West Seattle and Ballard
Link Extensions

Alternatives Development Report

February 2019

SOUNDTRANSIT

Summary

Introduction

This *Alternatives Development Report* documents the findings of the overall alternatives development, evaluation and screening process for the West Seattle and Ballard Link Extensions (WSBLE) Project. It incorporates the findings of the Level 3 alternatives evaluation, as well as highlights the Elected Leadership Group's (ELG) previous Level 1 and Level 2 screening recommendations. This information will help inform the identification of a Preferred Alternative(s) by the Sound Transit Board for advancement into the environmental review phase, along with other alternatives to evaluate in an Environmental Impact Statement (EIS).

Preliminary Purpose and Need

The purpose of the WSBLE 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. The preliminary Purpose and Need Statement provided the foundation for the definition of alternatives, as well as the evaluation criteria, measures and methods used for the evaluation and screening.

Alternatives Development Process

The alternatives evaluation framework for the WSBLE Project was structured as a series of sequential evaluation levels, where increasingly detailed and comprehensive evaluation measures were applied to a decreasing number of alternatives at each level. A variety of stakeholders were engaged in the Alternatives Development phase, and their input has informed the decision-making for the WSBLE Project. The agency and external engagement process to actively seek input and involvement from stakeholders was accomplished through multiple groups and forums, including an ELG, Stakeholder Advisory Group (SAG), Interagency Group (IAG) and the public.

A total of 28 alternatives were previously studied in Level 1 within the study segments—West Seattle/Duwamish, South of Downtown (SODO), Downtown and Interbay/Ballard. The Level 1 screening was intended to screen out those alternatives that had limited potential to meet the WSBLE Project's preliminary Purpose and Need and/or were deemed not practical. On May 17, 2018, the ELG recommended to carry forward 16 of the Level 1 alternatives into Level 2. Subsequently, on July 17, 2018, the ELG recommended to advance four additional alternatives into Level 2 for the SODO and Chinatown/International District Segment.

Level 2 also assessed alternatives within each study segment. The 20 alternatives carried forward from Level 1 were refined and optimized, leading to a total of 24 alternatives studied in Level 2. The Level 2 evaluation applied more quantitative methods to assess the potential benefits and impacts and highlight differentiating characteristics among the alternatives. On October 5, 2018, the ELG recommended 14 of the 24 alternatives advance into Level 3.

Level 3 Alternatives Evaluation and Findings

The Level 3 screening was the next step in the Alternatives Development phase for the WSBLE Project. A more refined definition of alternatives and evaluation process was used, with additional engineering, travel forecasting and other information. At this stage, the 14 segment-level alternatives from Level 2 were refined and combined from end-to-end, providing corridorwide alternatives that extend from downtown Seattle to West Seattle and Ballard. A total of three corridorwide alternatives and associated design options were evaluated in Level 3.

Summary of Level 3 Evaluation

Table S-1 (Summary of Level 3 Alternatives Evaluation Findings) summarizes the key findings among the Level 3 alternatives and associated design options.

Next Steps

At the end of the Alternatives Development process, Sound Transit and the Federal Transit Administration (FTA) will begin environmental scoping and invite the public and agency to comment on the alternatives, elements of the environment to evaluate in the EIS, and the WSBLE Project's Purpose and Need. Based on information from the Alternatives Development process, the Racial Equity Toolkit (RET) and environmental scoping, the Sound Transit Board is expected to identify the Preferred Alternative(s) and other alternatives to study in a Draft EIS.

Table S-1 Summary of Level 3 Alternatives Evaluation Findings

Level 3 Alternatives	Key Findings
ST3 Representative Project Alternative	
ST3 Representative Project	• East-west oriented Alaska Junction Station complicates future light rail transit (LRT) extension in West Seattle; constrained terminal station on SW Alaska Street • Duwamish Waterway crossing south of West Seattle Bridge potentially impacts Pigeon Point steep slope and Duwamish Greenbelt • More complex and costly elevated track in SODO does not facilitate track interconnections needed for service reliability • Most extensive potential 5th Avenue S cut-and-cover tunnel construction impacts in Chinatown/International District • Most potential traffic, transportation infrastructure and freight impacts due to lengthy sections of elevated track along high-volume arterials, including SW Alaska Street, Fauntleroy Way SW, Delridge Way SW, Elliott Avenue W, 15th Avenue W and 15th Avenue NW • Movable bridge over Salmon Bay would have potential service interruptions, vessel navigational effects, most in-water effects and effects to freshwater maritime businesses that would be hard to relocate
West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative	
5th Ave Cut-and-Cover International District/ Chinatown Station Design Option	• Most acquisitions and displacements due to elevated guideway outside of public right-of-way in West Seattle and Interbay/Ballard • Duwamish Waterway crossing south of West Seattle Bridge potentially impacts Pigeon Point steep slope and Duwamish Greenbelt • 5th Avenue Cut-and-Cover International District/Chinatown Station has potential for more construction impacts in Chinatown/International District • Fixed bridge over Salmon Bay provides service reliability and reduces potential in-water effects compared to movable bridge, but requires high-level structure for navigational clearances and has potential effects to freshwater maritime business that would be hard to relocate • Wider 14th Avenue NW right-of-way better accommodates guideway, station and tail tracks than on 15th Avenue NW • Ballard Station on 14th Avenue NW farther from center of Urban Village than 15th Avenue NW, but would have similar ridership
5th Ave Mined International District/ Chinatown Station Design Option	• 5th Avenue Mined International District/Chinatown Station reduces potential construction impacts in Chinatown/International District compared to cut-and-cover • Deep mined International District/Chinatown Station adds potential schedule delays, engineering constraints, and constructability complexity, and has less convenient passenger transfers to existing Link station • Other potential impacts along the WSBLE Project corridor similar to alternative with 5th Avenue Cut-and-cover International District/Chinatown Station
West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative	
41st Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard Design Options	• 41st Avenue Alaska Junction Station is close to the center of the West Seattle Junction Hub Urban Village • Tunnel in West Seattle lowers guideway along SW Genesee Street compared to elevated alternatives • Duwamish Waterway crossing north of West Seattle Bridge avoids Pigeon Point steep slope and potential effects to Duwamish Greenbelt • Duwamish Waterway crossing north of West Seattle Bridge potentially affects freight, port terminal facilities especially during construction • 4th Avenue S viaduct rebuild in Chinatown/International District adds schedule delays, engineering constraints, constructability complexity and costs; may require funding partnerships • Higher ridership potential at South Lake Union Station on Harrison Street due to better pedestrian access and bus connections • Engineering constraints with landslide hazard area and most potential effects to SW Queen Anne Greenbelt • Tunnels in West Seattle and Ballard potentially reduce property acquisitions/displacements and avoid permanent Salmon Bay in-water effects, but add schedule delays, engineering constraints, constructability complexity and costs that are not included in ST3 Financial Plan or evaluation methodology and may require funding partnerships
42nd Ave Alaska Junction Station Design Option	• 42nd Avenue Alaska Junction Station is close to the center of the West Seattle Junction Hub Urban Village and closer to existing and planned bus routes on California Avenue SW than 41st Avenue SW • Other potential impacts along the WSBLE Project corridor similar to alternative with 41st Avenue SW Alaska Junction Station
44th Ave Alaska Junction Station Design Option	• 44th Avenue Alaska Junction Station is on the west edge of the West Seattle Junction Hub Urban Village, but closer to existing and planned bus routes on California Avenue SW than a station on 41st Avenue SW • 44th Avenue Alaska Junction Station has slightly more acquisitions and displacements than a station on 41st Avenue SW • Other potential impacts along the WSBLE Project corridor similar to alternative with 41st Avenue SW Alaska Junction Station
4th Ave Mined International District/ Chinatown Station Design Option	• 4th Avenue S viaduct rebuild adds schedule delays, engineering constraints, constructability complexity and costs; may require funding partnerships • Deep mined International District/Chinatown Station under 4th Avenue S results in system reliability, network integration and operational constraints, and less convenient passenger transfers to existing Link station • Other potential impacts along the WSBLE Project corridor similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station
15th Ave Ballard Station Design Option	• Ballard Station on 15th Avenue NW closer to Urban Village than 14th Avenue NW, but would have similar ridership • More acquisitions and displacements than 14th Avenue NW • Other potential impacts along the WSBLE Project corridor similar to alternative with 14th Avenue NW Ballard Station

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Acronyms and Abbreviations

ADA	American with Disabilities Act
BNSF	Burlington Northern Santa Fe
C-ID	Chinatown/International District
DAHP	Department of Archaeology and Historic Preservation
DSTT	Downtown Seattle Transit Tunnel
EIS	Environmental Impact Statement
ELG	Elected Leadership Group
FTA	Federal Transit Administration
HCT	High-Capacity Transit
IAG	Interagency Group
KCM	King County Metro Transit
LEP	Limited English-Proficiency
LRT	Light Rail Transit
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
PSRC	Puget Sound Regional Council
RET	Racial Equity Toolkit
ROD	Record of Decision
RSJI	Race and Social Justice Initiative
RTLP	Regional Transit Long-Range Plan
SAG	Stakeholder Advisory Group
SEPA	State Environmental Policy Act
SLU	South Lake Union
SODO	South of Downtown
SR	State Route
ST3	Sound Transit 3
TPSS	Traction Power Substations
UPRR	Union Pacific Railroad
WSBLE	West Seattle and Ballard Link Extensions
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

1.1 Overview

Sound Transit has been advancing the West Seattle and Ballard Link Extensions (WSBLE) Project through the Alternatives Development phase. During 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 was the result of extensive, yearslong planning and public involvement work, including high-capacity transit (HCT) studies, the process to update the agency's long-range plan, and the *ST3 Plan* that voters approved financing for in 2016. Sound Transit has been engaging the public and agencies in an intensive external engagement process that will lead to the Sound Transit Board identifying a Preferred Alternative(s), as well as other alternatives to evaluate in an Environmental Impact Statement (EIS).

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. It would consist of two separate Link extensions: one to West Seattle and the other to Ballard. The extension to West Seattle would operate from downtown Seattle to West Seattle's Alaska Junction neighborhood. The Ballard extension would operate from downtown Seattle to Ballard's Market Street area and include a new rail-only tunnel from the Chinatown/ International District to South Lake Union and Seattle Center/Uptown.

The alternatives and analysis conducted during the Alternatives Development phase are generally focused within a 0.5-mile study area boundary around the ST3 Representative Project. A map of the study area for the WSBLE Project is shown on **Figure 1-1** (West Seattle and Ballard Link Extensions).

1.2 Purpose of Report

This *Alternatives Development Report* documents the findings of the overall alternatives development, evaluation and screening process for the WSBLE Project. It incorporates the findings of the Level 3 alternatives evaluation, as well as highlights the Elected Leadership Group's (ELG) previous Level 1 and Level 2 screening recommendations. This information will help inform the identification of a Preferred Alternative(s) by the Sound Transit Board for advancement into the environmental review phase, along with other alternatives to evaluate in an EIS.

Figure 1-1 West Seattle and Ballard Link Extensions Study Area

1.3 Report Organization

The *Alternatives Development Report* is organized into the following sections:

- **Section 1 (Introduction):** Provides an overview of the WSBLE process and project, as well as purpose of this report.
- **Section 2 (Preliminary Purpose and Need):** Outlines the preliminary Purpose and Need for the WSBLE Project.
- **Section 3 (Alternatives Development Process):** Describes an overview of the process to develop, evaluate and screen alternatives, including the agency and community engagement efforts and previous Level 1 and Level 2 screening.
- **Section 4 (Level 3 Alternatives Evaluation and Findings):** Defines the Level 3 end-to-end alternatives and highlights the results and findings for each alternative's performance relative to the evaluation criteria and measures.
- **Section 5 (Summary of Level 3 Evaluation):** Summarizes the overall findings of the Level 3 evaluation.
- **Section 6 (Next Steps):** Addresses the next steps for environmental review phase of the WSBLE Project.
- **Section 7 (References):** Lists the references cited in this report.

2 PRELIMINARY PURPOSE AND NEED

Sound Transit developed the preliminary Purpose and Need Statement for the WSBLE Project with input from stakeholders during the early scoping period between February 2 and March 5, 2018. The preliminary Purpose and Need Statement provided the foundation for the alternatives defined in Level 3, as well as the evaluation criteria, measures and methods used for the Level 3 evaluation and screening.

2.1 Project Purpose

The purpose of the WSBLE 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 to:

- Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit (LRT) service to communities in the project corridors as defined in ST3.
- Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the 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* (RTLP) (2014).
- Implement a system that is consistent with the *ST3 Plan* (Sound Transit 2016) that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.
- Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.
- 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.
- Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.

2.2 Need for Proposed Action

The WSBLE Project is needed because:

- Increasing roadway congestion on transit routes between downtown Seattle, West Seattle, and Ballard will continue to degrade transit performance and reliability.
- Regional population and employment growth will increase operational demands on the Downtown Seattle Transit Tunnel (DSTT).
- Regional and local plans call for HCT in the corridor consistent with the Puget Sound Regional Council's (PSRC) *VISION 2040* (2009) and Sound Transit's RTLP (2014).
- The region's citizens and communities, including travel-disadvantaged residents and low-income and minority populations, need long-term regional mobility and multimodal connectivity.
- Regional and local plans call for increased residential and/or employment density at and around HCT stations, and increased options for multimodal access.
- Environmental and sustainability goals of the state and region include reducing total vehicles miles traveled and greenhouse gas emissions.

To help organize the content of this report, the Purpose statements were distilled into short themes that reflect the primary focus of the full statement. Accompanying these brief themes are symbols that generally match the spirit of the summarized Purpose statement, as shown in **Table 2-1** (Level 3 Screening Themes and Symbols). The report uses these themes and symbols to denote these Purpose statements throughout.

Table 2-1 Level 3 Screening Themes and Symbols

Purpose Statement	Theme	Symbol
Provide high quality rapid, reliable, and efficient peak and off-peak LRT service to communities in the project corridors as defined in ST3.	Service performance and reliability in project corridor	
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the projected transit demand.	Improve downtown capacity for regional connectivity	
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's RTLP.	Connect regional centers	
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.	Technically feasible and financially sustainable	
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.	Expand mobility for all	
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.	Encourage equitable and sustainable urban growth	
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.	Promoting a healthy built, natural and social environment	

3 ALTERNATIVES DEVELOPMENT PROCESS

The alternatives evaluation framework for the WSBLE Project was structured as a series of sequential evaluation levels, where increasingly detailed and comprehensive evaluation measures were applied to a decreasing number of alternatives at each level. The screening process initially reviewed a wide range of alternatives during the first screening level, evaluated against a select set of measures to identify fatal flaws or major deficiencies. As the evaluation process progressed, the most promising alternatives were subjected to more rigorous and detailed analysis, with more quantitative evaluation criteria applied. The screening process was designed to provide insight into how the alternatives may be refined or modified to improve their effectiveness in satisfying the preliminary Purpose and Need.

The three levels of analysis for the WSBLE Project are depicted on **Figure 3-1** (Alternatives Development Process). More detailed information on the overall Alternatives Development process can be found in the *Alternatives Evaluation Framework and Methodology Technical Memorandum* (Sound Transit 2018a).

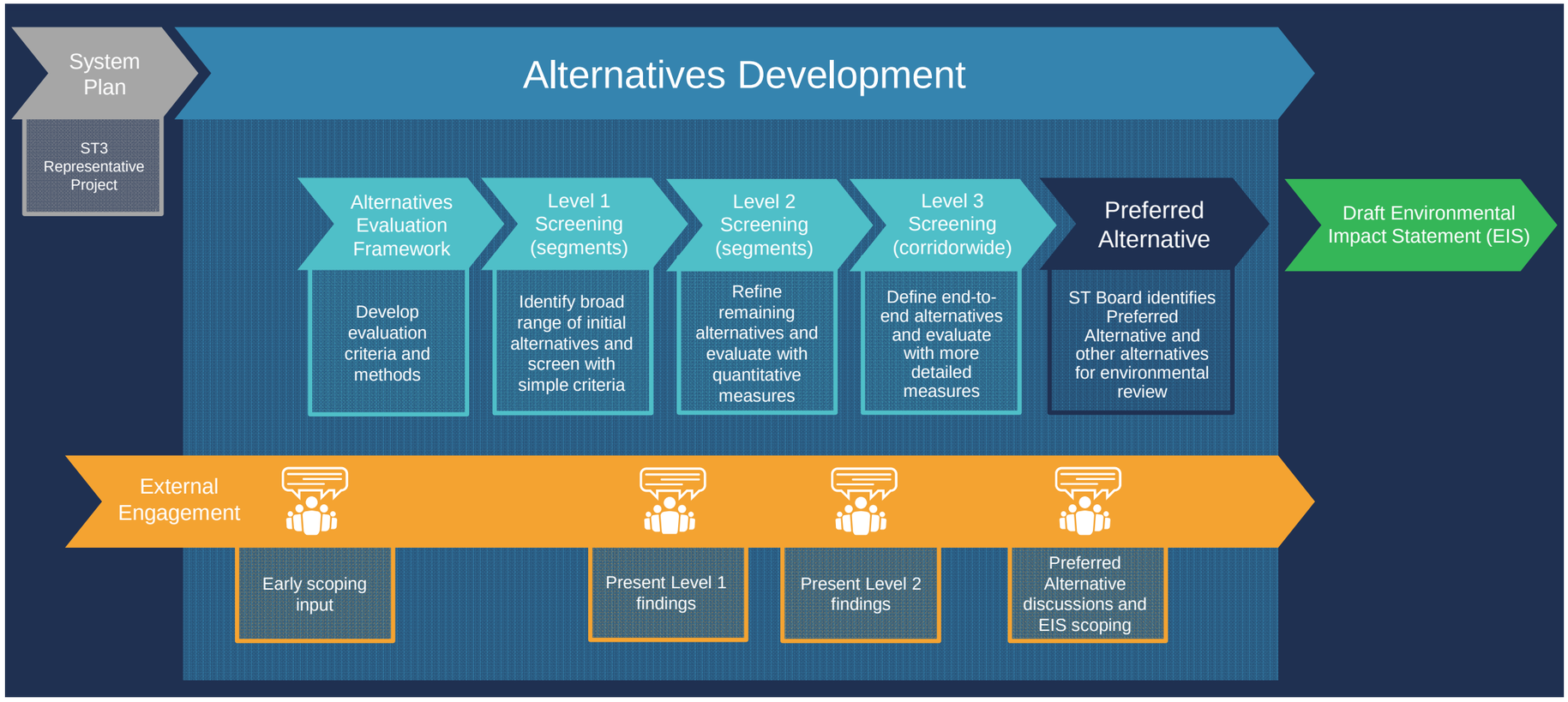


Figure 3-1 Alternatives Development Process

With a multi-tiered evaluation approach, each level of the screening analysis conforms to a level of detail necessary to make informed decisions about the alternatives considered. In this regard, different and increasingly detailed sets of evaluation criteria, measures and methods were used at each screening level. This approach allowed alternatives to be narrowed from a wide range down to a select set of alternatives. **Figure 3-2** (Alternatives Screening Process) illustrates the screening process used during the Alternatives Development phase, leading to the Preferred Alternative(s) and other alternatives to carry forward for further analysis in an EIS.

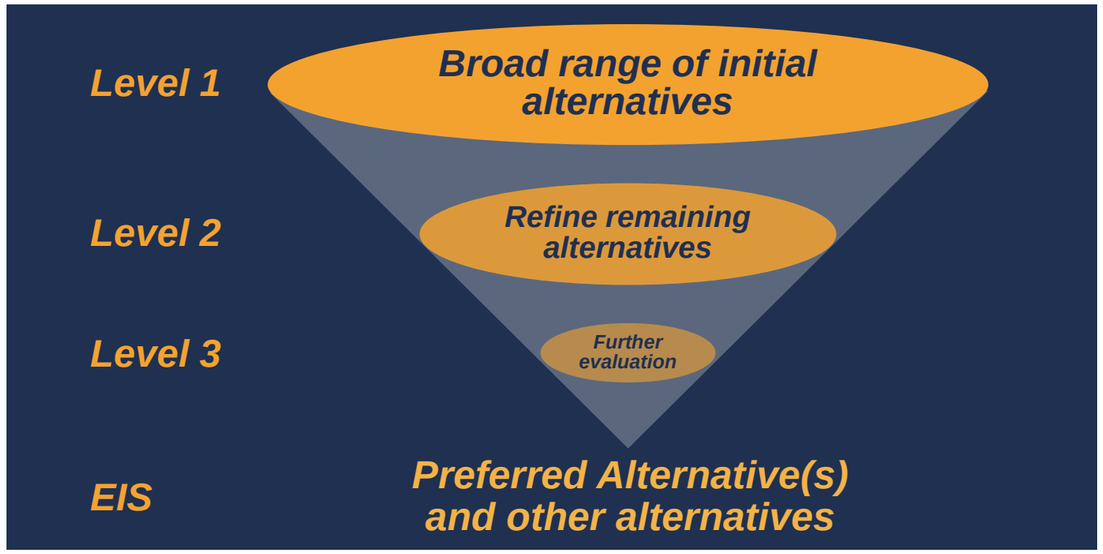


Figure 3-2 Alternatives Screening Process

3.1 Level 1 and Level 2 Screening Process

Due to the unique characteristics of the study area for the WSBLE Project, the corridor was subdivided into four study segments for evaluation purposes during the Level 1 and Level 2 screening of the Alternatives Development phase. Each study segment was oriented around the ST3 Representative Project and geographically determined to provide logical end points and interfaces with the adjoining segments. These study segments allowed for more detailed evaluation and analysis of specific planning, engineering or other issues. Following are the four study segments, as delineated on **Figure 3-3** (Study Segments for Level 1 and Level 2 Screening):

- West Seattle/Duwamish
- SODO and Chinatown/International District
- Downtown
- Interbay/Ballard

After the alternatives were evaluated and screened down at a segment level, they were then combined to define logical end-to-end alternatives that extend from downtown Seattle to West Seattle and Ballard for Level 3.

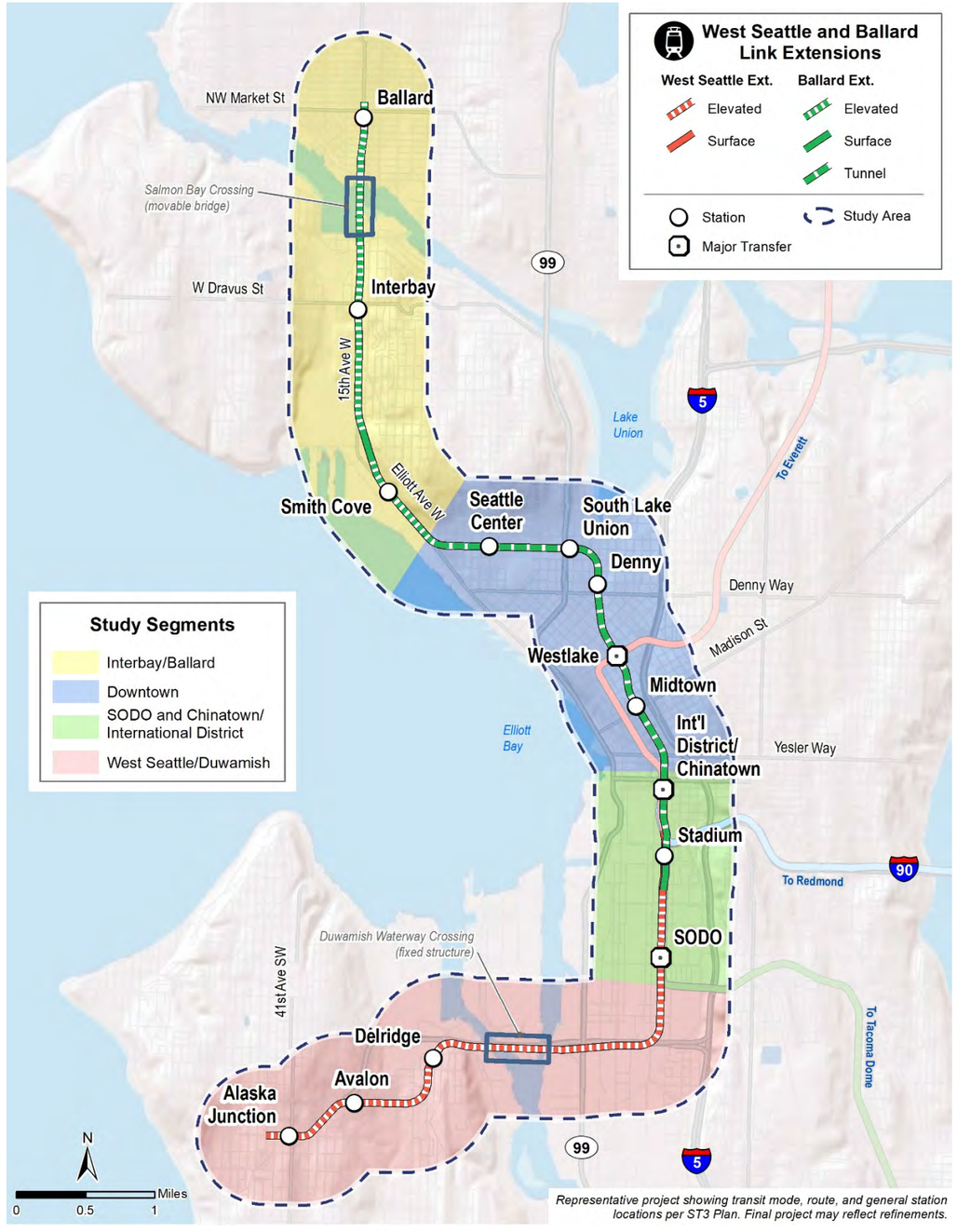


Figure 3-3 Study Segments for Level 1 and Level 2 Screening

3.2 Level 3 Screening Process

3.2.1 Evaluation Criteria, Measures and Methods

Sound Transit developed evaluation criteria based on the WSBLE Project's preliminary Purpose and Need, providing consistent criteria among the three screening levels. Supporting measures were identified under each criterion. Qualitative and/or quantitative evaluation methods were then specified for each measure. These evaluation criteria, measures and methods were used to assess the performance of alternatives for each criterion. **Figure 3-4** (Development of Evaluation Criteria, Measures and Methods) illustrates the relationship between the preliminary Purpose and Need statement and the evaluation criteria, measures and methods.

3.2.2 Evaluation Rating Thresholds

The alternatives were evaluated and rated against each evaluation criterion and supporting measure. Evaluation rating thresholds were established for each measure to differentiate higher versus lower performing alternatives. Three performance rating thresholds were used: Higher, Medium and Lower. Measures were then rated Higher, Medium, or Lower based on their anticipated performance relative to the other alternatives. Color coding was also used to help distinguish the Higher, Medium and Lower performance ratings within the evaluation matrices. **Table 3-1** (Alternative Performance Ratings) displays the performance ratings and their corresponding colors.

Table 3-1 Alternative Performance Ratings

Performance Rating	Color
Higher performing rating in comparison to other alternatives	Higher
Medium performing rating in comparison to other alternatives	Medium
Lower performing rating in comparison to other alternatives	Lower

Table 3-2 (Level 3 Screening Evaluation Criteria, Measures and Methods) lists the detailed evaluation criteria, measures and methods used to evaluate the alternatives in Level 3. Each criterion has one or more quantitative or qualitative measures to differentiate between alternatives in terms of project performance and potential impacts. **Appendix B** (Level 3 Screening Evaluation Criteria, Measures, Methods and Thresholds) describes the rating thresholds applied under the evaluation criteria, measures and methods used in the Level 3 screening process.

The performance ratings for each evaluation measure are accompanied by quantitative data where applicable and/or an explanation for the rating given to the measure. A summary table of the evaluation ratings can be found in **Appendix C** (Level 3 Alternative Evaluation Summary). The evaluation, data and rationale for each rating given can be found in the detailed evaluation matrices in **Appendix D** (Level 3 Alternatives Evaluation Matrices).

Figure 3-4 Development of Evaluation Criteria, Measures and Methods

Table 3-2 Level 3 Screening Evaluation Criteria, Measures and Methods

Purpose and Need [1]/ Evaluation Criteria [2]	Measure [3]	Quantitative or Qualitative [4]	Methods [5]
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3			
Reliable Service	At-grade crossings	Quantitative	Number of at-grade signalized intersections traversed
	Potential service interruptions and recoverability	Qualitative	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
Travel Times	LRT travel times	Quantitative	Estimated travel times from Ballard and Alaska Junction to Downtown Seattle based on alignment characteristics (minutes)
	Transit travel time savings	Quantitative	Change in transit travel times during peak compared to No Build Alternative based on select trip pairs
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand			
Regional Connectivity	LRT network integration	Qualitative	Ability to connect and integrate West Seattle and Ballard extensions with existing regional Link LRT system network and operational flexibility to meet future demand through regional spine (i.e., spine segmentation)
Transit Capacity	Passenger carrying capacity in downtown	Quantitative	Combined passenger carrying capacity of downtown transit tunnels (e.g., headways and vehicle passenger carrying capacities)
Projected Transit Demand	Ridership forecasts	Quantitative	Future forecasted 2042 average weekday riders for West Seattle and Ballard Link Extensions, including passenger transfers
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan			
Regional Centers Served	Station proximity to PSRC-designated regional centers	Quantitative	Number of PSRC-designated regional growth centers and manufacturing/industrial centers served by stations
	Population and job densities	Quantitative	Future PSRC-forecasted 2040 population and job densities within 10-minute walkshed of stations
Regional Plan Consistency	Accommodates future LRT extension beyond ST3	Qualitative	Ability to accommodate expansion potential of future LRT extensions identified in *Sound Transit 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			
ST3 Consistency	Mode, route and general station locations per ST3	Qualitative	Consistency of mode, route and general station locations per *ST3 Plan*
	Potential ST3 implementation schedule effects	Qualitative	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.)
	Potential ST3 operating plan effects	Qualitative	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)
Technical Feasibility	Engineering constraints	Qualitative	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	Qualitative	Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)
	Operational constraints	Qualitative	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)
Financial Sustainability	Conceptual capital cost comparison	Quantitative	ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and current Sound Transit unit pricing (2018$)
	Operations and maintenance costs (O&M)	Quantitative	Annual O&M costs based on operating and maintenance characteristics and Sound Transit unit pricing (2018$)
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations			
Historically Underserved Populations	Opportunities for low-income and minority populations	Qualitative	Assessment of improved access to opportunities (activity nodes served, as described below under Station Area Land Use Plan Consistency) for low-income and minority populations within station areas; includes assessment of how project would improve access for low-income and minority populations along the system to these nodes, as well as to major regional employment and educational destinations
		Quantitative	Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations
	Low-income population	Quantitative	Low-income population (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Minority population [6]	Quantitative	Minority population within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Youth population (under 18)	Quantitative	Youth population (under 18) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Elderly population (65 and over)	Quantitative	Elderly population (65 and over) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Limited English-Proficiency (LEP) population	Quantitative	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (predominant languages spoken by LEP populations will be noted)
	Disabled population	Quantitative	Disabled population (includes those with hearing, vision, or ambulatory disability) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
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	Proximity to Seattle-designated Urban Centers and Villages	Quantitative	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages
	Station locations consistent with current local land use plans	Qualitative	Compatibility and consistency of station locations with current local land use plans
	Activity nodes served	Quantitative	Number of activity nodes (e.g., points of interest, gathering spaces, food banks, educational institutions, parks and recreational resources) within 10-minute walkshed of stations

Table 3-2 Level 3 Screening Evaluation Criteria, Measures and Methods

Purpose and Need [1]/ Evaluation Criteria [2]	Measure [3]	Quantitative or Qualitative [4]	Methods [5]
Modal Integration	Passenger transfers	Qualitative	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
	Bus/rail and rail/rail integration	Qualitative	Assessment of transportation facility integration between the station and adjacent transit stops that serve other modes
	Bicycle infrastructure and accessibility	Quantitative/ Qualitative	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
	Pedestrian and persons with limited mobility accessibility	Quantitative/ Qualitative	Assessment of number of intersections, percent of sidewalk and trail miles to total roadway miles, and assessment of impediments to pedestrian and American with Disabilities Act (ADA) access (i.e., large intersections with signal delay, significant topography or grade challenges) within 10-minute walkshed of stations
Station Area Development Opportunities	Development potential	Quantitative	Percent of properties with development potential based on zoned capacity and market conditions within 10-minute walkshed of stations (5-minute walkshed in downtown)
	Equitable development opportunities	Qualitative	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration
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	Quantitative	Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle Landmark property impacts based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle Landmark data
	Potential archaeological resources	Quantitative	Percent of alternative length within previously identified archaeologically sensitive areas that are 500 feet (or 0.5 miles at water crossings) from alignment
	Parks and recreational resources	Quantitative	Number of and estimated acres of potential permanent impacts to parks and recreational resources
	Water resources	Quantitative	Estimated acres of potential permanent in-water effects
	Fish and wildlife habitats	Quantitative	Estimated acres of potential permanent impacts to fish and wildlife habitats using city of Seattle environmentally critical areas
	Hazardous materials	Quantitative	Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites
	Visual	Quantitative/ Qualitative	Assessment of the length of elevated guideway adjacent to residential or other visually sensitive areas, including parks and historic properties and an assessment of scale of elevated guideway in visually sensitive areas and potential impacts to State Environmental Policy Act (SEPA) Scenic Routes
	Noise and vibration	Quantitative/ Qualitative	Assessment of the number of potentially affected noise and vibration sensitive receivers, including residences, libraries, performance halls, schools, churches, and selected parks within 350 feet of alignment; presence of known noise and vibration sensitive facilities will be noted
	Property acquisitions and displacements	Quantitative	Number of properties potentially affected, including potential residential unit and square feet of business displacements (including maritime businesses); does not include potential permanent or temporary easements or area for construction staging, traction power substations (TPSS) or underground station entrances (except station entrances in downtown)
	Community construction impacts	Qualitative	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
	Burden on low-income and minority populations	Qualitative	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
Traffic Operations	Traffic circulation and access	Qualitative	Effects on traffic and transit (i.e., bus and streetcar) circulation and access, including potential for lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken
	Transportation facilities	Qualitative	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities
Economic Effects	Freight movement and access on land and water	Qualitative	Effects on existing freight and future capacity expansion opportunities, including truck, rail and water freight; includes potential impacts during construction and operations
	Business and commerce effects	Qualitative	Effects on existing businesses, commercial areas and designated industrial centers, as well as future expansion opportunities; includes potential impacts during construction and operations

NOTES:
(1) Based on preliminary Purpose and Need Statement, with revisions incorporated from feedback received during the Level 1 evaluation.
(2) Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
(3) Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
(4) 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.
(5) Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
(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.

3.3 Agency and Community Engagement

A variety of stakeholders are engaged in the WSBLE Project, and their input helped inform the screening process as the WSBLE Project advanced during the Alternatives Development phase. The agency and external engagement process actively seeks input and involvement from stakeholders through the following groups and forums:

- **Sound Transit Board:** Oversees implementation of WSBLE Project
- **Elected Leadership Group:** Elected officials who represent the project corridor and/or Sound Transit Board
- **Stakeholder Advisory Group:** Transit riders, residents, businesses, major institutional organizations, stakeholders, and members of the public
- **Interagency Group:** Senior staff from Sound Transit, city of Seattle and other partner agencies such as Port of Seattle, King County, Washington State Department of Transportation (WSDOT) and Federal Transit Administration (FTA)
- **Neighborhood Forums:** Community members interested in delving more deeply into issues specific to their neighborhood
- **Public:** People who live, work and commute in, through and around the Puget Sound region

These groups and forums supplement public engagement and outreach techniques already used by Sound Transit and offer opportunities for greater collaboration early in project development. This external engagement process is shown on **Figure 3-5** (Community Engagement and Collaboration Process).

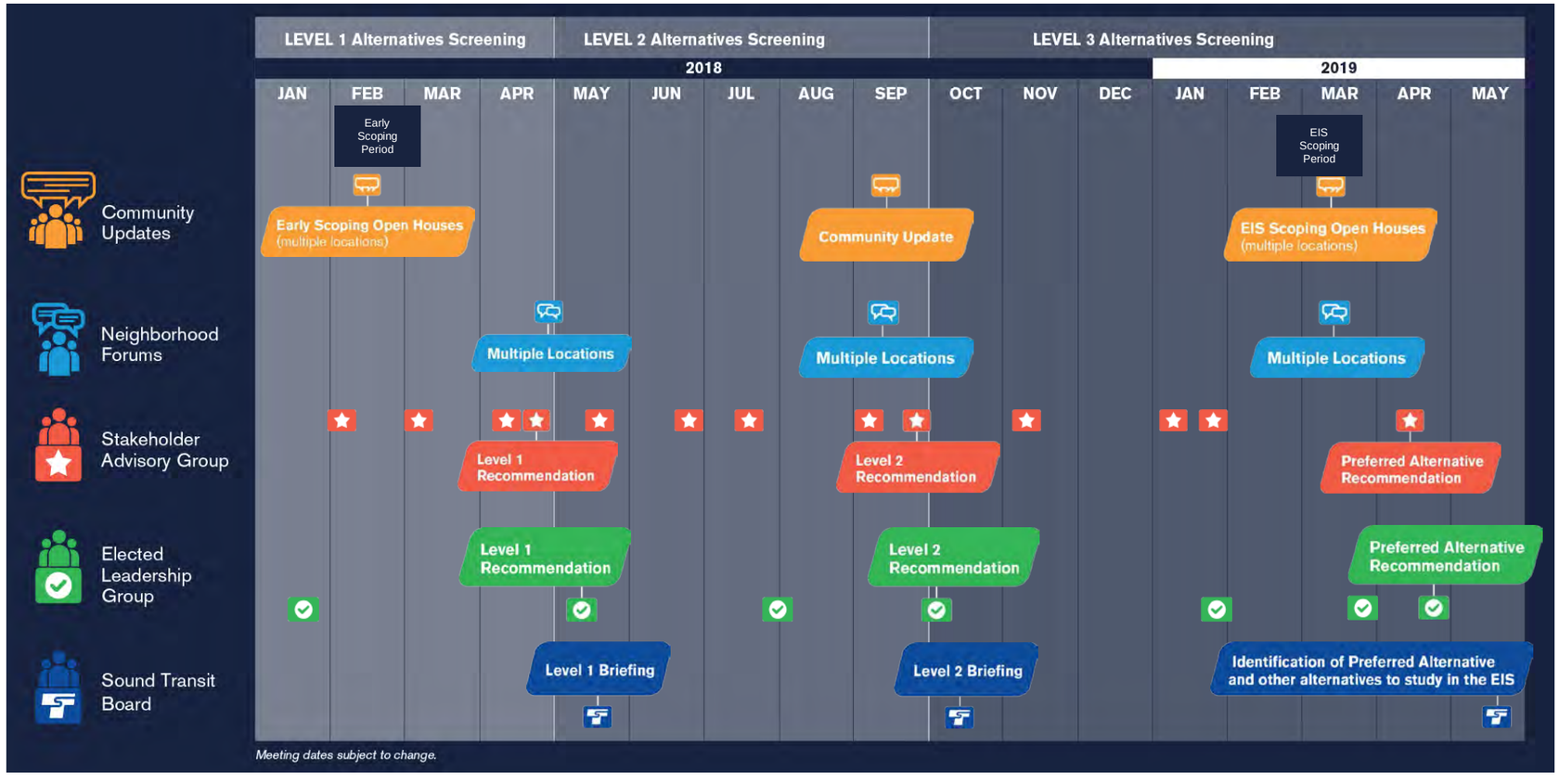


Figure 3-5 Community Engagement and Collaboration Process

3.3.1 Sound Transit Board

The Sound Transit Board oversees the implementation and delivery of the WSBLE Project, identifies the Preferred Alternative(s) and other alternatives to study in the EIS, and makes other major project decisions. The Board considers recommendations and feedback from the ELG, Stakeholder Advisory Group (SAG), Interagency Group (IAG) and public when making decisions about the project. The Sound Transit Board is expected to identify a Preferred Alternative(s) and other alternatives to advance into the EIS in May 2019.

3.3.2 Elected Leadership Group

The WSBLE Project's ELG is a group of elected officials that represent the service corridor and/or the Sound Transit Board. The purpose of this group is to reach consensus around key decisions and work through project issues as needed. ELG meetings are open to the public. The ELG:

- Appoints SAG members
- Works with project staff to understand and evaluate trade-offs
- Represents the communities they serve and shares community priorities
- Recommends a Preferred Alternative(s) to study in the EIS to the Sound Transit Board based on the recommendations from the SAG, public input and the *ST3 Plan*

The ELG was briefed on the Level 3 alternatives on November 9, 2018 and presented with the Level 3 evaluation results and findings on February 1, 2019.

3.3.3 Stakeholder Advisory Group

The SAG provides a forum for community members to inform the development of alternatives for the project. Meetings are open to the public. The SAG:

- Highlights potential issues and considers trade-offs in the corridor
- Makes recommendations on a Preferred Alternative(s) to study in the EIS to the ELG

The SAG met on November 5, 2018 to review the end-to-end alternatives developed for the Level 3 evaluation, with a follow-up meeting on January 9, 2019 to discuss the Level 3 screening process. The SAG reviewed the Level 3 evaluation results and findings on January 30, 2019.

3.3.4 Interagency Group

The IAG is composed of senior staff from Sound Transit and partner city, county, and transit agencies empowered with technical decision-making authority. The IAG:

- Examines technical aspects and resolves issues at a staff level wherever possible
- Identifies issues to bring before the ELG and SAG
- Recommends subjects to address within partnering and permitting agreements

An IAG meeting was held on October 17, 2018 to review the Level 3 end-to-end alternatives, with a follow-up meeting on January 23, 2019 for the Level 3 evaluation results and findings.

In addition to the IAG, Sound Transit conducted ongoing agency coordination throughout the Alternatives Development process. Other agency coordination efforts included one-on-one meetings, tours and workshops. During the Level 3 evaluation process, two agency workshops were held in mid-December 2018 to review the Alaska Junction, Delridge, Smith Cove and Ballard station concepts for the Level 3 alternatives. Participants reviewed draft station concepts and provided feedback on how the stations could best serve each community with respect to transit integration, non-motorized access and land development.




3.3.5 Racial Equity Toolkit

Sound Transit is committed to inclusively engaging communities along the WSBLE Project corridor to elevate opportunities, issues and other considerations to better inform the Alternatives Development process. Sound Transit and the City of Seattle are partnering on a Racial Equity Toolkit (RET) for the WSBLE Project. The RET is designed to implement the City of Seattle's commitment to the Race and Social Justice Initiative (RSJI), a vision to achieve racial equity in the community, end institutional and structural racism in city government, promote inclusion and full participation of all residents, and partner with the community to achieve racial equity across the City of Seattle. The city's RSJI is consistent with the 1994 federal Executive Order 12898 on Environmental Justice that the FTA and Sound Transit follow during project development. The Executive Order directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations.

The RET lays out a process and a set of questions to assess racial equity issues and considerations through data analysis and community engagement. **Figure 3-6** (Racial Equity Toolkit Process) summarizes the steps in the RET process. Sound Transit and the City of Seattle are utilizing this process to inform the Alternatives Development process for the WSBLE Project. The RET has established shared outcomes, resulted in refinements to evaluation criteria and engaged communities in the Alternatives Development process through a variety of community engagement activities designed to meet community needs and gather timely feedback.

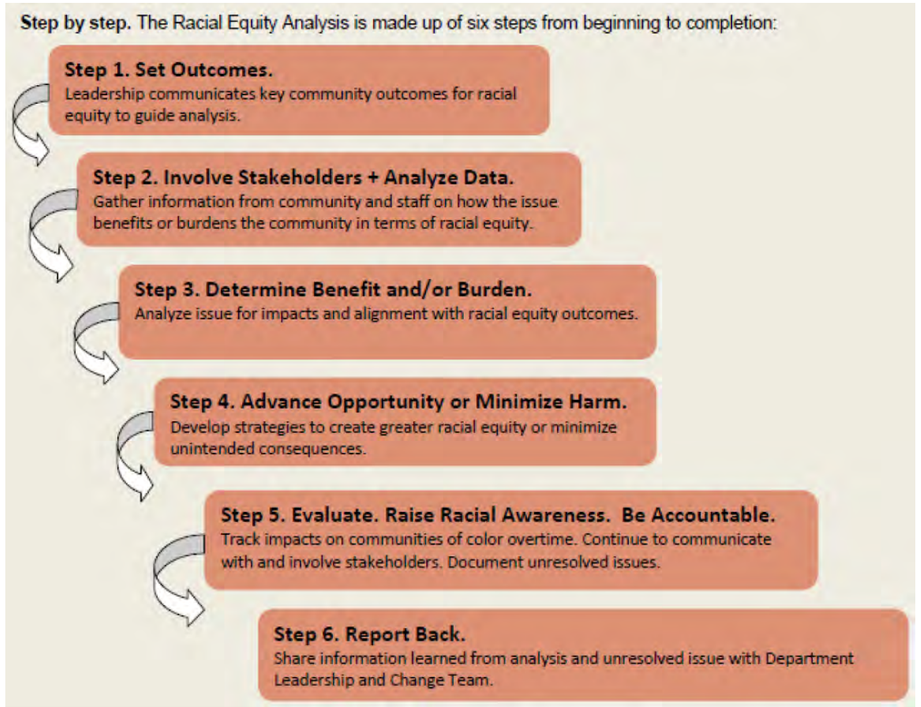


Figure 3-6 Racial Equity Toolkit Process

3.3.6 Public

A variety of other public engagement activities complement all the engagement groups and forums including, but not limited to, open houses (in person and online), community briefings and meetings, e-newsletters, and attendance at fairs and festivals. The role of members of the public is to communicate ideas, concerns and questions about the project through a variety of communications channels to:

- Learn about the project and ask questions
- Provide feedback on topics and issues of interest
- Communicate to Sound Transit how the public wants to be engaged
- Share information and discuss the project with the community

The following public engagement activities occurred during the Level 3 evaluation from October 2018 through January 2019:

- 47 briefings with individuals and community groups
- 6 social service provider interviews
- 10 fairs, festivals and tabling events
- 3 email updates engaging more than 4,330 subscribers
- 105 comments and questions received

3.3.6.1 Open Houses/Neighborhood Forums

Open house/neighborhood forum events provide an opportunity for community members to connect with their neighbors, follow the project's progress, delve more deeply into issues specific to their neighborhood, and voice their opinions at major decision points. At open houses/neighborhood forums, participants work together to:

- Examine and discuss area- and community-specific issues and concerns associated with the proposed alternatives
- Provide detailed feedback to inform alternatives development and decision-making, which is shared with the IAG, SAG, ELG and the Sound Transit Board

The findings of the Level 3 evaluation will be discussed at open houses/neighborhood forums in February and March 2019.

3.4 Level 1 Screening Findings

The previous Level 1 Screening began with an early scoping period held between February 2 and March 5, 2018. Early scoping provided agencies, tribes, and the public an opportunity to comment on the WSBLE Project. The ST3 Representative Project served as the starting point for this dialogue, and stakeholders were invited to offer their suggestions on possible alternatives. Stakeholders were also asked for their input on the preliminary Purpose and Need for the WSBLE Project, as well as potential community benefits and impacts, which provided feedback into the evaluation criteria, measures and methods used in the Alternatives Development process.

The Level 1 alternatives were developed within each of the four study segments—West Seattle/ Duwamish, SODO, Downtown and Interbay/Ballard. A total of 24 alternatives were studied in Level 1 at a segment level, with four additional alternatives for the International District/Chinatown Station in the Downtown Segment. The Level 1 alternatives were based on information from prior studies, technical analysis and considerations, and early scoping input from the agencies, public and stakeholders.

Level 1 relied on readily available information, with a high-level assessment of the alternatives within each of the study segments. The ST3 Representative Project served as the baseline alternative against which alternatives were compared during the Level 1 Screening. The Level 1 evaluation applied primarily qualitative criteria to measure the potential benefits and impacts and highlight differentiating characteristics among the alternatives relative to the ST3 Representative Project. The Level 1 Screening was intended to identify those alternatives that demonstrated the most promise, and to screen out those alternatives that had limited potential to meet the WSBLE Project's preliminary Purpose and Need and/or were deemed not practical.

Table 3-3 (Summary of ELG Level 1 Screening Recommendations) lists the alternatives evaluated in Level 1 and highlights the alternatives that the ELG recommended be carried forward into the subsequent Level 2 Screening. It also lists the alternatives not carried forward into Level 2. On May 17, 2018, the ELG recommended to carry forward 16 of the Level 1 alternatives into Level 2.

At the meeting in May 2018, the ELG also requested additional study of alignments further west in SODO, as well as options for the International District/Chinatown Station. As such, the following additional Level 1 alternatives were evaluated:

- Occidental Avenue
- 6th Avenue
- 4th Avenue Cut-and-Cover Tunnel/Station
- 4th Avenue Bored Tunnel/Mined Station
- 5th Avenue Bored Tunnel/Mined Station
- Union Station Bored Tunnel/Mined Station

On July 17, 2018, the ELG recommended to advance the following four additional alternatives into Level 2 for the SODO and Chinatown/International District Segment:

- Occidental Avenue
- 4th Avenue Cut-and-Cover Tunnel/Station
- 4th Avenue Bored Tunnel/Mined Station
- 5th Avenue Bored Tunnel/Mined Station

More detailed information on Level 1 can be found in the *Level 1 Alternatives Development and Screening Technical Memorandum* (Sound Transit 2018).

Table 3-3 Summary of ELG Level 1 Screening Recommendations

Segment / Level 1 Alternative	Carry Forward into Level 2	Do Not Carry Forward into Level 2
West Seattle/Duwamish Segment		
ST3 Representative Project (1)	✓	
Pigeon Ridge/West Seattle Tunnel	✓	
West Seattle Bridge/Fauntleroy		✓
Yancy Street/West Seattle Tunnel		✓
Oregon Street/Alaska Junction	✓	
West Seattle Golf Course/Alaska Junction	✓	
SODO Segment		
ST3 Representative Project (1)	✓	
Massachusetts Tunnel Portal	✓	
Surface E3	✓	
Occidental Avenue	✓	
6th Avenue		✓
Downtown Segment (2)		
ST3 Representative Project (1)	✓	
5th/Harrison	✓	
5th/Mercer		✓
6th/Boren/Roy	✓	
8th/6th/Republican		✓
5th/Roy/Consolidated SLU Station (3)		✓
4th Avenue Cut-and-Cover Tunnel/Station	✓	
4th Avenue Bored Tunnel/Mined Station	✓	
5th Avenue Bored Tunnel/Mined Station	✓	
Union Station Bored Tunnel/Mined Station		✓
Interbay/Ballard Segment		
ST3 Representative Project (1)	✓	
Elliott/15th/16th/Fixed Bridge	✓	
West of BNSF/20th/17th/Fixed Bridge (4)	✓	
West of BNSF/20th/17th/Tunnel	✓	
East of BNSF/14th/Movable Bridge	✓	
Elliott/Armory Way/14th/Tunnel	✓	
West of BNSF/20th/Tunnel		✓

NOTES: (1) ST3 Representative Project automatically carried forward into each level for comparison; (2) International District/Chinatown Station alternatives studied in Downtown Segment in Level 1; (3) SLU = South Lake Union; (4) BNSF = Burlington Northern Santa Fe

3.5 Level 2 Screening Findings

The Level 2 Screening developed and evaluated in greater detail those alternatives carried forward from the Level 1 Screening, including the additional alternatives for the SODO and Chinatown/International District Segment. The 20 alternatives recommended by the ELG for Level 2 were subsequently refined and optimized, leading to a total of 24 alternatives ultimately studied among the four study segments in Level 2.

Like Level 1, Level 2 also assessed alternatives within each study segment—West Seattle/Duwamish, SODO and Chinatown/International District, Downtown and Interbay/Ballard. However, the segment boundaries were refined for the Level 2 screening, and as a result, the International District/Chinatown Station alternatives were studied in the SODO and Chinatown/International District Segment in Level 2 (versus the Downtown Segment in Level 1). The Level 2 evaluation also applied more quantitative criteria to measure the potential benefits and impacts and highlight differentiating characteristics among the alternatives. As such, the Level 2 screening identified higher versus lower performing alternatives within each study segment.

Table 3-4 (Summary of ELG Level 2 Screening Recommendations) lists the alternatives evaluated in Level 2 and highlights the alternatives that the ELG recommended be carried forward into the subsequent Level 3 screening. It also lists the alternatives not carried forward into Level 3. On October 5, 2018, the ELG recommended to carry forward 14 of the Level 2 alternatives into Level 3, as delineated on **Figure 3-7** (Summary of Level 2 Screening); alternatives crossed out were not carried forward.

More detailed information on Level 2 can be found in the *Level 2 Alternatives Development and Screening Technical Memorandum* (Sound Transit 2018).

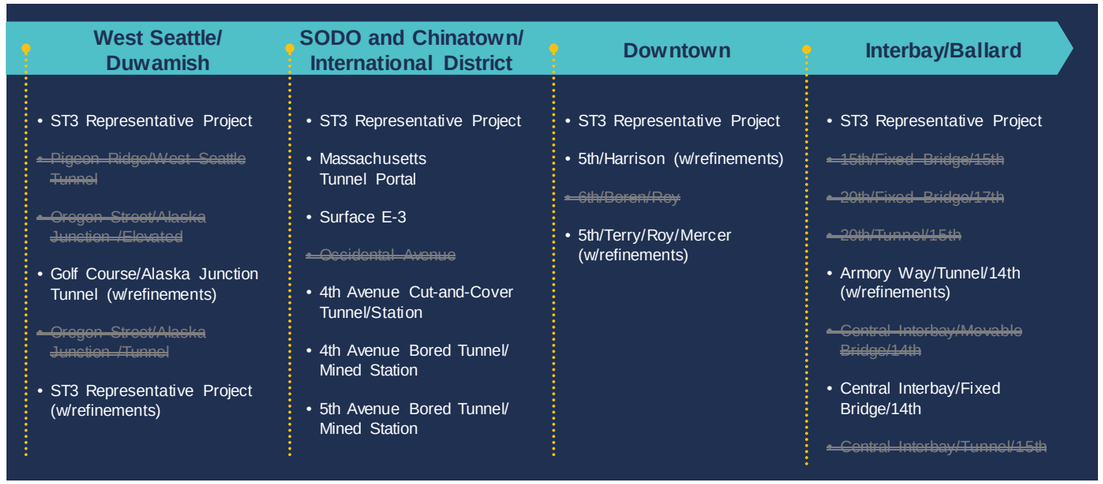


Figure 3-7 Summary of Level 2 Screening

Table 3-4 Summary of ELG Level 2 Screening Recommendations

Segment / Level 2 Alternative	Carry Forward into Level 3	Do Not Carry Forward into Level 3
West Seattle/Duwamish Segment		
ST3 Representative Project (1)	✓	
Pigeon Ridge/West Seattle Tunnel		✓
Oregon Street/Alaska Junction/Elevated		✓
Golf Course/Alaska Junction/Tunnel	✓	
Oregon Street/Alaska Junction/Tunnel		✓
SODO and Chinatown/International District Segment (2)		
ST3 Representative Project (1)	✓	
Massachusetts Tunnel Portal	✓	
Surface E3 (3)	✓	
Occidental Avenue		✓
4th Avenue Cut-and-Cover Tunnel/Station	✓	
4th Avenue Bored Tunnel/Mined Station	✓	
5th Avenue Bored Tunnel/Mined Station	✓	
Downtown Segment		
ST3 Representative Project (1)	✓	
5th/Harrison	✓	
6th/Boren/Roy		✓
5th/Terry/Roy/Mercer	✓	
Interbay/Ballard Segment		
ST3 Representative Project (1)	✓	
15th/Fixed Bridge/15th		✓
20th/Fixed Bridge/17th		✓
20th/Tunnel/15th		✓
Central Interbay/Movable Bridge/14th		✓
Armory Way//Tunnel/14th	✓	
Central Interbay/Fixed Bridge/14th	✓	
Central Interbay/Tunnel/15th		✓

NOTES: (1) ST3 Representative Project automatically carried forward into each level for comparison; (2) International District/Chinatown Station alternatives studied in SODO and Chinatown/International District Segment in Level 2; (3) Surface E3 in Chinatown/International District was not carried forward for further consideration; however, the portion of Surface E3 in SODO was carried forward and combined with other alternatives in Chinatown/International District for Level 3.

4 LEVEL 3 ALTERNATIVES EVALUATION AND FINDINGS

4.1 Definition of Level 3 Alternatives

After the Level 2 alternatives were screened down at a segment level, they were then refined and combined from end-to-end, providing corridorwide alternatives that extend from downtown Seattle to West Seattle and Ballard for Level 3. A total of three corridorwide alternatives were studied in Level 3, along with design options:

- **ST3 Representative Project**
- **West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative**
  - 5th Ave Cut-and-Cover International District/Chinatown Station Design Option
  - 5th Ave Mined International District/Chinatown Station Design Option
- **West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative**
  - 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard Design Options
  - 42nd Ave Alaska Junction Station Design Option
  - 44th Ave Alaska Junction Station Design Option
  - 4th Ave Mined International District/Chinatown Station Design Option
  - 15th Ave Ballard Station Design Option

4.1.1 ST3 Representative Project

The **ST3 Representative Project** continued to be studied in Level 3, with no refinements from Level 2. The **ST3 Representative Project** for the extension to West Seattle would operate on elevated guideway from SODO to West Seattle's Alaska Junction neighborhood. It would include a new high-level, fixed bridge across the Duwamish Waterway on the south side of the existing West Seattle Bridge. The West Seattle extension would serve one at-grade Stadium Station and one elevated SODO Station along the E3 busway in SODO, and three elevated stations at Delridge, Avalon and Alaska Junction in West Seattle. The West Seattle extension would terminate on elevated guideway along SW Alaska Street and California Avenue SW in an east-west orientation.

The Ballard extension would operate from downtown Seattle to Ballard's Market Street area. It would include a new rail-only tunnel from Chinatown/International District to South Lake Union and Seattle Center/Uptown, running under 5th Avenue in Chinatown/International District, 6th Avenue in Downtown, Westlake Avenue and Republican Street. The **ST3 Representative Project** would include an elevated guideway along Elliott Avenue W and 15th Avenue W, as well as a new movable bridge over Salmon Bay. The Ballard extension would serve six tunnel stations in downtown Seattle at International District/Chinatown, Midtown, Westlake, Denny, South Lake Union and Seattle Center, and three elevated stations at Smith Cove, Interbay and Ballard in the Interbay/Ballard area. The Ballard extension would terminate near 15th Avenue NW and NW Market Street in a north-south orientation.

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

The "elevated" alternative—**West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated**—combined the Level 2 alternatives shown on **Figure 4-1** (Level 2 Alternatives for West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated). The **West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative** for the extension to West Seattle would operate primarily on an at-grade guideway through SODO and then transition to an elevated guideway to West Seattle's Alaska Junction neighborhood. It would include a new high-level, fixed bridge across the Duwamish Waterway on the south side of the existing West Seattle Bridge, consistent with the ST3 Representative Project. The West Seattle extension would serve the existing at-grade Stadium Station and one new at-grade SODO Station along the E3 busway in SODO, and three elevated stations at Delridge, Avalon and Alaska Junction in West Seattle. Roadway overpasses are also planned in SODO at S Holgate and S Lander streets. The West Seattle extension would terminate on elevated guideway along 41st Avenue SW south of SW Alaska Street in a north-south orientation.

The Ballard extension would operate from downtown Seattle to Ballard's Market Street area. It would include a new rail-only tunnel from Chinatown/International District to South Lake Union and Seattle Center/Uptown, running under 5th Avenue S in Chinatown/International District, 6th Avenue in Downtown, Terry Avenue and Mercer Street. The **West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative** would include a combination of at-grade and elevated guideway through Central Interbay, with a new fixed bridge over Salmon Bay. The Ballard extension would serve six tunnel stations in downtown Seattle at International District/Chinatown, Midtown, Westlake, Denny, South Lake Union and Seattle Center, as well as one at-grade Smith Cove Station and two elevated stations at Interbay and Ballard. The Ballard extension would terminate near 14th Avenue NW and NW Market Street in a north-south orientation. The **West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative** would include two design options for either a cut-and-cover or a deep mined International District/Chinatown Station.

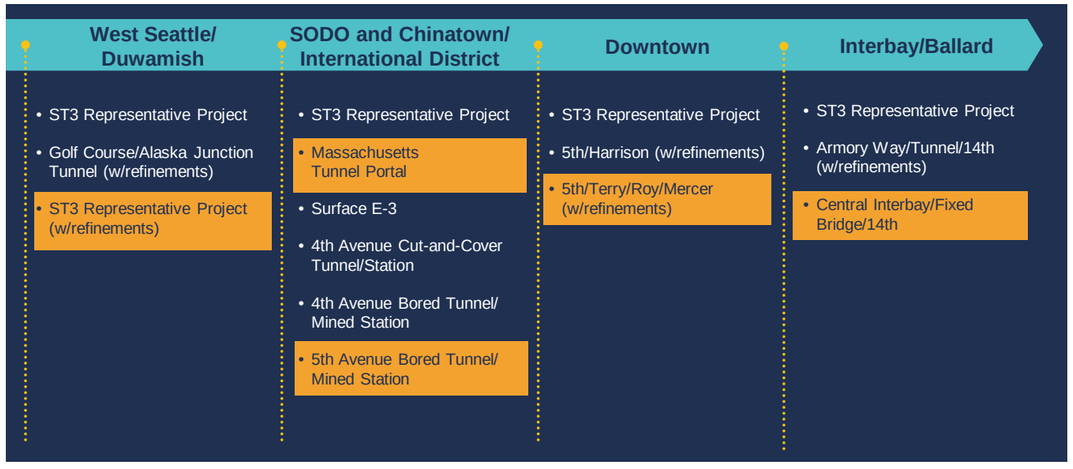


Figure 4-1 Level 2 Alternatives for West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated

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

The "tunnel" alternative—**West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel**—is comprised of the Level 2 alternatives shown on **Figure 4-2** (Level 2 Alternatives for West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel). The **West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative** for the extension to West Seattle would operate on an at-grade guideway through SODO, then transition to an elevated guideway towards West Seattle. It would include a new high-level, fixed bridge across the Duwamish Waterway on the north side of the existing West Seattle Bridge. The West Seattle extension would serve two at-grade stations at Stadium and SODO along the E3 busway in SODO, one elevated Delridge Station and two tunnel stations at Avalon and Alaska Junction in West Seattle. Roadway overpasses are also planned in SODO at S Holgate and S Lander streets. The West Seattle extension would terminate in a tunnel in Alaska Junction near SW Hudson Street, with design options for the terminal station oriented north-south under 41st Avenue SW, 42nd Avenue SW or 44th Avenue SW.

The Ballard extension would operate from downtown Seattle to Ballard's Market Street area. It would include a new rail-only tunnel from the International District/Chinatown to South Lake Union and Seattle Center/Uptown, running under 4th Avenue in Chinatown/International District with design options for either a cut-and-cover or deep mined International District/Chinatown Station, 5th Avenue in Downtown, Westlake Avenue, Harrison Street and Republican Street. The **West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative** would include a combination of at-grade, retained cut and elevated guideway through Central Interbay before descending into a tunnel under Salmon Bay. The Ballard extension would serve six tunnel stations in downtown Seattle at International District/Chinatown, Midtown, Westlake, Denny, South Lake Union and Seattle Center, as well as two at-grade/retained cut stations at Smith Cove and Interbay and one tunnel Ballard Station. The Ballard extension would terminate in a tunnel under either 14th Avenue NW or 15th Avenue NW and NW Market Street in a north-south orientation.

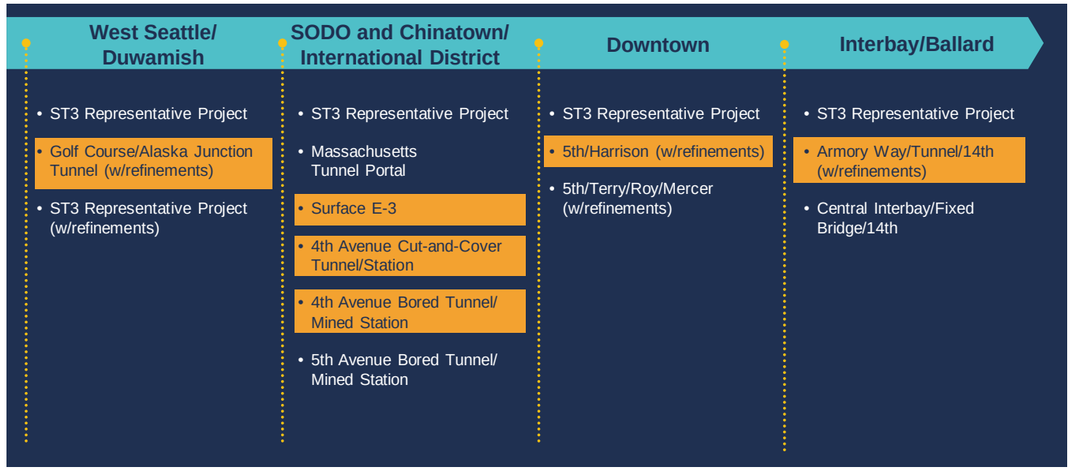


Figure 4-2 Level 2 Alternatives for West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel

4.2 Evaluation of Level 3 Alternatives

The sections that follow provide an overview of the Level 3 corridorwide alternatives and associated design options. Each corridorwide alternative is described for the West Seattle extension between SODO and West Seattle and then for the Ballard extension from downtown Seattle to Ballard. The design options are also discussed under each alternative.

A map, description and an evaluation summary table are provided for each alternative and design option. The map of the alternative illustrates the route, basic characteristics and station locations. The evaluation of the alternatives and design options is summarized based on the criteria under each Purpose statement, with the detailed evaluation matrices for each alternative and design option found in **Appendix D** (Level 3 Evaluation Matrices).

Figure 4-3 Level 3 Alternatives

Table 4-1 Level 3 Alternatives Evaluation Summary

Purpose and Need / Evaluation Measures	Level 3 Alternatives							
	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.								
At-grade crossings	3	1	1	1	1	1	1	1
Potential service interruptions	Lower	Medium	Medium	Medium	Medium	Medium	Lower	Medium
LRT travel times (minutes)	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14
Transit travel time savings (minutes)	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.								
Network integration	Lower	Medium	Medium	Higher	Higher	Higher	Medium	Higher
Passenger carrying capacity	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Average weekday trips on West Seattle / Ballard extensions (2042)	35,000 to 40,000 / 123,000 to 163,000	35,000 to 39,000 / 120,000 to 158,000	35,000 to 39,000 / 120,000 to 158,000	35,000 to 40,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000	36,000 to 41,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000
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.								
PSRC growth centers served	5	5	5	5	5	5	5	5
Population/job densities served (2040)	38 / 39	39 / 39	39 / 39	37 / 39	37 / 39	37 / 38	37 / 39	37 / 39
Accommodates future LRT extension	Lower	Medium	Medium	Higher	Higher	Medium	Higher	Higher
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.								
Mode, route and stations per ST3	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher
Potential ST3 schedule effects	Higher	Higher	Medium	Lower	Lower	Lower	Lower	Lower
Potential ST3 operating plan effects	Lower	Higher	Higher	Higher	Higher	Higher	Medium	Higher
Engineering constraints	Lower	Medium	Medium	Lower	Lower	Lower	Lower	Lower
Constructability issues	Lower	Medium	Medium	Lower	Lower	Lower	Lower	Lower
Operational constraints	Lower	Medium	Lower	Higher	Higher	Higher	Lower	Higher
Conceptual capital cost comparison (2018$ in millions)	--	$400 million increase	$500 million increase	$1,900 million increase	$1,900 million increase	$1,900 million increase	$2,100 million increase	$1,900 million increase
Annual O&M costs on West Seattle / Ballard extensions (2018$ in millions)	$20 to $25 / $45 to $50 million	$20 to $25 / $45 to $50 million	$20 to $25 / $45 to $50 million	$20 to $25 / $45 to $50 million	$20 to $25 / $45 to $50 million	$20 to $25 / $45 to $50 million	$20 to $25 / $45 to $50 million	$20 to $25 / $45 to $50 million
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.								
Low-income/minority opportunities [(1)] (activity nodes/subsidized rental units)	Medium 23%	Medium 22%	Medium 22%	Medium 23%	Medium 23%	Medium 23%	Medium 23%	Medium 23%
Low-income population	32% / 31%	32% / 32%	32% / 32%	32% / 31%	32% / 31%	32% / 31%	32% / 31%	32% / 31%
Minority population [(1)]	34% / 34%	34% / 35%	34% / 35%	34% / 35%	34% / 35%	34% / 35%	34% / 35%	34% / 34%
Youth population (under 18)	7% / 10%	7% / 9%	7% / 9%	7% / 9%	7% / 9%	7% / 10%	7% / 9%	7% / 10%
Elderly population (65 and over)	14% / 11%	14% / 12%	14% / 12%	14% / 12%	14% / 12%	14% / 12%	14% / 12%	14% / 11%
Limited English Proficiency population	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 7%
Disabled population	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%

Table 4-1 Level 3 Alternatives Evaluation Summary

Purpose and Need / Evaluation Measures	Level 3 Alternatives							
	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
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.								
Urban Center/Village proximity	58%	56%	56%	57%	56%	55%	57%	58%
Station local land use plan consistency	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher
Activity nodes served	302	298	298	300	301	302	300	303
Passenger transfers	Higher	Higher	Medium	Higher	Higher	Higher	Medium	Higher
Bus/rail and rail/rail integration	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bicycle infrastructure and accessibility	19%	19%	19%	18%	18%	18%	18%	19%
Pedestrian/limited mobility accessibility	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher
Development potential	14%	14%	14%	14%	13%	13%	14%	14%
Equitable development opportunities	Lower	Medium	Medium	Higher	Higher	Higher	Higher	Higher
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.								
Historic properties/landmarks	40	20	20	40	40	40	40	40
Potential archaeological resource effects	Lower	Lower	Lower	Lower	Lower	Lower	Lower	Lower
Parks/recreational resource effects (acres)	1.4	5.3	5.3	5.7	5.7	5.7	5.7	5.7
Water resource effects (acres)	0.9	0.6	0.6	<0.1	<0.1	<0.1	<0.1	<0.1
Fish and wildlife habitat effects (acres)	15	6	6	15	15	15	15	15
Hazardous materials sites	50	60	60	40	40	40	40	40
Visual effects to sensitive viewers (miles)	2.5	1.7	1.7	1.2	1.2	1.2	1.2	1.2
Noise/vibration effects	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Potentially affected properties	Medium	Lower	Lower	Higher	Higher	Higher	Higher	Higher
Residential unit displacements	Medium	Lower	Lower	Higher	Higher	Higher	Higher	Higher
Business displacements	Higher	Lower	Lower	Higher	Higher	Higher	Higher	Higher
Community construction impacts	Lower	Lower	Medium	Medium	Medium	Medium	Lower	Medium
Burden on minority/low-income	Lower	Medium	Medium	Lower	Lower	Lower	Lower	Lower
Traffic circulation and access effects	Lower	Medium	Medium	Higher	Higher	Higher	Higher	Higher
Effects on transportation facilities	Lower	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Effects on freight movement	Lower	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Business and commerce effects	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium

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

Figure 4-4 ST3 Representative Project

ST3 Representative Project

ALTERNATIVE

WEST SEATTLE EXTENSION

ROUTE DESCRIPTION

- Route begins at the existing Link light rail line to Everett at the DSTT and heads south and runs at grade on existing line across S Royal Brougham Way
- Transitions to a new elevated guideway within the E3 busway at approximately SW Massachusetts Street
- Continues south along the E3 busway in an elevated guideway
- Crosses over the Spokane Street Viaduct (i.e., approach to West Seattle Bridge)
- Curves west and parallels the West Seattle Bridge on the south side
- Crosses over the Duwamish Waterway on a high-level, fixed bridge on the south side of existing bridge
- Rounds Pigeon Point, follows Delridge Way SW heading south and runs west along SW Genesee Street north of the West Seattle Golf Course
- Turns southwest on Fauntleroy Way SW and then west on SW Alaska Street
- Terminates at California Avenue SW, with tail track in east-west orientation within SW Alaska Street

STATIONS

Stadium	Rebuilt existing at-grade and relocated station on West Seattle extension
SODO	New elevated station immediately west of existing station for West Seattle extension
Delridge	Elevated station on Delridge Way SW north of SW Andover Street
Avalon	Elevated station on south side of SW Genesee Street between SW Avalon Way and 35th Avenue SW
Alaska Junction	Elevated station on SW Alaska Street at 41st Avenue SW

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- ST3 Representative Project, with no refinements from Level 2

ST3 Representative Project

ALTERNATIVE

BALLARD EXTENSION

ROUTE DESCRIPTION

- Route begins at the existing Link light rail line from Tacoma near the existing Stadium Station
- Transitions into a new cut-and-cover tunnel and continues under S Royal Brougham Way, with tunnel portal in E3 busway south of S Royal Brougham Way
- Continues in a cut-and-cover tunnel under 5th Avenue S, with bored tunnel portal area between S Jackson Street and S Main Street
- Bored tunnel runs under 5th Avenue S from S Main Street to Spring Street
- Transitions from 5th Avenue to 6th Avenue between Spring Street and University Street
- Turns north to Westlake Avenue and then curves west to Republican Street, with north tunnel portal at Republican Street on east side of Elliott Avenue W
- Emerges from downtown tunnel portal in an elevated guideway along Elliott Avenue W
- Runs at grade and in retained cut along hillside to 15th Avenue W at W Armory Way
- Transitions back to elevated guideway along 15th Avenue W in center of roadway
- Crosses Salmon Bay via movable bridge west of existing Ballard Bridge
- Continues in an elevated guideway on west side of 15th Avenue NW but then crosses to east side of 15th Avenue NW
- Terminates north of NW Market Street and 15th Avenue NW, with tail track in north-south orientation on east side of 15th Avenue NW

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- ST3 Representative Project, with no refinements from Level 2

International District/ Chinatown	New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S
Midtown	Tunnel station beneath 5th Avenue between Columbia Street and Madison Street
Westlake	Tunnel station beneath 6th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel station beneath Westlake Avenue and John Street
South Lake Union	Tunnel station beneath Republican Street between Dexter Avenue N and Aurora Avenue N
Seattle Center	Tunnel station beneath Republican Street at 1st Avenue N
Smith Cove	Elevated station on Elliott Avenue W near W Prospect Street
Interbay	Elevated station on 15th Avenue W straddling W Dravus Street Bridge
Ballard	Elevated station on 15th Avenue NW south of NW Market Street

ST3 REPRESENTATIVE PROJECT

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Existing Link light rail line would continue to have at-grade crossings at S Royal Brougham Way, S Holgate Street and S Lander Street in SODO • Movable bridge over Salmon Bay would result in periodic LRT service interruptions and recoverability of operations could be challenging • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 40,000 average weekday trips projected in 2042 on West Seattle extension • 123,000 to 163,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Elevated Alaska Junction Station oriented east-west complicates a future LRT extension to south • Elevated Ballard Station oriented north-south along 15th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• Potential need for soil stabilization for steep slope at Pigeon Point in West Seattle • Duwamish Waterway crossing south of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in navigation channel, fish windows and tribal treaty fishing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Harbor Marina Corporate Center (Terminal 102) and Terminal 104 • Does not facilitate all track interconnections in SODO needed for reliable system operations; could require Washington State Department of Transportation (WSDOT)/East Link structure modifications • Likely greatest extent of 5th Avenue S surface disruptions (length and width) in Chinatown/International District • Complex tunnel design in downtown due to tieback conflicts • Tunneling may affect abandoned Union Pacific Railroad (UPRR) tunnel in downtown and major sewer tunnels in South Lake Union • Landslide hazard along steep hillside west of Queen Anne Hill may require walls with tiebacks • Movable bridge over Salmon Bay degrades systemwide reliability and would have most potential in-water effects; needs to consider vessel traffic in navigation channel, fish windows and tribal treaty fishing
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 41st Avenue SW is near center of West Seattle Junction Hub Urban Village, but farther from major bus zones • Station location at Delridge may constrain passenger drop-off/pick-up areas • South Lake Union Station has poor pedestrian access and limited space for adjacent bus zones • Seattle Center Station is located closer to center of Uptown Urban Center, but farther from bus routes on Mercer Street • Ballard Station on 15th Avenue NW is one block closer to Ballard Hub Urban Village • Limited equitable development opportunities because elevated alignment results in fewer large surplus lots
Promote a healthy built, natural, and social environment	• Requires clearing steep slope on West Duwamish Greenbelt near Pigeon Point and on SW Queen Anne Greenbelt • Duwamish Waterway crossing south of West Seattle Bridge could potentially have more in-water effects than north crossing • Duwamish Waterway crossing could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals • Residential displacements primarily in Delridge neighborhood, at Avalon Station, around north tunnel portal in West Queen Anne and along elevated guideway on Elliott Avenue W in Interbay • Business displacements primarily near Avalon Station, in Duwamish and south SODO industrial areas, at downtown station entrances, on Elliott Avenue W in Interbay and along 15th Avenue NW in Ballard • Most lengthy segments of elevated track along high-volume arterials, including on SW Alaska Street, Fauntleroy Way SW, Delridge Way SW, Elliott Avenue W, 15th Avenue W and 15th Avenue NW; can reduce capacity and restrict turning movements on these streets • Movable bridge would have most potential in-water effects in Salmon Bay, including temporary and permanent impacts to Fishermen's Terminal and other freshwater maritime businesses that would be hard to relocate

Figure 4-5 West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated

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

5TH AVE CUT-AND-COVER INTERNATIONAL DISTRICT/CHINATOWN STATION

DESIGN OPTION

ROUTE DESCRIPTION

- Route begins at the existing Link light rail line to Everett at S Holgate Street
- Heads south and runs at grade within the E3 busway under new roadway grade separations of S Holgate Street and S Lander Street
- Transitions to an elevated guideway between S Lander Street and S Forest Street
- Crosses over the Spokane Street Viaduct (i.e., approach to West Seattle Bridge)
- Curves west and parallels the West Seattle Bridge on the south side
- Spans the Duwamish Waterway on a high-level, fixed bridge on south side of existing bridge
- Rounds Pigeon Point, follows Delridge Way SW heading south and runs west along SW Genesee Street north of the West Seattle Golf Course
- Curves southwest at about 36th Avenue SW to 41st Avenue SW
- Terminates south of SW Alaska Street, with tail track in north-south orientation within 41st Avenue SW

WEST SEATTLE EXTENSION

STATIONS

Stadium	Existing at-grade station remains on West Seattle extension
SODO	New at-grade station immediately west of existing station for West Seattle extension
Delridge	Elevated station on Delridge Way SW south of SW Andover Street
Avalon	Elevated station along SW Genesee Street east of 35th Avenue SW
Alaska Junction	Elevated station east of 41st Avenue SW between SW Oregon Street and SW Alaska Street

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- ST3 Representative Project in Level 2, with refinements:
  - Delridge Station shifted south of SW Andover Street (*versus north*)
  - Alaska Junction Station shifted to north-south orientation east of 41st Avenue SW (*versus east-west on SW Alaska Avenue*)
- Massachusetts Tunnel Portal

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

5TH AVE CUT-AND-COVER INTERNATIONAL DISTRICT/CHINATOWN STATION

DESIGN OPTION

ROUTE DESCRIPTION

- Route begins at the existing Link light rail line from Tacoma north of the existing SODO Station
- Runs at grade under a new roadway grade separation of S Holgate Street
- Transitions into a retained cut configuration and then into a cut-and-cover tunnel, with the tunnel portal for the new downtown transit tunnel located near SW Massachusetts Street between the E3 busway and 6th Avenue S
- Continues in bored tunnel beneath 6th Avenue S and then transitions to 5th Avenue S and runs under 5th Avenue S from Seattle Boulevard S to Yesler Way
- Transitions from 5th Avenue S to 6th Avenue S at Yesler Way, continues in tunnel under 6th Avenue to Stewart Street, transitions to Terry Avenue N and then curves west toward Mercer Street
- Runs along north side of Mercer Street to about 2nd Avenue N, continues under Mercer Street and curves northwest to Elliott Avenue W, with north tunnel portal between Elliott Avenue W and BNSF Railway tracks on west side of Elliott Avenue W
- Emerges from downtown tunnel portal in an at-grade and retained cut guideway along east side of BNSF Railway tracks
- Runs at grade under W Galer Street Bridge and Magnolia Bridge
- Curves north to area between golf course and BNSF Railway tracks
- 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
- Crosses Salmon Bay via fixed bridge east of existing Ballard Bridge and continues in an elevated guideway on 14th Avenue NW
- Terminates north of NW Market Street and 14th Avenue NW, with tail track in north-south orientation on 14th Avenue NW

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- 5th/Terry/Roy/Mercer, with refinements:
  - Runs along 6th Avenue (*versus 5th Avenue*)
  - Tighter curve to parallel Mercer Street (*versus Roy Street*)
- Central Interbay/Fixed Bridge/14th

BALLARD EXTENSION

International District/ Chinatown	New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S
Midtown	Tunnel station beneath 6th Avenue between Madison Street and Seneca Street
Westlake	Tunnel station beneath 6th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel station beneath Terry Avenue N between Denny Way and John Street
South Lake Union	Tunnel station between Aurora Avenue N and Taylor Avenue N north of Mercer Street
Seattle Center	Tunnel station beneath Mercer Street between Warren Avenue N and Queen Anne Avenue N
Smith Cove	At-grade station between W Galer Street and Magnolia Bridge
Interbay	Elevated station on Thorndyke Avenue W north of W Dravus Street
Ballard	Elevated station on 14th Avenue NW straddling NW Market Street

WEST SEATTLE ELEVATED/C-ID 5TH AVE/DOWNTOWN 6TH AVE/BALLARD ELEVATED
5th Ave Cut-and-Cover International District/Chinatown Station Design Option

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Proposed new overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections • Fixed bridge over Salmon Bay would maintain service reliability compared to movable bridge • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 39,000 average weekday trips projected in 2042 on West Seattle extension • 120,000 to 158,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Elevated Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to south than ST3 Representative Project • Elevated Ballard Station oriented north-south along 14th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• Potential need for soil stabilization for steep slope at Pigeon Point in West Seattle • Duwamish Waterway crossing south of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in the navigation channel, fish windows and tribal treaty fishing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Harbor Marina Corporate Center (Terminal 102) and Terminal 104 • Facilitates track interconnections in SODO needed for reliable system operations; ground treatment likely required to construct tunnels and portals in poor soil conditions in SODO area • Stacked International District/Chinatown Station potentially reduces cut-and-cover on 5th Avenue S from S Jackson Street to S Weller Street • Tunneling under buildings near Denny Station likely require greater design and analysis than other alternatives; avoids major sewer tunnels in South Lake Union • Potential need to relocate King County Pump Station and reconstruct a portion of the Magnolia Bridge between BNSF railroad and pump station in Interbay • Long section of at-grade guideway in poor soil conditions in Interbay; potential need for ground improvements along guideway between Magnolia Bridge and 15th Avenue W • Fixed bridge over Salmon Bay would support systemwide transit reliability and reduces potential in-water effects compared to movable bridge; needs to consider coordination with maritime properties, vessel traffic, fish windows, and tribal treaty fishing • Conceptual capital cost estimate (2018$) approximately $400 million more than the ST3 Representative Project; additional elevated guideway outside public right-of-way adds cost compared to the ST3 Representative Project • Lower cost in Chinatown/International District due to reduced cut-and-cover construction compared to ST3 Representative Project
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 41st Avenue SW is near center of West Seattle Junction Hub Urban Village, but farther from major bus zones • South Lake Union Station is located west of SR 99 and further north with less convenient walk to Uptown and South Lake Union Urban Centers • Seattle Center Station is further from Uptown Urban Center, but closer to major bus routes on Mercer Street • Ballard Station located on 14th Avenue NW is one block further from center of Ballard Hub Urban Village • Limited equitable development opportunities in West Seattle because elevated guideway results in fewer large surplus lots; greater equitable development opportunities in SODO
Promote a healthy built, natural, and social environment	• Potential for greatest construction disruption to neighborhood between Alaska Junction and Avalon stations in West Seattle • Requires clearing steep slope on West Duwamish Greenbelt near Pigeon Point and on SW Queen Anne Greenbelt • Duwamish Waterway crossing south of West Seattle Bridge could potentially have more in-water effects than north crossing • Duwamish Waterway crossing could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals • Most residential displacements; primarily between Alaska Junction and Avalon stations, in Delridge neighborhood and at bridge approach on North Queen Anne • Most business displacements; primarily around Alaska Junction, Avalon, and Delridge stations, in Duwamish and south SODO industrial areas, around S Massachusetts Street tunnel portal, at downtown station entrances, on Elliott Avenue W and in Interbay • Cut-and-cover construction on 5th Avenue S in Chinatown/International District has potential for more disruption • Fixed bridge would have potential in-water effects in Salmon Bay, but less than movable bridge • Avoids impacts to Fishermen's Terminal, but has potential effects to freshwater maritime businesses that would be hard to relocate

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

5TH AVE MINED INTERNATIONAL DISTRICT/CHINATOWN STATION

DESIGN OPTION

WEST SEATTLE EXTENSION

ROUTE DESCRIPTION

- Same route as West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station

STATIONS

- Stations same as West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station

LEVEL 2 ALTERNATIVES AND REFINEMENTS

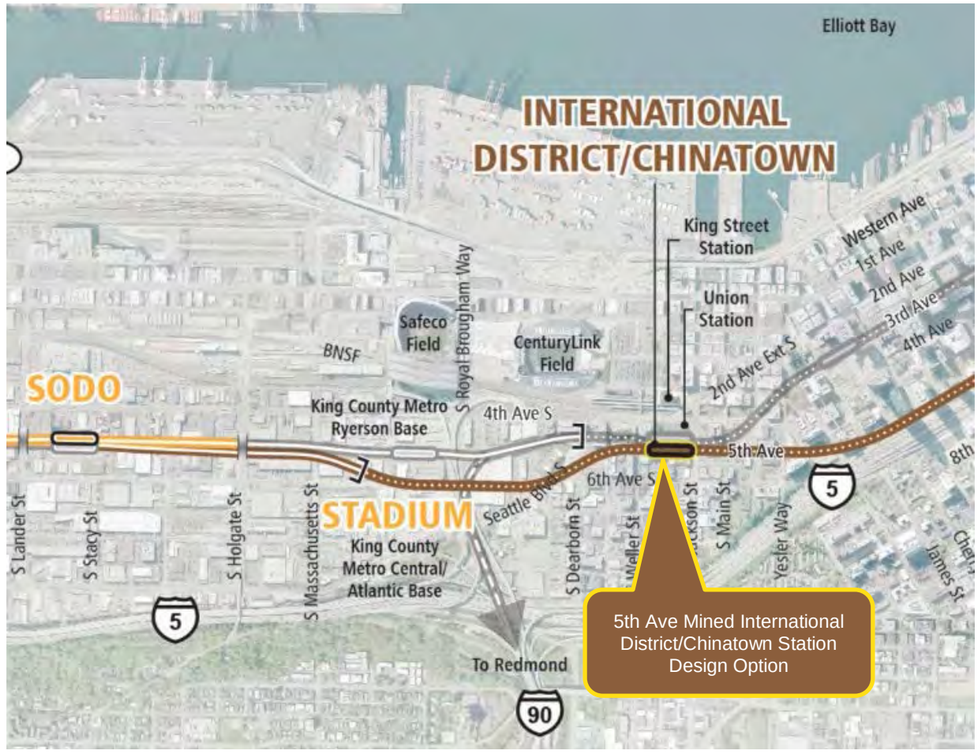
- Same as West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station

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

5TH AVE MINED INTERNATIONAL DISTRICT/CHINATOWN STATION

DESIGN OPTION

BALLARD EXTENSION



ROUTE DESCRIPTION

- Same route as West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative with 5th Ave Cut-and-Cover International District/Chinatown Station

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative with 5th Ave Cut-and-Cover International District/Chinatown Station, except it would use the following Level 2 Alternative:
  0 5th Avenue Bored Tunnel/Mined Station

STATIONS

International District/ Chinatown

New mined tunnel station (*versus cut-and-cover*) adjacent to existing station under 5th Avenue S

- Other stations same as West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station

WEST SEATTLE ELEVATED/C-ID 5TH AVE/DOWNTOWN 6TH AVE/BALLARD ELEVATED
5th Ave Mined International District/Chinatown Station Design Option

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Proposed new overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections • Fixed bridge over Salmon Bay would maintain service reliability compared to movable bridge • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 39,000 average weekday trips projected in 2042 on West Seattle extension • 120,000 to 158,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Elevated Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to south than ST3 Representative Project • Elevated Ballard Station oriented north-south along 14th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• Potential need for soil stabilization for steep slope at Pigeon Point in West Seattle • Duwamish Waterway crossing south of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in the navigation channel, fish windows and tribal treaty fishing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Harbor Marina Corporate Center (Terminal 102) and Terminal 104 • Facilitates track interconnections in SODO needed for reliable system operations; ground treatment likely required to construct tunnels and portals in poor soil conditions • Bored tunnel and mined International District/Chinatown Station likely minimize impacts to 5th Avenue S • Very deep mined International District/Chinatown Station could lengthen implementation schedule of Ballard extension; deeper International District/Chinatown Station results in a deeper Midtown Station • Tunneling under buildings near Denny Station likely require greater design and analysis than other alternatives; avoids major sewer tunnels in South Lake Union • Potential need to relocate King County Pump Station and reconstruct a portion of the Magnolia Bridge between BNSF railroad and pump station in Interbay • Long section of at-grade guideway in poor soil conditions in Interbay; potential need for ground improvements along guideway between Magnolia Bridge and 15th Avenue W • Fixed bridge over Salmon Bay would support systemwide transit reliability and reduces potential in-water effects compared to movable bridge; needs to consider coordination with maritime properties, vessel traffic, fish windows, and tribal treaty fishing • Conceptual capital cost estimate (2018$) approximately $500 million more than the ST3 Representative Project; additional elevated guideway outside public right-of-way adds cost compared to the ST3 Representative Project • Cost for 5th Avenue Mined International District/Chinatown Station higher than 5th Avenue Cut-and-Cover International District/Chinatown Station, but similar to ST3 Representative Project
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 41st Avenue SW is near center of West Seattle Junction Hub Urban Village, but farther from major bus zones • Deep mined International District/Chinatown Station creates less convenient transfer to existing Link station than cut-and-cover International District/Chinatown Station • South Lake Union Station is located west of SR 99 and further north with less convenient walk to Uptown and South Lake Union Urban Centers • Seattle Center Station is further from Uptown Urban Center, but closer to major bus routes on Mercer Street • Ballard Station located on 14th Avenue NW is one block further from center of Ballard Hub Urban Village • Limited equitable development opportunities in West Seattle because elevated guideway results in fewer large surplus lots; greater equitable development opportunities in SODO
Promote a healthy built, natural, and social environment	• Potential for greatest construction disruption to neighborhood between Alaska Junction and Avalon stations in West Seattle • Requires clearing steep slope on West Duwamish Greenbelt near Pigeon Point and on SW Queen Anne Greenbelt • Duwamish Waterway crossing south of West Seattle Bridge could potentially have more in-water effects than north crossing • Duwamish Waterway crossing could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals • Most residential displacements; primarily between Alaska Junction and Avalon stations, in Delridge neighborhood and at bridge approach on North Queen Anne • Most business displacements; primarily around Alaska Junction, Avalon, and Delridge stations, in Duwamish and south SODO industrial areas, around S Massachusetts Street tunnel portal, at downtown station entrances, on Elliott Avenue W and in Interbay • Reduced disruption on 5th Avenue S for International District/Chinatown Station compared to cut-and-cover station at this location • Fixed bridge would have potential in-water effects in Salmon Bay, but less than movable bridge • Avoids impacts to Fishermen's Terminal, but has potential effects to freshwater maritime businesses that would be hard to relocate

Figure 4-6 West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel

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

41ST AVE ALASKA JUNCTION/4TH AVE CUT-AND-COVER/14TH AVE BALLARD

DESIGN OPTIONS

ROUTE DESCRIPTION

- Route begins at the existing Link light rail line to Everett at the DSTT and heads south and runs at grade on existing line across S Royal Brougham Way (no roadway closure)
- Continues at grade within the E3 busway under new roadway grade separations of S Holgate Street and S Lander Street
- Transitions to an elevated guideway within the E3 busway south of S Lander Street
- Curves west and parallels the existing West Seattle Bridge on the north side
- Spans the Duwamish Waterway on a high-level, fixed bridge on north side of existing bridge
- Crosses over the West Seattle Bridge ramp, passes over the Nucor Steel property and runs south adjacent to Delridge Way SW
- Turns on a diagonal heading southwest to SW Genesee Street
- Continues on an elevated guideway on the northern edge of the West Seattle Golf Course
- Descends into a tunnel, with tunnel portal near SW Avalon Way
- Curves southwest at about 37th Avenue SW to 41st Avenue SW
- Terminates at SW Hudson Street, with tail track in north-south orientation under 41st Avenue SW

WEST SEATTLE EXTENSION

STATIONS

Stadium	Rebuilt existing at-grade and relocated station on West Seattle extension
SODO	New at-grade station immediately west of existing station for West Seattle extension; existing SODO Station shifted south towards S Lander Street for Ballard extension
Delridge	Elevated station on a diagonal between Delridge Way SW and 26th Avenue SW north of SW Genesee Street
Avalon	Tunnel station beneath SW Genesee Street straddling Fauntleroy Way SW
Alaska Junction	Tunnel station beneath 41st Avenue SW straddling SW Alaska Street

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Golf Course/Alaska Junction/Tunnel in Level 2, with refinements:
  - Crosses Duwamish Waterway on north side of existing West Seattle Bridge (*versus south side*)
  - 41st Avenue Alaska Junction Station (*versus Fauntleroy Way*)
- Surface E-3
  - No closure of Royal Brougham
  - One Stadium Station (*versus two*)
  - Shift new and existing SODO stations south towards S Lander Street

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

41ST AVE ALASKA JUNCTION/4TH AVE CUT-AND-COVER/14TH AVE BALLARD

DESIGN OPTIONS

ROUTE DESCRIPTION

- Route begins at the existing Link light rail line from Tacoma near the existing Stadium Station
- Transitions into a new cut-and-cover tunnel and turns northwest under the West Seattle extension at S Royal Brougham Way
- Heads north under 4th Avenue S in a cut-and-cover configuration along 4th Avenue S
- Transitions to 5th Avenue near James Street
- Runs under 5th Avenue from James Street to Olive Way
- Transitions to Westlake Avenue and then curves west to Harrison Street
- Follows Harrison Street and then begins to transition to Republican Street between 5th Avenue N and 2nd Avenue N, with north tunnel portal on east side of Elliott Avenue W north of Kinnear Park
- Emerges from downtown tunnel portal paralleling Elliott Avenue W in a retained cut
- Transitions to an elevated structure along the Queen Anne hillside to 15th Avenue W and W Armory Way, crossing over the intersection
- Runs at grade and in retained cut on the east side of the BNSF Railway tracks, passes under W Dravus Street and then curves east
- Descends into a tunnel beneath Salmon Bay, with tunnel portal between 15th Avenue W and Thorndyke Avenue W
- Curves north to align with 14th Avenue NW and continues in a tunnel under 14th Avenue NW
- Terminates north of NW Market Street and 14th Avenue NW, with tail track in north-south orientation on 14th Avenue NW

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- 4th Avenue Cut-and-Cover Tunnel/Station
- 5th/Harrison, with refinements:
  - Transitions to Republican Street (*versus continuing under Harrison Street*)
- Armory Way/Tunnel/14th

BALLARD EXTENSION

International District/ Chinatown	New cut-and-cover tunnel station west of existing station under 4th Avenue S
Midtown	Tunnel station beneath 5th Avenue between Columbia Street and Madison Street
Westlake	Tunnel station beneath 5th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel station beneath Westlake Avenue and Denny Way
South Lake Union	Tunnel station beneath Harrison Street between Dexter Avenue N and Aurora Avenue N
Seattle Center	Tunnel station beneath Republican Street at 1st Avenue N
Smith Cove	Retained cut (trench) station east of Elliott Avenue W near W Prospect Street
Interbay	Retained cut (trench) station on Thorndyke Avenue W north of W Dravus Street
Ballard	Tunnel station beneath 14th Avenue NW straddling NW Market Street

WEST SEATTLE TUNNEL/C-ID 4TH AVE/DOWNTOWN 5TH AVE/BALLARD TUNNEL
41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard Design Options

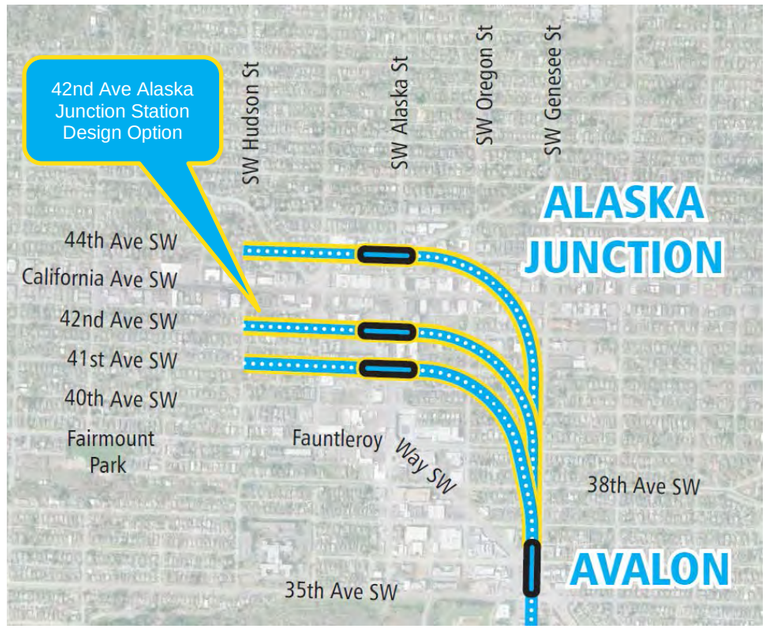
Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Proposed new overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections • Tunnel under Salmon Bay would maintain service reliability compared to movable bridge • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 40,000 average weekday trips projected in 2042 on West Seattle extension • 125,000 to 165,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel; slightly higher ridership due to better pedestrian access and transit connections at South Lake Union Station
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Tunnel Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to south than ST3 Representative Project • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• West Seattle tunnel could lengthen implementation schedule of West Seattle extension • Likely avoids steep and unstable slope design at Pigeon Point in West Seattle with north bridge crossing of Duwamish Waterway • Duwamish Waterway crossing north of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in navigation channel, fish windows and tribal treaty fishing, but could potentially have less in-water effects than south crossing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Terminal 18 on Harbor Island and near access road and tracks leading to Terminal 5 • Facilitates all special trackwork for track interconnections in SODO needed for reliable system operations; south tunnel portal would likely require WSDOT I-90 structure modifications • Potential constructability issues related to cut-and-cover tunnel below 4th Avenue S in Chinatown/International District, requiring 4th Avenue S viaduct and retaining wall reconstruction, full or partial closure of high-volume arterial, and work in close proximity to BNSF active trackway; could lengthen implementation schedule of Ballard extension • Engineering constraints of crossing BNSF tunnel and DSTT in close proximity at S Washington Street • Potentially unstable slopes at north tunnel portal on west side of Queen Anne Hill • Potential ground improvements needed on west side of Interbay Golf Center, between W Dravus Street and 15th Avenue W and for tunnel boring under Nickerson Street bridge in Interbay • Tunnel under Salmon Bay supports systemwide transit reliability and avoids potential in-water effects; potential challenges identifying muck hauling routes for Salmon Bay tunnel construction • Conceptual capital cost estimate (2018$) approximately $1,900 million more than the ST3 Representative Project due to additional tunnels and reconstruction of 4th Avenue S viaduct; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology and may require funding partnerships
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 41st Avenue SW is near center of West Seattle Junction Hub Urban Village, but farther from major bus zones • South Lake Union Station is located closer to center South Lake Union Urban Center with good pedestrian access and closer to bus routes on Harrison Street and Dexter Avenue • Seattle Center Station is located closer to center of Uptown Urban Center, but farther from major bus routes on Mercer Street • Ballard Station located on 14th Avenue NW is one block further from center of Ballard Hub Urban Village • Greater equitable development opportunities in West Seattle with tunnel due to larger surplus lots
Promote a healthy built, natural, and social environment	• Tunnel in West Seattle results in lower elevated guideway along SW Genesee Street • Duwamish Waterway crossing north of West Seattle Bridge could potentially have fewer in-water effects than south crossing and avoids steep slope on Pigeon Point • Duwamish Waterway crossing north of West Seattle Bridge could potentially displace businesses that support international and domestic trade at Port of Seattle and Northwest Seaport Alliance terminals • Fewest residential displacements; primarily around Avalon and Delridge stations in West Seattle • Fewer business displacements; primarily around Avalon Station and along west side of Delridge Way SW, in Duwamish and south SODO industrial areas, along 4th Avenue S in Chinatown/International District, at downtown station entrances, on Elliott Avenue W and in Interbay • Closure of 4th Avenue S for reconstruction of 4th Avenue S viaduct would result in congestion on other north-south streets in surrounding area • Could affect BNSF operations during tunnel and station construction on 4th Avenue S in Chinatown/International District due to close proximity to tracks • Requires most clearing of steep slope on SW Queen Anne Greenbelt • Tunnel under Salmon Bay avoids potential permanent in-water effects and impacts to Fishermen's Terminal and other freshwater maritime businesses in Salmon Bay

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

42ND AVE ALASKA JUNCTION STATION

DESIGN OPTION

WEST SEATTLE EXTENSION



ROUTE DESCRIPTION

- Same route as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except:
  - At approximately 37th Avenue SW, tunnel route continues heading west and then begins turning south at about 39th Avenue SW to 42nd Avenue SW
  - Terminates at SW Hudson Street, with tail track in north-south orientation under 42nd Avenue SW (*versus 41st Avenue SW*)

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Elevated/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except:
  - Alaska Junction: Tunnel station beneath 42nd Avenue SW (*versus 41st Avenue SW*) straddling SW Alaska Street

STATIONS

Alaska Junction

Tunnel station beneath 42nd Avenue SW (*versus 41st Avenue SW*) straddling SW Alaska Street

- Other stations same as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

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

42ND AVE ALASKA JUNCTION STATION

DESIGN OPTION

BALLARD EXTENSION

ROUTE DESCRIPTION

- Same route as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Avenue Alaska Junction Station

STATIONS

- Stations same as West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Avenue Alaska Junction Station

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Avenue Alaska Junction Station

WEST SEATTLE TUNNEL/C-ID 4TH AVE/DOWNTOWN 5TH AVE/BALLARD TUNNEL
42nd Ave Alaska Junction Station Design Option

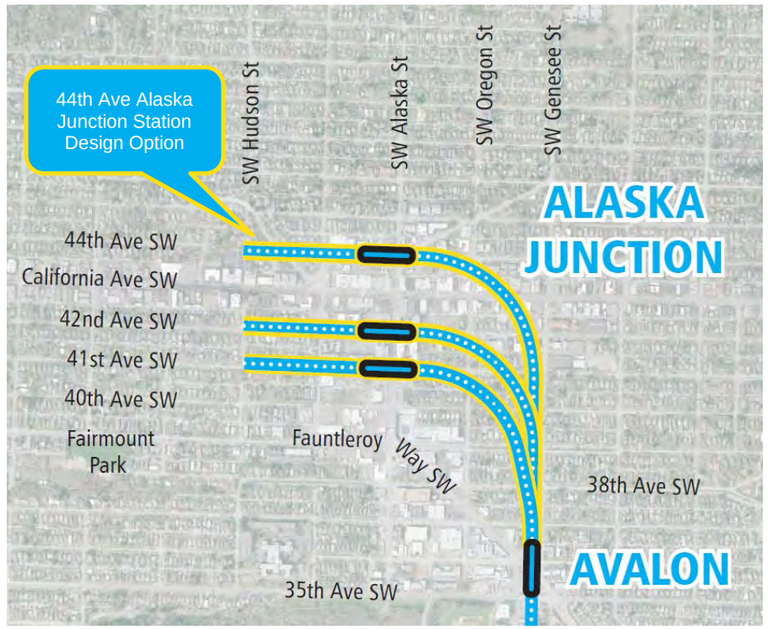
Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Proposed new overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections • Tunnel under Salmon Bay would maintain service reliability compared to movable bridge • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 40,000 average weekday trips projected in 2042 on West Seattle extension • 125,000 to 165,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel; slightly higher ridership due to better pedestrian access and transit connections at South Lake Union Station
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Tunnel Alaska Junction Station oriented north-south on 42nd Avenue SW would accommodate a more direct route for a future LRT extension to south than ST3 Representative Project, similar to 41st Avenue SW • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• West Seattle tunnel could lengthen implementation schedule of West Seattle extension • Likely avoids steep and unstable slope design at Pigeon Point in West Seattle with north bridge crossing of Duwamish Waterway • Duwamish Waterway crossing north of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in the navigation channel, fish windows and tribal treaty fishing, but could potentially have less in-water effects than south crossing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Terminal 18 on Harbor Island and near access road and tracks leading to Terminal 5 • Facilitates all special trackwork for track interconnections in SODO needed for reliable system operations; south tunnel portal would likely require WSDOT I-90 structure modifications • Potential constructability issues related to cut-and-cover tunnel below 4th Avenue S in Chinatown/International District, requiring 4th Avenue S viaduct and retaining wall reconstruction, full or partial closure of high-volume arterial, and work in close proximity to BNSF active trackway; could lengthen implementation schedule of Ballard extension • Engineering constraints of crossing BNSF tunnel and DSTT in close proximity at S Washington Street • Potentially unstable slopes at north tunnel portal on west side of Queen Anne Hill • Potential ground improvements needed on the west side of Interbay Golf Center, between W Dravus Street and 15th Avenue W and for tunnel boring under Nickerson Street bridge in Interbay • Tunnel under Salmon Bay supports systemwide transit reliability and avoids potential in-water effects; potential challenges identifying muck hauling routes for Salmon Bay tunnel construction • Conceptual capital cost estimate (2018$) approximately $1,900 million more than the ST3 Representative Project due to additional tunnels and reconstruction of 4th Avenue S viaduct; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology and may require funding partnerships
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 42nd Avenue SW is near center of West Seattle Junction Hub Urban Village and closer to major bus zones than Alaska Junction Station on 41st Avenue SW • South Lake Union Station is located closer to center South Lake Union Urban Center with good pedestrian access and closer to bus routes on Harrison Street and Dexter Avenue • Seattle Center Station is located closer to center of Uptown Urban Center, but farther from major bus routes on Mercer Street • Ballard Station located on 14th Avenue NW is one block further from center of Ballard Hub Urban Village • Greater equitable development opportunities in West Seattle with tunnel due to larger surplus lots
Promote a healthy built, natural, and social environment	• Tunnel in West Seattle results in lower elevated guideway along SW Genesee Street • Duwamish Waterway crossing of north of West Seattle Bridge could potentially have fewer in-water effects than south crossing and avoids steep slope on Pigeon Point • Duwamish Waterway crossing north of West Seattle Bridge could potentially displace businesses that support international and domestic trade at Port of Seattle and Northwest Seaport Alliance terminals • Fewest residential displacements; primarily around Avalon and Delridge stations in West Seattle • Fewer business displacements; primarily around Avalon Station and along west side of Delridge Way SW, in Duwamish and south SODO industrial areas, along 4th Avenue S in Chinatown/International District, at downtown station entrances, on Elliott Avenue W and in Interbay • Closure of 4th Avenue S for reconstruction of 4th Avenue S viaduct would result in congestion on other north-south streets in surrounding area • Could affect BNSF operations during tunnel and station construction on 4th Avenue S in Chinatown/International District due to close proximity to tracks • Requires most clearing of steep slope on SW Queen Anne Greenbelt • Tunnel under Salmon Bay avoids potential permanent in-water effects and avoids impacts to Fishermen's Terminal and other freshwater maritime businesses in Salmon Bay

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

44TH AVE ALASKA JUNCTION STATION

DESIGN OPTION

WEST SEATTLE EXTENSION



ROUTE DESCRIPTION

- Same route as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except:
  - At approximately 37th Avenue SW, tunnel route continues heading west and then begins turning south at about 39th Avenue SW to 44th Avenue SW
  - Terminates at SW Hudson Street, with tail track in north-south orientation under 44th Avenue SW (*versus 41st Avenue SW*)

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Elevated/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except:
  - Alaska Junction: Tunnel station beneath 44th Avenue SW (*versus 41st Avenue SW*) straddling SW Alaska Street

STATIONS

Alaska Junction

Tunnel station beneath 42nd Avenue SW (*versus 41st Avenue SW*) straddling SW Alaska Street

- Other stations same as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

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

44TH AVE ALASKA JUNCTION STATION

DESIGN OPTION

BALLARD EXTENSION

ROUTE DESCRIPTION

- Same route as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction Station

STATIONS

- Stations same as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction Station

WEST SEATTLE TUNNEL/C-ID 4TH AVE/DOWNTOWN 5TH AVE/BALLARD TUNNEL
44th Ave Alaska Junction Station Design Option

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Proposed new overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections • Tunnel under Salmon Bay would maintain service reliability compared to movable bridge • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 40,000 average weekday trips projected in 2042 on West Seattle extension • 125,000 to 165,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel; slightly higher ridership due to better pedestrian access and transit connections at South Lake Union Station
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Tunnel Alaska Junction Station oriented north-south on 44th Avenue SW would accommodate a more direct route for a future LRT extension to south than ST3 Representative Project, but likely more impacts than 41st Avenue SW or 42nd Avenue SW • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• West Seattle tunnel could lengthen implementation schedule of West Seattle extension • Likely avoids steep and unstable slope design at Pigeon Point in West Seattle with north bridge crossing of Duwamish Waterway • Duwamish Waterway crossing north of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in the navigation channel, fish windows and tribal treaty fishing, but could potentially have less in-water effects than south crossing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Terminal 18 on Harbor Island and near access road and tracks leading to Terminal 5 • Facilitates all special trackwork for track interconnections in SODO needed for reliable system operations; south tunnel portal would likely require WSDOT I-90 structure modifications • Potential constructability issues related to cut-and-cover tunnel below 4th Avenue S in Chinatown/International District, requiring 4th Avenue S viaduct and retaining wall reconstruction, full or partial closure of high-volume arterial, and work in close proximity to BNSF active trackway; could lengthen implementation schedule of Ballard extension • Engineering constraints of crossing BNSF tunnel and DSTT in close proximity at S Washington Street • Potentially unstable slopes at north tunnel portal on west side of Queen Anne Hill • Potential ground improvements needed on west side of Interbay Golf Center, between W Dravus Street and 15th Avenue W and for tunnel boring under Nickerson Street bridge in Interbay • Tunnel under Salmon Bay supports systemwide transit reliability and avoids potential in-water effects; potential challenges identifying muck hauling routes for Salmon Bay tunnel construction • Conceptual capital cost estimate (2018$) approximately $1,900 million more than the ST3 Representative Project due to additional tunnels and reconstruction of 4th Avenue S viaduct; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology and may require funding partnerships
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 44th Avenue SW is at edge of West Seattle Junction Hub Urban Village, but closer to major bus zones • South Lake Union Station is located closer to center South Lake Union Urban Center with good pedestrian access and closer to bus routes on Harrison Street and Dexter Avenue • Seattle Center Station is located closer to center of Uptown Urban Center, but farther from major bus routes on Mercer Street • Ballard Station located on 14th Avenue NW is one block further from center of Ballard Hub Urban Village • Greater equitable development opportunities in West Seattle with tunnel due to larger surplus lots
Promote a healthy built, natural, and social environment	• Tunnel in West Seattle results in lower elevated guideway along SW Genesee Street • Duwamish Waterway crossing north of West Seattle Bridge could potentially have fewer in-water effects than south crossing and avoids steep slope on Pigeon Point • Duwamish Waterway crossing north of West Seattle Bridge could potentially displace businesses that support international and domestic trade at Port of Seattle and Northwest Seaport Alliance terminals • Fewest residential displacements; primarily around Avalon and Delridge stations in West Seattle • Fewer business displacements; primarily around Avalon Station and along west side of Delridge Way SW, in Duwamish and south SODO industrial areas, along 4th Avenue S in Chinatown/International District, at downtown station entrances, on Elliott Avenue W and in Interbay • Closure of 4th Avenue S for reconstruction of 4th Avenue S viaduct would result in congestion on other north-south streets in surrounding area • Could affect BNSF operations during tunnel and station construction on 4th Avenue S in Chinatown/International District due to close proximity to tracks • Requires most clearing of steep slope on SW Queen Anne Greenbelt • Tunnel under Salmon Bay avoids potential permanent in-water effects and avoids impacts to Fishermen's Terminal and other freshwater maritime businesses in Salmon Bay

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

4TH AVE MINED INTERNATIONAL DISTRICT/CHINATOWN STATION

DESIGN OPTION

WEST SEATTLE EXTENSION

ROUTE DESCRIPTION

- Same route as West Seattle Elevated/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

STATIONS

- Stations same as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Elevated/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

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

4TH AVE MINED INTERNATIONAL DISTRICT/CHINATOWN STATION

DESIGN OPTION

BALLARD EXTENSION

ROUTE DESCRIPTION

- Same route as West Seattle Elevated/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except:
  - In SODO and Chinatown/International District, tunnel alignment would turn northwest in the vicinity of S Massachusetts Street rather than S Royal Brougham Way and would be constructed via bored methods along 4th Avenue (*versus cut-and-cover*)

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Elevated/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except it would use the following Level 2 Alternative:
  - 4th Avenue Bored Tunnel/Mined Station

International District/ Chinatown

New mined tunnel station (*versus cut-and-cover*) west of existing station under 4th Avenue S

- Other stations same as West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

WEST SEATTLE TUNNEL/C-ID 4TH AVE/DOWNTOWN 5TH AVE/BALLARD TUNNEL
4th Ave Mined International District/Chinatown Station Design Option

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Proposed new overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections • Tunnel under Salmon Bay would maintain service reliability compared to movable bridge • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 40,000 average weekday trips projected in 2042 on West Seattle extension • 125,000 to 165,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel; slightly higher ridership due to better pedestrian access and transit connections at South Lake Union Station
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Tunnel Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to south than ST3 Representative Project • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• West Seattle tunnel could lengthen implementation schedule of West Seattle extension • Likely avoids steep and unstable slope design at Pigeon Point in West Seattle with north bridge crossing of Duwamish Waterway • Duwamish Waterway crossing north of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in the navigation channel, fish windows and tribal treaty fishing, but could potentially have less in-water effects than south crossing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Terminal 18 on Harbor Island and near access road and tracks leading to Terminal 5 • 4th Avenue Mined International District/Chinatown Station does not facilitate special trackwork needed in SODO for track interconnections to provide reliable system operations • Potential constructability issues related to bored tunnel below 4th Avenue S in Chinatown/International District, requiring long-term full closure of 4th Avenue S viaduct, a high-volume arterial, and work in close proximity to BNSF active trackway; could lengthen implementation schedule of Ballard extension • Deeper International District/Chinatown Station results in deeper Midtown Station; potentially unstable slopes at north tunnel portal on west side of Queen Anne Hill • Potential ground improvements needed on west side of Interbay Golf Center, between W Dravus Street and 15th Avenue W and for tunnel boring under Nickerson Street bridge in Interbay • Tunnel under Salmon Bay supports systemwide transit reliability and avoids potential in-water effects; potential challenges identifying muck hauling routes for Salmon Bay tunnel construction • Conceptual capital cost estimate (2018$) approximately $2,100 million more than the ST3 Representative Project due to additional tunnels and reconstruction of 4th Avenue S viaduct; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology and may require funding partnerships
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 41st Avenue SW is near center of West Seattle Junction Hub Urban Village, but farther from major bus zones • Deep mined International District/Chinatown Station creates less convenient transfer to existing Link station than cut-and-cover International District/Chinatown Station • South Lake Union Station is located closer to center South Lake Union Urban Center with good pedestrian access and closer to bus routes on Harrison Street and Dexter Avenue • Seattle Center Station is located closer to center of Uptown Urban Center, but farther from major bus routes on Mercer Street • Ballard Station located on 14th Avenue NW is one block further from center of Ballard Hub Urban Village • Greater equitable development opportunities in West Seattle with tunnel due to larger surplus lots
Promote a healthy built, natural, and social environment	• Tunnel in West Seattle results in lower elevated guideway along SW Genesee Street • Duwamish Waterway crossing north of West Seattle Bridge could potentially have fewer in-water effects than south crossing and avoids steep slope on Pigeon Point • Duwamish Waterway crossing north of West Seattle Bridge could potentially displace businesses that support international and domestic trade at Port of Seattle and Northwest Seaport Alliance terminals • Fewest residential displacements; primarily around Avalon and Delridge stations in West Seattle • Fewer business displacements; primarily around Avalon Station and along west side of Delridge Way SW, in Duwamish and south SODO industrial areas, along 4th Avenue S in Chinatown/International District, at downtown station entrances, on Elliott Avenue W and in Interbay • 4th Avenue Mined International District Chinatown Station would result in greatest potential traffic impact to Chinatown/International District due to full, multi-year closure of 4th Avenue S viaduct; creates widespread congestion throughout Chinatown/International District, waterfront corridor and other north-south arterials east of I-5 • Could affect BNSF operations during tunnel and station construction on 4th Avenue S in Chinatown/International District due to close proximity to tracks • Requires most clearing of steep slope on SW Queen Anne Greenbelt • Tunnel under Salmon Bay avoids potential permanent in-water effects and avoids impacts to Fishermen's Terminal and other freshwater maritime businesses in Salmon Bay

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

15TH AVE BALLARD STATION

DESIGN OPTION

WEST SEATTLE EXTENSION

ROUTE DESCRIPTION

- Same route as West Seattle Elevated/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

STATIONS

- Stations same as West Seattle Tunnel/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

LEVEL 2 ALTERNATIVES AND REFINEMENTS

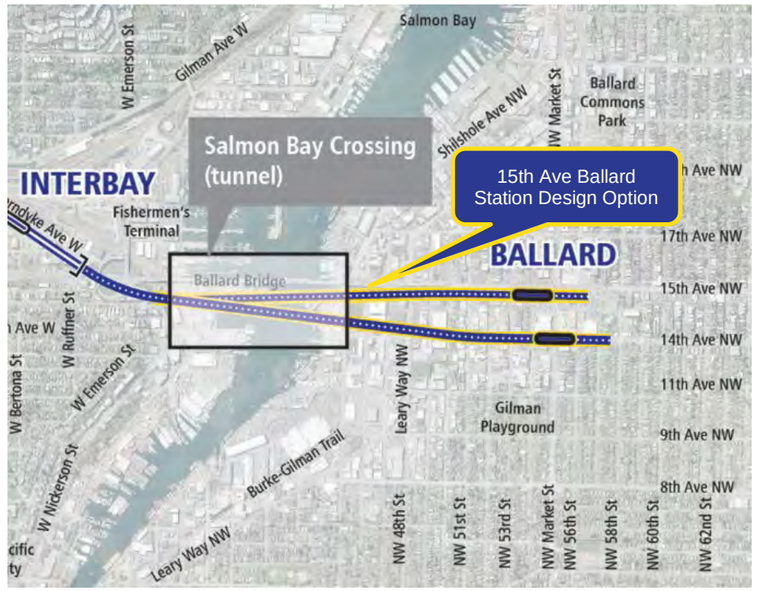
- Same as West Seattle Elevated/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

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

15TH AVE BALLARD STATION

DESIGN OPTION

BALLARD EXTENSION



ROUTE DESCRIPTION

- Same route as West Seattle Elevated/C-ID 4th Ave/ Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except:
  - On south side of Salmon Bay and east of existing Ballard Bridge, the tunnel route would head north and transition to 15th Avenue NW on the north side of Salmon Bay
  - Terminates south of NW Market Street and 15th Avenue NW, with tail track in north-south orientation on 15th Avenue NW (*versus 14th Avenue NW*)

LEVEL 2 ALTERNATIVES AND REFINEMENTS

- Same as West Seattle Elevated/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard, except:
  - Ballard: Tunnel station east of 15th Avenue NW (*versus 14th Avenue NW*) and south of NW Market Street

Ballard

Tunnel station east of 15th Avenue NW (*versus 14th Avenue NW*) and south of NW Market Street

- Other stations same as West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative with 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard

WEST SEATTLE TUNNEL/C-ID 4TH AVE/DOWNTOWN 5TH AVE/BALLARD TUNNEL
15th Ave Ballard Station Design Option

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Proposed new overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections • Tunnel under Salmon Bay would maintain service reliability compared to movable bridge • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes; Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Improve Downtown capacity for regional connectivity	• Facilitates passenger carrying capacity in downtown to support regional connectivity • 35,000 to 40,000 average weekday trips projected in 2042 on West Seattle extension • 125,000 to 165,000 average weekday trips projected in 2042 on Ballard extension, including new downtown tunnel; slightly higher ridership due to better pedestrian access and transit connections at South Lake Union Station
Connect regional centers	• Serves 3 regional growth centers and 2 manufacturing/industrial centers • Tunnel Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to south than ST3 Representative Project • Tunnel Ballard Station oriented north-south along 15th Avenue NW would accommodate a future LRT extension to north or east
Technically feasible and financially sustainable	• West Seattle tunnel could lengthen implementation schedule of West Seattle extension • Likely avoids steep and unstable slope design at Pigeon Point in West Seattle with north bridge crossing of Duwamish Waterway • Duwamish Waterway crossing north of West Seattle Bridge requires in-water construction activities and needs to consider vessel traffic in the navigation channel, fish windows and tribal treaty fishing, but could potentially have less in-water effects than south crossing • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Terminal 18 on Harbor Island and near access road and tracks leading to Terminal 5 • Facilitates all special trackwork for track interconnections in SODO needed for reliable system operations; south tunnel portal would likely require WSDOT I-90 structure modifications • Potential constructability issues related to cut-and-cover tunnel below 4th Avenue S in Chinatown/International District, requiring 4th Avenue S viaduct and retaining wall reconstruction, full or partial closure of high-volume arterial, and work in close proximity to BNSF active trackway; could lengthen implementation schedule of Ballard extension • Engineering constraints of crossing BNSF tunnel and DSTT in close proximity at S Washington Street • Potentially unstable slopes at north tunnel portal on west side of Queen Anne Hill • Potential ground improvements needed on the west side of Interbay Golf Center, between W Dravus Street and 15th Avenue W and for tunnel boring under Nickerson Street bridge in Interbay • Tunnel under Salmon Bay supports systemwide transit reliability and avoids potential in-water effects; potential challenges identifying muck hauling routes for Salmon Bay tunnel construction • Conceptual capital cost estimate (2018$) approximately $1,900 million more than the ST3 Representative Project due to additional tunnels and reconstruction of 4th Avenue S viaduct; cost of additional tunnels not included in ST3 Financial Plan or evaluation methodology and may require funding partnerships
Expand mobility for all	• All alternatives provide increased opportunities for low-income and minority populations, with better access on the greater Link system • All alternatives serve areas with similar low-income, minority, youth, elderly, LEP and disabled populations; Chinatown/International District approximately 90 percent minority
Encourage equitable and sustainable urban growth	• Alaska Junction Station on 41st Avenue SW is near center of West Seattle Junction Hub Urban Village, but farther from major bus zones • South Lake Union Station is located closer to center South Lake Union Urban Center with good pedestrian access and closer to bus routes on Harrison Street and Dexter Avenue • Seattle Center Station is located closer to center of Uptown Urban Center, but farther from major bus routes on Mercer Street • Ballard Station located on 15th Avenue NW is one block closer to center of Ballard Hub Urban Village • Greater equitable development opportunities in West Seattle with tunnel due to larger surplus lots
Promote a healthy built, natural, and social environment	• Tunnel in West Seattle results in lower elevated guideway along SW Genesee Street • Duwamish Waterway crossing north of West Seattle Bridge could potentially have fewer in-water effects than south crossing and avoids steep slope on Pigeon Point • Duwamish Waterway crossing north of West Seattle Bridge could potentially displace businesses that support international and domestic trade at Port of Seattle and Northwest Seaport Alliance terminals • Fewest residential displacements; primarily around Avalon and Delridge stations in West Seattle • Fewer business displacements; displacements primarily around Avalon Station and along west side of Delridge Way SW, in Duwamish and south SODO industrial areas, along 4th Avenue S in Chinatown/International District, at downtown station entrances, on Elliott Avenue W and in Interbay • Closure of 4th Avenue S for reconstruction of 4th Avenue S viaduct would result in congestion on other north-south streets in surrounding area • Could affect BNSF operations during tunnel and station construction on 4th Avenue S in Chinatown/International District due to close proximity to tracks • Requires most clearing of steep slope on SW Queen Anne Greenbelt • Tunnel under Salmon Bay avoids potential permanent in-water effects and avoids impacts to Fishermen's Terminal and other freshwater maritime businesses in Salmon Bay

5 SUMMARY OF LEVEL 3 EVALUATION

The Level 3 evaluation assessed potential benefits and impacts of three corridorwide alternatives and associated design options for the WSBLE Project. Following is an overview of the Level 3 evaluation findings for the three corridorwide alternatives:

- **ST3 Representative Project** complicates a future LRT extension in West Seattle due to east-west oriented Alaska Junction Station. It would also potentially have the most traffic, transportation infrastructure and freight impacts due to lengthy sections of elevated track along high-volume arterials. In addition, a movable bridge over Salmon Bay would have potential service interruptions, as well as greatest potential in-water effects.

- **West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative** would lessen conflicts with transportation facilities and provide improved service reliability with a fixed bridge over Salmon Bay. However, this “elevated” alternative would have increased property acquisitions and displacements associated with long sections of elevated guideway.

- **West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative** would reduce acquisitions and displacements due to the additional tunnels in West Seattle and Ballard. A tunnel under Salmon Bay would also avoid potential permanent in-water effects. The additional tunnels and reconstruction of the 4th Avenue S viaduct would add schedule delays, engineering constraints, constructability complexity and costs that may require funding partnerships.

Table 5-1 (Summary of Level 3 Alternatives Evaluation Findings) summarizes the key findings among the Level 3 alternatives and design options, with the detailed evaluation found in **Appendix D** (Level 3 Alternatives Evaluation Matrices).

Table 5-1 Summary of Level 3 Alternatives Evaluation Findings

Level 3 Alternatives	Key Findings
ST3 Representative Project	
ST3 Representative Project	• East-west oriented Alaska Junction Station complicates future LRT extension in West Seattle; constrained terminal station on SW Alaska Street • Duwamish Waterway crossing south of West Seattle Bridge potentially impacts Pigeon Point steep slope and Duwamish Greenbelt • More complex and costly elevated track in SODO does not facilitate track interconnections needed for service reliability • Most extensive potential 5th Avenue S cut-and-cover tunnel construction impacts in Chinatown/International District • Most potential traffic, transportation infrastructure and freight impacts due to lengthy sections of elevated track along high-volume arterials, including SW Alaska Street, Fauntleroy Way SW, Delridge Way SW, Elliott Avenue W, 15th Avenue W and 15th Avenue NW • Movable bridge over Salmon Bay would have potential service interruptions, vessel navigational effects, most in-water effects and effects to freshwater maritime businesses that would be hard to relocate
West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated Alternative	
5th Ave Cut-and-Cover International District/ Chinatown Station Design Option	• Most acquisitions and displacements due to elevated guideway outside of public right-of-way in West Seattle and Interbay/Ballard • Duwamish Waterway crossing south of West Seattle Bridge potentially impacts Pigeon Point steep slope and Duwamish Greenbelt • 5th Avenue Cut-and-Cover International District/Chinatown Station has potential for more construction impacts in Chinatown/International District • Fixed bridge over Salmon Bay provides service reliability and reduces potential in-water effects compared to movable bridge, but requires high-level structure for navigational clearances and has potential effects to freshwater maritime business that would be hard to relocate • Wider 14th Avenue NW right-of-way better accommodates guideway, station and tail tracks than on 15th Avenue NW • Ballard Station on 14th Avenue NW farther from center of Urban Village than 15th Avenue NW, but would have similar ridership
5th Ave Mined International District/ Chinatown Station Design Option	• 5th Avenue Mined International District/Chinatown Station reduces potential construction impacts in Chinatown/International District compared to cut-and-cover • Deep mined International District/Chinatown Station adds potential schedule delays, engineering constraints, and constructability complexity, and has less convenient passenger transfers to existing Link station • Other potential impacts along the WSBLE Project corridor similar to alternative with 5th Avenue Cut-and-cover International District/Chinatown Station
West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel Alternative	
41st Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard Design Options	• 41st Avenue Alaska Junction Station is close to the center of the West Seattle Junction Hub Urban Village • Tunnel in West Seattle lowers guideway along SW Genesee Street compared to elevated alternatives • Duwamish Waterway crossing north of West Seattle Bridge avoids Pigeon Point steep slope and potential effects to Duwamish Greenbelt • Duwamish Waterway crossing north of West Seattle Bridge potentially affects freight, port terminal facilities especially during construction • 4th Avenue S viaduct rebuild in Chinatown/International District adds schedule delays, engineering constraints, constructability complexity and costs; may require funding partnerships • Higher ridership potential at South Lake Union Station on Harrison Street due to better pedestrian access and bus connections • Engineering constraints with landslide hazard area and most potential effects to SW Queen Anne Greenbelt • Tunnels in West Seattle and Ballard potentially reduce property acquisitions/displacements and avoid permanent Salmon Bay in-water effects, but add schedule delays, engineering constraints, constructability complexity and costs that are not included in ST3 Financial Plan or evaluation methodology and may require funding partnerships
42nd Ave Alaska Junction Station Design Option	• 42nd Avenue Alaska Junction Station is close to the center of the West Seattle Junction Hub Urban Village and closer to existing and planned bus routes on California Avenue SW than 41st Avenue SW • Other potential impacts along the WSBLE Project corridor similar to alternative with 41st Avenue SW Alaska Junction Station
44th Ave Alaska Junction Station Design Option	• 44th Avenue Alaska Junction Station is on the west edge of the West Seattle Junction Hub Urban Village, but closer to existing and planned bus routes on California Avenue SW than a station on 41st Avenue SW • 44th Avenue Alaska Junction Station has slightly more acquisitions and displacements than a station on 41st Avenue SW • Other potential impacts along the WSBLE Project corridor similar to alternative with 41st Avenue SW Alaska Junction Station
4th Ave Mined International District/ Chinatown Station Design Option	• 4th Avenue S viaduct rebuild adds schedule delays, engineering constraints, constructability complexity and costs; may require funding partnerships • Deep mined International District/Chinatown Station under 4th Avenue S results in system reliability, network integration and operational constraints, and less convenient passenger transfers to existing Link station • Other potential impacts along the WSBLE Project corridor similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station
15th Ave Ballard Station Design Option	• Ballard Station on 15th Avenue NW closer to Urban Village than 14th Avenue NW, but would have similar ridership • More acquisitions and displacements than 14th Avenue NW • Other potential impacts along the WSBLE Project corridor similar to alternative with 14th Avenue NW Ballard Station

6 NEXT STEPS

At the end of the Alternatives Development process, Sound Transit and FTA will begin environmental scoping by publishing a Notice of Intent to Prepare an EIS in the Federal Register and a Determination of Significance in the SEPA Register. During scoping, Sound Transit and FTA will invite public and agency comments on the alternatives, elements of the environment to evaluate in the EIS, and the WSBLE Project Purpose and Need. After consideration of the Alternatives Development process, the RET and input received during scoping, the Sound Transit Board is expected to identify the Preferred Alternative(s) and other alternatives to study in a Draft EIS.

After the EIS scoping period, Sound Transit will conduct further engineering, environmental impact analysis, and public involvement work on the project. Sound Transit and FTA will publish a Draft EIS, provide an opportunity for formal public and agency comment, and publish a Final EIS that includes responses to public and agency comments. After publication of the Final EIS, the Sound Transit Board is expected to make the final decision on the WSBLE Project to build, and the FTA will issue a Record of Decision (ROD). **Figure 6-1** (West Seattle and Ballard Link Extensions General Project Timeline) shows the WSBLE Project's current general timeline.

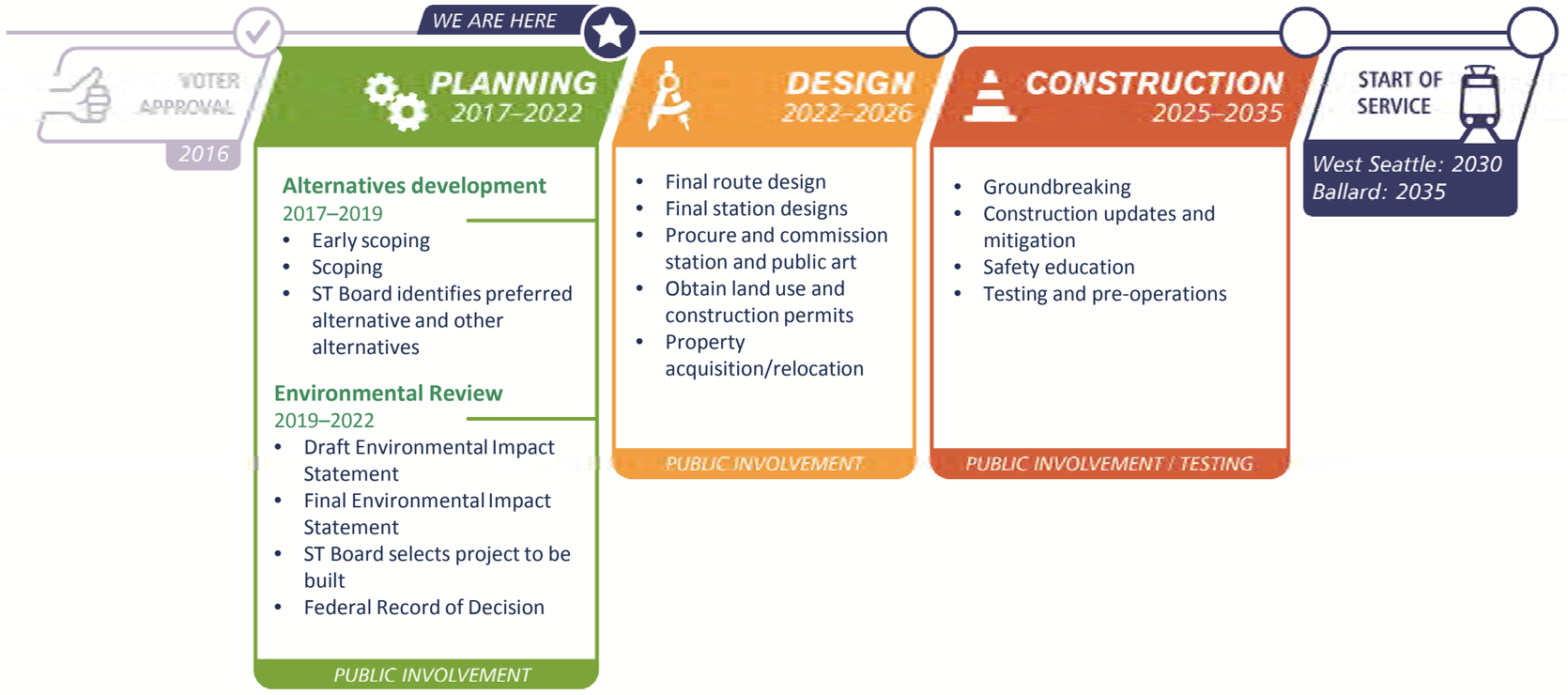


Figure 6-1 West Seattle and Ballard Link Extensions General Project Timeline

7 REFERENCES

7.1 GIS Data References

ACS, Census Bureau. 2010. Minority Population. US Census Data. Derived from 2012-2106 American Community Survey 5-Year average and 2010 Census. Accessed February 28, 2018.

ACS, Census Bureau. 2010. Low-income Population. US Census Data. Derived from 2012–2106 American Community Survey 5-Year average and 2010 Census data. Accessed February 28, 2018.

ACS, Census Bureau. 2010. Youth Population (under 18). US Census Data. Derived from 2012–2106 American Community Survey 5-Year average and 2010 Census data. Accessed June 2018.

ACS, Census Bureau. 2010. Elderly Population (65 and over). US Census Data. Derived from 2012–2106 American Community Survey 5-Year average and 2010 Census data. Accessed June 2018.

ACS, Census Bureau. 2010. Limited English Proficiency Population. US Census Data. Derived from 2012–2106 American Community Survey 5-Year average and 2010 Census data. Accessed June 2018.

ACS, Census Bureau. 2010. Disabled Population. US Census Data. Derived from 2012–2106 American Community Survey 5-Year average and 2010 Census data. Accessed June 2018.

City of Seattle. 2011. Environmentally Critical Areas, 6/7/2011. Accessed February 15, 2018.

City of Seattle. Created 2011, updated 2014. Seattle-designated Urban Centers and Villages. Accessed June 2018.

City of Seattle. 2014. Public Parks. Derived from web services provided by the City of Seattle. Accessed February 2, 2018.

City of Seattle. 2017. Existing Bicycle Facilities. Accessed February 19, 2018.

City of Seattle. 2017. Planning Bicycle Facilities. Accessed February 19, 2018.

City of Seattle. 2017. Sidewalk Verifications. Accessed March 26, 2018.

City of Seattle. 2018. Development Capacity Data. Accessed August 14, 2018.

City of Seattle. 2018. Rent-restricted or Subsidized Rental Units Rent- and Income-restricted or Subsidized Housing Units. Accessed April 4, 2018.

King County. 2017. Activity Nodes, Points of Interest, Food Banks, Gathering Spaces and Educational Institutions. Accessed May 14, 2018.

King County. 2018. Public Parks within King County. Derived from web services provided by King County: http://www5.kingcounty.gov/gisdataportal/. Accessed March 28, 2018.

King County. 2018. Location of Trails in King County. Derived from web services provided by King County: http://www5.kingcounty.gov/gisdataportal/. Accessed February 15, 2018.

King County. 2018. King County Parcel Data. Accessed February 7, 2018.

King County. 2018. King County Assessor Data. Accessed April 26, 2018.

Puget Sound Regional Council. 2009. Forecasted 2040 Total Population. Accessed February 21, 2018.

Puget Sound Regional Council. 2009. Forecasted 2040 Employment. Accessed February 21, 2018.

US Environmental Protection Agency. 2015. Lower Duwamish Waterway Superfund Site. Accessed February 19, 2018.

Washington State Department of Archaeology and Historic Preservation. 2017. NHRP Register Properties and Districts. Last updated May 8, 2017. Derived from web services provided by Department of Archaeology and Historic Preservation register properties: http://www.dahp.wa.gov. Accessed January 30, 2018.

7.2 Written Resources

City of Seattle. 2017. City of Seattle Comprehensive Plan: Toward a Sustainable Seattle 2015–2035. Adopted 2016, Amended August 2017.

City of Seattle Office of Planning and Community Development. 2016. North Delridge Action Plan Public Review Draft. (Internet website: https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/DelridgeActionPlan/DelridgeActionPlan.pdf) accessed September 6, 2018.

City of Seattle Office of Planning and Community Development and Seattle Department of Transportation. 2016. Ballard Urban Design and Transportation Framework. (Internet website: http://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/BallardUrbanDesign/BallardUDTFJuly2016_reduced.pdf) accessed September 6, 2018.

City of Seattle Office of Planning and Community Development. 2013. Interbay Land Use Study Preliminary Recommendations. (Internet website: http://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/EnvisioningInterbay/InterbayLandUseStudyPreliminaryRecommendations.pdf) accessed September 6, 2018.

Puget Sound Regional Council. 2009. VISION 2040, The Growth Management, Environmental, Economic, and Transportation Strategy for the Central Puget Sound Region. Adopted by the PSRC General Assembly April 24, 2008. Amended by the PSRC Executive Board May 28, 2009.

Seattle Department of Transportation. 2016. Transit Master Plan: MOVE SEATTLE 10-Year Strategic Vision for Transportation. (Internet website: https://www.seattle.gov/transportation/document-library/citywide-plans/move-seattle) accessed September 6, 2018. Adopted February 2016.

Seattle Department of Transportation. Move Ballard. 2016. (Internet website: https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/Move_Ballard_2016.pdf) accessed September 6, 2018.

Seattle Department of Transportation. 2017. Seattle Bicycle Master Plan: 2017-2021 Implementation Plan. (Internet website: https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/BicycleMasterPlan/BMP_Imp_Plan_2017_vr32.pdf) accessed September 6, 2018. Adopted April 2017.

Seattle Department of Transportation. 2017. Pedestrian Master Plan. https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/SeattlePedestrianMasterPlan.pdf. Adopted October 2017.

Sound Transit. 2014. *Sound Transit Regional Transit Long-Range Plan*. Adopted December 18, 2014. Adopted by the Sound Transit Board December 18, 2014 through Resolution No. R2014-31.

Sound Transit. 2016. *Sound Transit 3, The Regional Transit System Plan for Central Puget Sound*. Adopted by the Sound Transit Board June 23, 2016.

Sound Transit. 2018a. *Alternatives Evaluation Framework and Methodology Technical Memorandum*. West Seattle and Ballard Link Extensions Project. March 2018.

Sound Transit. 2018b. *Early Scoping Summary Report*. West Seattle and Ballard Link Extensions Project. April 2018.

Sound Transit. 2018. *Level 1 Alternatives Development and Screening Technical Memorandum*. West Seattle and Ballard Link Extensions Project. July 2018.

Sound Transit. 2018. *Level 2 Alternatives Development and Screening Technical Memorandum*. West Seattle and Ballard Link Extensions Project. October 2018.

APPENDIX A

Level 3 Alternative Maps

Figure A-1 Level 3 Alternatives

Figure A-2 ST3 Representative Project

Figure A-3 West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated

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

APPENDIX B

Level 3 Screening Evaluation
Criteria, Measures, Methods and Thresholds

Level 3 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.			
Reliable Service	At-grade crossings	Number of at-grade signalized intersections traversed	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
	Potential service interruptions and recoverability	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	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
Travel Times	LRT travel times	Estimated travel times from Ballard and Alaska Junction to Downtown Seattle based on alignment characteristics (minutes)	Higher = Travel times approximately 15% faster than average of all alternatives Medium = Travel times close to average of all alternatives Lower = Travel times approximately 15% slower than average of all alternatives
	Transit travel time savings	Change in transit travel times during peak compared to No Build Alternative based on select trip pairs	Higher = Evening PM peak travel time savings more than 10 minutes compared to No Build Alternative Medium = Evening PM peak travel time savings between 0 and 10 minutes compared to No Build Alternative Lower = No evening PM peak travel time savings compared to No Build Alternative
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.			
Regional Connectivity	LRT network integration	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)	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
Transit Capacity	Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Higher = Includes new light rail tunnel through downtown with additional improvements Medium = Includes new light rail tunnel through downtown consistent with ST3 Plan Lower = Does not include new light rail tunnel through downtown consistent with ST3 Plan
Projected Transit Demand	Ridership forecasts	Future forecasted 2042 average weekday trips for West Seattle and Ballard extensions	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
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.			
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	Higher = Stations located in regional growth centers Medium = Stations located within reasonable walking distance of regional growth centers Lower = Regional growth centers not served
	Population and job densities	Future PSRC-forecasted 2040 population and job densities within 10-minute walkshed of stations	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
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Ability to accommodate expansion potential of future LRT extensions identified in Sound Transit Regional Transit Long-Range Plan	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

Level 3 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
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.			
ST3 Consistency	Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	Higher = Mode, route and general station locations consistent with ST3 Plan Medium = Mode, route and general station locations moderately consistent with ST3 Plan Lower = Mode, route and general station locations not consistent with ST3 Plan
	Potential ST3 implementation schedule effects	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.)	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
	Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	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
Technical Feasibility	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, 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
	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, horizonal 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
Financial Sustainability	Conceptual capital cost comparison	ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and Sound Transit unit pricing (2018$)	Higher = Conceptual capital cost estimates less than ST3 Representative Project Medium = Conceptual capital cost estimates 0% to 10% more than ST3 Representative Project Lower = Conceptual capital cost estimates 10% or more than ST3 Representative Project
	Operations and maintenance (O&M) costs	Annual O&M costs based on operating and maintenance characteristics and Sound Transit unit pricing (2018$)	Higher = Annual O&M costs at least 5% more than average of all alternatives Medium = Annual O&M costs within 5% of average of all alternatives Lower = Annual O&M costs at least 5% less than average of all alternatives

Level 3 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.			
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities (activity nodes served, as described below under Station Area Land Use Plan Consistency) for low-income and minority populations within station areas; includes assessment of how project would improve access for low-income and minority populations along the system to these nodes, as well as to major regional employment and educational destinations	Higher = Would improve access to activity nodes for areas with minority and low-income populations higher than city average Medium = Would not affect access to activity nodes for areas with minority and low-income populations higher than city average Lower = Would worsen access to activity nodes for areas with minority and low-income populations higher than city average
		Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations	Higher = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is more than 40% Medium = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is 20% to 40% Lower = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is less than 20%
	Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	Higher = Low-income population within analysis area is more than 6% higher than city average Medium = Low-income population within analysis area is within 6% (+/-) of city average Lower = Low-income population within analysis area is more than 6% below city average
	Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	Higher = Minority population within analysis area is more than 6% higher than city average Medium = Minority population within analysis area is within 6% (+/-) of city average Lower = Minority population within analysis area is more than 6% below city average
	Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	Higher = Youth population within analysis area is more than 6% higher than city average Medium = Youth population within analysis area is within 6% (+/-) of city average Lower = Youth population within analysis area is more than 6% below city average
	Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	Higher = Elderly population within analysis area is more than 6% higher than city average Medium = Elderly population within analysis area is within 6% (+/-) of city average Lower = Elderly population within analysis area is more than 6% below city average
	Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (predominant languages spoken by LEP populations will be noted)	Higher = LEP population within analysis area is more than 6% higher than city average Medium = LEP population within analysis area is within 6% (+/-) of city average Lower = LEP population within analysis area is more than 6% below city average
	Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	Higher = Disabled population within analysis area is more than 6% higher than city average Medium = Disabled population within analysis area is within 6% (+/-) of city average Lower = Disabled population within analysis area is more than 6% below city average
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	Proximity to Seattle-designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	Higher = More than 50% of station walkshed within Urban Centers and Villages Medium = Between 30% and 50% of station walkshed within Urban Centers and Villages Lower = Less than 30% of station walkshed within Urban Centers and Villages
	Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	Higher = Station locations have greater consistency with local land use plans Medium = Station locations have moderate consistency with local land use plans Lower = Station locations have less consistency with local land use plans
	Activity nodes served	Number of activity nodes (e.g., points of interest, gathering spaces, food banks, educational institutions, parks and recreational resources) within 10-minute walkshed of stations	Higher = More than 275 activity nodes within 10-minute walkshed of stations Medium = Between 250 and 275 activity nodes within 10-minute walkshed of stations Lower = Fewer than 250 activity nodes within 10-minute walkshed of stations

Level 3 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Modal Integration	Passenger transfers	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	Higher = More convenient passenger transfers at stations Medium = Adequate passenger transfers at stations Lower = Less convenient passenger transfers at stations
	Bus/rail and rail/rail integration	Assessment of transportation facility integration between the station and adjacent transit stops that serve other modes	Higher = Above average transportation facility integration at stations Medium = Adequate transportation facility integration at stations Lower = Below average transportation facility integration at stations
	Bicycle infrastructure and accessibility	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	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
	Pedestrian and persons with limited mobility accessibility	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	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
Station Area Development Opportunities	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
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	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 = Less than 20 historic properties potentially affected Medium = Between 20 and 40 historic properties potentially affected Lower = More than 40 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	Higher = Less than 1 acre of potential permanent impacts to parks Medium = Between 1 and 4 acres of potential permanent impacts to parks Lower = More than 4 acres of potential permanent impacts to parks
	Water resources	Estimated acres of potential permanent in-water impacts	Higher = Less than 0.1 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 Lower = More than 0.5 acre of potential permanent in-water impacts in one or more water bodies

Level 3 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Environmental Effects (continued)	Fish and wildlife habitats	Estimated acres of potential permanent impacts to fish and wildlife habitats using city of Seattle environmentally critical areas	Higher = Less than 5 acres of potential permanent fish and wildlife habitat impacts Medium = Between 5 and 10 acres of potential permanent fish and wildlife habitat impacts Lower = More than 10 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	Higher = Less than 25 hazardous materials sites potentially affected Medium = Between 25 and 50 hazardous sites potentially affected Lower = More than 50 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	Higher = Less than 1 mile adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high, and low potential to affect SEPA Scenic Routes Medium = Between 1 and 2 miles adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high, and/or moderate potential to affect SEPA Scenic Routes Lower = More than 2 miles potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high, and/or high potential to affect SEPA Scenic Routes
	Noise and vibration	Assessment of the number of potentially affected noise and vibration sensitive receivers, including residences, libraries, performance halls, schools, churches, and selected parks within 350 feet of alignment; presence of known noise and vibration sensitive facilities will be noted	Higher = Less than 700 noise and vibration sensitive receivers potentially affected Medium = Between 700 and 900 noise and vibration sensitive receivers potentially affected Lower = More than 900 noise and vibration sensitive receivers potentially affected
	Property acquisitions and displacements	Number of properties potentially affected; does not include potential permanent or temporary easements or area for construction staging, traction power substations (TPSS) or underground station entrances (except station entrances in downtown)	Higher = Less than approximately 30% of range of values of all alternatives Medium = Between approximately 30% and 70% of range of values of all alternatives Lower = More than approximately 70% of range of values of all alternatives
		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)	Higher = Less than approximately 30% of range of values of all alternatives Medium = Between approximately 30% and 70% of range of values of all alternatives Lower = More than approximately 70% of range of values of all alternatives
		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)	Higher = Less than approximately 30% of range of values of all alternatives Medium = Between approximately 30% and 70% of range of values of all alternatives Lower = More than approximately 70% of range of values of all alternatives
	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

Level 3 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Traffic Operations	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
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, with revisions incorporated from feedback received during the Level 1 evaluation.
2. Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
3. Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
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.

APPENDIX C

Level 3 Alternative Evaluation Summary

Level 3 Alternatives Evaluation Summary

Purpose and Need / Evaluation Measures	Level 3 Alternatives							
	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.								
At-grade crossings	3	1	1	1	1	1	1	1
Potential service interruptions and recoverability	Lower	Medium	Medium	Medium	Medium	Medium	Lower	Medium
LRT travel times on West Seattle / Ballard extensions (minutes)	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14
Transit travel time savings (minutes)	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20	12 to 20
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.								
LRT network integration	Lower	Medium	Medium	Higher	Higher	Higher	Medium	Higher
Passenger carrying capacity in downtown	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Average weekday trips on West Seattle / Ballard extensions (year 2042)	35,000 to 40,000 / 123,000 to 163,000	35,000 to 39,000 / 120,000 to 158,000	35,000 to 39,000 / 120,000 to 158,000	35,000 to 40,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000	36,000 to 41,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000
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.								
PSRC-designated growth centers served	5	5	5	5	5	5	5	5
Population / job densities served (persons per acre, year 2040)	38 / 39	39 / 39	39 / 39	37 / 39	37 / 39	37 / 38	37 / 39	37 / 39
Accommodates future LRT extension beyond ST3	Lower	Medium	Medium	Higher	Higher	Medium	Higher	Higher
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.								
Mode, route and general station locations per ST3	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher
Potential ST3 implementation schedule effects	Higher	Higher	Medium	Lower	Lower	Lower	Lower	Lower
Potential ST3 operating plan effects	Lower	Higher	Higher	Higher	Higher	Higher	Medium	Higher
Engineering constraints	Lower	Medium	Medium	Lower	Lower	Lower	Lower	Lower
Constructability issues	Lower	Medium	Medium	Lower	Lower	Lower	Lower	Lower
Operational constraints	Lower	Medium	Lower	Higher	Higher	Higher	Lower	Higher
Conceptual capital cost comparison (2018$ in millions)	--	$400 million increase	$500 million increase	$1,900 million increase	$1,900 million increase	$1,900 million increase	$2,100 million increase	$1,900 million increase
Annual O&M costs on West Seattle / Ballard extensions (2018$ in millions)	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

The Level 3 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 3 Alternatives Evaluation Summary

Purpose and Need / Evaluation Measures	Level 3 Alternatives							
	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.								
Opportunities for low-income and minority populations (activity nodes/subsidized rental units)	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	23%	22%	22%	23%	23%	23%	23%	23%
Low-income population	32% / 31%	32% / 32%	32% / 32%	32% / 31%	32% / 31%	32% / 31%	32% / 31%	32% / 31%
Minority population	34% / 34%	34% / 35%	34% / 35%	34% / 35%	34% / 35%	34% / 35%	34% / 35%	34% / 34%
Youth population (under 18)	7% / 10%	7% / 9%	7% / 9%	7% / 9%	7% / 9%	7% / 10%	7% / 9%	7% / 10%
Elderly population (65 and over)	14% / 11%	14% / 12%	14% / 12%	14% / 12%	14% / 12%	14% / 12%	14% / 12%	14% / 11%
Limited English Proficiency (LEP) population	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 8%	7% / 7%
Disabled population	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%	12% / 11%
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	58%	56%	56%	57%	56%	55%	57%	58%
Station locations consistent with current local land use plans	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher
Activity nodes served	302	298	298	300	301	302	300	303
Passenger transfers	Higher	Higher	Medium	Higher	Higher	Higher	Medium	Higher
Bus/rail and rail/rail integration	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bicycle infrastructure and accessibility	19%	19%	19%	18%	18%	18%	18%	19%
Pedestrian and persons with limited mobility accessibility	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher
Development potential	14%	14%	14%	14%	13%	13%	14%	14%
Equitable development opportunities	Lower	Medium	Medium	Higher	Higher	Higher	Higher	Higher

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

The Level 3 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 3 Alternatives Evaluation Summary

Purpose and Need / Evaluation Measures	Level 3 Alternatives							
	ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel				
	Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard	42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
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	40	20	20	40	40	40	40	40
Potential archaeological resources	Lower	Lower	Lower	Lower	Lower	Lower	Lower	Lower
Parks and recreational resources (acres)	1.4	5.3	5.3	5.7	5.7	5.7	5.7	5.7
Water resources (acres)	0.9	0.6	0.6	<0.1	<0.1	<0.1	<0.1	<0.1
Fish and wildlife habitats (acres)	15	6	6	15	15	15	15	15
Hazardous materials sites	50	60	60	40	40	40	40	40
Visual effects (miles of sensitive viewers)	2.5	1.7	1.7	1.2	1.2	1.2	1.2	1.2
Noise and vibration effects	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Properties potentially affected	Medium	Lower	Lower	Higher	Higher	Higher	Higher	Higher
Potential residential unit displacements	Medium	Lower	Lower	Higher	Higher	Higher	Higher	Higher
Potential business displacements	Higher	Lower	Lower	Higher	Higher	Higher	Higher	Higher
Community construction impacts	Lower	Lower	Medium	Medium	Medium	Medium	Lower	Medium
Burden on minority and low-income populations	Lower	Medium	Medium	Lower	Lower	Lower	Lower	Lower
Traffic circulation and access effects	Lower	Medium	Medium	Higher	Higher	Higher	Higher	Higher
Effects on transportation facilities	Lower	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Effects on freight movement	Lower	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Business and commerce effects	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium

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

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

The Level 3 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

APPENDIX D

Level 3 Alternative Evaluation Matrices

Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	At-grade crossings	3 • WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have at-grade crossings at S Royal Brougham Way, S Holgate Street and S Lander Street in SODO	1 • WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have an at-grade crossing at S Royal Brougham Way • Proposed new 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	1 • WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have an at-grade crossing at S Royal Brougham Way • Proposed new 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	1 • WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have an at-grade crossing at S Royal Brougham Way • Proposed new 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
Reliable Service	Potential service interruptions and recoverability	Lower • Movable bridge over Salmon Bay would result in periodic LRT service interruptions • Restrictions to limit bridge openings during peak travel hours could be implemented, but the bridge could still be opened for certain large ships; it is unclear when and how often this could occur and recoverability of LRT operations after peak period bridge openings could be challenging • Fully dedicated guideway with no at-grade crossings would minimize service interruptions elsewhere along WSBLE Project corridor • No connection between West Seattle and Ballard lines in SODO limits operational flexibility and recoverability • Shorter downtown tunnel results in greater flexibility for crossover locations	Medium • Fixed bridge over Salmon Bay would maintain system reliability compared to a movable bridge • Fully dedicated guideway with no at-grade crossings would minimize service interruptions • Accommodates connection between West Seattle and Ballard lines in SODO • Pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability • Longer downtown tunnel limits flexibility for crossovers	Medium • Fixed bridge over Salmon Bay would maintain system reliability compared to a movable bridge • Fully dedicated guideway with no at-grade crossings would minimize service interruptions • Accommodates connection between West Seattle and Ballard lines in SODO • Pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability • Longer downtown tunnel limits flexibility for crossovers	Medium • Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge • Fully dedicated guideway with no at-grade crossings would minimize service interruptions • Accommodates connection between West Seattle and Ballard lines in SODO • Shared pocket track between West Seattle and Ballard lines in SODO accommodates operational flexibility and recoverability • Longer downtown tunnel limits flexibility for crossovers
Travel Times	LRT travel times on West Seattle / Ballard extensions (minutes)	6 to 7 / 13 to 14 • Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes	6 to 7 / 13 to 14 • Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes	6 to 7 / 13 to 14 • Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes	6 to 7 / 13 to 14 • Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes
Travel Times	Transit travel time savings (minutes)	12 to 20 • PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line	12 to 20 • PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line	12 to 20 • PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line	12 to 20 • PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	At-grade crossings	1	1	1	1
		• WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have an at-grade crossing at S Royal Brougham Way • Proposed new 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	• WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have an at-grade crossing at S Royal Brougham Way • Proposed new 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	• WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have an at-grade crossing at S Royal Brougham Way • Proposed new 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	• WSBLE Project would have no at-grade crossings; however, the existing Link light rail line would continue to have an at-grade crossing at S Royal Brougham Way • Proposed new 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
	Potential service interruptions and recoverability	Medium	Medium	Lower	Medium
		• Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge • Fully dedicated guideway with no at-grade crossings would minimize service interruptions • Accommodates connection between West Seattle and Ballard lines in SODO • Shared pocket track between West Seattle and Ballard lines in SODO accommodates operational flexibility and recoverability • Longer downtown tunnel limits flexibility for crossovers	• Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge • Fully dedicated guideway with no at-grade crossings would minimize service interruptions • Accommodates connection between West Seattle and Ballard lines in SODO • Shared pocket track between West Seattle and Ballard lines in SODO accommodates operational flexibility and recoverability • Longer downtown tunnel limits flexibility for crossovers	• Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge • Fully dedicated guideway with no at-grade crossings would minimize service interruptions • Accommodates connection between West Seattle and Ballard lines in SODO • Alignment associated with deeper 4th Avenue Mined International District/Chinatown Station does not accommodate a pocket track on the Ballard line in SODO, which reduces operational flexibility and recoverability • Longer downtown tunnel limits flexibility for crossovers	• Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge • Fully dedicated guideway with no at-grade crossings would minimize service interruptions • Accommodates connection between West Seattle and Ballard lines in SODO • Shared pocket track between West Seattle and Ballard lines in SODO accommodates operational flexibility and recoverability • Longer downtown tunnel limits flexibility for crossovers
Travel Times	LRT travel times on West Seattle / Ballard extensions (minutes)	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14	6 to 7 / 13 to 14
		• Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes	• Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes	• Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes	• Travel time results are similar to other alternatives • Travel time from Alaska Junction Station to SODO Station is 6 to 7 minutes • Travel time from Ballard Station to International District/Chinatown Station is 13 to 14 minutes
	Transit travel time savings (minutes)	12 to 20	12 to 20	12 to 20	12 to 20
		• PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line	• PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line	• PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line	• PM peak hour travel time from Westlake Station to Alaska Junction Station is 12 to 13 minutes less than existing bus travel time on C Line • PM peak hour travel time from Westlake Station to Ballard Station is 18 to 20 minutes less than existing bus travel time on D Line

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Lower • 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) • Limited operational flexibility on overall Link system due to lack of connection between West Seattle and Ballard lines	Medium • 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) • Accommodates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel	Medium • 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) • Accommodates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel	Higher • 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) • Accommodates connections between West Seattle and Ballard lines in SODO, with train movements in all directions possible
Transit Capacity	Passenger carrying capacity in downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown
Projected Transit Demand	Average weekday trips on West Seattle / Ballard extensions (year 2042)	35,000 to 40,000 / 123,000 to 163,000 • 35,000 to 40,000 average weekday trips on the West Seattle extension • 123,000 to 163,000 average weekday trips on the Ballard extension, including the new downtown tunnel	35,000 to 39,000 / 120,000 to 158,000 • 35,000 to 39,000 average weekday trips on the West Seattle extension • 120,000 to 158,000 average weekday trips on the Ballard extension, including the new downtown tunnel	35,000 to 39,000 / 120,000 to 158,000 • 35,000 to 39,000 average weekday trips on the West Seattle extension • 120,000 to 158,000 average weekday trips on the Ballard extension, including the new downtown tunnel	35,000 to 40,000 / 125,000 to 165,000 • 35,000 to 40,000 average weekday trips on the West Seattle extension • 125,000 to 165,000 average weekday trips on the Ballard extension, including the new downtown tunnel • Slightly more trips on the Ballard extension due to better pedestrian access and transit connections at South Lake Union Station
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.					
Regional Centers Served	PSRC-designated growth centers served	5 • 3 out of 3 regional growth centers served (Seattle Central Business District [CBD], South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)	5 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)	5 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)	5 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)
	Population / job densities served (persons per acre, year 2040)	38 / 39 • Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (38 persons per acre) within 10-minute walkshed of stations similar to average of all alternatives • Forecasted employment density (39 jobs per acre) within 10-minute walkshed of stations similar to average of all alternatives	39 / 39 • Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (39 persons per acre) within 10-minute walkshed of stations 4% above average of all alternatives due to serving slightly larger area of high population density in downtown Seattle and South Lake Union • Forecasted employment density (39 jobs per acre) within 10-minute walkshed of stations similar to average of all alternatives	39 / 39 • Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (39 persons per acre) within 10-minute walkshed of stations 4% above average of all alternatives due to serving slightly larger area of high population density in downtown Seattle and South Lake Union • Forecasted employment density (39 jobs per acre) within 10-minute walkshed of stations similar to average of all alternatives	37 / 39 • Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (37 persons per acre) within 10-minute walkshed of stations 1% below average of all alternatives • Forecasted employment density (39 jobs per acre) within 10-minute walkshed of stations similar to average of all alternatives

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Higher	Higher	Medium	Higher
		• 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) • Accommodates connections between West Seattle and Ballard lines in SODO, with train movements in all directions possible	• 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) • Accommodates connections between West Seattle and Ballard lines in SODO, with train movements in all directions possible	• 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) • Accommodates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel	• 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) • Accommodates connections between West Seattle and Ballard lines in SODO, with train movements in all directions possible
Transit Capacity	Passenger carrying capacity in downtown	Medium	Medium	Medium	Medium
		• Includes new light rail tunnel through downtown	• Includes new light rail tunnel through downtown	• Includes new light rail tunnel through downtown	• Includes new light rail tunnel through downtown
Projected Transit Demand	Average weekday trips on West Seattle / Ballard extensions (year 2042)	35,000 to 40,000 / 125,000 to 165,000	36,000 to 41,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000	35,000 to 40,000 / 125,000 to 165,000
		• 35,000 to 40,000 average weekday trips on the West Seattle extension • 125,000 to 165,000 average weekday trips on the Ballard extension, including the new downtown tunnel • Slightly more trips on the Ballard extension due to better pedestrian access and transit connections at South Lake Union Station	• 36,000 to 41,000 average weekday trips on the West Seattle extension • 125,000 to 165,000 average weekday trips on the Ballard extension, including the new downtown tunnel • Slightly more trips on the Ballard extension due to better pedestrian access and transit connections at South Lake Union Station	• 35,000 to 40,000 average weekday trips on the West Seattle extension • 125,000 to 165,000 average weekday trips on the Ballard extension, including the new downtown tunnel • Slightly more trips on the Ballard extension due to better pedestrian access and transit connections at South Lake Union Station	• 35,000 to 40,000 average weekday trips on the West Seattle extension • 125,000 to 165,000 average weekday trips on the Ballard extension, including the new downtown tunnel • Slightly more trips on the Ballard extension due to better pedestrian access and transit connections at South Lake Union Station
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.					
Regional Centers Served	PSRC-designated growth centers served	5	5	5	5
		• 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)	• 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)	• 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)	• 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne) • 2 out of 2 manufacturing/industrial centers served (Duwamish and Ballard-Interbay)
	Population / job densities served (persons per acre, year 2040)	37 / 39	37 / 38	37 / 39	37 / 39
		• Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (37 persons per acre) within 10-minute walkshed of stations 1.8% below average of all alternatives, slightly lower than 41st Avenue Alaska Junction Station • Forecasted employment density (39 jobs per acre) within 10-minute walkshed of stations 0.9% below average of all alternatives	• Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (37 persons per acre) within 10-minute walkshed of stations 2.8% below average of all alternatives, slightly lower than 41st Avenue Alaska Junction Station • Forecasted employment density (38 jobs per acre) within 10-minute walkshed of stations 2.1% below average of all alternatives	• Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (37 persons per acre) within 10-minute walkshed of stations 1% below average of all alternatives • Forecasted employment density (39 jobs per acre) within 10-minute walkshed of stations similar to average of all alternatives	• Areas of highest existing population density include downtown Seattle and the terminus station areas in West Seattle and Ballard; greatest employment densities are found in downtown Seattle • Forecasted population density (37 persons per acre) within 10-minute walkshed of stations 1% below average of all alternatives • Forecasted employment density (39 jobs per acre) within 10-minute walkshed of stations similar to average of all alternatives

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Lower • Elevated Alaska Junction Station oriented east-west on SW Alaska Street would be a less direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan • Elevated Ballard Station oriented north-south along 15th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	Medium • Elevated Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan than the ST3 Representative Project • Elevated Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	Medium • Elevated Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan than the ST3 Representative Project • Elevated Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	Higher • Tunnel Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan than the ST3 Representative Project • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives
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.					
ST3 Consistency	Mode, route and general station locations per ST3	Higher • Mode, route and general station locations consistent with ST3 Plan	Higher • Mode, route and general station locations consistent with ST3 Plan	Higher • Mode, route and general station locations consistent with ST3 Plan	Higher • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	Higher • Implementation schedule anticipated to be similar to ST3 Plan	Higher • Implementation schedule anticipated to be similar to ST3 Plan	Medium • Very deep mined International District/Chinatown Station could lengthen implementation schedule of Ballard extension	Lower • Inclusion of tunnel in West Seattle could lengthen implementation schedule of West Seattle extension • 4th Avenue viaduct rebuild in Chinatown/International District could lengthen implementation schedule of Ballard extension • Inclusion of tunnel under Salmon Bay is not anticipated to lengthen implementation schedule because the Ballard extension would be implemented 5 years later than the West Seattle extension and already includes the downtown tunnel

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Higher • Tunnel Alaska Junction Station oriented north-south on 42nd Avenue SW would accommodate a more direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan than the ST3 Representative Project • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	Medium • Tunnel Alaska Junction Station oriented north-south on 44th Avenue SW would accommodate a more direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan than the ST3 Representative Project, but less direct than 41st or 42nd avenues SW • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	Higher • Tunnel Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan than the ST3 Representative Project • Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	Higher • Tunnel Alaska Junction Station oriented north-south on 41st Avenue SW would accommodate a more direct route for a future LRT extension to the south per Sound Transit's Long-Range Plan than the ST3 Representative Project • Tunnel Ballard Station oriented north-south along 15th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives
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.					
ST3 Consistency	Mode, route and general station locations per ST3	Higher • Mode, route and general station locations consistent with ST3 Plan	Higher • Mode, route and general station locations consistent with ST3 Plan	Higher • Mode, route and general station locations consistent with ST3 Plan	Higher • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	Lower • Inclusion of tunnel in West Seattle could lengthen implementation schedule of West Seattle extension • 4th Avenue viaduct rebuild in Chinatown/International District could lengthen implementation schedule of Ballard extension • Inclusion of tunnel under Salmon Bay is not anticipated to lengthen implementation schedule because the Ballard extension would be implemented 5 years later than the West Seattle extension and already includes the downtown tunnel	Lower • Inclusion of tunnel in West Seattle could lengthen implementation schedule of West Seattle extension • 4th Avenue viaduct rebuild in Chinatown/International District could lengthen implementation schedule of Ballard extension • Inclusion of tunnel under Salmon Bay is not anticipated to lengthen implementation schedule because the Ballard extension would be implemented 5 years later than the West Seattle extension and already includes the downtown tunnel	Lower • Inclusion of tunnel in West Seattle could lengthen implementation schedule of West Seattle extension • Partial 4th Avenue viaduct rebuild in Chinatown/International District and very deep mined International District/Chinatown Station could lengthen implementation schedule of Ballard extension • Inclusion of tunnel under Salmon Bay is not anticipated to lengthen implementation schedule because the Ballard extension would be implemented 5 years later than the West Seattle extension and already includes the downtown tunnel	Lower • Inclusion of tunnel in West Seattle could lengthen implementation schedule of West Seattle extension • 4th Avenue viaduct rebuild in Chinatown/International District could lengthen implementation schedule of Ballard extension • Inclusion of tunnel under Salmon Bay is not anticipated to lengthen implementation schedule because the Ballard extension would be implemented 5 years later than the West Seattle extension and already includes the downtown tunnel

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
ST3 Consistency (continued)	Potential ST3 operating plan effects	Lower	Higher	Higher	Higher
		• Does not facilitate track interconnections in SODO and Chinatown/International District needed for reliable system operations • Movable bridge over Salmon Bay would degrade system operations due to system reliability effects compared to other alternatives, but is consistent with ST3 Plan	• Facilitates all pocket tracks and crossovers needed to provide reliable system operations • Fixed bridge over Salmon Bay would maintain system reliability compared to a movable bridge	• Facilitates all pocket tracks and crossovers needed to provide reliable system operations • Fixed bridge over Salmon Bay would maintain system reliability compared to a movable bridge	• Facilitates all pocket tracks and crossovers needed to provide reliable system operations • Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge
Technical Feasibility	Engineering constraints	Lower	Medium	Medium	Lower
		• Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at Pigeon Point in West Seattle • Duwamish Waterway crossing south of West Seattle Bridge would require column placements in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance --- • Alignment in SODO could require Washington State Department of Transportation (WSDOT)/East Link structure modifications • Engineering constraints with cut-and-cover tunnel from S Royal Brougham Way to S Main Street in Chinatown/International District --- • Complex tunnel design work due to tieback conflicts in downtown • Likely settlement control for tunneling under older sensitive buildings in downtown • Tunneling may affect major sewer tunnels in South Lake Union • Landslide hazard along steep hillside west of Queen Anne Hill may require walls with tiebacks --- • Straddle bents likely required to minimize roadway impacts along Elliott Avenue W and 15th Avenue W in Interbay, as well as NW Market Street in Ballard • Movable bridge would require column placements in Fishermen's Terminal at Salmon Bay and coordination with Port of Seattle • Complex movable bridge over Salmon Bay in a high seismic zone	• Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at Pigeon Point in West Seattle • Duwamish Waterway crossing south of West Seattle Bridge would require column placements in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance --- • Stacked International District/Chinatown Station potentially reduces cut-and-cover construction on 5th Avenue S from S Jackson Street to S Weller Street --- • Tunneling under buildings near Denny Station would likely require greater design and analysis than other alternatives --- • Potential relocation of existing King County Pump Station in Interbay • Potential reconstruction of portion of existing Magnolia Bridge between BNSF railroad and King County Pump Station in Interbay • Long section of at-grade guideway in poor soil conditions in Interbay creates engineering complexity • Potential need for ground improvements along guideway between Magnolia Bridge and W Dravus Street bridge in Interbay • Potential need for ground improvements along guideway between W Dravus Street and 15th Avenue W in Interbay • Fixed bridge would require column placements in Salmon Bay and coordination with maritime properties and vessel movements	• Bored tunnel and mined International District/Chinatown Station, with station access shaft off-street would likely minimize impacts to 5th Avenue S • Vertical profile beneath 5th Avenue S would result in deeper Midtown and International District/Chinatown stations • Engineering constraints for the 5th Avenue Mined International District/Chinatown Station elsewhere along the WSBLE Project corridor would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Duwamish Waterway crossing north of West Seattle Bridge likely avoids steep and unstable slope design at Pigeon Point in West Seattle • Duwamish Waterway crossing north of West Seattle Bridge would require column placement in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance; north crossing could have less in-water impacts than south crossing --- • Would require 4th Avenue S viaduct and retaining wall reconstruction S Washington Street to Seattle Boulevard S, construction on high volume arterial and in close proximity to BNSF active trackway • Three tunnels in close proximity of S Washington Street -- Ballard line bored tunnel, BNSF tunnel and Downtown Seattle Transit Tunnel (DSTT) -- would create engineering constraints --- • Tunneling under buildings in downtown would likely require measures to control ground settlements • North tunnel portal and adjacent trenches would likely be located in landslide prone topography on west side of Queen Anne Hill with potentially unstable hill slopes --- • Smith Cove Station and bus layover would likely require walls with tiebacks along landslide hazard area in Interbay • Potential ground improvements needed in the retained cut section along the west side of Interbay Golf Center, along guideway between W Dravus Street and 15th Avenue W in Interbay, and for tunnel boring under Nickerson Street bridge in Interbay

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
ST3 Consistency (continued)	Potential ST3 operating plan effects	Higher • Facilitates all pocket tracks and crossovers needed to provide reliable system operations • Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge	Higher • Facilitates all pocket tracks and crossovers needed to provide reliable system operations • Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge	Medium • 4th Avenue Mined International District/Chinatown Station does not facilitate all pocket tracks and crossovers needed to provide reliable system operations • Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge	Higher • Facilitates all pocket tracks and crossovers needed to provide reliable system operations • Tunnel under Salmon Bay would maintain system reliability compared to a movable bridge
Technical Feasibility	Engineering constraints	Lower • Engineering constraints for alternative with Alaska Junction Station at 42nd Avenue SW would be similar to alternative with station at 41st Avenue SW	Lower • Engineering constraints for alternative with Alaska Junction Station at 44th Avenue SW would be similar to alternative with station at 41st Avenue SW	Lower • Would require 4th Avenue S viaduct and retaining wall reconstruction S Jackson Street to Seattle Boulevard S to construct mined station cavern, likely requiring long-term closure of 4th Avenue S, a high volume arterial, and work in close proximity to BNSF active trackway • Vertical profile beneath 4th Avenue S would result in deeper Midtown and International District/Chinatown stations • Engineering constraints for the 4th Avenue Mined International District/Chinatown Station elsewhere along the WSBLE Project corridor would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	Lower • Tunnel Ballard Station at 15th Avenue NW would require a deeper tunnel under Salmon Bay than alternatives with a Ballard Station at 14th Avenue NW to avoid a large diameter planned Seattle Public Utilities (SPU) storage tunnel under Shilshole Avenue • Engineering constraints with 15th Avenue NW Ballard Station elsewhere along the WSBLE Project corridor would be similar to alternative with 14th Avenue Ballard Station

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Technical Feasibility (continued)		Lower	Medium	Medium	Lower
	Constructability issues	• Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization at Pigeon Point in West Seattle • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Harbor Marina Corporate Center (Terminal 102) and Terminal 104 • Duwamish Waterway crossing south of West Seattle Bridge would require coordination with BNSF Railroad • Duwamish Waterway crossing south of West Seattle Bridge would require in-water construction activities for piers in Duwamish Waterway and need to take into account vessel traffic in the navigation channel, fish windows and tribal treaty fishing --- • Alignment in SODO could require WSDOT/East Link structure modifications • Limited construction access between East Link ramps and S development • Bored tunnel portal in Chinatown/International District would likely result in constrained work area • Likely greatest extent of 5th Avenue S surface disruptions (length and width) in Chinatown/International District --- • Potential construction complexity, interferences and instabilities of abandoned UPRR tunnel in downtown • Mined stations in downtown would likely result in constructability challenges, including increased cost and schedule • Potential conflict with deep sewers in proximity to tunnel and station in South Lake Union may require re-routing of conflicting sewers and tunnel boring controls and monitoring • Potentially difficult construction on steep hillside along west side of Queen Anne Hill prone to sliding --- • Potential maintenance-of-traffic challenges during construction along Elliott Avenue W and 15th Avenue W/NW in Interbay and Ballard • Movable bridge would require in-water construction activities for multiple piers in Salmon Bay and take into account vessel traffic in the navigation channel, fish windows and tribal treaty fishing	• Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization at Pigeon Point in West Seattle • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Harbor Marina Corporate Center (Terminal 102) and Terminal 104 • Duwamish Waterway crossing south of West Seattle Bridge would require coordination with BNSF Railroad • Duwamish Waterway crossing south of West Seattle Bridge would require in-water construction activities for piers in Duwamish Waterway and need to take into account vessel traffic in the navigation channel, fish windows and tribal treaty fishing --- • Construction of S Lander Street and S Holgate Street overcrossings above active light rail tracks • Ground treatment would likely be required to construct tunnels and portals in poor soil conditions in SODO area and in close proximity to D-2 and I-90 ramp foundations crossing S Royal Brougham Way • Potentially reduces extent of 5th Avenue S surface disruptions (length and width) in Chinatown/International District compared to ST3 Representative Project --- • Mined stations in downtown would likely result in constructability challenges, including increased cost and schedule --- • At-grade guideway construction in Interbay potentially less challenging, but would need to address poor soil conditions • Coordination likely required with King County Wastewater for relocation of existing Pump Station in Interbay • Coordination likely required with BNSF Railroad in Interbay • Fixed bridge would require in-water construction activities for piers in Salmon Bay and take into account vessel traffic in the navigation channel, fish windows, and tribal treaty fishing	• Deeper bored tunnel and mined International District/Chinatown Station would likely avoid impacting 5th Avenue S wall pile foundation, but would result in greater complexity and constructability challenges • Access shaft for International District/Chinatown Station would require a large diameter complex structure in poor soil conditions • Constructability issues for 5th Avenue Mined International District/Chinatown Station elsewhere along the WSBLE Project corridor would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Duwamish Waterway crossing north of West Seattle Bridge likely avoids challenges of construction in Pigeon Point area in West Seattle • Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Terminal 18 on Harbor Island and near access road and tracks leading to Terminal 5 • Duwamish Waterway crossing north of West Seattle Bridge would require coordination with BNSF Railroad • Duwamish Waterway crossing north of West Seattle Bridge would require in-water construction activities for piers in Duwamish Waterway and need to take into account vessel traffic in the navigation channel, fish windows and tribal treaty fishing --- • Construction of S Lander Street and S Holgate Street overcrossings above active light rail tracks • South tunnel portal in SODO would likely require WSDOT I-90 structure modifications • Potential constructability issues related to cut-and-cover tunnel below 4th Avenue S in Chinatown/International District, including reconstruction of 4th Avenue S viaduct and work in close proximity to BNSF mainline tracks • Requires closures of 4th Avenue S in Chinatown/International District, a high volume arterial; potential for sequenced construction to reduce closures and maintain traffic --- • Mined stations in downtown would likely result in constructability challenges, including increased cost and schedule • Likely complex construction along steep slope on west side of Queen Anne Hill --- • Coordination likely required with BNSF Railroad in Interbay • Construction under the Nickerson Street bridge in Interbay creates potential challenges for maintenance of traffic • Potential challenges identifying muck hauling routes for Salmon Bay tunnel construction and constructing cross passages under Salmon Bay

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

The Level 3 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Technical Feasibility (continued)	Constructability issues	Lower	Lower	Lower	Lower
		• Constructability issues for alternative with Alaska Junction Station at 42nd Avenue SW would be similar to alternative with station at 41st Avenue SW	• Constructability issues for alternative with Alaska Junction Station at 44th Avenue SW would be similar to alternative with station at 41st Avenue SW	• Constructability issues related to bored tunnel and mined station below 4th Avenue S in Chinatown/International District, including reconstruction of 4th Avenue S viaduct and work in close proximity to BNSF mainline tracks • Requires long-term closure of 4th Avenue S in Chinatown/International District, a high volume arterial, and long-term detours • Constructability issues for 4th Avenue Mined International District/Chinatown Station elsewhere along the WSBLE Project corridor would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	• Constructability issues for alternative with Ballard Station at 15th Avenue NW would be similar to alternative with station at 14th Avenue NW

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Technical Feasibility (continued)	Operational constraints	Lower	Medium	Lower	Higher
		• Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle • No connection between West Seattle and Ballard extension lines in SODO creates operational constraints • Likely provides crossover adjacent to International District/Chinatown Station, which improves operational flexibility • Movable bridge openings over Salmon Bay would result in periodic service interruptions, which would impact systemwide operations	• Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle • Reduced flexibility for crossover at International District/Chinatown Station results in crossovers closer to Midtown Station and south of Denny Station, which reduces operational flexibility • Fixed bridge over Salmon Bay would not require openings for vessel traffic associated with a movable bridge	• Likely steeper track grades with 5th Avenue Mined International District/Chinatown Station limit train acceleration and flexibility for crossovers compared to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station • Operational constraints for 5th Avenue Mined International District/Chinatown Station elsewhere along the WSBLE Project corridor would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Less steep track grades for tunnel in West Seattle improves 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 would likely result in higher speeds • Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge
Financial Sustainability	Conceptual capital cost comparison (2018$ in millions)	--	$400 million increase	$500 million increase	$1,900 million increase
		• Baseline for capital cost comparison to other alternatives	• Approximately $400 million more than the ST3 Representative Project • Lower cost in SODO due to at-grade guideway and station • Lower cost in Chinatown/International District due to reduced cut-and-cover construction • Additional cost in downtown for mined crossover and South Lake Union tunnel station outside of public right-of-way • Additional cost for elevated guideway outside of public right-of-way compared to ST3 Representative Project	• Approximately $500 million more than the ST3 Representative Project • Lower cost in SODO due to at-grade guideway and station • Cost for 5th Avenue Mined International District/Chinatown Station higher than 5th Avenue Cut-and-Cover International District/Chinatown Station, but similar to ST3 Representative Project • Additional cost in downtown for mined crossover and South Lake Union tunnel station outside of public right-of-way • Additional cost for elevated guideway outside of public right-of-way compared to ST3 Representative Project	• Approximately $1,900 million more than the ST3 Representative Project • Higher cost for additional tunnel construction and reconstruction of 4th Avenue S viaduct in Chinatown/International District compared to ST3 Representative Project • Cost of additional tunnels not included in ST3 financial plan or evaluation methodology
	Annual O&M costs on West Seattle / Ballard extensions (2018$ in millions)	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million	$20 to $25 million / $45 to $50 million
		• $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel • Movable bridge results in slightly higher O&M costs	• $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel	• $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel	• $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel • Additional tunnel stations result in slightly higher O&M costs

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives: West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel – 42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Technical Feasibility (continued)	Operational constraints	Higher • Operational constraints for alternative with Alaska Junction Station at 42nd Avenue SW would be similar to alternative with station at 41st Avenue SW	Higher • Operational constraints for alternative with Alaska Junction Station at 44th Avenue SW would be similar to alternative with station at 41st Avenue SW	Lower • Likely steeper track grades with 4th Avenue Mined International District/Chinatown Station limit train acceleration and flexibility for crossovers compared to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station • Alignment associated with 4th Avenue Mined International District/Chinatown Station does not accommodate a pocket track in SODO, which creates operational constraints • Operational constraints with 4th Avenue Mined International District/Chinatown Station elsewhere along the WSBLE Project corridor would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	Higher • Operational constraints for alternative with Ballard Station at 15th Avenue NW would be similar to alternative with station at 14th Avenue NW
Financial Sustainability	Conceptual capital cost comparison (2018$ in millions)	$1,900 million increase • Approximately $1,900 million more than the ST3 Representative Project • Higher cost for additional tunnel construction and reconstruction of 4th Avenue S viaduct in Chinatown/International District compared to ST3 Representative Project • Cost of additional tunnels not included in ST3 financial plan or evaluation methodology	$1,900 million increase • Approximately $1,900 million more than the ST3 Representative Project • Higher cost for additional tunnel construction and reconstruction of 4th Avenue S viaduct in Chinatown/International District compared to ST3 Representative Project • Cost of additional tunnels not included in ST3 financial plan or evaluation methodology	$2,100 million increase • Approximately $2,100 million more than the ST3 Representative Project • Higher cost for additional tunnel construction and reconstruction of 4th Avenue S viaduct in Chinatown/International District compared to ST3 Representative Project • Additional cost for 4th Avenue mined International District/Chinatown Station compared to 4th Avenue cut-and-cover International District/Chinatown Station • Cost of additional tunnels not included in ST3 financial plan or evaluation methodology	$1,900 million increase • Approximately $1,900 million more than the ST3 Representative Project • Higher cost for additional tunnel construction and reconstruction of 4th Avenue S viaduct in Chinatown/International District compared to ST3 Representative Project • Cost of additional tunnels not included in ST3 financial plan or evaluation methodology
	Annual O&M costs on West Seattle / Ballard extensions (2018$ in millions)	$20 to $25 million / $45 to $50 million • $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel • Additional tunnel stations result in slightly higher O&M costs	$20 to $25 million / $45 to $50 million • $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel • Additional tunnel stations result in slightly higher O&M costs	$20 to $25 million / $45 to $50 million • $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel • Additional tunnel stations result in slightly higher O&M costs	$20 to $25 million / $45 to $50 million • $20 to $25 million for the West Seattle extension • $45 to $50 million for the Ballard extension, including the new downtown tunnel • Additional tunnel stations result in slightly higher O&M costs

Key to Rating	Alternative Performance		
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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.					
Historically Underserved Populations	Opportunities for low-income and minority populations (activity nodes/subsidized rental units)	Medium • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 40 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 180 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 30 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 150 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 30 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 150 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 30 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 170 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
		23% • 23% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle	22% • 22% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle	22% • 22% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle	23% • 23% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle
	Low-income population	32% / 31% • City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 7 percent above city average • Average household income for walksheds is approximately $72,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)	32% / 32% • City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 7 percent above city average • Average household income for walksheds is approximately $71,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)	32% / 32% • City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 8 percent above city average • Average household income for walksheds is approximately $71,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)	32% / 31% • City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 8 percent above city average • Average household income for walksheds is approximately $73,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)
	Minority population	34% / 34% • City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)	34% / 35% • City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)	34% / 35% • City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is similar to the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)	34% / 35% • City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is similar to the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.					
Historically Underserved Populations	Opportunities for low-income and minority populations (activity nodes/subsidized rental units)	Medium	Medium	Medium	Medium
		• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 30 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 170 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 30 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 170 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 30 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 170 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90% / 45%) and average household income below 2 times the federal poverty level for a 2-person household; access for this population would improve to approximately 40 activity nodes in West Seattle and 40 activity nodes in Interbay/Ballard • Other stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 180 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
		23%	23%	23%	23%
		• 23% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle	• 23% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle	• 23% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle	• 23% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units; greatest concentrations in downtown Seattle
	Low-income population	32% / 31%	32% / 31%	32% / 31%	32% / 31%
		• City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 7 percent above city average • Average household income for walksheds is approximately $75,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)	• City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 7 percent above city average • Average household income for walksheds is approximately $76,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)	• City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 7 percent above city average • Average household income for walksheds is approximately $73,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)	• City average is 24% • Low-income population within 10-minute walkshed is 8 percent above city average • Low-income population within 15-minute rideshed is 7 percent above city average • Average household income for walksheds is approximately $72,000, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.8 • Higher than city average population in Chinatown/International District neighborhood (approximately 60 percent)
	Minority population	34% / 35%	34% / 35%	34% / 35%	34% / 34%
		• City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is similar to the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)	• City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is similar to the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)	• City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is similar to the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)	• City average is 34% • Minority population within 10-minute walkshed is the same as the city average • Minority population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 90 percent)

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives: ST3 Representative — Project	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated — 5th Ave Cut-and-Cover International District/ Chinatown Station	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated — 5th Ave Mined International District/ Chinatown Station	West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel — 41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Historically Underserved Populations (continued)	Youth population (under 18)	7% / 10% • City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 5 percent below city average	7% / 9% • City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 6 percent below city average	7% / 9% • City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 6 percent below city average	7% / 9% • City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 6 percent below city average
	Elderly population (65 and over)	14% / 11% • City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is similar to the city average	14% / 12% • City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is the same as the city average	14% / 12% • City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is the same as the city average	14% / 12% • City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is the same as the city average
	Limited English Proficiency (LEP) population	7% / 8% • City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)	7% / 8% • City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)	7% / 8% • City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)	7% / 8% • City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)
	Disabled population	12% / 11% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average	12% / 11% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average	12% / 11% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average	12% / 11% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Historically Underserved Populations (continued)	Youth population (under 18)	7% / 9%	7% / 10%	7% / 9%	7% / 10%
		• City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 6 percent below city average	• City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 5 percent below city average	• City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 6 percent below city average	• City average is 15% • Youth population within 10-minute walkshed is 8 percent below city average • Youth population within 15-minute rideshed is 5 percent below city average
	Elderly population (65 and over)	14% / 12%	14% / 12%	14% / 12%	14% / 11%
		• City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is the same as the city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is the same as the city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is the same as the city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% greater than the city average • Elderly population within 15-minute rideshed is similar to the city average
	Limited English Proficiency (LEP) population	7% / 8%	7% / 8%	7% / 8%	7% / 7%
		• City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)	• City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)	• City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is the same as the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)	• City average is 8% • LEP population within 10-minute walkshed is similar to the city average • LEP population within 15-minute rideshed is similar to the city average • Higher than city average population in Chinatown/International District neighborhood (approximately 45 percent)
	Disabled population	12% / 11%	12% / 11%	12% / 11%	12% / 11%
		• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 2% above city average

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
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	Proximity to Seattle-designated Urban Centers and Villages	58%	56%	56%	57%
		• Alaska Junction Station on 41st Avenue SW is near the center of West Seattle Junction Hub Urban Village • South Lake Union Station is located east of SR 99, but with poor pedestrian access between Uptown and South Lake Union Urban Centers • Seattle Center Station is located further south than other alternatives, closer to center of Uptown Urban Center • Smith Cove Station is near the edge of Uptown Urban Center • 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	• Alaska Junction Station on 41st Avenue SW is near the center of West Seattle Junction Hub Urban Village • South Lake Union Station is located west of SR 99 and further north than other alternatives and more of its walkshed falls outside the Uptown and South Lake Union Urban Centers • Seattle Center Station is further north than other alternatives, closer to the edge of the Uptown Urban Center • Smith Cove Station is located further north than other alternatives and its walkshed is not within any Urban Centers or Villages • 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	• Alternative with 5th Avenue Mined International District/Chinatown Station provides similar compatibility with Seattle-designated Urban Centers and Villages as alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Alaska Junction Station on 41st Avenue SW is near the center of West Seattle Junction Hub Urban Village • South Lake Union Station is located east of SR 99 and further south than other alternatives, closer to the center South Lake Union Urban Center with good pedestrian access between South Lake Union and Uptown Urban Centers • Seattle Center Station is located further south than other alternatives, closer to center of Uptown Urban Center • Smith Cove Station is near the edge of Uptown Urban Center • 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
	Station locations consistent with current local land use plans	Higher	Higher	Higher	Higher
		• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans	• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans	• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans	• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans
	Activity nodes served	302	298	298	300
		• 302 activity nodes served (23 churches/religious institutions, 40 community facilities, 35 emergency/medical facilities, 39 government facilities, 8 museums, 76 parks/recreational facilities, 18 schools, 46 social services, and 17 theaters/performance venues)	• 298 activity nodes served (24 churches/religious institutions, 35 community facilities, 38 emergency/medical facilities, 39 government facilities, 8 museums, 74 parks/recreational facilities, 18 schools, 45 social services, and 17 theaters/performance venues)	• 298 activity nodes served; no difference with 5th Avenue Mined International District/Chinatown Station compared to 5th Avenue Cut-and-Cover International District/Chinatown Station since they are in the same location	• 300 activity nodes served (23 churches/religious institutions, 37 community facilities, 35 emergency/medical facilities, 38 government facilities, 8 museums, 78 parks/recreational facilities, 18 schools, 46 social services, and 17 theaters/performance venues)

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
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	Proximity to Seattle-designated Urban Centers and Villages	56%	55%	57%	58%
		• Alaska Junction Station on 42nd Avenue SW is near the center of West Seattle Junction Hub Urban Village, similar to 41st Avenue SW Alaska Junction Station • Proximity to Urban Centers and Villages elsewhere along the WSBLE Project corridor would be similar to alternative with 41st Avenue SW Alaska Junction Station	• Alaska Junction Station on 44th Avenue SW is on west edge of West Seattle Junction Hub Urban Village • Proximity to Urban Centers and Villages elsewhere along the WSBLE Project corridor would be similar to alternative with 41st Avenue SW Alaska Junction Station	• Alternative with 4th Avenue Mined International District/Chinatown Station provides similar compatibility with Seattle-designated Urban Centers and Villages as alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	• 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 • Proximity to Urban Centers and Villages elsewhere along the WSBLE Project corridor would be similar to alternative with 14th Avenue NW Ballard Station
	Station locations consistent with current local land use plans	Higher	Higher	Higher	Higher
		• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans	• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans	• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans	• Station locations in West Seattle have transit-supportive local land use plans • SODO and Stadium stations are within the Manufacturing and Industrial areas with less transit-supportive development and uses • Station locations in Chinatown/International District and downtown have transit-supportive local land use plan • Smith Cove and Interbay stations are in locations with less transit-supportive development and uses • Station location in Ballard has transit-supportive local land use plans
	Activity nodes served	301	302	300	303
		• 301 activity nodes served; Alaska Junction Station at 42nd Avenue SW serves 1 additional activity node compared to an Alaska Junction Station at 41st Avenue SW (park/recreational facility)	• 302 activity nodes served; Alaska Junction Station at 44th Avenue SW serves 2 additional activity nodes compared to an Alaska Junction Station at 41st Avenue SW (1 church/religious institution and 1 park/recreational facility)	• 300 activity nodes served; no difference with 4th Avenue Mined International District/Chinatown Station compared to 4th Avenue Cut-and-Cover International District/Chinatown Station	• 303 activity nodes served; Ballard Station at 15th Avenue NW serves 3 additional activity nodes compared to a Ballard Station at 14th Avenue NW (2 community facilities and 1 emergency/medical service)

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Modal Integration	Passenger transfers	Higher	Higher	Medium	Higher
		• Good to excellent passenger transfer environment at most stations • Station location at Delridge may constrain passenger drop-off/pick-up areas • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators • Station location at South Lake Union may constrain passenger drop-off/pick-up areas and is located in area with a more challenging pedestrian environment	• Good to excellent passenger transfer environment at most stations • Station location at Delridge may constrain passenger drop-off/pick-up areas • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators • Station location at South Lake Union may constrain passenger drop-off/pick-up areas and is located in area with a more challenging pedestrian environment	• Good to excellent passenger transfer environment at most stations • Station location at Delridge may constrain passenger drop-off/pick-up areas • Deep mined International District/Chinatown Station on 5th Avenue S requires high-speed elevators and creates less convenient transfers to existing Link station • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators • Station location at South Lake Union may constrain passenger drop-off/pick-up areas and is located in area with a more challenging pedestrian environment	• Good to excellent passenger transfer environment at most stations • Station location at International District/Chinatown may constrain passenger drop-off/pick-up areas • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators • South Lake Union Station is located in area with a good pedestrian environment
	Bus/rail and rail/rail integration	Medium	Medium	Medium	Medium
		• Good transportation integration opportunities for bus/rail and rail/rail connections • Avalon Station in West Seattle is farther from major bus zones • Delridge and Denny stations have bus zones adjacent to the station • South Lake Union Station is adjacent to SR 99 ramps with limited space for adjacent bus zones • Interbay Station has bus zones adjacent to the station • Ballard station is adjacent to north/south bus routes on 15th Avenue NW	• Good transportation integration opportunities for bus/rail and rail/rail connections • Alaska Junction and Avalon stations are farther from major bus zones • Delridge Station straddling the street provides good integration with buses on both sides of the street • Seattle Center Station is closer to major bus routes on Mercer Street • Smith Cove Station includes off-street bus loop with stops at the station • Interbay Station is farther from major bus zones • Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street	• Good transportation integration opportunities for bus/rail and rail/rail connections • 5th Avenue Mined International District/Chinatown Station would have similar transportation integration opportunities compared to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station • Similar transportation integration opportunities elsewhere along the WSBLE Project corridor compared to other West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated alternatives	• Good transportation integration opportunities for bus/rail and rail/rail connections • Alaska Junction Station on 41st Avenue SW is farther from the major bus zone • Avalon Station straddling 35th Avenue SW and Fauntleroy Way SW provides good integration with buses on both sides of the street • SODO Station shifted further south is closer to bus connections on S Lander Street • International District/Chinatown Station on 4th Avenue S is closer to Union Station and connections to Sounder and Amtrak • Denny Station is closer to bus routes on Denny or Westlake • South Lake Union Station is closer to Harrison and Dexter bus routes • Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street
	Bicycle infrastructure and accessibility	19%	19%	19%	18%
		• 19% of bicycle facility miles to roadway miles within bikeshed of stations • Existing multi-use bike facilities within a 10-minute ride from stations include Burke Gilman Trail, Ship Canal Trail, Elliott Bay Trail, Portside Trail, SODO Trail, Mountains to Sound Trail (I-90 Trail), West Seattle Bridge Trail, Alki Trail and Duwamish River Trail • There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly International District/Chinatown, downtown and Interbay stations	• 19% of bicycle facility miles to roadway miles within bikeshed of stations • Existing multi-use bike facilities within a 10-minute ride from stations include Burke Gilman Trail, Ship Canal Trail, Elliott Bay Trail, Portside Trail, SODO Trail, Mountains to Sound Trail (I-90 Trail), West Seattle Bridge Trail, Alki Trail and Duwamish River Trail • There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly International District/Chinatown, downtown and Interbay stations	• 19% of bicycle facility miles to roadway miles within bikeshed of stations • Alternative with 5th Avenue Mined International District/Chinatown Station provides similar access to bicycle facilities as alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• 18% of bicycle facility miles to roadway miles within bikeshed of stations • Existing multi-use bike facilities within a 10-minute ride from stations include Burke Gilman Trail, Ship Canal Trail, Elliott Bay Trail, Portside Trail, SODO Trail, Mountains to Sound Trail (I-90 Trail), West Seattle Bridge Trail, Alki Trail and Duwamish River Trail • There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly International District/Chinatown, downtown and Interbay stations

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Modal Integration	Passenger transfers	Higher • Good to excellent passenger transfer environment at most stations • Station location at International District/Chinatown may constrain passenger drop-off/pick-up areas • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators	Higher • Good to excellent passenger transfer environment at most stations • Station location at International District/Chinatown may constrain passenger drop-off/pick-up areas • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators	Medium • Good to excellent passenger transfer environment at most stations • Deep mined International District/Chinatown Station on 4th Avenue S requires high-speed elevators and creates less convenient transfers to existing Link station; station location at International District/Chinatown may also constrain passenger drop-off/pick-up areas • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators	Higher • Good to excellent passenger transfer environment at most stations • Station location at International District/Chinatown may constrain passenger drop-off/pick-up areas • Deep mined station at Midtown has fewer access options than shallower stations and requires high-speed elevators
	Bus/rail and rail/rail integration	Medium • Good transportation integration opportunities for bus/rail and rail/rail connections • Alaska Junction Station on 42nd Avenue SW is closer to bus routes on California Avenue SW than station on 41st Avenue SW • Similar transportation integration opportunities elsewhere along the WSBLE Project corridor compared to other West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel alternatives	Medium • Good transportation integration opportunities for bus/rail and rail/rail connections • Alaska Junction Station on 44th Avenue SW is closer to bus routes on California Avenue SW than the stations on 41st and 42nd avenues SW • Similar transportation integration opportunities elsewhere along the WSBLE Project corridor compared to other West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel alternatives	Medium • Good transportation integration opportunities for bus/rail and rail/rail connections • 4th Avenue Mined International District/Chinatown Station would have similar transportation integration opportunities as 4th Avenue Cut-and-Cover International District/Chinatown Station • Similar transportation integration opportunities elsewhere along the WSBLE Project corridor compared to other West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel alternatives	Medium • Good transportation integration opportunities for bus/rail and rail/rail connections • Ballard station is adjacent to north/south bus routes on 15th Avenue NW • 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 • Similar transportation integration opportunities elsewhere along the WSBLE Project corridor compared to other West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel alternatives
	Bicycle infrastructure and accessibility	18% • 18% of bicycle facility miles to roadway miles within bikeshed of stations • Alternative with 42nd Avenue SW Alaska Junction Station provides similar access to bicycle facilities as alternative with 41st Avenue SW Alaska Junction Station	18% • 18% of bicycle facility miles to roadway miles within bikeshed of stations • Alternative with 44th Avenue SW Alaska Junction Station provides similar access to bicycle facilities as alternative with 41st Avenue SW Alaska Junction Station	18% • 18% of bicycle facility miles to roadway miles within bikeshed of stations • Alternative with 4th Avenue Mined International District/Chinatown Station provides similar access to bicycle facilities as alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations • Alternative with 15th Avenue NW Ballard Station provides similar access to bicycle facilities as alternative with 14th Avenue NW Ballard Station

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Modal Integration (continued)	Pedestrian and persons with limited mobility accessibility	Higher • 81% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,068 intersections within combined walkshed • Delridge Station located further north than other alternatives, closer to West Seattle Bridge and Pigeon Point, results in fewer intersections and lower percentage of pedestrian facilities • Interbay Station straddling W Dravus Street Bridge has a lower percentage of sidewalks and trails, but more intersections than other alternatives; walkshed for this station does not extend as far west towards Magnolia neighborhood	Higher • 81% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,059 intersections within combined walkshed • Pedestrian access for 5th Avenue Cut-and-Cover or 5th Avenue Mined International District/Chinatown Station would be similar • Walksheds for the South Lake Union and Seattle Center stations are located further north than other alternatives, resulting in walksheds with steeper hills • Smith Cove Station located adjacent to BNSF Railway tracks has lowest percentage of pedestrian facilities and intersections compared to other alternatives	Higher • 81% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,059 intersections within combined walkshed • Pedestrian access for 5th Avenue Cut-and-Cover or 5th Avenue Mined International District/Chinatown Station would be similar	Higher • 82% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,028 intersections within combined walkshed • Pedestrian access for 4th Avenue Cut-and-Cover or 4th Avenue Mined International District/Chinatown Station would be similar
Station Area Development Opportunities	Development potential	13.6% • 14% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential	13.7% • 14% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential	13.7% • 14% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential	13.6% • 14% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential
	Equitable development opportunities	Lower • Limited equitable development opportunities in West Seattle and Ballard compared to other alternatives because elevated alignment in those areas results in fewer large surplus lots	Medium • Limited equitable development opportunities in West Seattle compared to West Seattle Tunnel Alternatives because elevated alignment results in fewer large surplus lots • Greater equitable development opportunities in SODO than ST3 Representative Project due to larger property acquisitions near the Massachusetts tunnel portal • Similar equitable development opportunities with either 5th Avenue Cut-and-Cover or Mined International District/Chinatown Station	Medium • Similar equitable development opportunities with either 5th Avenue Cut-and-Cover or Mined International District/Chinatown Station	Higher • Tunnel in West Seattle provides greater equitable development opportunities due to larger surplus lots compared to other alternatives • Equitable development opportunities at Delridge Station are similar acreage compared to West Seattle Elevated Alternative, but better quality due to location • More surplus land for equitable development opportunities is located in Urban Villages under this alternative
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	40 • Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	20 • Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	20 • Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	40 • Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Modal Integration (continued)	Pedestrian and persons with limited mobility accessibility	Higher	Higher	Higher	Higher
		•82% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,037 intersections within combined walkshed • Alternative with 42nd Avenue SW Alaska Junction Station includes 9 more intersections within combined walkshed than alternative with 41st Avenue SW Alaska Junction Station	• 82% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,047 intersections within combined walkshed • Alternative with 44th Avenue SW Alaska Junction Station includes 19 more intersections within combined walkshed than alternative with 41st Avenue SW Alaska Junction Station • Alaska Junction Station is located further west than other alternatives, resulting in a walkshed with steeper hills, making it less desirable for pedestrians and persons with limited mobility	• 82% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,028 intersections within combined walkshed • Pedestrian access for 4th Avenue Cut-and-Cover or 4th Avenue Mined International District/Chinatown Station would be similar	• 82% of sidewalk/trail miles to total roadway miles within combined walkshed • 1,032 intersections within combined walkshed • Alternative with 15th Avenue NW Ballard Station includes 4 more intersections within combined walkshed than alternatives with 14th Avenue NW Ballard Station
Station Area Development Opportunities	Development potential	13.4%	13.1%	13.6%	13.9%
		• 13% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential	• 13% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential	• 14% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential	• 14% of the properties within 10-minute walkshed of stations (5-minute walkshed in downtown) have development potential based on zoned capacity and market conditions • All alternatives have similar development potential
	Equitable development opportunities	Higher	Higher	Higher	Higher
		• Alaska Junction Station at 42nd Avenue SW would have similar equitable development opportunities to station at 41st Avenue SW	• Alaska Junction Station at 44th Avenue SW would have similar equitable development opportunities to station at 41st Avenue SW	• 4th Avenue Mined International District/Chinatown Station would have greater equitable development opportunities in SODO than 4th Avenue Cut-and-Cover International District/Chinatown Station due to additional large surplus lots • Equitable development opportunities elsewhere along the WSBLE Project corridor would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	• Slightly greater equitable development opportunities with Ballard Station at 15th Avenue NW compared to 14th Avenue NW due to additional large surplus parcels in Ballard • Equitable development opportunities elsewhere along the WSBLE Project corridor would be similar to alternative with 14th Avenue Ballard Station
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	40	40	40	40
		• Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	• Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	• Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	• Between 20 and 40 NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Environmental Effects (continued)	Potential archaeological resources	Lower	Lower	Lower	Lower
		• 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources (acres)	1.4	5.3	5.3	5.7
		• Between 1 and 4 acres of permanent impacts to the following parks: West Seattle Golf Course, West Duwamish Greenbelt, Harbor Marina Corporate Center (Terminal 102) and SW Queen Anne Greenbelt; requires avoidance alternatives • Least impacts to parks compared to elevated and tunnel alternatives	• More than 4 acres of permanent impacts to the following parks: West Seattle Golf Course, West Duwamish Greenbelt, Harbor Marina Corporate Center (Terminal 102), Interbay Golf Course, Interbay Athletic Field and 14th Ave NW Boat Ramp; requires avoidance alternatives • Greatest impacts to parks occur in Interbay	• More than 4 acres of permanent impacts to the following parks: West Seattle Golf Course, West Duwamish Greenbelt, Harbor Marina Corporate Center (Terminal 102), Interbay Golf Course, Interbay Athletic Field and 14th Ave NW Boat Ramp; requires avoidance alternatives • Greatest impacts to parks occur in Interbay	• More than 4 acres of permanent impacts to the following parks: West Seattle Golf Course, SW Queen Anne Greenbelt, Interbay Golf Course and Interbay Athletic Field; requires avoidance alternatives • Greatest impacts to parks occur in Interbay, but also has greatest impacts to West Seattle Golf Course of all alternatives
	Water resources (acres)	0.9	0.6	0.6	<0.1
		• More than 0.5 acre of potential permanent in-water impact • Potential impacts would occur in both Duwamish Waterway and Salmon Bay from bridge columns • Duwamish Waterway crossing south of West Seattle Bridge could have more potential in-water impacts than north crossing • Movable bridge would have more potential in-water impacts in Salmon Bay than fixed bridge or tunnel alternatives	• More than 0.5 acre of potential permanent in-water impact • Potential impacts would occur in both Duwamish Waterway and Salmon Bay from bridge columns • Duwamish Waterway crossing south of West Seattle Bridge could have more potential in-water impacts than north crossing • Fixed bridge would have less potential in-water impacts than movable bridge over Salmon Bay, but more than tunnel alternatives	• Approximately 0.5 acre of potential permanent in-water impact • Potential impacts would occur in both Duwamish Waterway and Salmon Bay from bridge columns • Duwamish Waterway crossing south of West Seattle Bridge could have more potential in-water impacts than north crossing • Fixed bridge would have less potential in-water impacts than movable bridge over Salmon Bay, but more than tunnel alternatives	• Less than 0.1 acre of potential permanent in-water impact • Potential impacts would occur in Duwamish Waterway from bridge columns • Duwamish Waterway crossing north of West Seattle Bridge could have less potential in-water impacts than south crossing • Tunnel avoids permanent in-water impacts in Salmon Bay
	Fish and wildlife habitats (acres)	15	6	6	15
		• More than 10 acres of potential permanent habitat impacts • Requires clearing steep slope on Pigeon Point (associated with south bridge crossing of Duwamish Waterway); revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment • Requires clearing steep slope on SW Queen Anne Greenbelt for construction and slope stabilization	• Between 5 and 10 acres of potential permanent habitat impacts • Requires clearing steep slope on Pigeon Point (associated with south bridge crossing of Duwamish Waterway); revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment • Avoids SW Queen Anne Greenbelt	• Between 5 and 10 acres of potential permanent habitat impacts • Requires clearing steep slope on Pigeon Point (associated with south bridge crossing of Duwamish Waterway); revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment • Avoids SW Queen Anne Greenbelt	• More than 10 acres of potential permanent habitat impacts • North bridge crossing of Duwamish Waterway avoids Pigeon Point in West Seattle • Potential impacts to the proposed Duwamish habitat restoration site • Requires most clearing of steep slope on SW Queen Anne Greenbelt for construction and slope stabilization

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives: West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel — 42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Environmental Effects (continued)	Potential archaeological resources	Lower • 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Lower • 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Lower • 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Lower • 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 • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources (acres)	5.7 • More than 4 acres of permanent impacts to the following parks: West Seattle Golf Course, SW Queen Anne Greenbelt, Interbay Golf Course and Interbay Athletic Field; requires avoidance alternatives • Greatest impacts to parks occur in Interbay, but also has greatest impacts to West Seattle Golf Course of all alternatives	5.7 • More than 4 acres of permanent impacts to the following parks: West Seattle Golf Course, SW Queen Anne Greenbelt, Interbay Golf Course and Interbay Athletic Field; requires avoidance alternatives • Greatest impacts to parks occur in Interbay, but also has greatest impacts to West Seattle Golf Course of all alternatives	5.7 • More than 4 acres of permanent impacts to the following parks: West Seattle Golf Course, SW Queen Anne Greenbelt, Interbay Golf Course and Interbay Athletic Field; requires avoidance alternatives • Greatest impacts occur in Interbay, but also has greatest impacts to West Seattle Golf Course of all alternatives	5.7 • More than 4 acres of permanent impacts to the following parks: West Seattle Golf Course, SW Queen Anne Greenbelt, Interbay Golf Course and Interbay Athletic Field; requires avoidance alternatives • Greatest impacts occur in Interbay, but also has greatest impacts to West Seattle Golf Course of all alternatives
	Water resources (acres)	<0.1 • Less than 0.1 acre of potential permanent in-water impact • Potential impacts would occur in Duwamish Waterway from bridge columns • Duwamish Waterway crossing north of West Seattle Bridge could have less potential in-water impacts than south crossing • Tunnel avoids permanent in-water impacts in Salmon Bay	<0.1 • Less than 0.1 acre of potential permanent in-water impact • Potential impacts would occur in Duwamish Waterway from bridge columns • Duwamish Waterway crossing north of West Seattle Bridge could have less potential in-water impacts than south crossing • Tunnel avoids permanent in-water impacts in Salmon Bay	<0.1 • Less than 0.1 acre of potential permanent in-water impact • Potential impacts would occur in Duwamish Waterway from bridge columns • Duwamish Waterway crossing north of West Seattle Bridge could have less potential in-water impacts than south crossing • Tunnel avoids permanent in-water impacts in Salmon Bay	<0.1 • Less than 0.1 acre of potential permanent in-water impact • Potential impacts would occur in Duwamish Waterway from bridge columns • Duwamish Waterway crossing north of West Seattle Bridge could have less potential in-water impacts than south crossing • Tunnel avoids permanent in-water impacts in Salmon Bay
	Fish and wildlife habitats (acres)	15 • More than 10 acres of potential permanent habitat impacts • North bridge crossing of Duwamish Waterway avoids Pigeon Point in West Seattle • Potential impacts to the proposed Duwamish habitat restoration site • Requires most clearing of steep slope on SW Queen Anne Greenbelt for construction and slope stabilization	15 • More than 10 acres of potential permanent habitat impacts • North bridge crossing of Duwamish Waterway avoids Pigeon Point in West Seattle • Potential impacts to the proposed Duwamish habitat restoration site • Requires most clearing of steep slope on SW Queen Anne Greenbelt for construction and slope stabilization	15 • More than 10 acres of potential permanent habitat impacts • North bridge crossing of Duwamish Waterway avoids Pigeon Point in West Seattle • Potential impacts to the proposed Duwamish habitat restoration site • Requires most clearing of steep slope on SW Queen Anne Greenbelt for construction and slope stabilization	15 • More than 10 acres of potential permanent habitat impacts • North bridge crossing of Duwamish Waterway avoids Pigeon Point in West Seattle • Potential impacts to the proposed Duwamish habitat restoration site • Requires most clearing of steep slope on SW Queen Anne Greenbelt for construction and slope stabilization

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Environmental Effects (continued)	Hazardous materials sites	50	60	60	40
		• Between 25 and 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• More than 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• More than 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• Between 25 and 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)
	Visual effects (miles of sensitive viewers)	2.5	1.7	1.7	1.2
		• More than 2 miles elevated guideway near visually sensitive viewers • Along SW Genesee Way/West Seattle Golf Course, approximately 2,500 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet • Would cross Fauntleroy Way SW, Elliott Ave W, and 15th Ave NW, designated State Environmental Policy Act (SEPA) Scenic Routes • Would be about 100 feet south of the West Seattle Bridge, a SEPA Scenic Route • Passes over about 1,000 feet of Salmon Bay and would be viewed by water users	• Between 1 and 2 miles elevated guideway near visually sensitive viewers • Along SW Genesee Way/West Seattle Golf Course, approximately 2,500 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet • Would cross over Fauntleroy Way SW and Elliott Ave W and under the Magnolia Bridge, designated SEPA Scenic Routes • Would be about 100 feet south of the West Seattle Bridge, a SEPA Scenic Route • Passes over about 700 feet of Salmon Bay and would be viewed by water users	• Between 1 and 2 miles elevated guideway near visually sensitive viewers • Along SW Genesee Way/West Seattle Golf Course, approximately 2,500 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet • Would cross over Fauntleroy Way SW and Elliott Ave W and under the Magnolia Bridge, designated SEPA Scenic Routes • Would be about 100 feet south of the West Seattle Bridge, a SEPA Scenic Route • Passes over about 700 feet of Salmon Bay and would be viewed by water users	• Between 1 and 2 miles elevated guideway near visually sensitive viewers • There would be no elevated guideway over 75 feet above grade • Would not cross any SEPA Scenic Routes • Would be about 100 feet north of the West Seattle Bridge, a SEPA Scenic Route
	Noise and vibration effects	Medium	Medium	Medium	Medium
		• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers	• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers	• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers	• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers
	Properties potentially affected	Medium	Lower	Lower	Higher
		• Between approximately 190 and 220 parcels affected, including both full and partial acquisitions • ST3 Representative Project would have fewer parcels affected than the elevated alternatives due to more guideway in public right-of way, but more than the tunnel alternatives	• More than approximately 220 parcels affected, including both full and partial acquisitions • Sections of elevated guideway would affect a greater number of parcels than the ST3 Representative Project and tunnel alternatives	• More than approximately 220 parcels affected, including both full and partial acquisitions • Sections of elevated guideway would affect a greater number of parcels than the ST3 Representative Project and tunnel alternatives	• Fewer than approximately 190 parcels affected, including both full and partial acquisitions • Tunnel alternatives would have fewer affected parcels than the ST3 Representative Project and elevated alternatives
	Potential residential unit displacements	Medium	Lower	Lower	Higher
		• Between approximately 120 and 180 potential residential unit displacements • Displacements would occur primarily in the Delridge neighborhood and around Avalon Station in West Seattle, around the north tunnel portal in West Queen Anne and for the elevated guideway on Elliott Avenue W in Interbay	• More than approximately 180 potential residential unit displacements • Displacements would occur primarily in the Delridge neighborhood and between Avalon and Alaska Junction stations in West Seattle and for the bridge approach on North Queen Anne	• More than approximately 180 potential residential unit displacements • Displacements would occur primarily in the Delridge neighborhood and between Avalon and Alaska Junction stations in West Seattle and for the bridge approach on North Queen Anne	• Fewer than approximately 120 potential residential unit displacements • Displacements would occur primarily around Delridge and Avalon stations in West Seattle

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Environmental Effects (continued)	Hazardous materials sites	40	40	40	40
		• Between 25 and 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• Between 25 and 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• Between 25 and 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• Between 25 and 50 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)
	Visual effects (miles of sensitive viewers)	1.2	1.2	1.2	1.2
		• Between 1 and 2 miles elevated guideway near visually sensitive viewers • There would be no elevated guideway over 75 feet above grade • Would not cross any SEPA Scenic Routes • Would be about 100 feet north of the West Seattle Bridge, a SEPA Scenic Route	• Between 1 and 2 miles elevated guideway near visually sensitive viewers • There would be no elevated guideway over 75 feet above grade • Would not cross any SEPA Scenic Routes • Would be about 100 feet north of the West Seattle Bridge, a SEPA Scenic Route	• Between 1 and 2 miles elevated guideway near visually sensitive viewers • There would be no elevated guideway over 75 feet above grade • Would not cross any SEPA Scenic Routes • Would be about 100 feet north of the West Seattle Bridge, a SEPA Scenic Route	• Between 1 and 2 miles elevated guideway near visually sensitive viewers • There would be no elevated guideway over 75 feet above grade • Would not cross any SEPA Scenic Routes • Would be about 100 feet north of the West Seattle Bridge, a SEPA Scenic Route
	Noise and vibration effects	Medium	Medium	Medium	Medium
		• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers	• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers	• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers	• Between 700 and 900 noise and vibration sensitive receivers within 350 feet of the alternative • All alternatives have similar amount of noise and vibration sensitive receivers
	Properties potentially affected	Higher	Higher	Higher	Higher
		• Fewer than approximately 190 parcels affected, including both full and partial acquisitions • Tunnel alternatives would have fewer affected parcels than the ST3 Representative Project and elevated alternatives	• Fewer than approximately 190 parcels affected, including both full and partial acquisitions • Tunnel alternatives would have fewer affected parcels than the ST3 Representative Project and elevated alternatives	• Fewer than approximately 190 parcels affected, including both full and partial acquisitions • Tunnel alternatives would have fewer affected parcels than the ST3 Representative Project and elevated alternatives	• Fewer than approximately 190 parcels affected, including both full and partial acquisitions • Tunnel alternatives would have fewer affected parcels than the ST3 Representative Project and elevated alternatives
	Potential residential unit displacements	Higher	Higher	Higher	Higher
		• Fewer than approximately 120 potential residential unit displacements, similar to 41st Avenue SW Alaska Junction Station • Displacements would occur primarily around Delridge and Avalon stations in West Seattle	• Fewer than approximately 120 potential residential unit displacements, but slightly higher than 41st Avenue SW Alaska Junction Station due to tail track location • Displacements would occur primarily around Delridge and Avalon stations in West Seattle	• Fewer than approximately 120 potential residential unit displacements, similar to 4th Avenue Cut-and-Cover Station • Displacements would occur primarily around Delridge and Avalon stations in West Seattle	• Fewer than approximately 120 potential residential unit displacements, similar to 14th Avenue NW Ballard Station • Displacements would occur primarily around Delridge and Avalon stations in West Seattle

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Environmental Effects (continued)	Potential business displacements	Higher • Fewer than approximately 1.4 million square feet of potential business displacements • Displacements would occur primarily along Fauntleroy Way SW and near Avalon Station in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, in downtown for entrances to underground stations, on Elliott Avenue W, in Interbay and along 15th Avenue NW in Ballard	Lower • More than approximately 1.7 million square feet of potential business displacements • Displacements would occur primarily around Alaska Junction, Avalon, and Delridge stations in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, around the S Massachusetts Street tunnel portal, in downtown for entrances to underground stations, on Elliott Avenue W and in Interbay	Lower • More than approximately 1.7 million square feet of potential business displacements • Displacements would occur primarily around Alaska Junction, Avalon, and Delridge stations in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, around the S Massachusetts Street tunnel portal, in downtown for entrances to underground stations, on Elliott Avenue W and in Interbay	Higher • Fewer than approximately 1.4 million square feet of potential business displacements • Displacements would occur primarily around Avalon Station and along the west side of Delridge Way SW in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, along 4th Avenue S for tunnel construction, in downtown for entrances to underground stations, on Elliott Avenue W and in Interbay
	Community construction impacts	Lower • Potential for visual, noise, and vibration impacts on residences near SW Alaska Street, Fauntleroy Way SW, SW Avalon Way, SW Genesee Street and Delridge Way SW in West Seattle, 5th Avenue S in the Chinatown/International District, Denny Way (near Westlake), Harrison Street (near SR 99), Republican Street (near Key Arena and west of 4th Avenue W), Elliott Avenue W, 15th Avenue W, 15th Avenue NW and NW Market Street • Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses --- • Increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW, SW Genesee Street, and Fauntleroy Way SW --- • Closure of S Royal Brougham Way contributes to congestion on Edgar Martinez Drive S • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail • Most disruptive construction (cut-and-cover) of 5th Avenue S in Chinatown/International District --- • Community impacts in downtown Seattle would most likely be limited to traffic disruptions and changes in business access --- • Lane closures during construction on Elliott Avenue W and 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	Lower • Potential for visual, noise, and vibration impacts on residences near SW Alaska Street, 41st Avenue SW, SW Avalon Way, SW Genesee Street and Delridge Way SW in West Seattle, 5th Avenue S in the Chinatown/International District, Mercer Street (near 5th Avenue N and 1st Avenue N), W Dravus Street, between 15th Avenue W and 14th Avenue W (north of W Emerson Street), and NW Market Street • Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses --- • Greatest disruption to the neighborhood between Alaska Junction and Avalon stations in West Seattle • Increased congestion on SW Avalon Way and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street --- • Construction of at-grade guideway and SODO Station in E3 busway would periodically disrupt travel on existing light rail, but avoid disruption to service at existing Stadium Station • Closure of S Royal Brougham Way, S Lander Street, and S Holgate Street contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S • Disruptive cut-and-cover construction on 5th Avenue S for International District/Chinatown Station --- • Community impacts in downtown Seattle would most likely be limited to traffic disruptions and changes in business access • Additional congestion in Lower Queen Anne due to lane restrictions on Mercer Street	Medium • Reduced length of disruption on 5th Avenue S for International District/Chinatown Station compared to cut-and-cover station at this location • Construction impacts elsewhere along the WSBLE Project corridor would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	Medium • Potential for visual, noise, and vibration impacts on residences near SW Alaska Street, 41st Avenue SW, SW Avalon Way, SW Genesee Street and Delridge Way SW in West Seattle, 4th Avenue S in the Chinatown/International District, Denny Way (near Westlake), Harrison Street (near SR 99), Republican Street (near Key Arena), Elliott Avenue W, 15th Avenue W (south of Armory Way), and NW Market Street • Greater amount of construction vehicles in West Seattle and 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 --- • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail • Closure of S Royal Brougham Way, S Lander Street, and S Holgate Street contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S • Reduced visual, noise, and vibration impacts compared to 5th Avenue S International District/Chinatown station location • Lane restrictions and closure of 4th Avenue S for reconstruction of 4th Avenue S viaduct would result in congestion on other north-south streets in Chinatown/International District, the waterfront corridor, and Rainier Avenue S --- • Community impacts in downtown Seattle would most likely be limited to traffic disruptions and changes in business access

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Environmental Effects (continued)	Potential business displacements	Higher • Fewer than approximately 1.4 million square feet of potential business displacements, similar to 41st Avenue Alaska Junction Station • Displacements would occur primarily around Avalon Station and along the west side of Delridge Way SW in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, along 4th Avenue S for tunnel construction, in downtown for entrances to underground stations, on Elliott Avenue W and in Interbay	Higher • Fewer than approximately 1.4 million square feet of potential business displacements, similar to 41st Avenue Alaska Junction Station • Displacements would occur primarily around Avalon Station and along the west side of Delridge Way SW in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, along 4th Avenue S for tunnel construction, in downtown for entrances to underground stations, on Elliott Avenue W and in Interbay	Higher • Fewer than approximately 1.4 million square feet of potential business displacements, less than 4th Avenue Cut-and-Cover Station • Displacements would occur primarily around Avalon Station and along the west side of Delridge Way SW in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, in downtown for entrances to underground stations, on Elliott Avenue W and in Interbay • Would have reduced business displacements along 4th Avenue S due to tunnel construction method	Higher • Fewer than approximately 1.4 million square feet of potential business displacements • Displacements would occur primarily around Avalon Station and along the west side of Delridge Way SW in West Seattle, in the Duwamish industrial areas for the Duwamish Waterway crossing and accessing the E3 busway, along 4th Avenue S for tunnel construction, in downtown for entrances to underground stations, on Elliott Avenue W, in Interbay and along 15th Avenue NW near NW Market Street for Ballard Station
	Community construction impacts	Medium • Construction impacts for alternative with Alaska Junction Station at 42nd Avenue SW would be similar to alternative with station at 41st Avenue SW, but construction activities would primarily occur on 42nd Avenue SW	Medium • Construction impacts for alternative with Alaska Junction Station at 44th Avenue SW would be similar to alternative with station at 41st Avenue SW, but construction activities would primarily occur on 44th Avenue SW	Lower • 4th Avenue Mined International District Chinatown Station would result in the greatest traffic impact to Chinatown/International District due to full, multi-year closure of 4th Avenue S viaduct; creates widespread congestion throughout Chinatown/International District, waterfront corridor and other north-south arterials east of I-5 • Construction impacts elsewhere along the WSBLE Project corridor would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	Medium • Construction impacts for alternative with Ballard Station at 15th Avenue NW would be similar to alternative with station at 14th Avenue NW, but construction activities would primarily occur on 15th Avenue NW

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Environmental Effects (continued)		Lower	Medium	Medium	Lower
	Burden on minority and low-income populations	• Construction period impacts would occur in areas with minority and low-income populations above the city average around the International District/Chinatown, Midtown, Westlake, Denny, and South Lake Union stations; no permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel through downtown Seattle • SODO and Stadium stations would be located in areas of moderate displacement risk • International District/Chinatown Station would have more extensive cut-and-cover construction on 5th Avenue S than other alternatives due to existing underground structures and need for ground improvement to address poor soil conditions • International District/Chinatown, Midtown, Westlake, and Denny stations would be located in areas of higher displacement risk • All other 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	• Construction period impacts would occur in areas with minority and low-income populations above the city average around the International District/Chinatown, Midtown, Westlake, Denny, and South Lake Union stations; no permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel through downtown Seattle • SODO and Stadium stations would be located in areas of moderate displacement risk • Reduced construction period impacts for the 5th Avenue Cut-and-Cover International District/Chinatown Station compared to the ST3 Representative Project because the tunnel south of the station would be bored instead of cut-and-cover • International District/Chinatown, Midtown, Westlake, and Denny stations would be located in areas of higher displacement risk • All other 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	• 5th Avenue Mined International District/Chinatown Station would have reduced construction period impacts compared to 5th Avenue Cut-and-Cover International District/Chinatown Station because the tunnel south of the station would be bored and the station would be mined • 5th Avenue Mined International District/Chinatown Station would have a longer duration of construction than 5th Avenue Cut-and-Cover International District/Chinatown Station • Burden on minority and low-income populations elsewhere along the WSBLE Project corridor would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Construction period impacts would occur in areas with minority and low-income populations above the city average around the International District/Chinatown, Midtown, Westlake, Denny, and South Lake Union stations; no permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel through downtown Seattle • SODO and Stadium stations would be located in areas of moderate displacement risk • Multi-year partial closure of 4th Avenue S during construction has potential for higher volumes of cut-through traffic, including transit and freight vehicles, in Chinatown/International District than the alternatives with an International District Chinatown Station on 5th Avenue S • International District/Chinatown, Midtown, Westlake, and Denny stations would be located in areas of higher displacement risk • All other 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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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Environmental Effects (continued)	Burden on minority and low-income populations	Lower	Lower	Lower	Lower
		• Alaska Junction Station at 42nd Avenue SW would have burden on minority and low-income populations similar to station at 41st Avenue SW • Burden on minority and low-income populations elsewhere along the WSBLE Project corridor would be similar to alternative with station at 41st Avenue SW	• Alaska Junction Station at 44th Avenue SW would have burden on minority and low-income populations similar to station at 41st Avenue SW • Burden on minority and low-income populations elsewhere along the WSBLE Project corridor would be similar to alternative with station at 41st Avenue SW	• Multi-year full closure of 4th Avenue S during construction for the 4th Avenue Mined International District/Chinatown Station has potential for higher volumes of cut-through traffic, including transit and freight vehicles, in Chinatown/International District than the 4th Avenue Cut-and-Cover Station and the station on 5th Avenue S • Duration of full closure of 4th Avenue S during construction for the 4th Avenue Mined International District/Chinatown Station would be longer than the partial closure for the 4th Avenue Cut-and-Cover International District/Chinatown Station	• Ballard Station at 15th Avenue NW would have burden on minority and low-income populations similar to station at 14th Avenue NW • Burden on minority and low-income populations elsewhere along the WSBLE Project corridor would be similar to alternative with station at 14th Avenue NW

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	Lower Performing	Medium Performing	Higher Performing

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Traffic Operations	Traffic circulation and access effects	Lower	Medium	Medium	Higher
		• Most lengthy segments of elevated track along high-volume arterials can eliminate or truncate left turn lanes, reduce capacity and restrict turning movements along these streets • Elevated track along high volume streets include SW Alaska Street, Fauntleroy Way SW, Delridge Way SW, Elliott Avenue W, 15th Avenue W and 15th Avenue NW	• Affects driveway access and roadway capacity/turn lanes, primarily along streets with lower traffic volumes, including 39th Avenue SW, Fauntleroy Way SW and 14th Avenue NW • 39th Avenue SW would be closed to through traffic south of SW Genesee Street; however, alternative routes are available for local circulation • Improvements to circulation in SODO due to addition of grade-separated crossings at S Lander and S Holgate streets	• Traffic circulation and access for 5th Avenue Mined International District/Chinatown Station would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Limited effect to driveway access and roadway capacity/turn lanes, including minor circulation changes around West Seattle tunnel portal • Improvements to circulation in SODO due to addition of grade-separated crossings at S Lander and S Holgate streets
	Effects on transportation facilities	Lower	Medium	Medium	Medium
		• Fully elevated guideway outside of downtown Seattle • Highest number of potential conflicts with existing and planned transportation infrastructure • Affected facilities in West Seattle/Duwamish include the Fauntleroy Way SW/SW Alaska Street intersection, Fauntleroy Boulevard project, Fauntleroy Way SW/SW Genesee Street intersection, Delridge Way SW corridor, West Seattle Bridge, SR 99 crossing and West Seattle Bridge/S Spokane Street crossing • Affected facilities in SODO and Chinatown/International District include WSDOT I-90 ramps, Seattle Boulevard, Ryerson Base and E3 busway • Affected facilities in Downtown include the SR 99 northbound off-ramp at Republican Street and South Lake Union Streetcar • Affected facilities in Interbay/Ballard include the Magnolia Bridge/Elliott Avenue West/15th Avenue West interchange, Emerson interchange and 15th Avenue NW/NW Market Street intersection	• Elevated portions of the alignment avoid some but not all potential conflicts with existing and planned transportation infrastructure • Affected facilities in West Seattle/Duwamish include the Fauntleroy Boulevard project, Fauntleroy Way SW/SW Genesee Street intersection, Delridge Way SW corridor, West Seattle Bridge, SR 99 crossing and West Seattle Bridge/S Spokane Street crossing • Affected facilities in SODO and Chinatown/International District include the SR 99 crossing, West Seattle Bridge/S Spokane Street crossing, S Lander Street, S Holgate Street, E3 busway and Central/Atlantic Base • Affected facilities in Downtown include I-5, Mercer Street and South Lake Union Streetcar • Affected facilities in Interbay/Ballard include a portion of the Magnolia Bridge, Emerson interchange and 14th Avenue NW/NW Market Street intersection	• Effects to transportation facilities for 5th Avenue Mined International District/Chinatown Station would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Tunnels in West Seattle and Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities • Affected facilities in West Seattle/Duwamish include 39th Ave SW, Fauntleroy Boulevard project, Fauntleroy Way SW/SW Genesee Street intersection, W Marginal Way ramps and West Seattle Bridge • Affected facilities in SODO and Chinatown/International District include S Lander Street, S Holgate Street, Ryerson Base, E3 busway and 4th Avenue S viaduct • Affected facilities in Downtown include Westlake Station, SR 99 and South Lake Union Streetcar • Affected facilities in Interbay/Ballard include W Armory Way and the Emerson interchange

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Traffic Operations	Traffic circulation and access effects	Higher • Traffic circulation and access for Alaska Junction Station at 42nd Avenue SW would be similar to station at 41st Avenue SW	Higher • Traffic circulation and access for Alaska Junction Station at 44th Avenue SW would be similar to station at 41st Avenue SW	Higher • Traffic circulation and access for 4th Avenue Mined International District/Chinatown Station would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	Higher • Traffic circulation and access for Ballard Station at 15th Avenue NW would be similar to station at 14th Avenue NW
	Effects on transportation facilities	Medium • Effects to transportation facilities for Alaska Junction Station at 42nd Avenue SW would be similar to station at 41st Avenue SW	Medium • Effects to transportation facilities for Alaska Junction Station at 44th Avenue SW would be similar to station at 41st Avenue SW	Medium • 4th Avenue Mined International District/Chinatown Station would displace Ryerson Base • Effects to transportation facilities for 4th Avenue Mined International District/Chinatown Station elsewhere along the WSBLE Project corridor would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	Medium • Effects to transportation facilities for Ballard Station at 15th Avenue NW would be similar to station at 14th Avenue NW

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
		Lower	Medium	Medium	Medium
Economic Effects	Effects on freight movement	• Elevated guideway columns could affect truck access to local businesses on SW Alaska Street, Fauntleroy Way SW, Delridge Way SW, Elliott Avenue W, 15th Avenue W and 15th Avenue NW; this alternative would have greatest direct impact to truck freight routes of all alternatives • Construction activities would affect the following Major Freight Routes: Fauntleroy Way SW, Elliott Ave W, 15th Ave W and 15th Ave NW; and would cross over the following Major Freight Routes: W Marginal Way, 1st Avenue S, 4th Avenue S, West Seattle Bridge, Shilshole Avenue NW, NW Leary Way and NW Market Street ---------- • South bridge crossing would span Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations • No direct impacts expected to Terminal 5 or Terminal 18 access or operations ---------- • Use of BNSF spur track south of S Lander Street in SODO could affect rail freight operations • Bus relocation from E3 busway could affect freight routes in SODO • Partial closure of 5th Avenue S in Chinatown/International District during construction could affect local freight delivery ---------- • Road closures during construction at cut-and-cover tunnel stations could affect some local truck freight delivery • Column in center turn lane on Elliott Avenue W in Interbay could affect queue lengths for left turns to W Mercer Place • Temporary and permanent impacts to water-dependent businesses and Dock 3 at Fishermen's Terminal are expected, and as fresh-water dependent businesses, these uses would be very difficult to relocate • Movable bridge columns in Salmon Bay would maintain Ship Canal navigation channel, but could affect large vessel turning movement to Fishing Vessel Owners (FVO)/Fisherman's Terminal	• Construction activities would have substantial effects on Mercer Street, a Major Freight Route, and would cross over the following Major Freight Routes with more limited impacts: Fauntleroy Way SW, W Marginal Way, 1st Avenue S, 4th Avenue S, West Seattle Bridge, 15th Avenue W, W Nickerson Street, NW Leary Way and NW Market Street • Elevated guideway columns could affect truck access to local businesses on SW Alaska Street and Delridge Way SW in West Seattle • Road closures during construction at cut-and-cover tunnel stations could affect some local truck freight delivery in Chinatown/International District and downtown ---------- • South bridge crossing would span Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations • No direct impacts expected to Terminal 5 or Terminal 18 access or operations ---------- • Use of BNSF spur track south of S Lander Street in SODO could affect rail freight operations • Bus relocation from E3 busway could affect freight routes in SODO • Temporary closure of S Royal Brougham Way in SODO and construction of overpasses at S Lander Street and S Holgate Street could affect local freight delivery • Partial closure of 5th Avenue S in Chinatown/International District during construction could affect local freight delivery • Partial or full closure of Mercer Street for Seattle Center Station could affect freight movement between I-5 and Terminal 91 ---------- • Construction adjacent to east side of BNSF lines west of Elliott Avenue W in Interbay and on the east side of Interbay BNSF yard • Potential full or partial closure of Magnolia Bridge in Interbay during construction of undercrossing • Avoids impacts to Fishermen's Terminal, but could affect operations of an intermodal freight facility that provides unique shipping services to/from Alaska and is dependent on a freshwater location and proximity to rail lines and freight truck routes, which would be difficult to relocate • Columns for the Salmon Bay fixed bridge crossing would maintain navigation channel but could affect large vessel navigation to/from water dependent businesses on Salmon Bay, as well as the Maritime Academy/14th Avenue NW Boat Ramp area, and as freshwater dependent businesses, these uses would be difficult to relocate	• Mined construction of International District/Chinatown Station would avoid impacts on local freight delivery on 5th Avenue S compared to 5th Avenue Cut-and-Cover International District/Chinatown Station • Effects to freight movement and access would be similar elsewhere to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Construction activities would have substantial effects on 4th Avenue S, a Major Freight Routes and cross over the following Major Freight Routes, with more limited impacts: West Seattle Bridge, 1st Avenue S, and 15th Avenue W • Road closures during construction at cut-and-cover tunnel stations could affect some local truck freight delivery in Chinatown/International District and downtown ---------- • Elevated guideway columns could affect truck access to local businesses on Delridge Way SW in West Seattle • North bridge crossing would span Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations • Possible temporary construction parking and gate queue storage impacts at Terminal 18 on Harbor Island; rail access to businesses would be maintained ---------- • Use of BNSF spur track south of S Lander Street in SODO could affect rail freight operations • Bus relocation from E3 busway in SODO could affect freight routes • Partial closure of 4th Avenue S in Chinatown/International District during construction would increase congestion on freight routes and affect freight movement and would also limit oversize load access to downtown Seattle; 4th Avenue S is one of two routes into downtown for oversize loads from the south • Could affect BNSF operations during tunnel and station construction on 4th Avenue S in Chinatown/International District due to close proximity to tracks ---------- • Construction on the east side of Interbay BNSF yard in Interbay • Tunnel avoids in-water columns in Salmon Bay and impacts on Fishermen's Terminal

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Level 3 Alternatives Evaluation

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Economic Effects	Effects on freight movement	Medium • Effects to freight movement for Alaska Junction Station at 42nd Avenue SW would be similar to station at 41st Avenue SW	Medium • Effects to freight movement for Alaska Junction Station at 44th Avenue SW would be similar to station at 41st Avenue SW	Medium • Full closure of 4th Avenue S in Chinatown/International District during construction would require detours of freight trucks and affect freight movement • Full closure of 4th Avenue S would also limit oversize load access to downtown Seattle; 4th Avenue S is one of two routes into downtown for oversize loads from the south • Effects to freight movement and access would be similar elsewhere along the WSBLE Project corridor as alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	Medium • Effects to freight movement for Ballard Station at 15th Avenue NW would be similar to station at 14th Avenue NW

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		ST3 Representative	West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel
		Project	5th Ave Cut-and-Cover International District/ Chinatown Station	5th Ave Mined International District/ Chinatown Station	41st Ave Alaska Junction/4th Ave Cut-and-Cover/14th Ave Ballard
Economic Effects (continued)		Medium	Medium	Medium	Medium
	Business and commerce effects	• Would have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish and Interbay Manufacturing/Industrial Centers (MIC) • Would displace small businesses in West Seattle and Ballard that mostly serve local community • Could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals on Duwamish Waterway and Salmon Bay • Potential construction period impacts, such as lane closures and access changes, to local businesses on or near SW Alaska Street, Fauntleroy Way SW and Delridge Way SW in West Seattle, south side of West Seattle Bridge, E3 busway in SODO, 5th Avenue S in Chinatown/International District, around Downtown tunnel station locations, Elliott Avenue W and 15th Avenue W in Interbay, and 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)	• Would have greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish and Interbay MICs • Could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals on Duwamish Waterway and Salmon Bay • Potential construction period impacts, such as lane closures and access changes, to local businesses on or near SW Alaska Street, SW Avalon Way and Delridge Way SW in West Seattle, south side of West Seattle Bridge, E3 busway in SODO, 5th Avenue S in Chinatown/International District, around Downtown tunnel station locations, Elliott Avenue W, 17th Avenue W, 16th Avenue W and 13th Avenue W in Interbay, and 14th Avenue NW and NW Market Street in Ballard --- • Would displace small businesses in West Seattle that mostly serve local community and small businesses in Interbay that are service- or light-industrial-oriented --- • Permanent business and commerce effects of 5th Avenue Cut-and-Cover Station and 5th Avenue Mined Station would be similar • Construction period impacts would last longer with the cut-and-cover station --- • Would avoid impacts to Fishermen's Terminal, but could affect operations of an intermodal freight facility that provides unique shipping services to/from Alaska and is dependent on a freshwater location and proximity to rail lines and freight truck routes	• Permanent business and commerce effects of 5th Avenue Cut-and-Cover Station and 5th Avenue Mined Station would be similar • Construction period impacts would be shorter with mined station • Business and commerce effects elsewhere along the WSBLE Project corridor would be similar to alternative with 5th Avenue Cut-and-Cover International District/Chinatown Station	• Would have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish and Interbay MICs • Potential construction period impacts, such as lane closures and access changes to local businesses on or near SW Alaska Street, SW Avalon Way and Delridge Way SW in West Seattle, north side of West Seattle Bridge, E3 busway in SODO, 4th Avenue S in Chinatown/International District, around Downtown tunnel station locations, Elliott Avenue W, 15th Avenue W, W Armory Way, 17th Avenue W and 16th Avenue W in Interbay, and 14th Ave NW and NW Market Street in Ballard --- • Would displace small businesses in West Seattle that mostly serve local community and small businesses in Interbay that are service- or light-industrial-oriented • Duwamish Waterway crossing north of West Seattle Bridge may displace some water-dependent businesses • Duwamish Waterway crossing north of West Seattle Bridge could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals; could displace some buildings at Terminal 7 (private) --- • Permanent business and commerce effects of 4th Avenue Cut-and-Cover Station and 4th Avenue Mined Station would be similar • Construction period impacts would be shorter with cut-and-cover tunnel and station, but longer than alternatives on 5th Avenue S --- • Tunnel under Salmon Bay would avoid maritime business impacts, including those at Fishermen'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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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			
		West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel			
		42nd Ave Alaska Junction Station	44th Ave Alaska Junction Station	4th Ave Mined International District/ Chinatown Station	15th Ave Ballard Station
Economic Effects (continued)	Business and commerce effects	Medium • Business and commerce effects of Alaska Junction Station at 42nd Avenue SW would be similar to station at 41st Avenue SW • Potential for additional construction period impacts on businesses on 42nd Avenue SW	Medium • Business and commerce effects of Alaska Junction Station at 44th Avenue SW would be similar to station at 41st Avenue SW • Potential for additional construction period impacts on businesses on 44th Avenue SW	Medium • Permanent business and commerce effects of 4th Avenue Cut-and-Cover Station and 4th Avenue Mined Station would be similar • Construction period impacts would be longer with mined station than 4th Avenue Cut-and-Cover Station and alternatives on 5th Avenue S • Business and commerce effects elsewhere along the WSBLE Project corridor would be similar to alternative with 4th Avenue Cut-and-Cover International District/Chinatown Station	Medium • Business and commerce effects of Ballard Station at 15th Avenue NW would be similar to station at 14th Avenue NW • Potential for additional construction period impacts on 15th Avenue NW

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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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