td>
</tr>
<tr>
<td>- Fewer than 65,000 square feet of potential business displacements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Between 65,000 and 110,000 square feet of potential business displacements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Environmental Effects (continued)

- **Fish and wildlife habitats (acres)**
  - Approximately 2.5 acres of potential permanent habitat impacts
  - Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible
  - Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment

- **Hazardous materials sites**
  - 2 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

- **Visual effects (miles of sensitive viewers)**
  - Approximately 1 mile of elevated guideway near visually sensitive viewers
  - Along SW Genesee Street/West Seattle Golf Course, approximately 900 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet

- **Potential residential unit displacements**
  - More than 60 potential residential unit displacements

- **Potential business displacements**
  - Fewer than 65,000 square feet of potential business displacements
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>ST3 Representative Project</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Effects (continued)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community construction impacts</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Burden on minority and low-income populations</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Traffic circulation and access effects</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Effects on transportation facilities</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Economic effects</td>
<td>Lower</td>
<td>Medium</td>
<td>Lower</td>
</tr>
</tbody>
</table>

### Community construction impacts
- Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW
- Potential increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Construction could affect the West Seattle Golf Course
- Delridge Station construction mostly within right-of-way

### Burden on minority and low-income populations
- Located in an area where minority or low-income populations are not above the city average
- Located in an area where minority or low-income populations are not above the city average
- Located in an area where minority or low-income populations are not above the city average
- Located in an area where minority or low-income populations are not above the city average

### Traffic circulation and access effects
- Could affect driveway access and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street
- Could affect driveway access and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street
- Limited effect to driveway access and roadway capacity/turn lanes, including minor circulation changes around West Seattle tunnel portal
- Could affect driveway access for major industrial use on SW Andover Street; limited effects elsewhere

### Effects on transportation facilities
- Affected facilities include the Delridge Way SW corridor
- Affected facilities include the Delridge Way SW corridor
- Affected facilities include the Delridge Way SW corridor
- Affected facilities in West Seattle include the Delridge Way SW and Avalon Way corridor

### Economic effects
- Elevated guideway columns could affect truck access to local businesses on Delridge Way SW
- Truck and rail access to Nucor Steel could be affected by the elevated guideway columns and Delridge Station
- Construction of elevated guideway columns could have limited effects associated with the guideway crossing the W Marginal Way Major Freight Route
- Elevated guideway columns could affect truck access to local businesses on Delridge Way SW
- Traffic signal at SW Dakota Street/Delridge Way SW intersection will likely divert some local traffic away from heavy freight movements on SW Andover Street
- Construction of elevated guideway columns could have limited effects associated with the guideway crossing the W Marginal Way Major Freight Route
- Elevated guideway columns could affect truck access to local businesses on SW Yancy Street, SW Andover Street and Avalon Way
- Truck and rail access to Nucor Steel could be affected by the elevated guideway columns and Delridge Station
- Construction of elevated guideway columns could have limited effects associated with the guideway crossing the W Marginal Way Major Freight Route and SW Avalon Way Minor Freight Route

### Alternative Performance

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
### Economic Effects

#### Business and commerce effects

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST3 Representative Project</td>
<td>Medium</td>
<td>Yancy-Andover Elevated</td>
</tr>
<tr>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Avalon Station Elevated</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Delridge Station North of Andover</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Avalon Station Elevated</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Delridge Station South of Andover</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Yancy-Andover Elevated</td>
<td>Lower</td>
<td></td>
</tr>
<tr>
<td>Delridge Station North of Genesee</td>
<td>Medium</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

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**Purpose and Need / Evaluation Criteria / Measures**

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
Initial Assessment Results

Pigeon Point Tunnel
Pre Draft-EIS Initial Assessment Results

LEGEND

**ST3 Representative Project**
- Elevated alignment
- OMF connection (elevated)

**Level 3 Tunnel Alternatives**
- Tunnel alignment
- Tunnel station

**Initial Assessment - Pigeon Point Tunnel**
- Elevated alignment
- Elevated station
- Tunnel alignment

---

Pigeon Point Tunnel Alternative
Pre Draft-EIS Initial Assessment Results

Level 3 Alternatives
### Purpose and Need / Evaluation Criteria

<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.</td>
<td>ST3 Consistency</td>
<td>Potential ST3 implementation schedule effects</td>
<td>Higher = Similar implementation schedule for WSBLE Project as included in ST3 Plan Medium = Moderate potential effects to implementation schedule for WSBLE Project as included in ST3 Plan Lower = Major potential effects to implementation schedule for WSBLE Project as included in ST3 Plan</td>
</tr>
<tr>
<td></td>
<td>Engineering constraints</td>
<td>Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints</td>
<td>Higher = Minimal engineering constraints, design meets full standards, likely acceptance by authority having jurisdiction, minimum ROW issues, and/or no unusual design considerations Medium = Moderate engineering constraints, design meets minimums, likely acceptance by authority having jurisdiction, but with additional mitigation and moderate ROW issues, and/or unusual design considerations that could be mitigated Lower = Substantial engineering constraints, deviations to standards, authority having jurisdiction’s acceptance requires substantial mitigation, substantial ROW issues, and/or unique design considerations</td>
</tr>
<tr>
<td></td>
<td>Constructability issues</td>
<td>Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)</td>
<td>Higher = Lower construction complexity and construction risks (e.g., minimal utility conflicts, building impacts, impacts to existing infrastructure, etc.) Medium = Moderate construction complexity and construction risks Lower = Higher construction complexity requiring special mitigation and construction risks</td>
</tr>
<tr>
<td></td>
<td>Operational constraints</td>
<td>Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizontal curvature, movable bridge, etc.)</td>
<td>Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection</td>
</tr>
<tr>
<td></td>
<td>Financial Sustainability</td>
<td>Conceptual capital cost comparison</td>
<td>ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and Sound Transit unit pricing (2018$) Higher = Conceptual capital cost estimates less than ST3 Representative Project Medium = Conceptual capital cost estimates 0% to 10% more than ST3 Representative Project Lower = Conceptual capital cost estimates 10% or more than ST3 Representative Project</td>
</tr>
</tbody>
</table>

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**Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.**

<table>
<thead>
<tr>
<th>Modal Integration</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger transfers</td>
<td>Assessment of ease of passenger transfer for riders transferring between light rail lines, and between light rail and other motorized modes (i.e., bus, paratransit, drop-off/pick-up, taxis or other ride-hailing services) at stations</td>
<td>Higher = More convenient passenger transfers at stations Medium = Adequate passenger transfers at stations Lower = Less convenient passenger transfers at stations</td>
<td></td>
</tr>
<tr>
<td>Bus/rail and rail/rail integration</td>
<td>Assessment of transportation facility integration between the station and adjacent transit stops that serve other modes</td>
<td>Higher = Above average transportation facility integration at stations Medium = Adequate transportation facility integration at stations Lower = Below average transportation facility integration at stations</td>
<td></td>
</tr>
<tr>
<td>Bicycle infrastructure and accessibility</td>
<td>Assessment of the quality of bicycle infrastructure and percent of bicycle facility miles (i.e., neighborhood greenways, bicycle lanes, protected bicycle lanes, and trails) to total roadway miles within 10-minute bikeshed of stations</td>
<td>Higher = Greatest quality of bicycle facilities and bicycle facility miles greater than 25 percent of total roadway miles within bikeshed area Medium = Moderate quality of bicycle facilities and bicycle facility miles between 15 and 25 percent of total roadway miles within bikeshed area Lower = Lower quality of bicycle facilities and bicycle facility miles lower than 15 percent of total roadway miles within bikeshed area</td>
<td></td>
</tr>
<tr>
<td>Pedestrian and persons with limited mobility accessibility</td>
<td>Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access (i.e., large intersections with signal delay, adjacency to freight corridors/industrial uses, and substantial topography or grade challenges) within 10-minute walkshed of stations</td>
<td>Higher = Higher number of intersections and sidewalk coverage, good to excellent pedestrian access and few impediments Medium = Moderate number of intersections and sidewalk coverage, average to good pedestrian access and average impediments Lower = Limited number of intersections and sidewalk coverage, poor to fair pedestrian access and greatest impediments</td>
<td></td>
</tr>
</tbody>
</table>

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The Pre-DEIS Initial Assessment is based on limited conceptual design and intended to inform comparison of potential benefits between alternatives. Sound Transit will evaluate the potential impacts of alternatives carried forward for environmental review in an Environmental Impact Statement.
### Purpose and Need / Evaluation Criteria

<table>
<thead>
<tr>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
</table>
| Development potential | Percent of properties with development potential based on zoned capacity and market conditions within 10-minute walkshed of stations (5-minute walkshed in downtown) | Higher = Greater than 20 percent of properties with development potential  
Medium = Between 10 and 20 percent of properties with development potential  
Lower = Less than 10 percent of properties with development potential |
| Equitable development opportunities | Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration | Higher = Greatest opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration  
Medium = Opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration  
Lower = Limited opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration |
| Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites | Number of hazardous materials sites potentially affected based on station location and configuration | Lower = More than 10 hazardous materials sites potentially affected  
Medium = Between 6 and 10 hazardous sites potentially affected  
Higher = 5 or less hazardous materials sites potentially affected |
| Number of potential permanent impacts to parks and recreational resources | Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown) | Lower = 3 acres or more of potential permanent impacts to parks  
Medium = Between 1.5 and 3 acres of potential permanent impacts to parks  
Higher = Less than 1.5 acres of potential permanent impacts to parks |
| Number of and estimated acres of potential permanent impacts to parks and recreational resources | Number of and estimated acres of potential permanent impacts to parks and recreational resources | Lower = 3 or more acres of potential permanent impacts to parks  
Medium = Between 1.5 and 3 acres of potential permanent impacts to parks  
Higher = Less than 1.5 acres of potential permanent impacts to parks |
| Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown) | Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown) | Lower = Greater than 20 potential residential unit displacements  
Medium = Between 10 and 20 potential residential unit displacements  
Higher = Less than 10 potential residential unit displacements |
| Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites | Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites | Lower = More than 10 hazardous materials sites potentially affected  
Medium = Between 6 and 10 hazardous sites potentially affected  
Higher = 5 or less hazardous materials sites potentially affected |
| Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown) | Number of potential permanent impacts to parks and recreational resources | Lower = More than 75 percent of alternative length within Very High Risk or High Risk probability areas  
Medium = Between 25 and 75 percent of alternative length within Very High Risk or High Risk probability areas  
Higher = Less than 25 percent of alternative length within Very High Risk or High Risk probability areas |
| Estimated acres of potential permanent in-water impacts | Estimated acres of potential permanent in-water impacts | Lower = More than 0.5 acre of potential permanent in-water impacts in each water body  
Medium = Up to 0.5 acre of potential permanent in-water impacts in each water body  
Higher = More than 0.1 acre of potential permanent in-water impacts for both water bodies |
| Estimated acres of potential permanent impacts to fish and wildlife habitats using city of Seattle environmentally critical areas | Estimated acres of potential permanent impacts to fish and wildlife habitats using city of Seattle environmentally critical areas | Lower = More than 2.5 acres of potential permanent fish and wildlife habitat impacts  
Medium = Between 1.5 and 2.5 acres of potential permanent fish and wildlife habitat impacts  
Higher = Less than 1.5 acres of potential permanent fish and wildlife habitat impacts |
| Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites | Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites | Lower = More than 10 hazardous materials sites potentially affected  
Medium = Between 6 and 10 hazardous sites potentially affected  
Higher = 5 or less hazardous materials sites potentially affected |
| Visual | Assessment of length of elevated guideway adjacent to residential or other visually sensitive areas, including parks and historic properties and assessment of scale of elevated guideway in visually sensitive areas and potential impacts to State Environmental Policy Act (SEPA) Scenic Routes | Lower = 0.5 miles or less adjacent to visually sensitive areas, most elevated guideway not more than 75 feet high in visually sensitive areas, and low potential to affect SEPA Scenic Routes  
Medium = Between 0.6 and 1 miles adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high in visually sensitive areas, and/or moderate potential to affect SEPA Scenic Routes  
Higher = More than 1 miles potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high in visually sensitive areas, and/or high potential to affect SEPA Scenic Routes |
| Property acquisitions and displacements | Number of potential property acquisitions and displacements | Lower = Less than 10 percent of properties with development potential  
Medium = Between 10 and 20 percent of properties with development potential  
Higher = Greater than 20 percent of properties with development potential |
| Property acquisitions and displacements | Number of and estimated acres of potential permanent impacts to parks and recreational resources | Lower = More than 75 percent of alternative length within Very High Risk or High Risk probability areas  
Medium = Between 25 and 75 percent of alternative length within Very High Risk or High Risk probability areas  
Higher = Less than 25 percent of alternative length within Very High Risk or High Risk probability areas |
| Property acquisitions and displacements | Number of potential property acquisitions and displacements | Lower = Less than 10 potential property acquisitions and displacements  
Medium = Between 10 and 20 potential property acquisitions and displacements  
Higher = Greater than 20 potential property acquisitions and displacements |

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**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

- **National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks:**
  - Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle Landmark properties based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle Landmark data
  - Higher = 1 or less historic properties potentially affected  
  - Medium = Between 2 and 3 historic properties potentially affected  
  - Lower = More than 3 historic properties potentially affected

- **Potential archaeological resources:**
  - Percent of alternative length within previously identified archaeologically sensitive areas that are 500 feet (or 0.5 miles at water crossings) from alignment
  - Higher = Less than 25 percent of alternative length within Very High Risk or High Risk probability areas  
  - Medium = Between 25 and 75 percent of alternative length within Very High Risk or High Risk probability areas  
  - Lower = More than 75 percent of alternative length within Very High Risk or High Risk probability areas

- **Parks and recreational resources:**
  - Number of and estimated acres of potential permanent impacts to parks and recreational resources
  - Lower = More than 1.5 acres of potential permanent impacts to parks  
  - Medium = Between 1.5 and 3 acres of potential permanent impacts to parks  
  - Higher = Less than 1.5 acres of potential permanent impacts to parks

- **Water resources:**
  - Estimated acres of potential permanent in-water impacts
  - Lower = More than 0.5 acre of potential permanent in-water impacts for both water bodies  
  - Medium = Up to 0.5 acre of potential permanent in-water impacts in each water body  
  - Higher = More than 0.1 acre of potential permanent in-water impacts for both water bodies

- **Fish and wildlife habitats:**
  - Estimated acres of potential permanent impacts to fish and wildlife habitats using city of Seattle environmentally critical areas
  - Lower = More than 2.5 acres of potential permanent fish and wildlife habitat impacts  
  - Medium = Between 1.5 and 2.5 acres of potential permanent fish and wildlife habitat impacts  
  - Higher = Less than 1.5 acres of potential permanent fish and wildlife habitat impacts

- **Hazardous materials:**
  - Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites
  - Lower = More than 10 hazardous materials sites potentially affected  
  - Medium = Between 6 and 10 hazardous sites potentially affected  
  - Higher = 5 or less hazardous materials sites potentially affected

- **Visual:**
  - Assessment of length of elevated guideway adjacent to residential or other visually sensitive areas, including parks and historic properties and assessment of scale of elevated guideway in visually sensitive areas and potential impacts to State Environmental Policy Act (SEPA) Scenic Routes
  - Lower = 0.5 miles or less adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high in visually sensitive areas, and low potential to affect SEPA Scenic Routes  
  - Medium = Between 0.6 and 1 miles adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high in visually sensitive areas, and/or moderate potential to affect SEPA Scenic Routes  
  - Higher = More than 1 miles potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high in visually sensitive areas, and/or high potential to affect SEPA Scenic Routes

- **Property acquisitions and displacements:**
  - Number of potential property acquisitions and displacements
  - Lower = Less than approximately 20 potential residential unit displacements  
  - Medium = Between approximately 20 and 40 potential residential unit displacements  
  - Higher = Greater than approximately 40 potential residential unit displacements

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The Pre-DEIS Initial Assessment is based on limited conceptual design and intended to inform comparison of potential benefits between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.
**Pre-DEIS Initial Assessment Criteria, Measures, Methods and Thresholds - Pigeon Point Tunnel**

<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
</table>
| **Environmental Effects** (continued)  | Community construction impacts | Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below | Higher = Lower potential for impacts to community relative to other alternatives  
Medium = Moderate potential for impacts to community relative to other alternatives  
Lower = More substantial potential for impacts to community relative to other alternatives |
| | Burden on minority and low-income populations | Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities | Higher = Little to no potential impact to minority or low-income communities relative to other alternatives  
Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives  
Lower = Substantial potential for impacts to minority or low-income communities relative to other alternatives |
| | Traffic circulation and access | Effects on traffic and transit (i.e., bus and streetcar) operations, including potential for lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken | Higher = Most of alignment is outside of roadway, with few to no changes in traffic patterns or access  
Medium = Potential for changes in traffic patterns or access to some properties; could be mitigated with local circulation modifications  
Lower = Substantial impacts to traffic circulation and/or access to many properties; mitigation likely requires substantial roadway improvements |
| | Transportation facilities | Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities | Higher = Minor changes to transportation facilities, and/or moderate changes with opportunities to improve infrastructure  
Medium = Moderate changes to transportation facilities, with more limited opportunities to improve infrastructure  
Lower = Substantial changes to transportation facilities, with no or limited opportunities to improve infrastructure |
| | Freight movement and access on land and water | Effects on existing freight and future capacity expansion opportunities, including truck, rail and water freight; includes potential impacts during construction and operations | Higher = No or less than substantial effects on both land and water freight mobility and capacity expansion  
Medium = Substantial effects on either land or water freight mobility and capacity expansion  
Lower = Substantial effects on both land and water freight mobility and capacity expansion |
| | Business and commerce effects | Effects on existing businesses, commercial areas and designated industrial centers, as well as future expansion opportunities; includes potential impacts during construction and operations | Higher = Minimal effects on local businesses, as well as commercial areas and designated industrial zones  
Medium = Moderate effects on local businesses, as well as commercial areas and designated industrial zones  
Lower = Substantial effects on local businesses, as well as commercial areas and designated industrial zones |

**NOTES:**

1. Based on preliminary Purpose and Need Statement.
2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; “Higher” = higher ability to achieve measure; “Medium” = moderate ability to achieve measure; “Lower” = lower ability to achieve measure; no weighting will be applied.
6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
## Purpose and Need / Evaluation Measures

<table>
<thead>
<tr>
<th></th>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pigeon Point Tunnel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST3 Representative Project</td>
<td>Higher (includes entire West Seattle Extension)</td>
<td>Higher (includes entire West Seattle Extension)</td>
<td>Lower (includes entire West Seattle Extension)</td>
<td>Lower (includes entire West Seattle Extension)</td>
</tr>
<tr>
<td>Engineering constraints</td>
<td>Lower</td>
<td>Lower</td>
<td>Lower</td>
<td>Medium</td>
</tr>
<tr>
<td>Constructability issues</td>
<td>Lower</td>
<td>Lower</td>
<td>Lower</td>
<td>Higher</td>
</tr>
<tr>
<td>Operational constraints</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td>Conceptual capital cost comparison (2018$ in millions)</td>
<td>--</td>
<td>Similar to ST3 Representative Project (includes entire West Seattle Extension)</td>
<td>$1,000 million increase (includes entire West Seattle Extension)</td>
<td>$900 million increase (includes entire West Seattle Extension)</td>
</tr>
</tbody>
</table>

## Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.

- Passenger transfers: Medium
- Bus/rail and rail/rail integration: Lower
- Bicycle infrastructure and accessibility: Higher
- Pedestrian and persons with limited mobility accessibility: Lower
- Development potential: Lower
- Equitable development opportunities: Lower

## Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.

- National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks: Lower
- Potential archaeological resources: Lower
- Parks and recreational resources (acres): 3.3
- Water resources (acres): >0.1
- Fish and wildlife habitats (acres): 3.5
- Hazardous materials sites: 4
- Visual effects (miles of sensitive viewers): Lower
- Potential residential unit displacements: Medium

### Key to Rating

- Lower Performing
- Medium Performing
- Higher Performing

*The Pre-GRES Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.*
### Purpose and Need / Evaluation Measures

<table>
<thead>
<tr>
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<th>ST3 Representative Project</th>
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<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential business displacements</td>
<td>Medium</td>
<td>Medium</td>
<td>Lower</td>
<td>Medium</td>
</tr>
<tr>
<td>Community construction impacts</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Lower</td>
</tr>
<tr>
<td>Burden on minority and low-income populations</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Traffic circulation and access effects</td>
<td>Medium</td>
<td>Medium</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Effects on transportation facilities</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td>Effects on freight movement</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td>Business and commerce effects</td>
<td>Medium</td>
<td>Medium</td>
<td>Lower</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### NOTES:

1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST3 Consistency</td>
<td>Higher (includes entire West Seattle Extension)</td>
<td>Higher (includes entire West Seattle Extension)</td>
</tr>
<tr>
<td>Potential ST3 implementation schedule effects</td>
<td>• Implementation schedule anticipated to be similar to ST3 Plan</td>
<td>• Implementation schedule anticipated to be similar to ST3 Plan</td>
</tr>
<tr>
<td>• Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at Pigeon Point in West Seattle</td>
<td>• Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
<td>• Duwamish Waterway crossing north of West Seattle Bridge avoids steep and unstable slope design at Pigeon Point in West Seattle</td>
</tr>
<tr>
<td>• Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope</td>
<td>• Duwamish Waterway crossing south of West Seattle Bridge could require potential column placements in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance</td>
<td>• Duwamish Waterway crossing south of West Seattle Bridge could require potential column placements in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance; north crossing could have less area of in-water effects than other crossings</td>
</tr>
<tr>
<td>• Potentially requires additional design measures for the potential in-water pier for being in close proximity to BNSF railroad bridge and West Seattle Bridge</td>
<td>• Potentially requires additional design measures for the potential in-water pier for being in close proximity to BNSF railroad bridge and West Seattle Bridge</td>
<td>• Avoids having a potential in-water pier in close proximity to BNSF railroad bridge and West Seattle Bridge</td>
</tr>
<tr>
<td>• Higher elevated guideway with potentially larger foundation</td>
<td>• Higher elevated guideway with potentially larger foundation</td>
<td>• Lower elevated guideway with potentially smaller foundation</td>
</tr>
</tbody>
</table>

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
### Purpose and Need / Evaluation Criteria / Measures

**Technical Feasibility (continued)**

<table>
<thead>
<tr>
<th>Constructability Issues</th>
<th>Operational Constraints</th>
<th>Financial Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lower</strong></td>
<td>Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle. Tighter radius curves rounding Pigeon Point would likely result in lower speeds.</td>
<td>Baseline for capital cost comparison to other alternatives.</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle. Tighter radius curves rounding Pigeon Point would likely result in lower speeds.</td>
<td>Similar to ST3 Representative Project (includes entire West Seattle Extension).</td>
</tr>
<tr>
<td><strong>Higher</strong></td>
<td>Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle. Tighter radius curves rounding Pigeon Point would likely result in lower speeds.</td>
<td>Similar cost to ST3 Representative Project in West Seattle.</td>
</tr>
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</table>

### Financial Sustainability

**Conceptual capital cost comparison (2018$ in millions)**

<table>
<thead>
<tr>
<th>Lower</th>
<th>Medium</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher cost for additional tunnel construction in West Seattle Junction ($700 million increase) and for north Duwamish Waterway Crossing ($300 million increase)</td>
<td>Cost for additional tunnel in West Seattle Junction not included in ST3 Financial plan</td>
<td>Approximately $1,000 million more than the ST3 Representative Project.</td>
</tr>
<tr>
<td>Cost of additional tunnel in Pigeon Point Tunnel ($200 million increase) and in West Seattle Junction ($700 million increase)</td>
<td>Cost for additional tunnels in Pigeon Point and West Seattle Junction not included in ST3 Financial plan</td>
<td>Approximately $900 million more than the ST3 Representative Project.</td>
</tr>
</tbody>
</table>

### Pre-DEIS Initial Assessment - Pigeon Point Tunnel

<table>
<thead>
<tr>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delridge Station North of Andover South Duwamish Crossing</td>
<td>Delridge Station South of of Andover South Duwamish Crossing</td>
</tr>
<tr>
<td>Delridge Station North of Genesee Street North Duwamish Crossing</td>
<td>Delridge Station North of Genesee Street North Duwamish Crossing</td>
</tr>
<tr>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pigeon Point Tunnel</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duwamish Waterway crossing further south of West Seattle Bridge on Harbor Island leading to the tunnel requires soil stabilization at east and west tunnel portals at Pigeon Point in West Seattle.</td>
<td>Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Harbor Marina Corporate Center (Terminal 102), Terminal 104 and Terminal 103 but avoids affecting Port of Seattle and the West Seattle bridge.</td>
<td>Avoids construction activity close to BNSF railroad bridge and the West Seattle bridge.</td>
<td>Minimizes coordination with BNSF Railroad and potentially minimizes risks to construction schedule.</td>
</tr>
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<td>Duwamish Waterway crossing further south of West Seattle Bridge on Harbor Island leading to the tunnel requires soil stabilization at east and west tunnel portals at Pigeon Point in West Seattle.</td>
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<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger transfers</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td>• Station location at Delridge may constrain passenger drop-off/pick-up areas</td>
<td>• Station location at Delridge provides opportunity for convenient passenger drop-off/pick-up areas but the higher profile at the guideway and higher station mezzanine result in slightly longer access path</td>
<td>• Station location at Delridge off street may constrain passenger drop-off/pick-up areas</td>
<td>• Station location straddling Delridge provides opportunity for convenient passenger drop-off/pick-up areas and the lower profile at the guideway and lower station mezzanine result in slightly shorter access path</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Bus/rail and rail/rail integration</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>• Delridge Station North of Genesee may have constrained areas for bus zones</td>
<td>• Delridge Station straddling the street provides good integration with buses on both sides of the street</td>
<td>• Delridge Station is located off-street, requiring either some bus reroutings or a walk to the station from bus stops on Delridge Way SW</td>
<td>• Delridge Station straddling the street provides good integration with buses on both sides of the street</td>
<td></td>
</tr>
<tr>
<td>• Bus routes destined to Alki may need to either be re-routed to serve station or serve a station platform south of SW Andover Street because of ramp lane configurations</td>
<td>• Existing multi-use bike facilities within a 10-minute ride from stations include West Seattle Bridge Trail, Alki Trail and Duwamish River Trail</td>
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<td>• Existing multi-use bike facilities within a 10-minute ride from stations include West Seattle Bridge Trail, Alki Trail and Duwamish River Trail</td>
<td></td>
</tr>
<tr>
<td>• There are existing in-street, separated bike facilities within a 10-minute ride from stations</td>
<td>• There are existing in-street, separated bike facilities within a 10-minute ride from stations</td>
<td>• There are existing in-street, separated bike facilities within a 10-minute ride from stations</td>
<td>• There are existing in-street, separated bike facilities within a 10-minute ride from stations</td>
<td></td>
</tr>
<tr>
<td>• Delridge Station is sited closer to the West Seattle Bridge industrial areas north of SW Andover Street, which results in fewer intersections, less sidewalk coverage and lower accessibility compared to all other alternatives</td>
<td>• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project</td>
<td>• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project and Delridge Station South of Andover</td>
<td>• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project and Delridge Station South of Andover</td>
<td></td>
</tr>
<tr>
<td>• Fewer development opportunities due to proximity of Delridge Station to West Seattle Bridge</td>
<td>• Fewer equitable development opportunities due to proximity of Delridge Station to West Seattle Bridge</td>
<td>• Fewer development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to location</td>
<td>• Fewer development opportunities similar to opportunities for Delridge North of Genesee</td>
<td></td>
</tr>
</tbody>
</table>

### Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.

- Delridge Station North of Andover
- South Duwamish Crossing

<table>
<thead>
<tr>
<th>Development potential</th>
<th>Lower</th>
<th>Medium</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fewer development opportunities due to proximity of Delridge Station to West Seattle Bridge</td>
<td>• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to location</td>
<td>• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to southern location</td>
<td>• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to southern location</td>
</tr>
</tbody>
</table>

- Delridge Station South of of Andover
- North Duwamish Crossing

<table>
<thead>
<tr>
<th>Equitable development opportunities</th>
<th>Lower</th>
<th>Medium</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fewer equitable development opportunities due to proximity of Delridge Station to West Seattle Bridge</td>
<td>• Equitable development opportunities at Delridge Station are improved compared to the ST3 Representative Project</td>
<td>• Equitable development opportunities at Delridge Station are similar to other alternatives, but parcels are of higher value due to further south station location</td>
<td>• Equitable development opportunities similar to opportunities for Delridge North of Genesee</td>
</tr>
<tr>
<td>Purpose and Need / Evaluation Criteria / Measures</td>
<td>Level 3 Alternatives</td>
<td>Pre-DEIS Initial Assessment Alternatives</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------------------</td>
<td>-----------------------------------------</td>
<td></td>
</tr>
<tr>
<td>ST3 Representative Project</td>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
<td></td>
</tr>
<tr>
<td>Delridge Station North of andover South Duwamish Crossing</td>
<td>Delridge Station South of of Andover South Duwamish Crossing</td>
<td>Delridge Station North of Genesee North Duwamish Crossing</td>
<td></td>
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</tbody>
</table>

**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

<table>
<thead>
<tr>
<th>National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks</th>
<th>3</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 2 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential archaeological resources</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>• Fill deposits known to be present in the region may have buried/preserved archaeological sites</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parks and recreational resources (acres)</th>
<th>3.3</th>
<th>1.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Approximately 3.3 acres of potential permanent impacts to the following parks: West Duwamish Greenbelt, West Seattle Golf Course, and Harbor Marina Corporate Center (Terminal 102)</td>
<td>1.7</td>
<td>3.3</td>
</tr>
<tr>
<td>• Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</td>
<td>3.4</td>
<td>1.7</td>
</tr>
<tr>
<td>• Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</td>
<td>&gt;0.1</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water resources (acres)</th>
<th>&gt;0.1</th>
<th>&lt;0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>• More than 0.1 acres of potential permanent in-water impact would occur in the Duwamish Waterway from bridge columns</td>
<td>&lt;0.1</td>
<td>&gt;0.1</td>
</tr>
<tr>
<td>• Duwamish Waterway crossing south of West Seattle Bridge could have more potential in-water impacts than the north crossing</td>
<td>&gt;0.1</td>
<td>&lt;0.1</td>
</tr>
</tbody>
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<tr>
<td>Fish and wildlife habitats (acres)</td>
<td></td>
<td></td>
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<tr>
<td>Hazardous materials sites</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual effects (miles of sensitive viewers)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential residential unit displacements</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Level 3 Alternatives

- **West Seattle Elevated/Downtown 6th Ave/Ballard Elevated**
  - **Delridge Station North of Andover South Duwamish Crossing**
  - **Delridge Station South of Andover South Duwamish Crossing**
  - **Delridge Station North of Genesee North Duwamish Crossing**

#### West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel

- **Delridge Station North of Andover South Duwamish Crossing**
- **Delridge Station South of Andover South Duwamish Crossing**
- **Delridge Station North of Genesee North Duwamish Crossing**

### Pre-DEIS Initial Assessment Alternatives

- **Pigeon Point Tunnel**

#### West Seattle Elevated/Downtown 6th Ave/Ballard Elevated

- Approximately 3.5 acres of potential permanent habitat impacts
- Crosses the Duwamish Waterway and requires clearing steep slope on Pigeon Point in West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible
- Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment

#### West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel

- Approximately 1.2 acres of potential permanent habitat impacts
- North bridge crossing of Duwamish Waterway avoids steep slope on Pigeon Point in West Duwamish Greenbelt

#### Pigeon Point Tunnel

- Approximately 2.0 acres of potential permanent habitat impacts
- Crosses the Duwamish Waterway and requires clearing steep slope in West Duwamish Greenbelt near the tunnel portal; revegetation with low-growing shrubs is expected to be possible
- The alignment and vegetation clearing would bisect the West Duwamish Greenbelt
- Heron rookery has been observed in West Duwamish Greenbelt within 500 feet north of the elevated guideway and within 550 feet south of the elevated guideway
- Historical presence of bald eagle nests in the West Duwamish Greenbelt; Bald Eagle and Heron Management Areas are approximately 300 feet south of the elevated guideway

---

### Environmental Effects (continued)

#### Fish and wildlife habitats (acres)

- **ST3 Representative Project**
  - Approximately 3.5 acres of potential permanent habitat impacts
  - Crosses the Duwamish Waterway and requires clearing steep slope on Pigeon Point in West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible
  - Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment

#### Hazardous materials sites

- **ST3 Representative Project**
  - Approximately 3.5 acres of potential permanent habitat impacts
  - Crosses the Duwamish Waterway and requires clearing steep slope on Pigeon Point in West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible
  - Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment

#### Visual effects (miles of sensitive viewers)

- **ST3 Representative Project**
  - Approximately 3.5 miles of elevated guideway near visually sensitive viewers
  - Along SW Genesee Street/West Seattle Golf Course, approximately 800 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet
  - Would be about 100 feet south of the West Seattle Bridge, a SEPA Scenic Route

- **Pre-DEIS Initial Assessment Alternatives**
  - Approximately 1 mile of elevated guideway near visually sensitive viewers
  - Along SW Genesee Street/West Seattle Golf Course, approximately 800 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet
  - Would be about 100 feet south of the West Seattle Bridge, a SEPA Scenic Route

#### Potential residential unit displacements

- **ST3 Representative Project**
  - Between approximately 20 and 40 potential residential unit displacements
  - Residential displacements primarily located west of Delridge Way SW

- **Pre-DEIS Initial Assessment Alternatives**
  - Between approximately 20 and 40 potential residential unit displacements
  - Residential displacements primarily located west of Delridge Way SW

---

**Alternative Performance**

- **Lower Performing**
- **Medium Performing**
- **Higher Performing**

---

*The Pre-GIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.*
### Purpose and Need / Evaluation Criteria / Measures

#### Potential business displacements
- Between approximately 200,000 and 300,000 square feet of potential business displacements
- Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW
- Between approximately 200,000 and 300,000 square feet of potential business displacements
- Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW
- More than approximately 300,000 square feet of potential business displacements
- Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW
- Between approximately 200,000 and 300,000 square feet of potential business displacements
- Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW

#### Community construction impacts
- Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW
- Potential increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Construction could affect the West Seattle Golf Course
- Delridge Station construction mostly within right-of-way
- Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW
- Potential increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Construction could affect the West Seattle Golf Course
- Delridge Station construction mostly within right-of-way
- Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW
- Greater amount of construction vehicles in West Seattle neighborhoods for tunnel excavation material hauling
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Greater construction effect to the West Seattle Golf Course
- Delridge Station construction outside right-of-way
- Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW
- Greater amount of construction vehicles in West Seattle neighborhoods for tunnel excavation material hauling
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Greater construction effect to the West Seattle Golf Course
- Delridge Station construction outside right-of-way

#### Burden on minority and low-income populations
- Located in an area where minority or low-income populations are not above the city average
- Located in an area where minority or low-income populations are not above the city average
- Located in an area where minority or low-income populations are not above the city average
- Located in an area where minority or low-income populations are not above the city average

#### Traffic circulation and access effects
- Could affect driveway access and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street
- Could affect driveway access and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street
- Limited effects to driveway access and roadway capacity/turn lanes because the alignment is outside of Delridge Way SW right-of-way
- Fewer effects to the Delridge Way SW corridor

#### Effects on transportation facilities
- Could affect Delridge SW corridor and West Seattle Bridge
- Could affect Delridge SW corridor and West Seattle Bridge
- Could affect Delridge SW corridor and West Seattle Bridge
- Fewer effects to the Delridge Way SW corridor

---

The Pre-DEIS initial assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
### Purpose and Need / Evaluation Criteria / Measures

<table>
<thead>
<tr>
<th>Alternative Performance</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delridge Station North of Andover</strong></td>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
</tr>
<tr>
<td><strong>South Duwamish Crossing</strong></td>
<td>Delridge Station South of Andover</td>
<td>Delridge Station North of Genesee</td>
</tr>
<tr>
<td><strong>Evaluations</strong></td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Elevated guideway columns could affect truck access to local businesses on Delridge Way SW</strong></td>
<td>potential to affect truck access to local businesses on Delridge Way SW</td>
<td>Potential to add a traffic signal at SW Dakota Street/Delridge Way SW</td>
</tr>
<tr>
<td><strong>Construction of elevated guideway columns would potentially have limited effects associated with the guideway crossing the West Marginal Way Major Freight Route</strong></td>
<td>Construction of elevated guideway columns would potentially have limited effects associated with the guideway crossing the West Marginal Way Major Freight Route</td>
<td>Construction of elevated guideway columns would potentially have limited effects associated with the guideway crossing the West Marginal Way Major Freight Route</td>
</tr>
<tr>
<td><strong>South bridge crossing would span the Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations and BNSF railroad bridge</strong></td>
<td>No direct effects expected to Terminal 5 or Terminal 18 access or operations</td>
<td>South bridge crossing would span Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations and BNSF railroad bridge</td>
</tr>
<tr>
<td><strong>Could have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish Manufacturing/Industrial Center (MIC)</strong></td>
<td>Could have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish MIC</td>
<td>Would have the greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish MIC</td>
</tr>
<tr>
<td><strong>Could displace small businesses that mostly serve local community</strong></td>
<td>Could displace small businesses that mostly serve local community</td>
<td>Could displace small businesses that mostly serve local community</td>
</tr>
<tr>
<td><strong>Could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals on Duwamish Waterway</strong></td>
<td>Could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals on Duwamish Waterway</td>
<td>Duwamish Waterway crossing north of West Seattle Bridge may displace some water dependent businesses</td>
</tr>
<tr>
<td><strong>Potential construction period effects such as lane closures and access changes, to local businesses on or near Delridge Way SW and south side of West Seattle Bridge</strong></td>
<td>Potential construction period effects such as lane closures and access changes, to local businesses on or near Delridge Way SW and south side of West Seattle Bridge</td>
<td>Potential construction period effects such as lane closures and access changes, to local businesses on or near Delridge Way SW and north side of West Seattle Bridge</td>
</tr>
<tr>
<td><strong>Could displace some buildings at Terminal 7 (private)</strong></td>
<td>Potential construction period effects such as lane closures and access changes, to local businesses on or near Delridge Way SW and south side of West Seattle Bridge</td>
<td>Potential construction period effects such as lane closures and access changes, to local businesses on or near Delridge Way SW and north side of West Seattle Bridge</td>
</tr>
<tr>
<td><strong>Delridge Station would straddle Delridge Way SW and have minimal truck effects on access to local businesses on Delridge Way SW</strong></td>
<td>Construction of elevated guideway columns would potentially have limited effects associated with the guideway crossing the West Marginal Way Major Freight Route</td>
<td>South bridge crossing would span Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations and marina</td>
</tr>
</tbody>
</table>

### NOTES:
1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
Initial Assessment Results

SODO Elevated
Pre Draft-EIS Initial Assessment Results

LEGEND

<table>
<thead>
<tr>
<th>Level 3 CID 5th Avenue Tunnel Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated alignment</td>
</tr>
<tr>
<td>At-grade alignment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Initial Assessment - SODO Double Elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated alignment</td>
</tr>
<tr>
<td>Elevated station</td>
</tr>
</tbody>
</table>

Approximate portal location

Existing LINK

Area evaluated
SODO Partial Elevated
Pre Draft-EIS
Initial Assessment Results

Level 3 Alternatives
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provide high quality, rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliable Service</td>
<td>At-grade crossings</td>
<td>Number of at-grade signalized intersections traversed</td>
<td>Higher = No at-grade signalized intersections traversed Medium = Between 1 and 2 at-grade signalized intersections traversed Lower = More than 2 at-grade signalized intersections traversed</td>
</tr>
<tr>
<td>Potential service interruptions and recoverability</td>
<td>Likelihood of service interruptions during peak and off-peak travel periods (e.g., frequency and duration of movable bridge openings, etc.) and ability to reroute service</td>
<td>Higher = Low likelihood of service interruptions and good ability to reroute service Medium = Limited likelihood of service interruptions and adequate ability to reroute service Lower = High likelihood of service interruptions and/or limited ability to reroute service</td>
<td></td>
</tr>
<tr>
<td><strong>Regional Connectivity</strong></td>
<td>LRT network integration</td>
<td>Ability to connect and integrate West Seattle and Ballard extensions with existing regional Link light rail transit (LRT) system network and operational flexibility to meet future demand through regional spine (i.e., spine segmentation)</td>
<td>Higher = Facilitates additional connectivity and operational flexibility beyond spine segmentation Medium = Facilitates spine segmentation for operational flexibility consistent with ST3 Plan Lower = Does not facilitate connection and integration with existing Link system network through regional spine (i.e., spine segmentation) or has limited operational flexibility on overall Link system network</td>
</tr>
<tr>
<td><strong>Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST3 Consistency</td>
<td>Potential ST3 operating plan effects</td>
<td>Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)</td>
<td>Higher = Facilitates special trackwork and/or provides reliable system operations Medium = Facilitates some special trackwork and/or provides moderately reliable system operations Lower = Does not facilitate special trackwork and/or degrades system operations</td>
</tr>
<tr>
<td>Engineering constraints</td>
<td>Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints</td>
<td>Higher = Minimal engineering constraints, design meets full standards, likely acceptance by authority having jurisdiction, minimum ROW issues, and/or no unusual design considerations Medium = Moderate engineering constraints, design meets minimums, likely acceptance by authority having jurisdiction, but with additional mitigation and moderate ROW issues, and/or unusual design considerations that could be mitigated Lower = Substantial engineering constraints, deviations to standards, authority having jurisdiction’s acceptance requires substantial mitigation, substantial ROW issues, and/or unique design considerations</td>
<td></td>
</tr>
<tr>
<td>Constructability issues</td>
<td>Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)</td>
<td>Higher = Lower construction complexity and construction risks (e.g., minimal utility conflicts, building impacts, impacts to existing infrastructure, etc.) Medium = Moderate construction complexity and construction risks Lower = Higher construction complexity requiring special mitigation and construction risks</td>
<td></td>
</tr>
<tr>
<td>Operational constraints</td>
<td>Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizontal curvature, movable bridge, etc.)</td>
<td>Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection</td>
<td></td>
</tr>
<tr>
<td>Financial Sustainability</td>
<td>Conceptual cost comparison</td>
<td>ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and Sound Transit unit pricing (2018$)</td>
<td>Higher = Conceptual capital cost estimates less than ST3 Representative Project Medium = Conceptual capital cost estimates 0% to 10% more than ST3 Representative Project Lower = Conceptual capital cost estimates 10% or more than ST3 Representative Project</td>
</tr>
<tr>
<td><strong>Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modal Integration</td>
<td>Passenger transfers</td>
<td>Assessment of ease of passenger transfer for riders transferring between light rail lines, and between light rail and other motorized modes (i.e., bus, paratransit, drop-off/pick-up, taxis or other ride-hailing services) at stations</td>
<td>Higher = More convenient passenger transfers at stations Medium = Adequate passenger transfers at stations Lower = Less convenient passenger transfers at stations</td>
</tr>
</tbody>
</table>

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## Modal Integration (continued)

### Bus/rail and rail/rail integration

<table>
<thead>
<tr>
<th>Purpose and Need</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of transportation facility integration between the station and adjacent transit stops that serve other modes</td>
<td>Higher = Above average transportation facility integration at stations</td>
<td>Medium = Adequate transportation facility integration at stations</td>
<td>Lower = Below average transportation facility integration at stations</td>
</tr>
</tbody>
</table>

### Bicycle infrastructure and accessibility

<table>
<thead>
<tr>
<th>Purpose and Need</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Assessment of the quality of bicycle infrastructure and percent of bicycle facility miles (i.e., neighborhood greenways, bicycle lanes, protected bicycle lanes, and trails) to total roadway miles within 10-minute bikeshed of stations</td>
<td>Higher = Greatest quality of bicycle facilities and bicycle facility miles greater than 25 percent of total roadway miles within bikeshed area</td>
<td>Medium = Moderate quality of bicycle facilities and bicycle facility miles between 15 and 25 percent of total roadway miles within bikeshed area</td>
<td>Lower = Lower quality of bicycle facilities and bicycle facility miles lower than 15 percent of total roadway miles within bikeshed area</td>
</tr>
</tbody>
</table>

### Pedestrian and persons with limited mobility accessibility

<table>
<thead>
<tr>
<th>Purpose and Need</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access (i.e., large intersections with signal delay, adjacency to freight corridors/industrial uses, and substantial topography or grade challenges) within 10-minute walkshed of stations</td>
<td>Higher = Higher number of intersections and sidewalk coverage, good to excellent pedestrian access and few impediments</td>
<td>Medium = Moderate number of intersections and sidewalk coverage, average to good pedestrian access and average impediments</td>
<td>Lower = Limited number of intersections and sidewalk coverage, poor to fair pedestrian access and greatest impediments</td>
</tr>
</tbody>
</table>

### Station Area Development Opportunities

#### Development potential

<table>
<thead>
<tr>
<th>Purpose and Need</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Percent of properties with development potential based on zoned capacity and market conditions within 10-minute walkshed of stations (5-minute walkshed in downtown)</td>
<td>Higher = Greater than 20 percent of properties with development potential</td>
<td>Medium = Between 10 and 20 percent of properties with development potential</td>
<td>Lower = Less than 10 percent of properties with development potential</td>
</tr>
</tbody>
</table>

#### Equitable development opportunities

<table>
<thead>
<tr>
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<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration</td>
<td>Higher = Greatest opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration</td>
<td>Medium = Opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration</td>
<td>Lower = Limited opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration</td>
</tr>
</tbody>
</table>

### Environmental Effects

#### Hazardous materials

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites</td>
<td>Higher = More than 1 hazardous materials sites potentially affected</td>
<td>Medium = Between 6 and 10 hazardous materials sites potentially affected</td>
<td>Lower = Less than 6 hazardous materials sites potentially affected</td>
</tr>
</tbody>
</table>

#### Visual

<table>
<thead>
<tr>
<th>Purpose and Need</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Assessment of length of elevated guideway adjacent to residential or other visually sensitive areas, including parks and historic properties and assessment of scale of elevated guideway in visually sensitive areas and potential impacts to State Environmental Policy Act (SEPA) Scenic Routes</td>
<td>Higher = 0.5 miles or less adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high in visually sensitive areas, and low potential to affect SEPA Scenic Routes</td>
<td>Medium = Between 0.6 and 1 miles adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high in visually sensitive areas, and/or moderate potential to affect SEPA Scenic Routes</td>
<td>Lower = More than 1 miles potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high in visually sensitive areas, and/or high potential to affect SEPA Scenic Routes</td>
</tr>
</tbody>
</table>

#### Property acquisitions and displacements

<table>
<thead>
<tr>
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<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown)</td>
<td>Higher = Less than approximately 20 potential residential unit displacements</td>
<td>Medium = Between approximately 20 and 40 potential residential unit displacements</td>
<td>Lower = More than approximately 40 potential residential unit displacements</td>
</tr>
<tr>
<td>Square feet of potential business displacements (including maritime businesses); does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown)</td>
<td>Higher = Less than approximately 250,000 square feet of potential business displacements</td>
<td>Medium = Between approximately 250,000 and 500,000 square feet of potential business displacements</td>
<td>Lower = More than approximately 500,000 square feet of potential business displacements</td>
</tr>
</tbody>
</table>

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**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

### National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks

- Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle Landmark properties based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle Landmark data

#### Environmental Policy Act (SEPA) Scenic Routes

- Elevated guideway in visually sensitive areas and potential impacts to SEPA Scenic Routes

#### Superfund sites

- Area

---

### The Pre-DEIS Initial Assessment is based on limited conceptual design and intended to inform comparison of potential benefits between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

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SODO Elevated Page A-2
### Purpose and Need / Evaluation Criteria

<table>
<thead>
<tr>
<th>Environmental Effects (continued)</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community construction impacts</td>
<td>Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below</td>
<td>Higher = Lower potential for impacts to community relative to other alternatives</td>
<td>Medium = Moderate potential for impacts to community relative to other alternatives</td>
</tr>
<tr>
<td>Burden on minority and low-income populations</td>
<td>Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities</td>
<td>Higher = Little to no potential impact to minority or low-income communities relative to other alternatives</td>
<td>Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives</td>
</tr>
</tbody>
</table>

### Traffic Operations

| Traffic circualtion and access | Effects on traffic and transit (i.e., bus and streetcar) operations, including potential for lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken | Higher = Most of alignment is outside of roadway, with few to no changes in traffic patterns or access | Medium = Potential for changes in traffic patterns or access to some properties; could be mitigated with local circulation modifications | Lower = Substantial impacts to traffic circulation and/or access to many properties; mitigation likely requires substantial roadway improvements |
| Transportation facilities | Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities | Higher = Minor changes to transportation facilities, and/or moderate changes with opportunities to improve infrastructure | Medium = Moderate changes to transportation facilities, with more limited opportunities to improve infrastructure | Lower = Substantial changes to transportation facilities, with no or limited opportunities to improve infrastructure |

### Economic Effects

| Freight movement and access on land and water | Effects on existing freight and future capacity expansion opportunities, including truck, rail and water freight; includes potential impacts during construction and operations | Higher = No or less than substantial effects on both land and water freight mobility and capacity expansion | Medium = Substantial effects on either land or water freight mobility and capacity expansion | Lower = Substantial effects on both land and water freight mobility and capacity expansion |
| Business and commerce effects | Effects on existing businesses, commercial areas and designated industrial centers, as well as future expansion opportunities; includes potential impacts during construction and operations | Higher = Minimal effects on local businesses, as well as commercial areas and designated industrial zones | Medium = Moderate effects on local businesses, as well as commercial areas and designated industrial zones | Lower = Substantial effects on local businesses, as well as commercial areas and designated industrial zones |

**NOTES:**

1. Based on preliminary Purpose and Need Statement.
2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; "Higher" = higher ability to achieve measure, "Medium" = moderate ability to achieve measure, "Lower" = lower ability to achieve measure; no weighting will be applied.
6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
### Purpose and Need / Evaluation Measures

**Pre-DEIS Initial Assessment Alternatives**

<table>
<thead>
<tr>
<th>ST3 Representative Project</th>
<th>Level 3 Alternatives</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevatope West Seattle at Lander and Holgate</td>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td></td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
<td>SODO Partial Elevated</td>
</tr>
<tr>
<td></td>
<td>SODO At-Grade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SODO At-Grade with SODO Station Closer to Lander</td>
<td></td>
</tr>
</tbody>
</table>

**Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.**

<table>
<thead>
<tr>
<th>At-grade crossings</th>
<th>2</th>
<th>0</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
</table>

**Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.**

<table>
<thead>
<tr>
<th>LRT network integration</th>
<th>Medium</th>
<th>Higher</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
</table>

**Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.**

<table>
<thead>
<tr>
<th>Potential ST3 operating plan effects</th>
<th>Lower</th>
<th>Higher</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Engineering constraints</th>
<th>Medium</th>
<th>Medium</th>
<th>Lower</th>
<th>Lower</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Constructability issues</th>
<th>Medium</th>
<th>Higher</th>
<th>Higher</th>
<th>Lower</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Operational constraints</th>
<th>Lower</th>
<th>Higher</th>
<th>Higher</th>
<th>Lower</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Conceptual capital cost comparison (2018$ in millions)</th>
<th>--</th>
<th>$200 million decrease</th>
<th>$200 million decrease</th>
<th>$300 million increase</th>
</tr>
</thead>
</table>

**Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.**

<table>
<thead>
<tr>
<th>Passenger transfers</th>
<th>Medium</th>
<th>Medium</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bus/rail and rail/rail integration</th>
<th>Medium</th>
<th>Medium</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bicycle infrastructure and accessibility</th>
<th>Medium</th>
<th>Medium</th>
<th>Medium</th>
<th>Medium</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Pedestrian and persons with limited mobility accessibility</th>
<th>Medium</th>
<th>Medium</th>
<th>Medium</th>
<th>Medium</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Development potential</th>
<th>Medium</th>
<th>Medium</th>
<th>Medium</th>
<th>Medium</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Equitable development opportunities</th>
<th>Lower</th>
<th>Lower</th>
<th>Lower</th>
<th>Lower</th>
</tr>
</thead>
</table>

**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

<table>
<thead>
<tr>
<th>National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hazardous materials sites</th>
<th>1</th>
<th>4</th>
<th>1</th>
<th>6</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Visual effects (miles of sensitive viewers)</th>
<th>Higher</th>
<th>Higher</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
</table>

**Key to Rating:**
- Lower Performing
- Medium Performing
- Higher Performing

---

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### Purpose and Need / Evaluation Measures

<table>
<thead>
<tr>
<th>Potential residential unit displacements</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Higher</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential business displacements</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Higher</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community construction impacts</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Lower</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Burden on minority and low-income populations</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Lower</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Traffic circulation and access effects</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Medium</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effects on transportation facilities</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Lower</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effects on freight movement</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Lower</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business and commerce effects</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>SODO Double Elevated</td>
</tr>
<tr>
<td>Lower</td>
<td>SODO Partial Elevated</td>
</tr>
</tbody>
</table>

### Notes:
1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

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<thead>
<tr>
<th>Level 3 Alternatives</th>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevate West Seattle at Lander and Holgate</td>
<td>SODO Elevated</td>
<td>SODO At-Grade</td>
<td>SODO At-Grade with SODO Station Closer to Lander</td>
</tr>
</tbody>
</table>

### Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.

<table>
<thead>
<tr>
<th>At-grade crossings</th>
<th>2</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Approximately 2 at-grade crossings; the existing Link light rail line would continue to have at-grade crossings at S Holgate Street and S Lander Street in SODO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No at-grade crossings; proposed new roadway overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections on both the new and existing light rail line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No at-grade crossings; proposed new roadway overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections on both the new and existing light rail line</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

### Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.

<table>
<thead>
<tr>
<th>Reliable Service</th>
<th>Lower</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential service interruptions and recoverability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No connection between West Seattle and Ballard lines in SODO limits operational flexibility and recoverability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accommodates connection between West Seattle and Ballard lines in SODO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Shared pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accommodates connection between West Seattle and Ballard lines in SODO</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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### Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.

<table>
<thead>
<tr>
<th>Regional Connectivity</th>
<th>Medium</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRT network integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Facilitates connectivity and integration of West Seattle and Ballard extensions with regional spine of existing Link system network; extensions would operate on two separate lines through the regional spine (i.e., spine segmentation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Limited operational flexibility on overall Link system due to lack of connection between West Seattle and Ballard lines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Facilitates connectivity and integration of West Seattle and Ballard extensions with regional spine of existing Link system network; extensions would operate on two separate lines through the regional spine (i.e., spine segmentation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accommodates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accommodates connections between West Seattle and Ballard lines in SODO, with train movements in all directions possible</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ST3 Consistency

<table>
<thead>
<tr>
<th>Potential ST3 operating plan effects</th>
<th>Lower</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Does not facilitate track interconnections in SODO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Facilitates all pocket tracks and crossovers needed to provide reliable system operations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Facilitates all pocket tracks and crossovers needed to provide reliable system operations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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**Alternative Performance**

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**Key to Rating**

- Lower Performing
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<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>At-grade crossings</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>No at-grade crossings; proposed elevated light rail guideway at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections on both the new and existing light rail line</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Approximately 1 at-grade crossing; proposed elevated light rail guideway at S Lander Street and proposed roadway overcrossing at S Holgate Street in SODO would improve Link light rail reliability by removing at-grade intersections; would maintain at-grade intersection of existing light rail line at S Lander Street</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential service interruptions and recoverability</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodates connection between West Seattle and Ballard lines in SODO</td>
<td>Accommodates connection between West Seattle and Ballard lines in SODO</td>
<td></td>
</tr>
<tr>
<td>Shared pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability</td>
<td>Shared pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LRT network integration</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitates connectivity and integration of West Seattle and Ballard extensions with regional spine of existing Link system network; extensions would operate on two separate lines through the regional spine (i.e., spine segmentation)</td>
<td>Facilitates connectivity and integration of West Seattle and Ballard extensions with regional spine of existing Link system network; extensions would operate on two separate lines through the regional spine (i.e., spine segmentation)</td>
<td></td>
</tr>
<tr>
<td>Facilitates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel</td>
<td>Accommodates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential ST3 operating plan effects</th>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitates all pocket tracks and crossovers needed to provide reliable system operations</td>
<td>Facilitates all pocket tracks and crossovers needed to provide reliable system operations</td>
<td></td>
</tr>
</tbody>
</table>

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<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
<th>SODO Elevated with SODO Station Closer to Lander</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 3 Alternatives</strong></td>
<td><strong>Level 3 Alternatives</strong></td>
<td><strong>Level 3 Alternatives</strong></td>
<td><strong>Level 3 Alternatives</strong></td>
</tr>
<tr>
<td>Elevated West Seattle at Lander and Holgate</td>
<td>SODO At-Grade</td>
<td>SODO At-Grade</td>
<td>Medium</td>
</tr>
<tr>
<td>• Minimizes roadway modifications, no major cross street work</td>
<td>• Substantial roadway modifications on S Lander and S Holgate streets to construct roadway overcrossings</td>
<td>• Substantial roadway modifications on S Lander and S Holgate streets to construct roadway overcrossings</td>
<td>Medium</td>
</tr>
<tr>
<td>• Elevated guideway in poor soils and adjacent to active Link tracks</td>
<td>• No elevated light rail guideway</td>
<td>• No elevated light rail guideway</td>
<td>Medium</td>
</tr>
<tr>
<td>• Substantial roadway modifications on S Lander and S Holgate streets to construct roadway overcrossings</td>
<td>• Enables connection to all four alternatives in Chinatown/International District</td>
<td>• Enables connection to all four alternatives in Chinatown/International District</td>
<td>Medium</td>
</tr>
<tr>
<td>• No elevated light rail guideway</td>
<td>• Substantial roadway modifications on S Lander and S Holgate streets to construct roadway overcrossings</td>
<td>• Substantial roadway modifications on S Lander and S Holgate streets to construct roadway overcrossings</td>
<td>Medium</td>
</tr>
<tr>
<td>• Enables connection to all four alternatives in Chinatown/International District</td>
<td>• Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</td>
<td>• Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### Engineering constraints

- **Level 3 Alternatives**
  - Medium
  - Higher
  - Higher
  - Higher

### Constructability issues

- **Level 3 Alternatives**
  - Medium
  - Higher
  - Higher
  - Higher

### Operational constraints

- **Level 3 Alternatives**
  - Lower
  - Higher
  - Higher
  - Higher

---

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*Segment Evaluated: S Forest Street to S Massachusetts Street*
### Pre-DEIS Initial Assessment Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>SODO Elevated</th>
<th>SODO Partial Elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Medium</td>
<td>Lower Medium</td>
<td>Lower Medium</td>
</tr>
<tr>
<td>Engineering constraints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Longest section of elevated guideway in poor soils and adjacent to active Link tracks</td>
<td>• Substantial roadway modifications on S Holgate Street to construct roadway overcrossing</td>
<td></td>
</tr>
<tr>
<td>• Would require complex engineering to tie new curved elevated structure into existing Central Link light rail line in constrained right-of-way along S Forest Street with adjacent buildings</td>
<td>• Elevated guideway in poor soils and adjacent to active Link tracks, but less than with ST3 Representative Project</td>
<td></td>
</tr>
<tr>
<td>• Substantial roadway modification on S Holgate Street to lower roadway approximately eight feet with retaining walls and grading resulting in access changes; would likely require a stormwater pump station</td>
<td>• Enables connection to the 5th Avenue Cut-and-Cover, 5th Avenue Deep Mined, and 4th Avenue Cut-and-Cover International District/Chinatown Station</td>
<td></td>
</tr>
<tr>
<td>• Enables connection to the 5th Avenue Cut-and-Cover, 5th Avenue Deep Mined, and 4th Avenue Cut-and-Cover International District/Chinatown Station</td>
<td>• May connect to the 4th Avenue Deep Mined International District/Chinatown Station with additional challenges: would likely require operation at maximum grade or elimination of a pocket track; additional challenges to construct cut-and-cover tunnel below light rail track</td>
<td></td>
</tr>
<tr>
<td>• May connect to the 4th Avenue Deep Mined International District/Chinatown Station with additional challenges: would likely require operation at maximum grade or elimination of a pocket track; additional challenges to construct cut-and-cover tunnel below light rail track</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constructability issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Medium</td>
<td>Lower Medium</td>
<td>Lower Medium</td>
</tr>
<tr>
<td>• To elevate the existing Central Link light rail it would likely require two extensive shutdowns to construct; one period of at least approximately two to three months and one period of at least approximately four to six months, assuming accelerated construction schedule</td>
<td>• Limited interruptions of existing Central Link light rail to connect new lines to existing and reconstruct existing SODO Station, likely can be done with single-track operations or potential off-peak closures</td>
<td></td>
</tr>
<tr>
<td>• Would require temporary structure/shoofly to connect existing Central Link light rail tracks to West Seattle line</td>
<td>• Construction of S Holgate Street overcrossing above active light rail tracks</td>
<td></td>
</tr>
<tr>
<td>• Would likely require additional ground improvements for the elevated guideway; longest section of elevated guideway compared to other alternatives</td>
<td>• Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Holgate Street overcrossing at the intersections</td>
<td></td>
</tr>
<tr>
<td>Operational constraints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Medium</td>
<td>Lower Medium</td>
<td>Lower Medium</td>
</tr>
<tr>
<td>• Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</td>
<td>• Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</td>
<td></td>
</tr>
<tr>
<td>• Transitioning for pocket tracks and special trackwork introduces additional curves with less desirable operating speeds</td>
<td>• Transitioning for pocket tracks and special trackwork introduces additional curves with less desirable operating speeds</td>
<td></td>
</tr>
<tr>
<td>• Two extensive shutdowns of existing Central Link light rail to construct would likely require extensive temporary additional bus service to replace Central Link service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Temporary structure/shoofly during construction with tight curve would result in slower train speeds for a duration of approximately two years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Light rail transit vehicles from the north would be unable to access the Forest Street Operations and Maintenance Facility for a period of at least approximately four to six weeks during construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Central Link light rail shutdown during construction would result in less frequent light rail service throughout the system</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Technical Feasibility**

- Constructability issues
- Operational constraints
- Engineering constraints

**Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.**

Segment Evaluated: S Forest Street to S Massachusetts Street
### Purpose and Need / Evaluation Criteria / Measures

#### Level 3 Alternatives

<table>
<thead>
<tr>
<th></th>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated West Seattle at Lander and Holgate</td>
<td>SODO At-Grade</td>
<td>SODO At-Grade with SODO Station Closer to Lander</td>
<td></td>
</tr>
<tr>
<td><strong>Financial Sustainability</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conceptual capital cost comparison (2018$ in millions)</td>
<td>$200 million decrease</td>
<td>$200 million decrease</td>
<td>$200 million decrease</td>
</tr>
</tbody>
</table>

#### Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.

<table>
<thead>
<tr>
<th></th>
<th>Medium</th>
<th>Medium</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passenger Transfers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevated West Seattle line and at-grade Ballard line would require vertical circulation to transfer between the light rail lines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-grade S Lander Street would result in less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Modal Integration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus/rail and rail/rail integration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would require vertical circulation to transfer between the light rail lines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bicycle infrastructure and accessibility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pedestrian and persons with limited mobility accessibility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of intersections and sidewalk coverage similar for all alternatives</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key to Rating

- **Lower Performing**
- **Medium Performing**
- **Higher Performing**

*The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.*
### Purpose and Need / Evaluation Criteria / Measures

**Pre-DEIS Initial Assessment Alternatives**

<table>
<thead>
<tr>
<th>Conceptual capital cost comparison (2018$ in millions)</th>
<th>SODO Double Elevated</th>
<th>SODO Partial Elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td>$300 million increase</td>
<td>Similar to ST3 Representative</td>
<td></td>
</tr>
<tr>
<td>• Approximately $300 million more than the ST3 Representative Project if connected with 5th Avenue shallow tunnel in Chinatown/International District</td>
<td>• Similar cost to the ST3 Representative Project if connected with 5th Avenue shallow tunnel in Chinatown/International District</td>
<td></td>
</tr>
<tr>
<td>• Additional cost not included in ST3 financial plan or evaluation methodology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Financial Sustainability

**Passenger transfers**

<table>
<thead>
<tr>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Elevated West Seattle and Ballard lines would require vertical circulation to transfer between the light rail lines</td>
<td>• Elevated West Seattle line and at-grade Ballard line would require vertical circulation to transfer between the light rail lines</td>
</tr>
<tr>
<td>• Elevated West Seattle and Ballard lines above S Lander Street would require vertical circulation to transfer between bus stops on S Lander Street and the light rail lines</td>
<td>• At-grade S Lander Street would result in less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</td>
</tr>
<tr>
<td>• SODO Station located closer to S Lander Street would improve passenger transfers to/from buses on S Lander Street</td>
<td>• SODO Station located closer to S Lander Street would improve passenger transfers to/from buses on S Lander Street</td>
</tr>
<tr>
<td>• Opportunity for more direct transfers to/from buses with maintained E3 busway</td>
<td>• Opportunity for more direct transfers to/from buses with maintained E3 busway</td>
</tr>
</tbody>
</table>

**Bus/rail and rail/rail integration**

<table>
<thead>
<tr>
<th>Higher</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Would require vertical circulation to transfer between light rail lines and between light rail and buses</td>
<td>• Would require vertical circulation to transfer between the light rail lines</td>
</tr>
<tr>
<td>• Platform closer to S Lander Street to reduce distance to bus/rail transfer</td>
<td>• Less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</td>
</tr>
<tr>
<td>• Opportunity for more integrated bus transfers with maintained E3 busway</td>
<td>• Platform closer to S Lander Street to reduce distance to bus/rail transfer</td>
</tr>
<tr>
<td></td>
<td>• Opportunity for more integrated bus transfers with maintained E3 busway</td>
</tr>
</tbody>
</table>

**Bicycle infrastructure and accessibility**

<table>
<thead>
<tr>
<th>Medium</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</td>
<td>• Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</td>
</tr>
</tbody>
</table>

**Pedestrian and persons with limited mobility accessibility**

<table>
<thead>
<tr>
<th>Medium</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Number of intersections and sidewalk coverage similar for all alternatives</td>
<td>• Number of intersections and sidewalk coverage similar for all alternatives</td>
</tr>
</tbody>
</table>
### Purpose and Need / Evaluation Criteria / Measures

<table>
<thead>
<tr>
<th>ST3 Representative Project</th>
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<tr>
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<td>SODO At-Grade</td>
<td>SODO At-Grade with SODO Station Closer to Lander</td>
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</table>

#### Level 3 Alternatives

<table>
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<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development potential</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Equitable development opportunities</td>
<td>Lower</td>
<td>Lower</td>
<td>Lower</td>
</tr>
<tr>
<td>- Development potential would be similar for all alternatives</td>
<td>- Development potential would be similar for all alternatives</td>
<td>- Development potential would be similar for all alternatives</td>
<td></td>
</tr>
<tr>
<td>- Limited equitable development opportunities in SODO due to lack of residential zoning</td>
<td>- Limited equitable development opportunities in SODO due to lack of residential zoning</td>
<td>- Limited equitable development opportunities in SODO due to lack of residential zoning</td>
<td></td>
</tr>
<tr>
<td>- No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project</td>
<td>- No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project</td>
<td>- No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project</td>
<td></td>
</tr>
<tr>
<td>- 1 contaminated site of higher concern within the alternative footprint or within an intersecting parcel</td>
<td>- 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</td>
<td>- 1 contaminated site of higher concern within the alternative footprint or within an intersecting parcel</td>
<td></td>
</tr>
<tr>
<td>Visual effects (miles of sensitive viewers)</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>- Elevated guideway and SODO Station would not be near visually sensitive viewers</td>
<td>- At-grade alignment and SODO station would not be near sensitive viewers</td>
<td>- At-grade alignment and SODO station would not be near sensitive viewers</td>
<td></td>
</tr>
<tr>
<td>- Would include approximately 0.5 miles of new elevated guideway which would bring visual change along the alignment</td>
<td>- New S Holgate Street and S Lander Street overpasses would bring visual change along the alignment</td>
<td>- New S Holgate Street and S Lander Street overpasses would bring visual change to the alignment</td>
<td></td>
</tr>
<tr>
<td>Potential residential unit displacements</td>
<td>Higher</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>- No potential residential unit displacements</td>
<td>- No potential residential unit displacements</td>
<td>- No potential residential unit displacements</td>
<td></td>
</tr>
<tr>
<td>Potential business displacements</td>
<td>Higher</td>
<td>Medium</td>
<td>Higher</td>
</tr>
<tr>
<td>- Fewer than approximately 250,000 square feet of potential business displacements</td>
<td>- Between approximately 250,000 and 500,000 square feet of potential business displacements</td>
<td>- Fewer than approximately 250,000 square feet of potential business displacements</td>
<td></td>
</tr>
</tbody>
</table>

Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.

**Environmental Effects**

- **National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks**
  - 0
  - 0
  - 0
- **Hazardous materials sites**
  - 1
  - 4
  - 1
- **Visual effects (miles of sensitive viewers)**
  - Higher
  - Higher
  - Higher
- **Potential residential unit displacements**
  - Higher
  - Higher
  - Higher
- **Potential business displacements**
  - Higher
  - Medium
  - Higher

**Station Area Development Opportunities**

- **Development potential**
  - Medium
  - Medium
  - Medium
- **Equitable development opportunities**
  - Lower
  - Lower
  - Lower
- **Station Area Development Opportunities**
  - Limited equitable development opportunities in SODO due to lack of residential zoning

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
### Pre-DEIS Initial Assessment Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>SODO Double Elevated</th>
<th>SODO Partial Elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development potential</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Equitable development opportunities</td>
<td>Lower</td>
<td>Lower</td>
</tr>
<tr>
<td>Hazardous materials sites</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Visual effects (miles of sensitive viewers)</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Potential residential unit displacements</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Potential business displacements</td>
<td>Lower</td>
<td>Lower</td>
</tr>
</tbody>
</table>

#### Development potential
- Development potential would be similar for all alternatives
- Development potential would be similar for all alternatives

#### Equitable development opportunities
- Limited equitable development opportunities in SODO due to lack of residential zoning
- Limited equitable development opportunities in SODO due to lack of residential zoning

#### Hazardous materials sites
- 6 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
- 3 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

#### Visual effects (miles of sensitive viewers)
- Elevated guideway and SODO Station would not be near visually sensitive viewers
  - Would include approximately 0.5 miles of new dual elevated guideway; the elevated guideway structure would be wider than the guideway for the other alternatives, bringing greater visual change along the alignment
- Elevated guideway and SODO Station would not be near visually sensitive viewers
  - Would include approximately 0.5 miles of new elevated guideway and a new S Holgate Street overcrossing which would bring visual change along the alignment

#### Potential residential unit displacements
- No potential residential unit displacements
- No potential residential unit displacements

#### Potential business displacements
- More than approximately 500,000 square feet of potential business displacements
  - Guideway and station footprint would require additional right-of-way in vicinity of S Lander Street intersection
- More than approximately 500,000 square feet of potential business displacements
  - Elevated West Seattle SODO station shifted closer to Lander would require additional right-of-way in vicinity of S Lander Street intersection

---

**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

- **National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks**
  - 0
  - 0
  - No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project
  - No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project

- **Hazardous materials sites**
  - 6
  - 3
  - 6 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
  - 3 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

- **Visual effects (miles of sensitive viewers)**
  - Higher
  - Higher
  - Elevated guideway and SODO Station would not be near visually sensitive viewers
  - Elevated guideway and SODO Station would not be near visually sensitive viewers

- **Potential residential unit displacements**
  - Higher
  - Higher
  - No potential residential unit displacements
  - No potential residential unit displacements

- **Potential business displacements**
  - Lower
  - Lower
  - More than approximately 500,000 square feet of potential business displacements
  - Elevated West Seattle SODO station shifted closer to Lander would require additional right-of-way in vicinity of S Lander Street intersection

---

**The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.**

**Segment Evaluated:** S Forest Street to S Massachusetts Street
<table>
<thead>
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<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>Level 3 Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST3 Representative Project</td>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
</tr>
<tr>
<td>Elevated West Seattle at Lander and Holgate</td>
<td>SODO At-Grade</td>
</tr>
<tr>
<td>Level 3 Alternatives</td>
<td>Level 3 Alternatives</td>
</tr>
<tr>
<td>Higher</td>
<td>Medium</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Higher</td>
<td>Higher</td>
</tr>
</tbody>
</table>

### Community construction impacts
- Construction of elevated guideway and SODO station in E3 busway would have short, off-peak travel disruptions to existing light rail.
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses.

### Burden on minority and low-income populations
- SODO station would be located in an area of moderate displacement risk.
- Construction would result in short, off-peak travel disruptions to passengers traveling from areas where minority or low-income populations are above the city average.

### Traffic circulation and access effects
- No change to circulation in SODO due to maintenance of at-grade crossings of the existing Link light rail line with S Lander and S Holgate streets.

### Traffic Operations
- Affected facilities in SODO include Ryerson Base, Central/Atlantic Base and E3 busway.
- Would result in displacement of the E3 Busway.
- Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Lander Street and S Holgate Street overcrossings at the intersections.
### Pre-DEIS Initial Assessment Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>SODO Double Elevated</th>
<th>SODO Partial Elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lower</strong></td>
<td><strong>Medium</strong></td>
<td><strong>Lower</strong></td>
</tr>
<tr>
<td><strong>Community construction impacts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Construction of double elevated guideway and SODO station in E3 busway would require two extensive shutdowns of existing Central Link light rail to construct; one period of at least approximately two to three months and one period of at least approximately four to six months, requiring extensive temporary additional bus service to replace Central Link service</td>
<td>• Construction of elevated guideway and SODO station in E3 busway would have short, off-peak travel disruptions on existing light rail</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Partial or full closure of 5 Holgate Street to lower the roadway would potentially contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S</td>
<td>• Closure of 5 Holgate Street to construct the overcrossing would potentially contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S</td>
</tr>
<tr>
<td></td>
<td>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</td>
<td>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</td>
</tr>
<tr>
<td><strong>Burden on minority and low-income populations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• SODO station would be located in an area of moderate displacement risk</td>
<td>• SODO station would be located in areas of moderate displacement risk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construction would result in extensive light rail travel disruptions to passengers traveling from areas where minority or low-income populations are above the City of Seattle average, such as Rainier Valley, Tukwila, SeaTac, Kent, Des Moines, and other communities to the south</td>
<td>• Construction would result in short, off-peak travel disruptions to passengers traveling from areas where minority or low-income populations are above the city average</td>
</tr>
<tr>
<td><strong>Traffic circulation and access effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improvements to circulation in SODO due to removal of at-grade Link light rail crossings at S Lander and S Holgate streets</td>
<td>• Improvements to circulation in SODO due to removal of the at-grade Link light rail crossing at S Holgate Street; maintains the at-grade crossing of the existing Link light rail at S Lander Street</td>
<td></td>
</tr>
<tr>
<td><strong>Effects on transportation facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Affected facilities in SODO include Central Link light rail line, 5 Holgate Street, Ryerson Base, Central/Atlantic Base and E3 busway</td>
<td>• Affected facilities in SODO include 5 Holgate Street, Ryerson Base, Central/Atlantic Base and E3 busway</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Would likely require two extensive shutdowns of existing Central Link light rail to construct, requiring extensive temporary additional bus service to replace Central Link service</td>
<td>• Connection to the 5th Avenue International District/Chinatown Station alternatives would result in new downtown tunnel portal shifting further north, reducing space available for KC Metro bases</td>
</tr>
<tr>
<td></td>
<td>• Would require two extensive shutdowns of existing Central Link light rail to construct, requiring extensive temporary additional bus service to replace Central Link service</td>
<td>• Potential traffic disruptions on 6th Avenue S related to construction of cut-and-cover tunnel below</td>
</tr>
<tr>
<td></td>
<td>• Would likely require two extensive shutdowns of existing Central Link light rail to construct, requiring extensive temporary additional bus service to replace Central Link service</td>
<td>• Would maintain the E3 Busway</td>
</tr>
<tr>
<td></td>
<td>• Connection to the 5th Avenue International District/Chinatown Station alternatives would result in new downtown tunnel portal shifting slightly further north, reducing space available for KC Metro bases</td>
<td>• Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of 5 Holgate Street overcrossing at the intersections</td>
</tr>
</tbody>
</table>

**Traffic Operations**

**Environmental Effects (continued)**

Segment Evaluated: S Forest Street to S Massachusetts Street
### Purpose and Need / Evaluation Criteria / Measures

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<tr>
<th>ST3 Representative Project</th>
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<td>SODO At-Grade</td>
<td>SODO At-Grade with SODO Station Closer to Lander</td>
<td></td>
</tr>
</tbody>
</table>

#### Economic Effects

**Effects on freight movement**
- Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations.
- Bus relocation from E3 busway could potentially affect freight routes in SODO.
- Reduced potential construction effects to freight delivery associated with not building the S Lander Street and S Holgate Street overpass.
- There would continue to be minor delays to freight delivery associated with retaining the S Lander Street and S Holgate Street at-grade crossings.

**Effects on freight movement**
- Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations.
- Bus relocation from E3 busway could potentially affect freight routes in SODO.
- Construction of overpasses at S Lander Street and S Holgate Street would require temporary closure and could potentially affect local freight delivery.
- Full grade separation at S Lander Street and S Holgate Street would improve long-term freight mobility.

**Effects on freight movement**
- Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations.
- Bus relocation from E3 busway could potentially affect freight routes.
- Construction of overpasses at S Lander Street and S Holgate Street would require temporary closure and could potentially affect local freight delivery.
- Full grade separation at S Lander Street and S Holgate Street would improve long-term freight mobility.

#### Business and commerce effects

**Business and commerce effects**
- Would have the least amount of business displacements, the majority of which would be industrial or light-industrial businesses.
- Could displace small businesses that mostly serve local community.
- Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway.

**Business and commerce effects**
- Would have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses.
- Could displace small businesses that mostly serve local community.
- Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway.

**Business and commerce effects**
- Would have the least amount of business displacements, the majority of which would be industrial or light-industrial businesses.
- Could displace small businesses that mostly serve local community.
- Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway.

#### Notes:

1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
### Purpose and Need / Evaluation Criteria / Measures

#### Economic Effects

**Effects on freight movement**
- Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations.
- Reduced construction impacts to freight associated with not building the S Lander Street overpass.
- Construction associated with lowering S Holgate Street could potentially require temporary full or partial closure and affect freight delivery.
- Construction of the new elevated guideway and reconstruction of the existing Central Link light rail line on elevated guideway could affect local freight delivery due to additional road closure.
- Two extensive shutdowns of existing Central Link light rail for construction could substantially increase bus traffic in the area and could affect freight movement.
- Reduced potential construction impacts to freight delivery associated with not building the S Lander Street overpass.

**Business and commerce effects**
- Would have the greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses.
- Could displace small businesses that mostly serve local community.
- Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway.

#### Business and commerce effects

- Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations.
- Construction of the overpass at S Holgate Street could potentially require temporary closure and could affect freight delivery.
- Full grade separation at S Holgate Street would improve truck freight mobility by reducing at-grade crossings.
- Reduced potential construction impacts to freight delivery associated with not building the S Lander Street overpass.

### NOTES:

1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
Initial Assessment Results

20th Ave Ballard Tunnel
Pre Draft-EIS Initial Assessment Results

20th Ave Tunnel Ballard - BNSF Portal Alternative

LEGEND

<table>
<thead>
<tr>
<th>West Seattle Tunnel/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated alignment</td>
</tr>
<tr>
<td>At-grade alignment</td>
</tr>
</tbody>
</table>

Initial Assessment - 20th Ave Tunnel Ballard - BNSF Portal

Approximate portal location Area evaluated

N

9-12-2019
20th Ave Tunnel Ballard - Thorndyke Portal Alternative
Pre Draft-EIS Initial Assessment Results

Level 3 Alternatives

LEGEND

- Elevated alignment
- Surface alignment
- Tunnel alignment
- Elevated station

West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated

- Elevated alignment
- Surface alignment
- Tunnel alignment
- Elevated station

West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel

- Elevated alignment
- Surface alignment
- Tunnel station option

Approximate portal location

Area evaluated

9-12-2019
## Purpose and Need / Evaluation Criteria

<table>
<thead>
<tr>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ridership forecasts</td>
<td>Future forecasted 2042 average weekday trips for West Seattle and Ballard extensions</td>
<td>Higher = Average weekday trips at least 5% more than average of all alternatives Medium = Average weekday trips within 5% of average of all alternatives Lower = Average weekday trips at least 5% less than average of all alternatives</td>
</tr>
<tr>
<td>Regional Centers Served</td>
<td>Population and job densities</td>
<td>Higher = Population and job densities at least 5% more than average of all alternatives Medium = Population and job densities within 5% of average of all alternatives Lower = Population and job densities at least 5% less than average of all alternatives</td>
</tr>
<tr>
<td>Sound Transit Long-Range Plan Consistency</td>
<td>Accommodates future LRT extension beyond ST3</td>
<td>Higher = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct Medium = A future LRT extension per Sound Transit Long-Range Plan feasible Lower = A future LRT extension per Sound Transit Long-Range Plan would be less feasible and less direct</td>
</tr>
</tbody>
</table>

## Methods

### Engineering constraints
- Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints
- Higher = Minimal engineering constraints, design meets full standards, likely acceptance by authority having jurisdiction, minimum ROW issues, and/or no unusual design considerations
- Medium = Moderate engineering constraints, design meets minimums, likely acceptance by authority having jurisdiction, with additional mitigation and moderate ROW issues, and/or unusual design considerations that could be mitigated
- Lower = Substantial engineering constraints, deviations to standards, authority having jurisdiction’s acceptance requires substantial mitigation, substantial ROW issues, and/or unique design considerations

### Constructability issues
- Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)
- Higher = Lower construction complexity and construction risks (e.g., minimal utility conflicts, building impacts, impacts to existing infrastructure, etc.)
- Medium = Moderate construction complexity and construction risks
- Lower = Higher construction complexity requiring special mitigation and construction risks

### Operational constraints
- Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizontal curvature, movable bridge, etc.)
- Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility)
- Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection
- Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection

### Conceptual capital cost comparison
- ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and Sound Transit unit pricing (2018$)
- Higher = Conceptual capital cost estimates less than ST3 Representative Project
- Medium = Conceptual capital cost estimates 0% to 10% more than ST3 Representative Project
- Lower = Conceptual capital cost estimates 10% or more than ST3 Representative Project

## Thresholds

### Purpose and Need / Evaluation Criteria

- **Regional Centers Served**
  - Population and job densities
- **Sound Transit Long-Range Plan Consistency**
  - Accommodates future LRT extension beyond ST3

### Methods

- **Engineering constraints**
  - Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints
- **Constructability issues**
  - Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)
- **Operational constraints**
  - Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizontal curvature, movable bridge, etc.)
- **Conceptual capital cost comparison**
  - ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and Sound Transit unit pricing (2018$)

### Thresholds

- **Purpose and Need / Evaluation Criteria**
  - **Regional Centers Served**
    - Population and job densities
  - **Sound Transit Long-Range Plan Consistency**
    - Accommodates future LRT extension beyond ST3

- **Methods**
  - **Engineering constraints**
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    - ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and Sound Transit unit pricing (2018$)

- **Thresholds**
  - **Purpose and Need / Evaluation Criteria**
    - **Regional Centers Served**
      - Population and job densities
    - **Sound Transit Long-Range Plan Consistency**
      - Accommodates future LRT extension beyond ST3
### Purpose and Need / Evaluation Criteria

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<thead>
<tr>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modal Integration (continued)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycle infrastructure and accessibility</td>
<td>Assessment of the quality of bicycle infrastructure and percent of bicycle facility miles (i.e., neighborhood greenways, bicycle lanes, protected bicycle lanes, and trails) to total roadway miles within 10-minute bikeshed of stations</td>
<td>Higher = Greatest quality of bicycle facilities within bikeshed area&lt;br&gt;Medium = Moderate quality of bicycle facilities within bikeshed area&lt;br&gt;Lower = Lower quality of bicycle facilities within bikeshed area</td>
</tr>
<tr>
<td>Pedestrian and persons with limited mobility accessibility</td>
<td>Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access (i.e., large intersections with signal delay, adjacency to freight corridors/industrial uses, and substantial topography or grade challenges) within 10-minute walkshed of stations</td>
<td>Higher = Higher number of intersections and sidewalk coverage, good to excellent pedestrian access and few impediments&lt;br&gt;Medium = Moderate number of intersections and sidewalk coverage, average to good pedestrian access and average impediments&lt;br&gt;Lower = Limited number of intersections and sidewalk coverage, poor to fair pedestrian access and greatest impediments</td>
</tr>
<tr>
<td>Development potential</td>
<td>Percent of properties with development potential based on zoned capacity and market conditions within 10-minute walkshed of stations (5-minute walkshed in downtown)</td>
<td>Higher = Greater than 20 percent of properties with development potential&lt;br&gt;Medium = Between 10 and 20 percent of properties with development potential&lt;br&gt;Lower = Less than 10 percent of properties with development potential</td>
</tr>
<tr>
<td>Equitable development opportunities</td>
<td>Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration</td>
<td>Higher = Greatest opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration&lt;br&gt;Medium = Opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration&lt;br&gt;Lower = Limited opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration</td>
</tr>
</tbody>
</table>

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**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built, and social environments through sustainable practices.**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks</td>
<td>Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle Landmark properties based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle Landmark data</td>
<td>Higher = 1 or less historic properties potentially affected&lt;br&gt;Medium = Between 2 and 3 historic properties potentially affected&lt;br&gt;Lower = More than 3 historic properties potentially affected</td>
</tr>
<tr>
<td>Parks and recreational resources</td>
<td>Number of and estimated acres of potential permanent impacts to parks and recreational resources</td>
<td>Higher = Less than 1 acre of potential permanent impacts to parks&lt;br&gt;Medium = Between 1 and 2 acres of potential permanent impacts to parks&lt;br&gt;Lower = 2 acres or more of potential permanent impacts to parks</td>
</tr>
<tr>
<td>Water resources</td>
<td>Estimated acres of potential permanent in-water impacts</td>
<td>Higher = Less than 0.1 acre of potential permanent in-water impacts for both water bodies&lt;br&gt;Medium = Up to 0.5 acre of potential permanent in-water impacts in each water body&lt;br&gt;Lower = More than 0.5 acre of potential permanent in-water impacts in one or more water bodies</td>
</tr>
<tr>
<td>Hazardous materials</td>
<td>Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites</td>
<td>Higher = 5 or less hazardous materials sites potentially affected&lt;br&gt;Medium = Between 6 and 10 hazardous sites potentially affected&lt;br&gt;Lower = More than 10 hazardous materials sites potentially affected</td>
</tr>
<tr>
<td>Property acquisitions and displacements</td>
<td>Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown)</td>
<td>Higher = Less than approximately 25 residential unit displacements&lt;br&gt;Medium = Between approximately 25 and 100 residential unit displacements&lt;br&gt;Lower = More than approximately 100 residential unit displacements</td>
</tr>
<tr>
<td></td>
<td>Square feet of potential business displacements (including maritime businesses); does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances (except station entrances in downtown)</td>
<td>Higher = Less than approximately 150,000 square feet of potential business displacements&lt;br&gt;Medium = Between approximately 150,000 and 300,000 square feet of potential business displacements&lt;br&gt;Lower = More than approximately 300,000 square feet of potential business displacements</td>
</tr>
</tbody>
</table>

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The Pre-DEIS Initial Assessment is based on limited conceptual design and intended to inform comparison of potential benefits between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria</th>
<th>Measure</th>
<th>Methods</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Effects (continued)</td>
<td>Community construction impacts</td>
<td>Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below.</td>
<td>Higher = Lower potential for impacts to community relative to other alternatives Medium = Moderate potential for impacts to community relative to other alternatives Lower = More substantial potential for impacts to community relative to other alternatives</td>
</tr>
<tr>
<td></td>
<td>Burden on minority and low-income populations</td>
<td>Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities</td>
<td>Higher = Little to no potential impact to minority or low-income communities relative to other alternatives Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives Lower = Substantial potential for impacts to minority or low-income communities relative to other alternatives</td>
</tr>
<tr>
<td>Traffic Operations</td>
<td>Traffic circulation and access</td>
<td>Effects on traffic and transit (i.e., bus and streetcar) operations, including potential for lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken</td>
<td>Higher = Most of alignment is outside of roadway, with few to no changes in traffic patterns or access Medium = Potential for changes in traffic patterns or access to some properties; could be mitigated with local circulation modifications Lower = Substantial impacts to traffic circulation and/or access to many properties; mitigation likely requires substantial roadway improvements</td>
</tr>
<tr>
<td></td>
<td>Transportation facilities</td>
<td>Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities</td>
<td>Higher = Minor changes to transportation facilities, and/or moderate changes with opportunities to improve infrastructure Medium = Moderate changes to transportation facilities, with more limited opportunities to improve infrastructure Lower = Substantial changes to transportation facilities, with no or limited opportunities to improve infrastructure</td>
</tr>
<tr>
<td>Economic Effects</td>
<td>Freight movement and access on land and water</td>
<td>Effects on existing freight and future capacity expansion opportunities, including truck, rail and water freight; includes potential impacts during construction and operations</td>
<td>Higher = No or less than substantial effects on both land and water freight mobility and capacity expansion Medium = Substantial effects on either land or water freight mobility and capacity expansion Lower = Substantial effects on both land and water freight mobility and capacity expansion</td>
</tr>
<tr>
<td></td>
<td>Business and commerce effects</td>
<td>Effects on existing businesses, commercial areas and designated industrial centers, as well as future expansion opportunities; includes potential impacts during construction and operations</td>
<td>Higher = Minimal effects on local businesses, as well as commercial areas and designated industrial zones Medium = Moderate effects on local businesses, as well as commercial areas and designated industrial zones Lower = Substantial effects on local businesses, as well as commercial areas and designated industrial zones</td>
</tr>
</tbody>
</table>

NOTES:
1. Based on preliminary Purpose and Need Statement.
2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; "Higher" = higher ability to achieve measure, "Medium" = moderate ability to achieve measure, "Lower" = lower ability to achieve measure; no weighting will be applied.
6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
## Purpose and Need / Evaluation Measures

<table>
<thead>
<tr>
<th></th>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Elevated</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segments Evaluated</td>
<td>20th Ave Ballard Tunnel</td>
<td>20th Ave Ballard Tunnel</td>
<td>20th Ave Ballard Tunnel</td>
<td></td>
</tr>
<tr>
<td>Preserves and promotes a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Parks and recreational resources (acres)</td>
<td>0.0</td>
<td>1.1</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Water resources (acres)</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

### Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.

- Average weekday trips on Ballard extensions (year 2042)
  - Medium

### Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit’s Regional Transit Long-Range Plan.

- Population / job densities served (persons per acre, year 2040)
  - Medium
- Accommodates future LRT extension beyond ST3
  - Medium

### Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.

- Engineering constraints
  - Lower
- Operational constraints
  - Lower
- Conceptual capital cost comparison (2018$ in millions)
  - $100 million increase (north of Dravus only)
  - $350 million increase (north of Dravus only)
  - $750 million increase (north of Dravus only)

### Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.

- Proximity to Seattle-designated Urban Centers and Villages
  - Medium
- Passenger transfers
  - Medium
- Bus/rail and rail/rail integration
  - Medium
- Bicycle infrastructure and accessibility
  - Medium
- Pedestrian and persons with limited mobility accessibility
  - Higher
- Development potential
  - Lower
- Equitable development opportunities
  - Lower

### Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.

<table>
<thead>
<tr>
<th></th>
<th>Lower Performing</th>
<th>Medium Performing</th>
<th>Higher Performing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key to Rating</td>
<td>Lower Performing</td>
<td>Medium Performing</td>
<td>Higher Performing</td>
</tr>
</tbody>
</table>

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## Purpose and Need / Evaluation Measures

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</thead>
<tbody>
<tr>
<td>ST3 Representative Project</td>
<td>Level 3 Alternatives</td>
<td>Pre-DEIS Initial Assessment Alternatives</td>
<td></td>
</tr>
<tr>
<td>Movable Bridge 15th Ave Ballard Elevated</td>
<td>Fixed Bridge 14th Ave Ballard Elevated</td>
<td>14th Ave Ballard Tunnel</td>
<td>15th Ave Ballard Tunnel</td>
</tr>
</tbody>
</table>

### Level 3 Alternatives

<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Measures</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous materials sites</td>
<td>5</td>
</tr>
<tr>
<td>Potential residential unit displacements</td>
<td>Higher</td>
</tr>
<tr>
<td>Potential business displacements</td>
<td>Medium</td>
</tr>
<tr>
<td>Community construction impacts</td>
<td>Lower</td>
</tr>
<tr>
<td>Burden on minority and low-income populations</td>
<td>Higher</td>
</tr>
<tr>
<td>Traffic circulation and access effects</td>
<td>Lower</td>
</tr>
<tr>
<td>Effects on transportation facilities</td>
<td>Lower</td>
</tr>
<tr>
<td>Effects on freight movement</td>
<td>Lower</td>
</tr>
<tr>
<td>Business and commerce effects</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### NOTES:
1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
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<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Movable Bridge</strong></td>
<td>15th Ave Ballard Elevated</td>
<td>Fixed Bridge</td>
<td>14th Ave Ballard Elevated</td>
</tr>
<tr>
<td><strong>Fixed Bridge</strong></td>
<td>14th Ave Ballard Elevated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Projected Transit Demand

- Average weekday trips on Ballard extensions (year 2042)
  - Average weekday trips on the Ballard extension would be similar for all alternatives
  - Average weekday trips on the Ballard extension would be similar for all alternatives
  - Average weekday trips on the Ballard extension would be similar for all alternatives

#### Population and job densities served (persons per acre, year 2040)

- Population and employment densities would be less than average for the ST3 Representative Project in this 15th Avenue NW Ballard Station location due to its distance from the center of the Ballard Urban Village
  - Population and employment densities would be less than average for the 14th Avenue Elevated Ballard Station due to its distance from the center of the Ballard Urban Village
  - Population and employment densities would be less than average for the 14th Avenue Tunnel Ballard Station due to its distance from the center of the Ballard Urban Village.

#### Accomodates future LRT extension beyond ST3

- Elevated Ballard Station oriented north-south along 15th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives
  - Elevated Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives
  - Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives

#### Sound Transit Long-Range Plan Consistency

- Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.
  - Potential need for ground improvements along guideway between W Dravus Street and 15th Avenue W in Interbay, and for tunnel boring under Nickerson Street bridge in Interbay

#### Technical Feasibility

<table>
<thead>
<tr>
<th>Engineering constraints</th>
<th>Lower</th>
<th>Medium</th>
<th>Higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straddle bents likely required to minimize roadway impacts along 15th Avenue W in Interbay, as well as NW Market Street in Ballard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Movable bridge could require column placements in Salmon Bay and coordination with maritime properties and vessel movements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complex movable bridge over Salmon Bay in a high seismic zone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential need for ground improvements along guideway between W Dravus Street and 15th Avenue W in Interbay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed bridge would require column placements in Salmon Bay and coordination with maritime properties and vessel movements</td>
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*Purpose and Need / Evaluation Criteria / Measures*

- **Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.**
- **Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.**
- **Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.**
## Purpose and Need / Evaluation Criteria / Measures

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<tr>
<th>Region / Category</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
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<tr>
<td><strong>Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.</strong></td>
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</tr>
<tr>
<td>Average weekday trips on Ballard extensions (year 2042)</td>
<td>• Average weekday trips on the Ballard extension would be similar for all alternatives</td>
</tr>
<tr>
<td><strong>Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit’s Regional Transit Long-Range Plan.</strong></td>
<td>Medium</td>
</tr>
<tr>
<td>Population / job densities served (persons per acre, year 2040)</td>
<td>• Population and employment densities would be less than average for the 15th Avenue Tunnel Ballard Station for this station location due to its distance from the center of the Ballard Urban Village</td>
</tr>
<tr>
<td>Accommodates future LRT extension beyond ST3</td>
<td>Medium</td>
</tr>
<tr>
<td>• Tunnel Ballard Station oriented north-south along 15th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives</td>
<td>• Tunnel Ballard Station oriented north-south along 20th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives</td>
</tr>
<tr>
<td><strong>Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.</strong></td>
<td>Medium</td>
</tr>
<tr>
<td>Engineering constraints</td>
<td>• Potential need for ground improvements along guideway between W Dravus Street and 15th Avenue W in Interbay, and for tunnel boring under Nickerson Street Bridge in Interbay</td>
</tr>
</tbody>
</table>

**Sound Transit Long-Range Plan Consistency**

Consistently accommodates future LRT extension beyond ST3

**Regional Centers Served**

Population / job densities served (persons per acre, year 2040)

Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.
## Purpose and Need / Evaluation Criteria / Measures

<table>
<thead>
<tr>
<th>Constructability issues</th>
<th>Operational constraints</th>
<th>Financial Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>Lower</td>
<td>Lower</td>
</tr>
<tr>
<td>Medium</td>
<td>Higher</td>
<td>Higher</td>
</tr>
<tr>
<td>Medium</td>
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</tr>
<tr>
<td>$100 million increase</td>
<td>$350 million increase</td>
<td>$350 million increase</td>
</tr>
</tbody>
</table>

### Conceptual capital cost comparison (2018$ in millions)
- **Movable Bridge 15th Ave Ballard Elevated**
  - Baseline for capital cost comparison to other alternatives
- **Fixed Bridge 14th Ave Ballard Elevated**
  - Approximately $100 million more than the ST3 Representative Project
  - Additional cost for elevated guideway outside of public right-of-way compared to ST3 Representative Project
- **14th Ave Ballard Tunnel**
  - Approximately $150 million more than the ST3 Representative Project
  - Higher cost for additional tunnel construction
  - Cost of additional tunnels not included in ST3 financial plan or evaluation methodology

### Constructability issues
- Potential challenges maintaining traffic during construction along 15th Avenue W in Interbay and 15th Avenue NW in Ballard
- Movable bridge would require in-water construction activities for multiple piers in Salmon Bay and need to take into account vessel traffic in the navigation channel, fish windows and tribal treaty fishing
- Coordination likely required with BNSF Railway in Interbay
- Construction under the Nickerson Street bridge in Interbay creates potential challenges for maintenance of traffic
- Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages

### Operational constraints
- Movable bridge openings over Salmon Bay would result in periodic service interruptions, which would impact systemwide operations
- Fixed bridge over Salmon Bay would not require openings for vessel traffic associated with a movable bridge
- Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge
- Coordination likely required with BNSF Railway in Interbay
- Construction under the Nickerson Street bridge in Interbay creates potential challenges for maintenance of traffic
- Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages

### Financial Sustainability
- Conceptual capital cost comparison (2018$ in millions)
  - **Movable Bridge 15th Ave Ballard Elevated**
    - Baseline for capital cost comparison to other alternatives
  - **Fixed Bridge 14th Ave Ballard Elevated**
    - Approximately $100 million more than the ST3 Representative Project
    - Additional cost for elevated guideway outside of public right-of-way compared to ST3 Representative Project
  - **14th Ave Ballard Tunnel**
    - Approximately $150 million more than the ST3 Representative Project
    - Higher cost for additional tunnel construction
    - Cost of additional tunnels not included in ST3 financial plan or evaluation methodology

### Station Area Land Use Consistency
- Proximity to Seattle-designated Urban Centers and Villages
  - **Movable Bridge 15th Ave Ballard Elevated**
    - Ballard Station located on 15th Avenue NW is one block closer to the center of the Ballard Hub Urban Village than the station alternatives on 14th Avenue NW
  - **Fixed Bridge 14th Ave Ballard Elevated**
    - Ballard Station located on 14th Avenue NW is one block further from the center of the Ballard Hub Urban Village than the ST3 Representative Project
  - **14th Ave Ballard Tunnel**
    - Ballard Station located on 14th Avenue NW is one block further from the center of the Ballard Hub Urban Village than the ST3 Representative Project

---

Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.

The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
### Purpose and Need / Evaluation Criteria / Measures

#### West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel

<table>
<thead>
<tr>
<th>Constructability issues</th>
<th>Operational constraints</th>
<th>Financial Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Higher</strong></td>
<td><strong>Medium</strong></td>
<td><strong>Lower</strong></td>
</tr>
<tr>
<td>• Coordination likely required with BNSF Railway in Interbay</td>
<td>• Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge</td>
<td>• Approximately $150 million more than the ST3 Representative Project</td>
</tr>
<tr>
<td>• Construction under the Nickerson Street bridge in Interbay creates potential challenges for maintenance of traffic</td>
<td>• Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge</td>
<td>• Higher cost for additional tunnel construction</td>
</tr>
<tr>
<td>• Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages</td>
<td>• Would include additional curves, resulting in lower operating speeds than other alternatives</td>
<td>• Cost of additional tunnels not included in ST3 financial plan or evaluation methodology</td>
</tr>
<tr>
<td></td>
<td>• Tunnel would be approximately 200 to 500 feet shorter than tunnel to 14th Avenue NW or 15th Avenue NW</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>$350 million increase</strong> (north of Dravus only)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>$750 million increase</strong> (north of Dravus only)</td>
</tr>
</tbody>
</table>

#### Pre-DEIS Initial Assessment Alternatives

<table>
<thead>
<tr>
<th>20th Ave Ballard Tunnel - BNSF Tunnel Portal</th>
<th>20th Ave Ballard Tunnel - Thorndyke Tunnel Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medium</strong></td>
<td><strong>Lower</strong></td>
</tr>
<tr>
<td>• Maintaining operation of 144-inch diameter major King County combined sewer pipeline during construction would increase construction challenges and schedule/cost risk</td>
<td>• Maintaining operation of 96-inch diameter major King County combined sewer pipeline during construction would increase construction challenges and schedule/cost risk</td>
</tr>
<tr>
<td>• Construction of Ballard Station would be more constrained than with other alternatives due to narrower right-of-way along 20th Avenue NW</td>
<td>• Construction of Ballard Station would be more constrained than with other alternatives due to narrower right-of-way along 20th Avenue NW</td>
</tr>
<tr>
<td>• Potential closure of the intersection of 21st Avenue W and W Emerson Street for the cut-and-cover tunnel</td>
<td>• Coordination likely required with BNSF Railway in Interbay</td>
</tr>
<tr>
<td>• Potential traffic disruptions on W Dravus Street for construction of elevated Interbay Station</td>
<td>• Construction under the W Emerson Street bridge in Interbay creates potential challenges for maintenance of traffic</td>
</tr>
<tr>
<td>• Coordination required with BNSF Railroad in Interbay for construction of tunnel portal in BNSF property with approximately 1,000-foot long transition from retained fill/out</td>
<td>• Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages</td>
</tr>
<tr>
<td>• Requires long span of elevated structure over BNSF tracks to avoid disruption to freight service and need for rail reconstruction</td>
<td>• Includes reconstruction of portion of W Dravus Street bridge and potential retrofit or reconstruction of W Emerson Street bridge</td>
</tr>
<tr>
<td>• Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages</td>
<td></td>
</tr>
</tbody>
</table>

#### Conceptual capital cost comparison (2018$ in millions)

<table>
<thead>
<tr>
<th><strong>$350 million increase</strong> (north of Dravus only)</th>
<th><strong>$750 million increase</strong> (north of Dravus only)</th>
<th><strong>$450 million increase</strong> (north of Dravus only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ballard Station located on 15th Avenue NW is one block closer to the center of the Ballard Hub Urban Village than the station alternatives on 14th Avenue NW</td>
<td>• Ballard Station located on 20th Avenue NW is closer to the center of the Ballard Hub Urban Village than the station alternatives on 14th Avenue NW and 15th Avenue NW</td>
<td>• Ballard Station located on 20th Avenue NW is closer to the center of the Ballard Hub Urban Village than the station alternatives on 14th Avenue NW and 15th Avenue NW</td>
</tr>
</tbody>
</table>

#### Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.

#### Station Area Land Use - Plan Consistency

<table>
<thead>
<tr>
<th>Segment Evaluated: North of W Dravus Street</th>
<th>Lower Performing</th>
<th>Medium Performing</th>
<th>Higher Performing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximity to Seattle-designated Urban Centers and Villages</td>
<td><strong>Higher</strong></td>
<td><strong>Higher</strong></td>
<td><strong>Higher</strong></td>
</tr>
</tbody>
</table>

*Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.*
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>Level 3 Alternatives</th>
<th>20th Ave Ballard Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST3 Representative Project</td>
<td>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</td>
<td>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</td>
</tr>
<tr>
<td><strong>Movable Bridge</strong> 15th Ave Ballard Elevated</td>
<td><strong>Fixed Bridge</strong> 14th Ave Ballard Elevated</td>
<td>14th Ave Ballard Tunnel</td>
</tr>
</tbody>
</table>

**Passenger transfers**
- Transfers from southbound buses on 15th Avenue NW would require crossing 15th Avenue NW
- Opportunity for buses in all directions to serve station entrances without requiring passengers to cross a street
- Pick-up and drop-off activity can be distributed over several blocks
- Opportunity for buses in all directions to serve station entrances without requiring passengers to cross a street
- Pick-up and drop-off activity can be distributed over several blocks

**Bus/rail and rail/rail integration**
- Ballard station is adjacent to north/south bus routes on 15th Avenue NW
- Ballard Station on east side of 15th Avenue NW south of NW Market Street provides less opportunity for integration with buses on both sides of 15th Avenue NW
- Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street

**Bicycle infrastructure and accessibility**
- Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail
- There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: 8th Avenue NW, Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Ave NW, and Nickerson Street
- Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail
- There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: 8th Avenue NW, Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Avenue NW, and Nickerson Street

**Pedestrian and persons with limited mobility accessibility**
- Interbay Station on 15th Avenue W straddling W Dravus Street Bridge has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station does not extend as far west towards Magnolia neighborhood, but extends further east into Queen Anne neighborhood
- Alternative with 15th Avenue NW Ballard Station includes slightly more intersections within combined walkshed than alternatives with 14th Avenue NW Ballard Station
- Interbay Station on 17th Avenue W has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station extends farther west towards Magnolia neighborhood than the ST3 Representative Project, but less far than Queen Anne neighborhood
- Ballard Station on 14th Avenue NW has a lower percentage of sidewalks and trails than other alternatives
<table>
<thead>
<tr>
<th>Purpose and Need / Evaluation Criteria / Measures</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>15th Ave Ballard Tunnel</td>
<td></td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td><strong>Higher</strong></td>
</tr>
<tr>
<td><strong>Passenger transfers</strong></td>
<td><strong>• Transfers from southbound buses on 15th Avenue NW would require crossing 15th Avenue NW</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• Drop-offs more challenging compared to station options on lower-volume streets</strong></td>
</tr>
<tr>
<td><strong>Bus/rail and rail/rail integration</strong></td>
<td><strong>• Ballard station is adjacent to north/south bus routes on 15th Avenue NW</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• Ballard Station is on the east side of 15th Avenue NW and does not straddle NW Market Street, reducing integration with buses on both sides of NW Market Street</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street</strong></td>
</tr>
<tr>
<td><strong>Bicycle infrastructure and accessibility</strong></td>
<td><strong>• Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: 8th Avenue NW, Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Avenue NW, and Nickerson Street</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• The 20th Avenue NW station location is closer to the Burke-Gilman Trail and NW 58th Greenway than other alternatives</strong></td>
</tr>
<tr>
<td><strong>Higher</strong></td>
<td><strong>Higher</strong></td>
</tr>
<tr>
<td><strong>Pedestrian and persons with limited mobility accessibility</strong></td>
<td><strong>• Interbay Station on 17th Avenue W has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station extends farther west towards Magnolia neighborhood than the ST3 Representative Project, but less far into Queen Anne neighborhood</strong></td>
</tr>
<tr>
<td></td>
<td><strong>• Alternative with 15th Avenue NW Ballard Station includes slightly more intersections within combined walkshed than alternatives with 14th Avenue NW Ballard Station</strong></td>
</tr>
</tbody>
</table>
### Purpose and Need / Evaluation Criteria / Measures

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<thead>
<tr>
<th>ST3 Representative Project</th>
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<td>Movable Bridge</td>
<td>Fixed Bridge</td>
<td>14th Ave Ballard Tunnel</td>
</tr>
<tr>
<td>15th Ave Ballard Elevated</td>
<td>14th Ave Ballard Elevated</td>
<td></td>
</tr>
<tr>
<td>Level 3 Alternatives</td>
<td>Lower</td>
<td>Medium</td>
</tr>
<tr>
<td>Development potential</td>
<td>Moderate development opportunities with elevated station at 15th Ave NW due to smaller surplus lots than tunnel alternatives</td>
<td>Fewer development opportunities with elevated Ballard Station at 14th Avenue NW due to project footprint almost entirely within street right-of-way and majority industrial zoning south of Ballard station</td>
</tr>
<tr>
<td></td>
<td>Greater development opportunities due to tunnel construction resulting in increased surplus land available; however, proximity to industrial zoning allows for less density than 20th Ave Ballard Tunnel alternative</td>
<td></td>
</tr>
</tbody>
</table>

#### Station Area Development Opportunities

- **Development potential**
  - Medium
  - Lower
  - Medium
  - Fewer development opportunities with elevated Ballard Station at 14th Avenue NW due to project footprint almost entirely within street right-of-way and majority industrial zoning south of Ballard station

- **Equitable development opportunities**
  - Lower
  - Lower
  - Medium
  - Greater equitable development opportunities due to tunnel construction resulting in increased surplus land available; however, proximity to industrial zoning allows for fewer equitable development opportunities than 20th Ave Ballard Tunnel alternative

- **National Register of Historic Places (NRHP), listed or eligible historic properties and Seattle Landmarks**
  - 2
  - 3
  - 3
  - 2 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project
  - 3 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project
  - 3 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project

- **Parks and recreational resources (acres)**
  - 0.0
  - 1.1
  - 0.8
  - No permanent impacts to parks
  - Approximately 1.1 acres of potential permanent impacts to Interbay Athletic Field and 14th Avenue NW Boat Ramp
  - Approximately 0.8 acres of potential permanent impacts to Interbay Athletic Field

- **Water resources (acres)**
  - 0.5
  - 0.5
  - 0.0
  - More than 0.5 acres of potential permanent in-water impacts
  - More than 0.5 acres of potential permanent in-water impacts
  - No potential permanent in-water impacts

- **Hazardous materials sites**
  - 5
  - 10
  - 11
  - 5 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
  - 10 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
  - 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

- **Potential residential unit displacements**
  - Higher
  - Lower
  - Higher
  - Fewer than approximately 25 potential residential unit displacements
  - More than approximately 100 potential residential unit displacements
  - Fewer than approximately 25 potential residential unit displacements

---

**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

- **Environmental Effects**
  - 20th Ave Ballard Tunnel
  - 14th Ave Ballard Tunnel
  - Parks and recreational resources (acres)
  - Water resources (acres)
  - Hazardous materials sites
  - Potential residential unit displacements

---

**The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.**
### Purpose and Need / Evaluation Criteria / Measures

#### Development potential
- **West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel**
  - Greater development opportunities due to tunnel construction resulting in increased surplus land available; however, proximity to industrial zoning allows for less density than 20th Ave Ballard Tunnel alternative
- **15th Ave Ballard Tunnel**
  - Greater development opportunities due to increased density allowed with Mixed-Use and Multi-Family Residential zoning within station walkshed

#### Equitable development opportunities
- **20th Ave Ballard Tunnel - BNSF Tunnel Portal**
  - Greater equitable development opportunities due to tunnel construction resulting in increased surplus land available
  - Greater equitable development opportunities due to Mixed-Use and Multi-Family Residential zoning within station walkshed
- **20th Ave Ballard Tunnel - Thorndyke Tunnel Portal**
  - Greater equitable development opportunities due to tunnel construction resulting in increased surplus land available
  - Greater equitable development opportunities due to Mixed-Use and Multi-Family Residential zoning within station walkshed

#### Station Area Development Opportunities
- **National Register of Historic Places (NRHP)**
  - 3 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project
  - 7 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project
  - 8 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project

#### Environmental Effects
- **Parks and recreational resources (acres)**
  - Approximately 0.8 acres of potential permanent impacts to Interbay Athletic Field
  - Approximately 1.0 acres of potential permanent impacts to Interbay Athletic Field
  - Approximately 0.9 acres of potential permanent impacts to Interbay Athletic Field

#### Hazardous materials sites
- **Approximately 10 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel**
  - 8 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
  - 8 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

#### Potential residential unit displacements
- **Fewer than approximately 25 potential residential unit displacements**
- **More than approximately 100 potential residential unit displacements**
- **Between approximately 25 and 100 potential residential unit displacements**

---

**Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.**

**Development potential**
- Medium

**Equitable development opportunities**
- Higher

---

**National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks**
- 3 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project
- Includes tunnel beneath Ballard Historic District

**Parks and recreational resources (acres)**
- Approximately 0.8 acres of potential permanent impacts to Interbay Athletic Field
- Approximately 1.0 acres of potential permanent impacts to Interbay Athletic Field
- Approximately 0.9 acres of potential permanent impacts to Interbay Athletic Field

**Water resources (acres)**
- No potential permanent in-water impacts

**Hazardous materials sites**
- 10 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

**Potential residential unit displacements**
- Fewer than approximately 25 potential residential unit displacements
- More than approximately 100 potential residential unit displacements
- Between approximately 25 and 100 potential residential unit displacements
## Purpose and Need / Evaluation Criteria / Measures

<table>
<thead>
<tr>
<th>Environmental Effects (continued)</th>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential business displacements</td>
<td>• Between approximately 150,000 and 300,000 square feet of potential business displacements</td>
<td>• More than approximately 300,000 square feet of potential business displacements</td>
<td>• Between approximately 150,000 and 300,000 square feet of potential business displacements</td>
</tr>
<tr>
<td>Community construction impacts</td>
<td>• Potential for visual, noise, and vibration impacts on residences near 15th Avenue W, 15th Avenue NW and NW Market Street</td>
<td>• Potential for visual, noise, and vibration impacts on residences near 15th Avenue W and 14th Avenue W (north of W Emerson Street), and NW Market Street</td>
<td>• Potential for visual, noise, and vibration impacts on residences near NW Market Street</td>
</tr>
<tr>
<td>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</td>
<td>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</td>
<td>• Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling</td>
<td>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</td>
</tr>
<tr>
<td>• Lane closures during construction on 15th Avenue W in Interbay and 15th Avenue NW in Ballard contribute to widespread diversion and increased congestion in Lower Queen Anne and the Westlake and SR 99 corridors</td>
<td>• Fully elevated guideway along 15th Avenue W in Interbay and 15th Avenue NW in Ballard</td>
<td>• Includes elevated guideway along 14th Avenue NW, a lower-volume street</td>
<td>• Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities</td>
</tr>
<tr>
<td>• Columns could affect access by restricting certain turning movements.</td>
<td>• Affected facilities include W Dravus Street, the Emerson interchange, 15th Avenue W, 15th Avenue NW, and the 15th Avenue NW/NW Market Street intersection</td>
<td>• Affected facilities include W Dravus Street, the Emerson interchange and 14th Avenue NW/NW Market Street intersection</td>
<td>• Affected facilities include the Emerson interchange</td>
</tr>
<tr>
<td>• Alignment in tunnel limits permanent effects to traffic circulation and access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burden on minority and low-income populations</td>
<td>• Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk</td>
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<td>• Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk</td>
</tr>
<tr>
<td>Traffic circulation and access effects</td>
<td>• Lengthy segments of elevated guideway along principal arterial 15th Ave W/NW could eliminate or truncate left turn lanes, reduce capacity, and restrict turning movements</td>
<td>• Includes elevated guideway along 14th Avenue NW, a lower-volume street</td>
<td>• Alignment in tunnel limits permanent effects to traffic circulation and access</td>
</tr>
<tr>
<td>• Includes elevated guideway along 14th Avenue NW, a lower-volume street</td>
<td>• Columns could affect access by restricting certain turning movements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects on transportation facilities</td>
<td>• Fully elevated guideway along 15th Avenue W in Interbay and 15th Avenue NW in Ballard</td>
<td>• Fully elevated guideway primarily outside of roadway right-of-way and along 14th Avenue NW in Ballard; avoids 15th Avenue W and 15th Avenue NW</td>
<td>• Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities</td>
</tr>
<tr>
<td>• Highest number of potential conflicts with existing and planned transportation infrastructure</td>
<td>• Reduced number of potential conflicts with existing and planned transportation infrastructure compared to ST3 Representative Project</td>
<td>• Affected facilities include the Emerson interchange</td>
<td>• Affected facilities include the Emerson interchange</td>
</tr>
<tr>
<td>• Affected facilities include W Dravus Street, the Emerson interchange, 15th Avenue W, 15th Avenue NW, and the 15th Avenue NW/NW Market Street intersection</td>
<td>• Affected facilities include W Dravus Street, the Emerson interchange and 14th Avenue NW/NW Market Street intersection</td>
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</table>
### Purpose and Need / Evaluation Criteria / Measures

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<tr>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
<th>Pre-DEIS Initial Assessment Alternatives</th>
</tr>
</thead>
</table>

#### Potential business displacements
- Between approximately 150,000 and 300,000 square feet of potential business displacements
- Between approximately 150,000 and 300,000 square feet of potential business displacements
- Fewer than approximately 150,000 square feet of potential business displacements

#### Community construction impacts
- Potential for visual, noise, and vibration impacts on residences near NW Market Street
- Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Potential for visual, noise, and vibration impacts on residences near 20th Avenue NW and NW Market Street
- Construction for cut-and-cover tunnel Ballard Station would occur in the core of the Ballard Hub Urban Village
- Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Potential for visual, noise, and vibration impacts on residences near 20th Avenue NW and NW Market Street
- Construction for cut-and-cover tunnel Ballard Station would occur in the core of the Ballard Hub Urban Village
- Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses

#### Burden on minority and low-income populations
- Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk
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#### Traffic circulation and access effects
- Alignment in tunnel limits permanent effects to traffic circulation and access
- Alignment in tunnel limits permanent effects to traffic circulation and access
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#### Traffic Operations
- Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities
- Affected facilities include the Emerson interchange
- Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities
- Affected facilities include construction over live BNSF rail tracks and temporary construction-related impacts to W Emerson Place
- Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities
- Affected facilities in Interbay/Ballard include reconstruction of portion of W Dravus Street bridge, potential retrofit or reconstruction of W Emerson Street bridge

#### Environmental effects (continued)
- Potential for visual, noise, and vibration impacts on residences near 20th Avenue NW and NW Market Street
- Construction for cut-and-cover tunnel Ballard Station would occur in the core of the Ballard Hub Urban Village
- Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling
- Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
- Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk

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**Key to Rating**
- Lower Performing
- Medium Performing
- Higher Performing

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The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.
### Purpose and Need / Evaluation Criteria / Measures

<table>
<thead>
<tr>
<th>ST3 Representative Project</th>
<th>West Seattle Elevated/Downtown 6th Ave/Ballard Elevated</th>
<th>West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Movable Bridge</strong></td>
<td><strong>Fixed Bridge</strong></td>
<td><strong>14th Ave Ballard Tunnel</strong></td>
</tr>
<tr>
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<td>14th Ave Ballard Elevated</td>
<td></td>
</tr>
<tr>
<td><strong>Lower</strong></td>
<td><strong>Medium</strong></td>
<td><strong>Higher</strong></td>
</tr>
</tbody>
</table>

**Economic Effects**

- **Level 3 Alternatives**
  - **Elevated guideway columns** could affect truck access to local businesses on 15th Avenue W and 15th Avenue NW; this alternative would have greatest potential direct impact to truck freight routes of all alternatives.
  - **Construction activities would be conducted along and affect the 15th Avenue W and 15th Avenue NW Major Freight Routes.**
  - **Construction of elevated guideway columns would likely have limited impacts associated with the guideway crossing the following Major Freight Routes:** Shilshole Avenue NW, NW Leary Way and NW Market Street.
  - **Effects on freight movement**
    - Construction of the elevated Ballard Station would occur on 15th Avenue NW and close to NW Market Street, both of which are a Major Freight Route. Construction of the station could have limited impact to freight movement on 15th Avenue NW and NW Market Street.
    - Construction of the tunnel Ballard Station would occur beneath 15th Avenue NW in Interbay; 15th Avenue W and NW Market Street in Ballard.
  - **Construction associated with the tunnel portal could affect local freight access** along 15th Avenue NW in Interbay; 15th Avenue W and 15th Avenue NW in Ballard; 14th Avenue NW in Interbay; 14th Avenue W in Interbay; 17th Avenue W, 16th Avenue W and 13th Avenue W in Interbay and Ballard.
  - **Could have the greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MJC**
  - **Could displace small businesses in Interbay that are service-or light-industrial-oriented**
  - **Could displace businesses that support international and domestic trade through terminals on Salmon Bay**
  - **Could displace water-dependent businesses at Fishermen’s Terminal, which could have secondary effects to other marine industries that maintain the Alaskan Fishing Fleet, and would reduce available moorage for fishing vessels**
  - **Other water dependent businesses could be displaced on north side of Salmon Bay (i.e., marina for recreational vessels)**
  - **Could displace small businesses in Ballard that mostly serve local community**
  - **Could displace businesses that support international and domestic trade through terminals on Salmon Bay**
  - **Potential construction period effects such as lane closures and access changes, to local businesses on or near 15th Avenue W in Interbay, 15th Avenue NW and NW Market Street in Ballard**
  - **Could displace water-dependent businesses at Fishermen’s Terminal, which could have secondary effects to other marine industries that maintain the Alaskan Fishing Fleet, and would reduce available moorage for fishing vessels**
  - **Other water dependent businesses could be displaced on north side of Salmon Bay (i.e., marina for recreational vessels)**

**Notes:**

1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.
### Purpose and Need / Evaluation Criteria / Measures

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<tr>
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<tr>
<td><strong>15th Ave Ballard Tunnel</strong></td>
<td><strong>20th Ave Ballard Tunnel - BNSF Tunnel Portal</strong></td>
</tr>
<tr>
<td>Higher</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### Effects on Freight Movement

- Construction on the east side of Interbay BNSF yard in Interbay
- Construction associated with the tunnel portal could affect local freight access
- Tunnel avoids in-water columns in Salmon Bay and impacts on Fisherman's Terminal
- Construction of the tunnel Ballard Station would occur beneath 15th Avenue NW and close to NW Market Street, both of which are Major Freight Routes; construction of the station could have temporary impact to freight movement on 15th Avenue NW and NW Market Street, but less impact compared to the alternative with the elevated station

### Business and Commerce Effects

- Could have a moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MIC
- Potential construction period impacts, such as lane closures and access changes, to local businesses on or near 15th Avenue W, 16th Avenue W in Interbay; 17th Avenue W, 15th Avenue NW and NW Market Street in Ballard
- Could displace small businesses in Interbay that are service or light-industrial-oriented
- Tunnel under Salmon Bay would avoid permanent maritime business impacts, including those at Fisherman's Terminal

### Economic Effects

#### Business and Commerce Effects

- Could have a moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MIC
- Potential construction period impacts, such as lane closures and access changes, to local businesses on or near 17th Avenue W in Interbay, 20th Avenue NW and NW Market Street in Ballard
- Could displace small businesses in Interbay that are service or light-industrial-oriented
- Tunnel under Salmon Bay would avoid permanent maritime business impacts, including those at Fisherman's Terminal

### Notes

1. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

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**NOTES:**

- Construction on the east side of Interbay BNSF yard in Interbay
- Construction associated with the tunnel could affect local freight access
- Tunnel avoids in-water columns in Salmon Bay and impacts on Fisherman's Terminal
- Construction of the tunnel Ballard Station would occur beneath 20th Avenue NW straddling NW Market Street which is a Major Freight Route; construction of the station could have temporary impact to freight movement on NW Market Street

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**Alternative Performance**

- Lower Performing
- Medium Performing
- Higher Performing

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**Sound Transit** will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.