



# ***West Seattle and Ballard***

## Link Extensions

Initial Assessments

**September 2019**



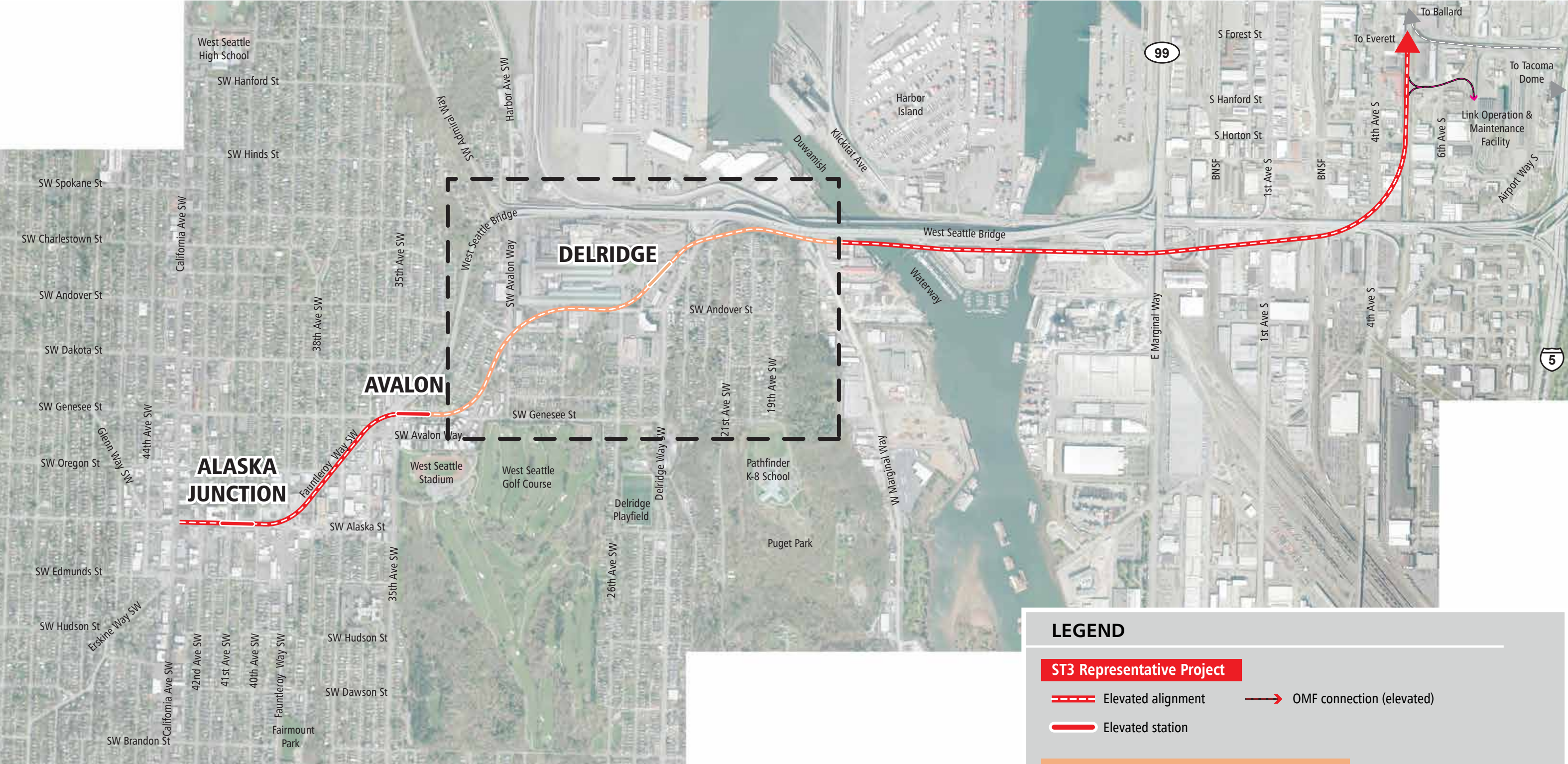
## Initial Assessment Results

Yancy / Andover Elevated



# Pre Draft-EIS Initial Assessment Results

9-12-2019



## LEGEND

### ST3 Representative Project

- Elevated alignment
- Elevated station
- OMF connection (elevated)

### Initial Assessment - Yancy/Andover Elevated

- Elevated alignment
- Elevated station
- Area evaluated

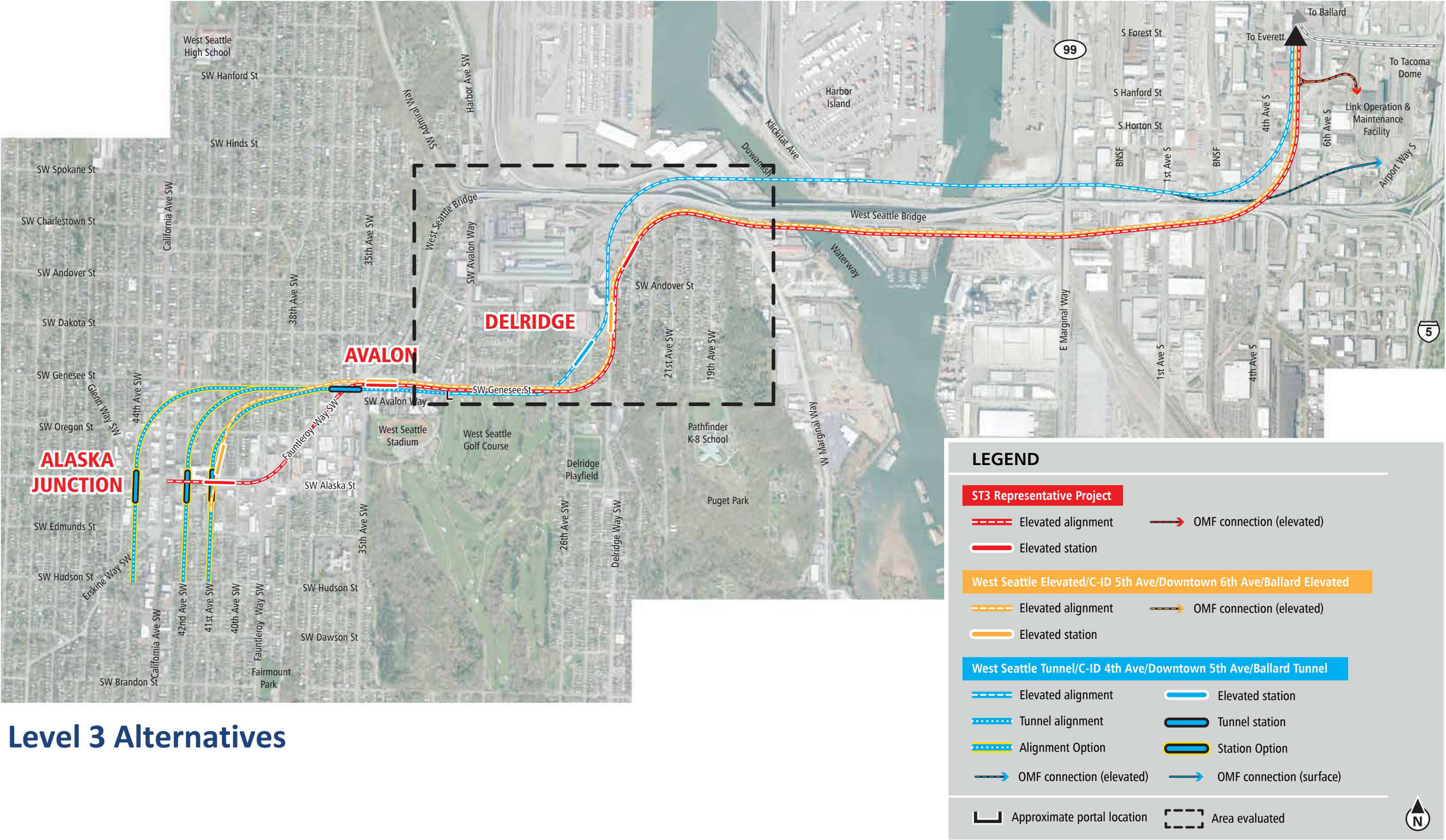


## Yancy/Andover Elevated Alternative



# Pre Draft-EIS Initial Assessment Results

9-12-2019





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	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
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, horizontal curvature, movable bridge, etc.)	Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection
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
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.			
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, taxi 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

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
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 = 1 or less historic properties potentially affected Medium = Between 2 and 3 historic properties potentially affected Lower = More than 3 historic properties potentially affected
	Parks and recreational resources	Number of and estimated acres of potential permanent impacts to parks and recreational resources	Higher = Less than 1.5 acres of potential permanent impacts to parks Medium = Between 1.5 and 3 acres of potential permanent impacts to parks Lower = 3 acres or more of potential permanent impacts to parks
	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 1 acre of potential permanent fish and wildlife habitat impacts Medium = Between 1 and 2.5 acres of potential permanent fish and wildlife habitat impacts Lower = More than 2.5 acres of potential permanent fish and wildlife habitat impacts
	Hazardous materials	Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites	Higher = 5 or less hazardous materials sites potentially affected Medium = Between 6 and 10 hazardous sites potentially affected Lower = More than 10 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 = 0.5 miles or less adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high in visually sensitive areas, and low potential to affect SEPA Scenic Routes Medium = Between 0.6 and 1 miles adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high in visually sensitive areas, and/or moderate potential to affect SEPA Scenic Routes Lower = More than 1 miles potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high in visually sensitive areas, and/or high potential to affect SEPA Scenic Routes
	Property acquisitions and displacements	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 40 potential residential unit displacements Medium = Between approximately 40 and 60 potential residential unit displacements Lower = More than approximately 60 potential residential unit displacements
		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 65,000 square feet of potential residential displacements Medium = Between approximately 65,000 and 110,000 square feet of potential residential displacements Lower = More than approximately 110,000 square feet of potential residential displacements

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Environmental Effects (continued)	Community construction impacts	Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below	Higher = Lower potential for impacts to community relative to other alternatives Medium = Moderate potential for impacts to community relative to other alternatives Lower = More substantial potential for impacts to community relative to other alternatives
	Burden on minority and low-income populations	Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities	Higher = Little to no potential impact to minority or low-income communities relative to other alternatives Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives Lower = Substantial potential for impacts to minority or low-income communities relative to other alternatives
Traffic 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.
  - 2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
  - 3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
  - 4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
  - 5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; “Higher” = higher ability to achieve measure, “Medium” = moderate ability to achieve measure, “Lower” = lower ability to achieve measure; no weighting will be applied.
  - 6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

Purpose and Need / Evaluation Measures	Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
	ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Yancy-Andover Elevated
	Avalon Station Elevated Delridge Station North of Andover	Avalon Station Elevated Delridge Station South of of Andover	Avalon Station Tunnel Delridge Station North of Genesee	
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.				
Potential ST3 implementation schedule effects	Higher (includes entire West Seattle Extension)	Higher (includes entire West Seattle Extension)	Lower (includes entire West Seattle Extension)	Higher (includes entire West Seattle Extension)
Engineering constraints	Lower	Lower	Medium	Lower
Constructability issues	Lower	Lower	Medium	Lower
Operational constraints	Medium	Medium	Higher	Lower
Conceptual capital cost comparison (2018\$ in millions)	--	Similar to ST3 Representative Project (includes entire West Seattle Extension)	\$1,000 million increase (includes entire West Seattle Extension)	Similar to ST3 Representative Project (includes entire West Seattle Extension)
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.				
Passenger transfers	Medium	Medium	Medium	Lower
Bus/rail and rail/rail integration	Lower	Higher	Medium	Lower
Bicycle infrastructure and accessibility	Higher	Higher	Higher	Higher
Pedestrian and persons with limited mobility accessibility	Lower	Medium	Higher	Lower
Development potential	Lower	Medium	Higher	Lower
Equitable development opportunities	Lower	Medium	Higher	Lower
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.				
National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks	1	0	1	1
Parks and recreational resources (acres)	3.0	3.1	1.7	2.5
Fish and wildlife habitats (acres)	2.5	2.5	<0.5	2.5
Hazardous materials sites	2	2	2	1
Visual effects (miles of sensitive viewers)	Lower	Lower	Medium	Medium
Potential residential unit displacements	Lower	Lower	Lower	Medium
Potential business displacements	Higher	Higher	Medium	Lower

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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



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	ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Yancy-Andover Elevated
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Community construction impacts	Medium	Medium	Lower	Medium
Burden on minority and low-income populations	Higher	Higher	Higher	Higher
Traffic circulation and access effects	Medium	Medium	Higher	Medium
Effects on transportation facilities	Medium	Medium	Medium	Medium
Effects on freight movement	Lower	Medium	Medium	Lower
Business and commerce effects	Medium	Medium	Medium	Lower

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

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Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Potential ST3 implementation schedule effects	Higher (includes entire West Seattle Extension) • Implementation schedule anticipated to be similar to ST3 Plan	Higher (includes entire West Seattle Extension) • Implementation schedule anticipated to be similar to ST3 Plan	Lower (includes entire West Seattle Extension) • Implementation schedule anticipated to be similar to ST3 Plan within the limit of the segment evaluated • However, segment leads to the West Seattle tunnel, which may affect the ST3 schedule	Higher (includes entire West Seattle Extension) • Implementation schedule anticipated to be similar to ST3 Plan
Technical Feasibility	Engineering constraints	Lower • Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at Pigeon Point in West Seattle • Higher elevated guideway with potentially larger foundation • Delridge Station at approximately 45-60 feet above Delridge Way SW with mezzanine • Substantial straddle bents and support structure at Delridge Way SW and West Seattle bridge ramps	Lower • Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at Pigeon Point in West Seattle • Higher elevated guideway with potentially larger foundation • Delridge Station at approximately 45-60 feet above Delridge Way SW with mezzanine	Medium • Duwamish Waterway crossing north of West Seattle Bridge likely avoids steep and unstable slope design at Pigeon Point in West Seattle, however may need special design for the long span bridge going above the flyover leading to Terminal 5 and also above the West Seattle Bridge • Lower elevated guideway with potentially smaller foundation • Off-street Delridge Station at approximately 30 feet above ground level with no mezzanine	Lower • Duwamish Waterway crossing south of West Seattle Bridge potentially requires special design for steep and unstable slope at Pigeon Point in West Seattle • Higher elevated guideway with potentially larger foundation to fit within constrained right-of-way along SW Andover Street and SW Avalon Way with adjacent multi-story buildings on both sides • Higher Delridge Station at approximately 90 feet above ground level and 60 feet above Delridge Way SW results in more complex station structure • Substantial straddle bents and support structure at Delridge Way SW and West Seattle bridge ramps
	Constructability issues	Lower • Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization at Pigeon Point in West Seattle • Construction constraints along SW Genesee Street width with adjacent residences and West Seattle Golf Course • Higher elevated guideway along SW Genesee Street	Lower • Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization at Pigeon Point in West Seattle • Construction constraints along SW Genesee Street width with adjacent residences and West Seattle Golf Course • Higher elevated guideway along SW Genesee Street	Medium • Duwamish Waterway crossing north of West Seattle Bridge likely avoids challenges of construction at Pigeon Point in West Seattle; however construction near West Marginal Way SW/Chelan Ave SW intersection will be challenging due to limited area for construction and staging • Construction constraints at tunnel portal location on SW Genesee Street with adjacent residences and West Seattle Golf Course • Lower elevated guideway along SW Genesee Street	Lower • Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization at Pigeon Point in West Seattle • Construction constraints along Avalon Way SW width with adjacent multi-story buildings on both sides • Higher elevated guideway along SW Andover Street and SW Avalon Way • Higher Delridge Station at approximately 90 feet above ground level and 60 feet above Delridge Way SW results in more complex construction • Substantial support structure at Delridge Way SW and West Seattle bridge ramps
	Operational constraints	Medium • Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle	Medium • Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle	Higher • 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 with the North Duwamish Waterway crossing would likely result in higher speeds	Lower • Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle • Potentially lower speeds due to additional curves combined with steep grades.

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Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Financial Sustainability	Conceptual capital cost comparison (2018\$ in millions)	--	Similar to ST3 Representative Project (includes entire West Seattle Extension)	\$1,000 million increase (includes entire West Seattle Extension)	Similar to ST3 Representative Project (includes entire West Seattle Extension)
		• Baseline for capital cost comparison to other alternatives	• Similar cost to ST3 Representative Project in West Seattle	• Approximately \$1,000 million more than the ST3 Representative Project in West Seattle • Higher cost for additional tunnel construction in West Seattle Junction (\$700 million increase) and for north Duwamish Waterway crossing (\$300 million increase) • Cost for additional tunnel in West Seattle Junction not included in ST3 financial plan	• Similar cost to ST3 Representative Project in West Seattle
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.					
Modal Integration	Passenger transfers	Medium	Medium	Medium	Lower
		• Station location at north end of Delridge Way SW may constrain passenger drop-off/pick-up areas	• Station location at Delridge provides opportunity for convenient passenger drop-off/pick-up areas but the higher profile at the guideway and higher station mezzanine result in slightly longer access path	• Station location at Delridge off street may constrain passenger drop-off/pick-up areas	• Station location at Delridge off-street may constrain passenger drop-off/pick-up areas immediately adjacent to station and result in the need to cross up to two streets to reach the station
	Bus/rail and rail/rail integration	Lower	Higher	Medium	Lower
		• Delridge Station may have constrained areas for bus zones • Bus routes destined to Alki may need to either be re-routed to serve station or serve a bus zone south of SW Andover Street because of ramp lane configurations	• Delridge Station straddling the street provides good integration with buses on both sides of the street	• Delridge Station is located off-street, requiring either some bus reroutings or a walk to the station from bus stops on Delridge Way SW	• Delridge Station may have constrained areas for bus zones • Bus routes destined to Alki may need to either be re-routed to serve station or serve a bus zone south of SW Andover Street because of ramp lane configurations
	Bicycle infrastructure and accessibility	Higher	Higher	Higher	Higher
		• Existing multi-use bike facilities within a 10-minute ride from stations include 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	• Existing multi-use bike facilities within a 10-minute ride from stations include 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	• Existing multi-use bike facilities within a 10-minute ride from stations include 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	• Existing multi-use bike facilities within a 10-minute ride from stations include 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

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
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Modal Integration (continued)	Pedestrian and persons with limited mobility accessibility	Lower	Medium	Higher	Lower
		• Delridge Station is sited closer to the West Seattle Bridge and West Seattle industrial areas, which results in fewer intersections, less sidewalk coverage and lower accessibility compared to all other alternatives	• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project	• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project and Delridge Station South of Andover	• Delridge Station is similar in location to the ST3 Representative Project alternative relative to the West Seattle Bridge and West Seattle industrial areas, resulting in fewer intersections and less sidewalk coverage than alternatives that shift Delridge Station further south • Pedestrian access for persons with limited mobility is lower in quality than the Delridge South of Andover and Delridge North of Genesee alternatives
Station Area Development Opportunities	Development potential	Lower	Medium	Higher	Lower
		• Fewer development opportunities due to proximity of Delridge Station to West Seattle Bridge	• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to location	• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to southern location	• Fewer properties with development opportunities due to proximity of Delridge Station to West Seattle Bridge • Development opportunities similar to ST Representative alternative
	Equitable development opportunities	Lower	Medium	Higher	Lower
		• Fewer equitable development opportunities due to proximity of Delridge Station to West Seattle Bridge	• Equitable development opportunities at Delridge Station are improved compared to the ST3 Representative Project	• Equitable development opportunities at Delridge Station are similar to other alternatives, but parcels are of higher value due to further south station location	• Fewer equitable development opportunities due to proximity of Delridge Station to West Seattle Bridge and industrial areas
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	1	0	1	1
		• 1 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project	• No NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project	• 1 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project	• 1 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project
	Parks and recreational resources (acres)	3.0	3.1	1.7	2.5
		• Approximately 3 acres of potential permanent impacts to the following parks: West Duwamish Greenbelt and West Seattle Golf Course • Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible	• Approximately 3.1 acres of potential permanent impacts to the following parks: West Duwamish Greenbelt and West Seattle Golf Course • Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible	• Approximately 1.7 acres of potential permanent impacts to the West Seattle Golf Course • North Duwamish Waterway crossing avoids steep slope on Pigeon Point in the West Duwamish Greenbelt	• Approximately 2.5 acres of potential permanent impacts to the West Duwamish Greenbelt • Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible • Avoids West Seattle Golf Course

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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		Avalon Station Elevated Delridge Station North of Andover	Avalon Station Elevated Delridge Station South of of Andover	Avalon Station Tunnel Delridge Station North of Genesee	
Environmental Effects (continued)	Fish and wildlife habitats (acres)	2.5	2.5	<0.5	2.5
		<ul style="list-style-type: none"><li>Approximately 2.5 acres of potential permanent habitat impacts</li><li>Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</li><li>Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment</li></ul>	<ul style="list-style-type: none"><li>Approximately 2.5 acres of potential permanent habitat impacts</li><li>Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</li><li>Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment</li></ul>	<ul style="list-style-type: none"><li>Less than approximately 0.5 acres of potential permanent habitat impacts</li><li>North Duwamish Waterway crossing avoids Pigeon Point</li></ul>	<ul style="list-style-type: none"><li>Approximately 2.5 acres of potential permanent habitat impacts</li><li>Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</li><li>Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment</li></ul>
	Hazardous materials sites	2	2	2	1
		<ul style="list-style-type: none"><li>2 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li></ul>	<ul style="list-style-type: none"><li>2 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li></ul>	<ul style="list-style-type: none"><li>2 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li></ul>	<ul style="list-style-type: none"><li>1 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li></ul>
	Visual effects (miles of sensitive viewers)	Lower	Lower	Medium	Medium
		<ul style="list-style-type: none"><li>Approximately 1 mile of elevated guideway near visually sensitive viewers</li><li>Along SW Genesee Street/West Seattle Golf Course, approximately 900 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet</li></ul>	<ul style="list-style-type: none"><li>Approximately 1 mile of elevated guideway near visually sensitive viewers</li><li>Along SW Genesee Street/West Seattle Golf Course, approximately 900 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet</li></ul>	<ul style="list-style-type: none"><li>Approximately 0.9 miles of elevated guideway near visually sensitive viewers</li><li>There would be no elevated guideway over 75 feet above grade</li></ul>	<ul style="list-style-type: none"><li>Approximately 0.5 miles of elevated guideway near visually sensitive viewers</li><li>Along SW Avalon Way and SW Yancy Street, approximately 1,650 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet</li></ul>
	Potential residential unit displacements	Lower	Lower	Lower	Medium
		<ul style="list-style-type: none"><li>More than 60 potential residential unit displacements</li></ul>	<ul style="list-style-type: none"><li>More than 60 potential residential unit displacements</li></ul>	<ul style="list-style-type: none"><li>More than 60 potential residential unit displacements</li></ul>	<ul style="list-style-type: none"><li>Between 40 and 60 potential residential unit displacements</li></ul>
	Potential business displacements	Higher	Higher	Medium	Lower
		<ul style="list-style-type: none"><li>Fewer than 65,000 square feet of potential business displacements</li></ul>	<ul style="list-style-type: none"><li>Fewer than 65,000 square feet of potential business displacements</li></ul>	<ul style="list-style-type: none"><li>Between 65,000 and 110,000 square feet of potential business displacements</li></ul>	<ul style="list-style-type: none"><li>More than 110,000 square feet of potential business displacements</li></ul>

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Yancy-Andover Elevated
		Avalon Station Elevated Delridge Station North of Andover	Avalon Station Elevated Delridge Station South of of Andover	Avalon Station Tunnel Delridge Station North of Genesee	
Environmental Effects (continued)	Community construction impacts	Medium	Medium	Lower	Medium
		<ul style="list-style-type: none"><li>• Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW</li><li>• Potential Increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>• Construction could affect the West Seattle Golf Course</li><li>• Delridge Station construction mostly within right-of-way</li></ul>	<ul style="list-style-type: none"><li>• Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW</li><li>• Potential increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>• Construction could affect the West Seattle Golf Course</li><li>• Delridge Station construction mostly within right-of-way</li></ul>	<ul style="list-style-type: none"><li>• Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW</li><li>• Greater amount of construction vehicles in West Seattle neighborhoods for tunnel excavation material hauling</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>• Would have the greatest potential construction effect to the West Seattle Golf Course</li><li>• Delridge Station construction mostly outside right-of-way</li></ul>	<ul style="list-style-type: none"><li>• Potential for visual, noise, and vibration impacts on residences near SW Avalon Way, SW Yancy Street and SW Andover Street, as well as the north end of Pigeon Point for elevated guideway and Delridge station construction</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>• Increased potential congestion on Delridge Way SW and Fauntleroy Way SW due to construction on Avalon Way SW</li><li>• No construction effect to the West Seattle Golf Course</li></ul>
	Burden on minority and low-income populations	Higher	Higher	Higher	Higher
		<ul style="list-style-type: none"><li>• Located in an area where minority or low-income populations are not above the city average</li></ul>	<ul style="list-style-type: none"><li>• Located in an area where minority or low-income populations are not above the city average</li></ul>	<ul style="list-style-type: none"><li>• Located in an area where minority or low-income populations are not above the city average</li></ul>	<ul style="list-style-type: none"><li>• Located in an area where minority or low-income populations are not above the city average</li></ul>
Traffic Operations	Traffic circulation and access effects	Medium	Medium	Higher	Medium
		<ul style="list-style-type: none"><li>• Could affect driveway access and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street</li></ul>	<ul style="list-style-type: none"><li>• Could affect driveway access and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street</li></ul>	<ul style="list-style-type: none"><li>• Limited effect to driveway access and roadway capacity/turn lanes, including minor circulation changes around West Seattle tunnel portal</li></ul>	<ul style="list-style-type: none"><li>• Could affect driveway access for major industrial use on SW Andover Street; limited effects elsewhere</li><li>• Would potentially increase traffic on SW Avalon Way and impede access</li></ul>
	Effects on transportation facilities	Medium	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>• Affected facilities include the Delridge Way SW corridor</li></ul>	<ul style="list-style-type: none"><li>• Affected facilities include the Delridge Way SW corridor</li></ul>	<ul style="list-style-type: none"><li>• Affected facilities include the Delridge Way SW corridor</li></ul>	<ul style="list-style-type: none"><li>• Affected facilities in West Seattle include the Delridge Way SW and Avalon Way corridor</li></ul>
Economic Effects	Effects on freight movement	Lower	Medium	Medium	Lower
		<ul style="list-style-type: none"><li>• Elevated guideway columns could affect truck access to local businesses on Delridge Way SW</li><li>• Truck and rail access to Nucor Steel could be affected by the elevated guideway columns and Delridge Station</li><li>• Construction of elevated guideway columns could have limited effects associated with the guideway crossing the W Marginal Way Major Freight Route</li></ul>	<ul style="list-style-type: none"><li>• Elevated guideway columns could affect truck access to local businesses on Delridge Way SW</li><li>• Traffic signal at SW Dakota Street/Delridge Way SW intersection will likely divert some local traffic away from heavy freight movements on SW Andover Street</li><li>• Construction of elevated guideway columns could have limited effects associated with the guideway crossing the W Marginal Way Major Freight Route</li></ul>	<ul style="list-style-type: none"><li>• Elevated guideway columns could affect truck access to local businesses on Delridge Way SW</li><li>• Truck and rail access to Nucor Steel could be affected by the elevated guideway columns</li><li>• Traffic signal at SW Dakota Street/Delridge Way SW intersection will likely divert some local traffic away from heavy freight movements on SW Andover Street</li><li>• Construction of elevated guideway columns could have limited effects associated with the guideway crossing the W Marginal Way Major Freight Route</li></ul>	<ul style="list-style-type: none"><li>• Elevated guideway columns could affect truck access to local businesses on SW Yancy Street, SW Andover Street and Avalon Way</li><li>• Truck and rail access to Nucor Steel could be affected by the elevated guideway columns and Delridge Station</li><li>• Construction of elevated guideway columns could have limited effects associated with the guideway crossing the W Marginal Way Major Freight Route and SW Avalon Way Minor Freight Route</li></ul>

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Yancy-Andover Elevated
		Avalon Station Elevated Delridge Station North of Andover	Avalon Station Elevated Delridge Station South of of Andover	Avalon Station Tunnel Delridge Station North of Genesee	
Economic Effects (continued)	Business and commerce effects	Medium	Medium	Medium	Lower
		<ul style="list-style-type: none"><li>• Would have the least amount of business displacements, the majority of which would be in the Duwamish Manufacturing/Industrial Center (MIC) and along Delridge Way SW</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period effects such as lane closures and access changes, to local businesses on or near SW Avalon Way and Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>• Would have the least amount of business displacements, the majority of which would be in the Duwamish MIC and along Delridge Way SW</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period impacts, such as lane closures and access changes, to local businesses on or near SW Avalon Way and Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>• Could have a moderate amount of business displacements, the majority of which would be along Delridge Way SW</li><li>• Could displace small businesses in that mostly serve local community</li><li>• Potential construction period impacts, such as lane closures and access changes to local businesses on or near SW Avalon Way and Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>• Would have the greatest amount of business displacements, the majority of which would be in the Duwamish MIC and along Delridge Way SW and along SW Andover Street and SW Yancy Street</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period impacts, such as lane closures and access changes, to local businesses on or near SW Yancy Street and SW Andover Street</li></ul>

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

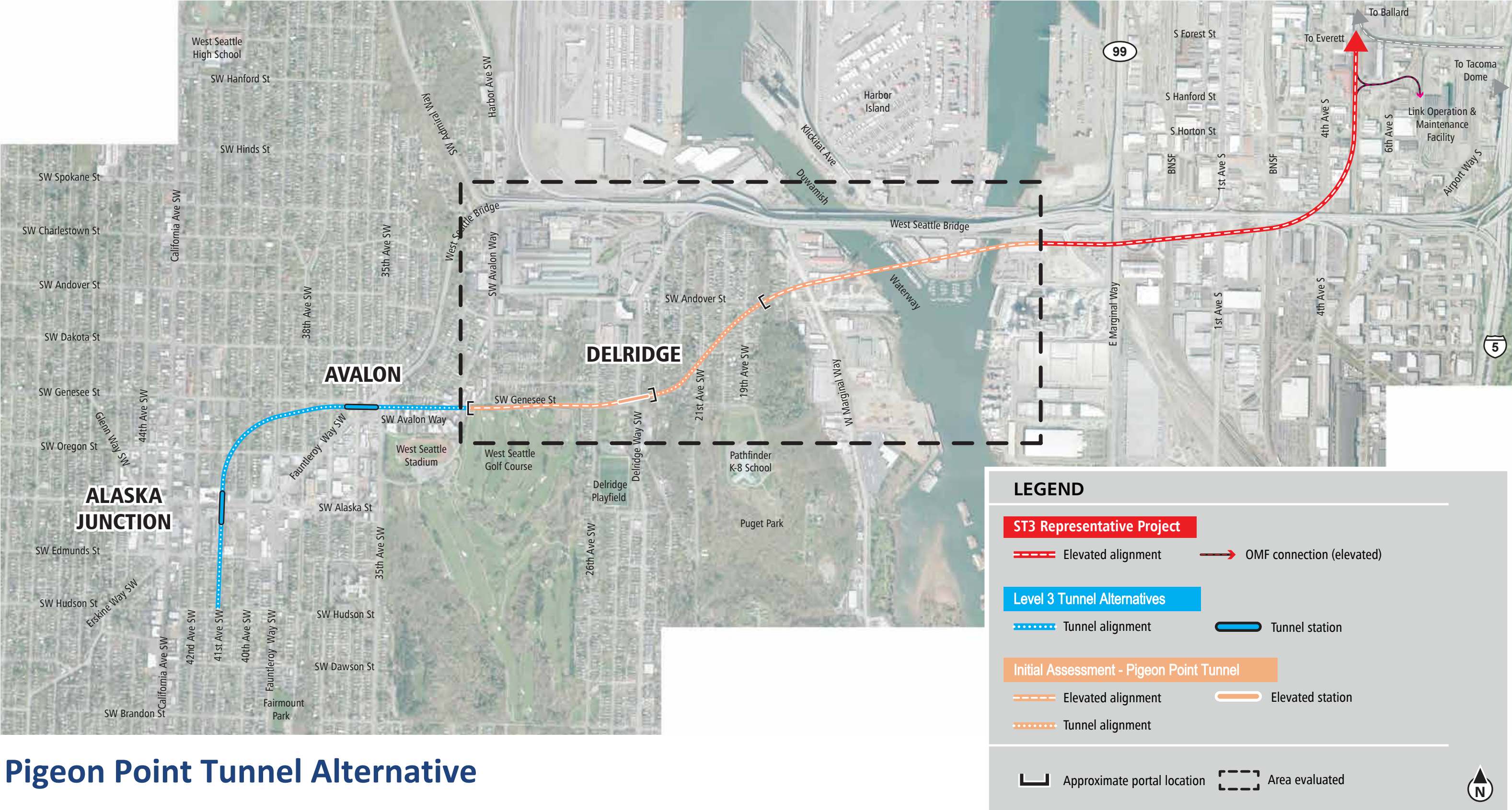
The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.



## Initial Assessment Results

# Pigeon Point Tunnel



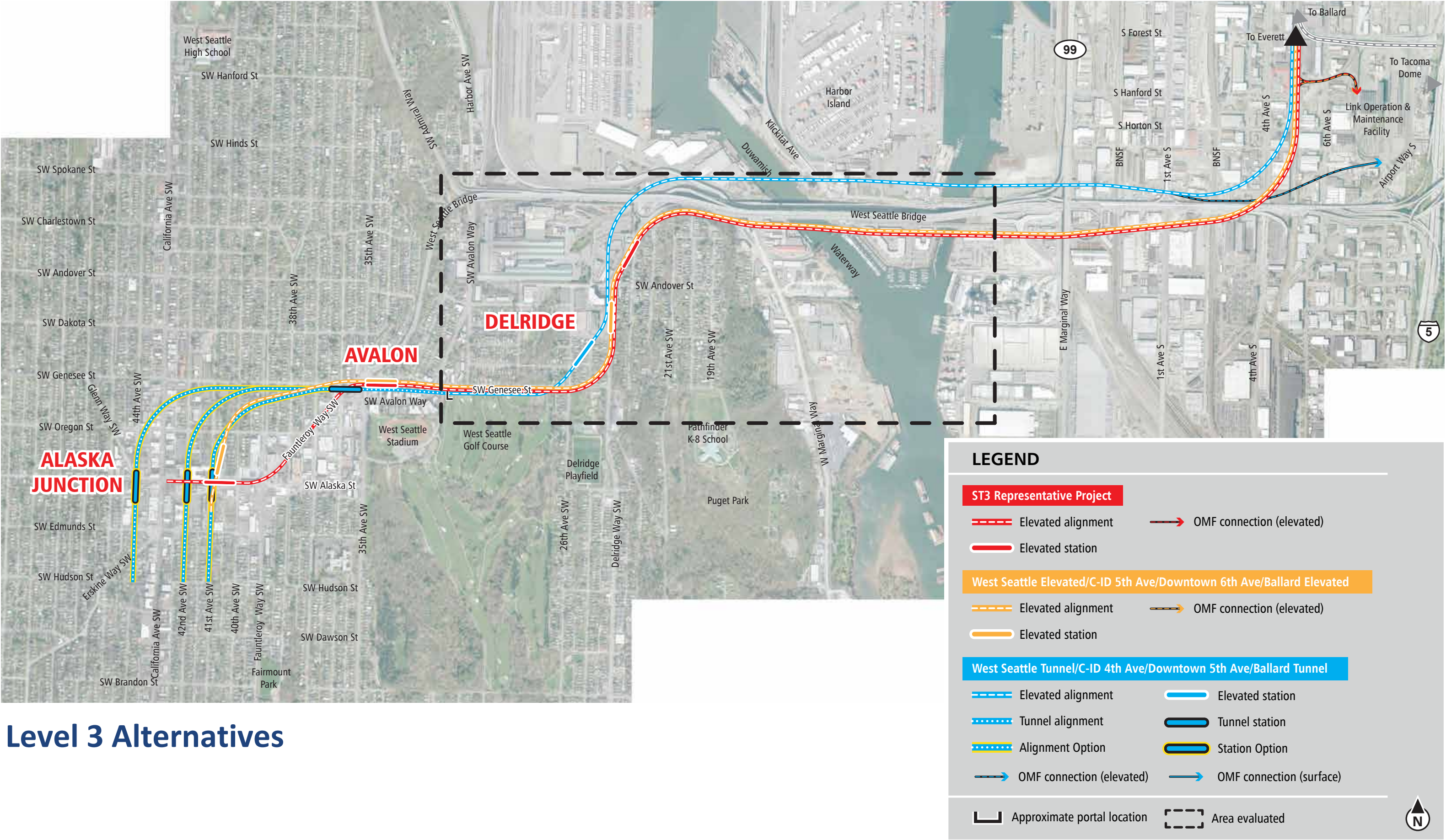


Pigeon Point Tunnel Alternative



# Pre Draft-EIS Initial Assessment Results

9-12-2019



## Level 3 Alternatives



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	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
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, horizontal curvature, movable bridge, etc.)	Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection
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
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.			
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



Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
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 = 1 or less historic properties potentially affected Medium = Between 2 and 3 historic properties potentially affected Lower = More than 3 historic properties potentially affected
	Potential archaeological resources	Percent of alternative length within previously identified archaeologically sensitive areas that are 500 feet (or 0.5 miles at water crossings) from alignment	Higher = Less than 25 percent of alternative length within Very High Risk or High Risk probability areas Medium = Between 25 and 75 percent of alternative length within Very High Risk or High Risk probability areas Lower = More than 75 percent of alternative length within Very High Risk or High Risk probability areas
	Parks and recreational resources	Number of and estimated acres of potential permanent impacts to parks and recreational resources	Higher = Less than 1.5 acres of potential permanent impacts to parks Medium = Between 1.5 and 3 acres of potential permanent impacts to parks Lower = 3 acres or more 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
	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 1.5 acres of potential permanent fish and wildlife habitat impacts Medium = Between 1.5 and 2.5 acres of potential permanent fish and wildlife habitat impacts Lower = More than 2.5 acres of potential permanent fish and wildlife habitat impacts
	Hazardous materials	Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites	Higher = 5 or less hazardous materials sites potentially affected Medium = Between 6 and 10 hazardous sites potentially affected Lower = More than 10 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 = 0.5 miles or less adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high in visually sensitive areas, and low potential to affect SEPA Scenic Routes Medium = Between 0.6 and 1 miles adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high in visually sensitive areas, and/or moderate potential to affect SEPA Scenic Routes Lower = More than 1 miles potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high in visually sensitive areas, and/or high potential to affect SEPA Scenic Routes
	Property acquisitions and displacements	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 20 potential residential unit displacements Medium = Between approximately 20 and 40 potential residential unit displacements Lower = More than approximately 40 potential residential unit displacements
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 200,000 square feet of potential business displacements Medium = Between approximately 200,000 and 300,000 square feet of potential business displacements Lower = More than approximately 300,000 square feet of potential business displacements	

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Environmental Effects (continued)	Community construction impacts	Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below	Higher = Lower potential for impacts to community relative to other alternatives Medium = Moderate potential for impacts to community relative to other alternatives Lower = More substantial potential for impacts to community relative to other alternatives
	Burden on minority and low-income populations	Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities	Higher = Little to no potential impact to minority or low-income communities relative to other alternatives Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives Lower = Substantial potential for impacts to minority or low-income communities relative to other alternatives
Traffic 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.
  - 2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
  - 3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
  - 4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
  - 5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; “Higher” = higher ability to achieve measure, “Medium” = moderate ability to achieve measure, “Lower” = lower ability to achieve measure; no weighting will be applied.
  - 6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

Purpose and Need / Evaluation Measures	Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
	ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Pigeon Point Tunnel
	Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.				
Potential ST3 implementation schedule effects	Higher (includes entire West Seattle Extension)	Higher (includes entire West Seattle Extension)	Lower (includes entire West Seattle Extension)	Lower (includes entire West Seattle Extension)
Engineering constraints	Lower	Lower	Higher	Medium
Constructability issues	Lower	Lower	Medium	Higher
Operational constraints	Medium	Medium	Higher	Higher
Conceptual capital cost comparison (2018\$ in millions)	--	Similar to ST3 Representative Project (includes entire West Seattle Extension)	\$1,000 million increase (includes entire West Seattle Extension)	\$900 million increase (includes entire West Seattle Extension)
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.				
Passenger transfers	Medium	Medium	Medium	Higher
Bus/rail and rail/rail integration	Lower	Higher	Medium	Higher
Bicycle infrastructure and accessibility	Higher	Higher	Higher	Higher
Pedestrian and persons with limited mobility accessibility	Lower	Medium	Higher	Higher
Development potential	Lower	Medium	Higher	Higher
Equitable development opportunities	Lower	Medium	Higher	Higher
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	2	1	2	1
Potential archaeological resources	Lower	Lower	Lower	Lower
Parks and recreational resources (acres)	3.3	3.4	1.7	2.4
Water resources (acres)	>0.1	>0.1	<0.1	>0.1
Fish and wildlife habitats (acres)	3.5	3.5	1.2	2.0
Hazardous materials sites	4	4	6	3
Visual effects (miles of sensitive viewers)	Lower	Lower	Medium	Higher
Potential residential unit displacements	Medium	Medium	Medium	Medium

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Measures	Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
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	Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
Potential business displacements	Medium	Medium	Lower	Medium
Community construction impacts	Medium	Medium	Medium	Lower
Burden on minority and low-income populations	Higher	Higher	Higher	Higher
Traffic circulation and access effects	Medium	Medium	Higher	Higher
Effects on transportation facilities	Medium	Medium	Medium	Higher
Effects on freight movement	Medium	Medium	Medium	Higher
Business and commerce effects	Medium	Medium	Lower	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

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
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		Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
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	Potential ST3 implementation schedule effects	Higher (includes entire West Seattle Extension)	Higher (includes entire West Seattle Extension)	Lower (includes entire West Seattle Extension)	Lower (includes entire West Seattle Extension)
		• Implementation schedule anticipated to be similar to ST3 Plan	• Implementation schedule anticipated to be similar to ST3 Plan	• Implementation schedule anticipated to be similar to ST3 Plan within the limit of the segment evaluated • However, segment leads to the West Seattle tunnel, which may affect the ST3 schedule	• Implementation schedule anticipated to be similar to ST3 Plan within the limit of the segment evaluated • However, segment leads to the West Seattle tunnel, which may affect the ST3 schedule
Technical Feasibility	Engineering constraints	Lower	Lower	Higher	Medium
		• 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 could require potential column placements in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance • Potentially requires additional design measures for the potential in-water pier for being in close proximity to BNSF railroad bridge and West Seattle Bridge • Higher elevated guideway with potentially larger foundation	• 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 could require potential column placements in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance • Potentially requires additional design measures for potential in-water pier for being in close proximity to BNSF railroad bridge and West Seattle Bridge • Higher elevated guideway with potentially larger foundation	• Duwamish Waterway crossing north of West Seattle Bridge avoids steep and unstable slope design at Pigeon Point in West Seattle, however may need special design for the long span bridge going above the flyover leading to Terminal 5 and also above the West Seattle Bridge • Duwamish Waterway crossing north of West Seattle Bridge could require potential column placement in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance; north crossing could have less area of in-water effects than other crossings • Avoids having a potential in-water pier in close proximity to BNSF railroad bridge and West Seattle Bridge • Lower elevated guideway with potentially smaller foundation	• Duwamish Waterway crossing further south of West Seattle Bridge leading to the tunnel potentially requires special design for steep and unstable slope and landslide evaluation at east and west tunnel portal at Pigeon Point in West Seattle • Duwamish Waterway crossing further south of West Seattle Bridge leading to the tunnel could require potential column placement in Duwamish Waterway and coordination with Port of Seattle and Northwest Seaport Alliance • Avoids having a potential in-water pier in close proximity to BNSF railroad bridge and West Seattle Bridge • Lower elevated guideway with potentially smaller foundation

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Pigeon Point Tunnel
		Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
Technical Feasibility (continued)	Constructability issues	Lower	Lower	Medium	Higher
		<ul style="list-style-type: none"><li>• Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization and multiple construction access roads along steep slope at Pigeon Point in West Seattle which will be challenging</li><li>• 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 but avoids affecting Port of Seattle and Northwest Seaport Alliance's major operation directly</li><li>• Requires coordination with BNSF Railroad for any construction activity close to BNSF railroad bridge</li><li>• Requires coordination with City of Seattle for any construction activity close to the West Seattle bridge</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for vessel traffic in the navigation channel, where the waterway is the narrowest at this location</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for work windows and tribal treaty fishing windows</li><li>• Construction constraints along SW Genesee Street width with adjacent properties and West Seattle Golf Course</li><li>• Higher elevated guideway along SW Genesee Street</li></ul>	<ul style="list-style-type: none"><li>• Duwamish Waterway crossing south of West Seattle Bridge potentially requires soil stabilization and multiple construction access roads along steep slope at Pigeon Point in West Seattle which will be challenging</li><li>• 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 but avoids affecting Port of Seattle and Northwest Seaport Alliance's major operation directly</li><li>• Requires coordination with BNSF Railroad for any construction activity close to BNSF railroad bridge</li><li>• Requires coordination with City of Seattle for any construction activity close to the West Seattle bridge</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for vessel traffic in the navigation channel, where the waterway is the narrowest at this location</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for work windows and tribal treaty fishing windows</li><li>• Construction constraints along SW Genesee Street width with adjacent properties and West Seattle Golf Course</li><li>• Higher elevated guideway along SW Genesee Street</li></ul>	<ul style="list-style-type: none"><li>• Duwamish Waterway crossing north of West Seattle Bridge likely avoids challenges of construction at Pigeon Point in West Seattle; however construction near West Marginal Way SW/Chelan Ave SW intersection will be challenging due to limited area for construction and staging</li><li>• 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</li><li>• Avoids construction activity close to BNSF railroad bridge and the West Seattle bridge</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for vessel traffic in the navigation channel, however avoids the narrow channel at BNSF railroad bridge</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for work windows and tribal treaty fishing windows</li><li>• Construction constraints at tunnel portal location on SW Genesee Street with adjacent properties and West Seattle Golf Course</li><li>• Lower elevated guideway along SW Genesee Street</li></ul>	<ul style="list-style-type: none"><li>• Duwamish Waterway crossing further south of West Seattle Bridge on Harbor Island leading to the tunnel requires soil stabilization at east and west tunnel portals at Pigeon Point in West Seattle</li><li>• Requires coordination with Port of Seattle and Northwest Seaport Alliance for construction access, staging and ground improvements at Harbor Marina Corporate Center (Terminal 102), Terminal 104 and Terminal 103 but avoids affecting Port of Seattle and Northwest Seaport Alliance's major operation directly</li><li>• Avoids construction activity close to BNSF railroad bridge and the West Seattle bridge</li><li>• Minimizes coordination with BNSF Railroad and potentially minimizes risks to construction schedule</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for vessel traffic in the navigation channel, however avoids the narrow channel at BNSF railroad bridge</li><li>• Requires potential in-water construction activities for piers in Duwamish Waterway with consideration for work windows and tribal treaty fishing windows</li><li>• Construction constraints at tunnel portal location on SW Genesee Street with adjacent properties and West Seattle Golf Course</li><li>• Lower elevated guideway along SW Genesee Street</li><li>• Guideway approaching the east portal at Pigeon Point would likely require modification to existing overhead power lines</li></ul>
	Operational constraints	Medium	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>• Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle</li><li>• Tighter radius curves rounding Pigeon Point would likely result in lower speeds</li></ul>	<ul style="list-style-type: none"><li>• Steeper track grades for elevated guideway in West Seattle limit train acceleration and flexibility for crossovers compared to a tunnel in West Seattle.</li><li>• Tighter radius curves rounding Pigeon Point would likely result in lower speeds</li></ul>	<ul style="list-style-type: none"><li>• Larger radius curves crossing West Seattle Bridge and avoiding Pigeon Point would likely result in higher speeds</li><li>• Less steep track grades result in better acceleration and flexibility for crossovers</li></ul>	<ul style="list-style-type: none"><li>• Larger radius curves through Pigeon Point tunnel would enable higher speeds</li><li>• Less steep track grades result in better acceleration and flexibility for crossovers</li></ul>
Financial Sustainability	Conceptual capital cost comparison (2018\$ in millions)	--	Similar to ST3 Representative Project (includes entire West Seattle Extension)	\$1,000 million increase (includes entire West Seattle Extension)	\$900 million increase (includes entire West Seattle Extension)
		<ul style="list-style-type: none"><li>• Baseline for capital cost comparison to other alternatives</li></ul>	<ul style="list-style-type: none"><li>• Similar cost to ST3 Representative Project in West Seattle</li></ul>	<ul style="list-style-type: none"><li>• Approximately \$1,000 million more than the ST3 Representative Project</li><li>• Higher cost for additional tunnel construction in West Seattle Junction (\$700 million increase) and for north Duwamish Waterway Crossing (\$300 million increase)</li><li>• Cost for additional tunnel in West Seattle Junction not included in ST3 financial plan</li></ul>	<ul style="list-style-type: none"><li>• Approximately \$900 million more than the ST3 Representative Project</li><li>• Alignment can only tie to tunnel in West Seattle Junction; higher cost includes additional tunnel construction in Pigeon Point (\$200 million increase) and in West Seattle Junction (\$700 million increase)</li><li>• Cost for additional tunnels in Pigeon Point and West Seattle Junction not included in ST3 financial plan</li></ul>

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Pigeon Point Tunnel
		Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
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.					
Modal Integration	Passenger transfers	Medium	Medium	Medium	Higher
		• Station location at Delridge may constrain passenger drop-off/pick-up areas	• Station location at Delridge provides opportunity for convenient passenger drop-off/pick-up areas but the higher profile at the guideway and higher station mezzanine result in slightly longer access path	• Station location at Delridge off street may constrain passenger drop-off/pick-up areas	• Station location straddling Delridge provides opportunity for convenient passenger drop-off/pick-up areas and the lower profile at the guideway and lower station mezzanine result in slightly shorter access path
	Bus/rail and rail/rail integration	Lower	Higher	Medium	Higher
		• Delridge Station may have constrained areas for bus zones • Bus routes destined to Alki may need to either be re-routed to serve station or serve a station platform south of SW Andover Street because of ramp lane configurations	• Delridge Station straddling the street provides good integration with buses on both sides of the street	• Delridge Station is located off-street, requiring either some bus reroutings or a walk to the station from bus stops on Delridge Way SW	• Delridge Station straddling the street provides good integration with buses on both sides of the street
	Bicycle infrastructure and accessibility	Higher	Higher	Higher	Higher
		• Existing multi-use bike facilities within a 10-minute ride from stations include 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	• Existing multi-use bike facilities within a 10-minute ride from stations include 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	• Existing multi-use bike facilities within a 10-minute ride from stations include 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	• Existing multi-use bike facilities within a 10-minute ride from stations include 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
	Pedestrian and persons with limited mobility accessibility	Lower	Medium	Higher	Higher
		• Delridge Station is sited closer to the West Seattle Bridge industrial areas north of SW Andover Street, which results in fewer intersections, less sidewalk coverage and lower accessibility compared to all other alternatives	• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project	• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project and Delridge Station South of Andover	• Delridge Station is sited further south, which results in a higher number of intersections and sidewalk coverage for better accessibility than the ST3 Representative Project and Delridge Station South of Andover
Station Area Development Opportunities	Development potential	Lower	Medium	Higher	Higher
		• Fewer development opportunities due to proximity of Delridge Station to West Seattle Bridge	• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to location	• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to southern location	• Development opportunities at Delridge Station are similar in acreage to those associated with other alternatives, but parcels are of higher value due to southern location
	Equitable development opportunities	Lower	Medium	Higher	Higher
		• Fewer equitable development opportunities due to proximity of Delridge Station to West Seattle Bridge	• Equitable development opportunities at Delridge Station are improved compared to the ST3 Representative Project	• Equitable development opportunities at Delridge Station are similar to other alternatives, but parcels are of higher value due to further south station location	• Equitable development opportunities similar to opportunities for Delridge North of Genesee

Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
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		Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
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	2	1	2	1
		• 2 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project	• 1 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project	• 2 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project	• 1 NRHP-listed, NRHP-eligible, and/or Seattle Landmark property could be directly affected by the project
	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 • Precontact archaeological sites may have been less disturbed and may retain a higher degree of integrity compared to those archaeological sites immediately adjacent to existing infrastructure along/over the Duwamish Waterway • Closest to National Register-listed archaeology site
	Parks and recreational resources (acres)	3.3	3.4	1.7	2.4
		• Approximately 3.3 acres of potential permanent impacts to the following parks: West Duwamish Greenbelt, West Seattle Golf Course, and Harbor Marina Corporate Center (Terminal 102) • Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible	• Approximately 3.4 acres of potential permanent impacts to the following parks: West Duwamish Greenbelt, West Seattle Golf Course, and Harbor Marina Corporate Center (Terminal 102) • Requires clearing steep slope on Pigeon Point in the West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible	• Approximately 1.7 acres of potential permanent impacts to the West Seattle Golf Course • Avoids steep slope on Pigeon Point in the West Duwamish Greenbelt	• Approximately 2.4 acres of potential permanent impacts to the following parks: Delridge Playfield, West Duwamish Greenbelt, West Seattle Golf Course, and Harbor Marina Corporate Center (Terminal 102) • Requires clearing steep slope in the West Duwamish Greenbelt at the tunnel portal; revegetation with low-growing shrubs is expected to be possible
	Water resources (acres)	>0.1	>0.1	<0.1	>0.1
		• More than 0.1 acres of potential permanent in-water impact would occur in the Duwamish Waterway from bridge columns • Duwamish Waterway crossing south of West Seattle Bridge could have more potential in-water impacts than the north crossing	• More than 0.1 acres of potential permanent in-water impact would occur in the Duwamish Waterway from bridge columns • Duwamish Waterway crossing south of West Seattle Bridge could have more potential in-water impacts than the north crossing	• Less than 0.1 acres of potential permanent in-water impact would occur in the Duwamish Waterway from bridge columns • Duwamish Waterway crossing north of West Seattle Bridge could have less potential in-water impacts than the south crossing	• More than 0.1 acres of potential permanent in-water impact would occur in the Duwamish Waterway from bridge columns • Duwamish Waterway crossing south of West Seattle Bridge could have more potential in-water impacts than the north crossing

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Pigeon Point Tunnel
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Environmental Effects (continued)	Fish and wildlife habitats (acres)	3.5	3.5	1.2	2.0
		<ul style="list-style-type: none"><li>• Approximately 3.5 acres of potential permanent habitat impacts</li><li>• Crosses the Duwamish Waterway and requires clearing steep slope on Pigeon Point in West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</li><li>• Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment</li></ul>	<ul style="list-style-type: none"><li>• Approximately 3.5 acres of potential permanent habitat impacts</li><li>• Crosses the Duwamish Waterway and requires clearing steep slope on Pigeon Point in West Duwamish Greenbelt; revegetation with low-growing shrubs is expected to be possible</li><li>• Heron rookery has been observed in West Duwamish Greenbelt within 250 feet south of the alignment</li></ul>	<ul style="list-style-type: none"><li>• Approximately 1.2 acres of potential permanent habitat impacts</li><li>• North bridge crossing of Duwamish Waterway avoids steep slope on Pigeon Point in West Duwamish Greenbelt</li></ul>	<ul style="list-style-type: none"><li>• Approximately 2.0 acres of potential permanent habitat impacts</li><li>• Crosses the Duwamish Waterway and requires clearing steep slope in West Duwamish Greenbelt near the tunnel portal; revegetation with low-growing shrubs is expected to be possible</li><li>• The alignment and vegetation clearing would bisect the West Duwamish Greenbelt</li><li>• Heron rookery has been observed in West Duwamish Greenbelt within 500 feet north of the elevated guideway and within 550 feet south of the elevated guideway</li><li>• Historical presence of bald eagle nests in the West Duwamish Greenbelt. Bald Eagle and Heron Management Areas are approximately 320 feet south of the elevated guideway</li></ul>
	Hazardous materials sites	4	4	6	3
		<ul style="list-style-type: none"><li>• 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li><li>• Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)</li></ul>	<ul style="list-style-type: none"><li>• 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li><li>• Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)</li></ul>	<ul style="list-style-type: none"><li>• 6 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li><li>• Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)</li></ul>	<ul style="list-style-type: none"><li>• 3 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li><li>• Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)</li><li>• A small portion of the alignment crosses the northern extent of the Lower Duwamish Superfund Site</li></ul>
	Visual effects (miles of sensitive viewers)	Lower	Lower	Medium	Higher
		<ul style="list-style-type: none"><li>• Approximately 1 mile of elevated guideway near visually sensitive viewers</li><li>• Along SW Genesee Street/West Seattle Golf Course, approximately 900 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet</li><li>• Would be about 100 feet south of the West Seattle Bridge, a SEPA Scenic Route</li></ul>	<ul style="list-style-type: none"><li>• Approximately 1 mile of elevated guideway near visually sensitive viewers</li><li>• Along SW Genesee Street/West Seattle Golf Course, approximately 900 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 160 feet</li><li>• Would be about 100 feet south of the West Seattle Bridge, a SEPA Scenic Route</li></ul>	<ul style="list-style-type: none"><li>• Approximately 0.9 miles of elevated guideway near visually sensitive viewers</li><li>• There would be no elevated guideway over 75 feet above grade</li><li>• Would be about 100 feet north of the West Seattle Bridge, a SEPA Scenic Route</li></ul>	<ul style="list-style-type: none"><li>• Approximately 0.3 miles of elevated guideway near visually sensitive viewers</li><li>• Along 18th Avenue SW and 17th Avenue SW, approximately 500 feet of length of elevated guideway would be over 75 feet, with a maximum height of about 135 feet</li><li>• Would be between approximately 220 feet (at the eastern extent) to 960 feet (at the western extent) south of the West Seattle Bridge, a SEPA Scenic Route</li></ul>
	Potential residential unit displacements	Medium	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>• Between approximately 20 and 40 potential residential unit displacements</li><li>• Residential displacements primarily located west of Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>• Between approximately 20 and 40 potential residential unit displacements</li><li>• Residential displacements primarily located west of Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>• Between approximately 20 and 40 potential residential unit displacements</li><li>• Residential displacements primarily located west of Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>• Between approximately 20 and 40 potential residential unit displacements</li><li>• Residential displacements primarily located east of Delridge Way SW</li></ul>

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Alternative Performance

Lower Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Pigeon Point Tunnel
		Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
Environmental Effects (continued)	Potential business displacements	Medium	Medium	Lower	Medium
		<ul style="list-style-type: none"><li>Between approximately 200,000 and 300,000 square feet of potential business displacements</li><li>Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>Between approximately 200,000 and 300,000 square feet of potential business displacements</li><li>Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>More than approximately 300,000 square feet of potential business displacements</li><li>Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW</li></ul>	<ul style="list-style-type: none"><li>Between approximately 200,000 and 300,000 square feet of potential business displacements</li><li>Business displacements are primarily located in the Duwamish MIC and along Delridge Way SW</li></ul>
	Community construction impacts	Medium	Medium	Medium	Lower
		<ul style="list-style-type: none"><li>Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW</li><li>Potential increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street</li><li>Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>Construction could affect the West Seattle Golf Course</li><li>Delridge Station construction mostly within right-of-way</li></ul>	<ul style="list-style-type: none"><li>Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW</li><li>Potential increased congestion on SW Avalon Way, 35th Avenue SW and the West Seattle Bridge due to construction on Delridge Way SW and SW Genesee Street</li><li>Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>Construction could affect the West Seattle Golf Course</li><li>Delridge Station construction mostly within right-of-way</li></ul>	<ul style="list-style-type: none"><li>Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW</li><li>Greater amount of construction vehicles in West Seattle neighborhoods for tunnel excavation material hauling</li><li>Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>Greater construction effect to the West Seattle Golf Course</li><li>Delridge Station construction outside right-of-way</li></ul>	<ul style="list-style-type: none"><li>Potential for visual, noise, and vibration impacts on residences near SW Genesee Street and Delridge Way SW (near the intersection of SW Genesee Street) for elevated guideway, station and tunnel portal construction and near the east side of Pigeon Point for the high-level, rail-only bridge and tunnel portal construction</li><li>Reduces construction disruption on Delridge Way SW and on the northern end of Pigeon Point</li><li>Greatest amount of construction vehicles in Delridge and Pigeon Point neighborhoods for tunnel excavation material hauling</li><li>Construction could affect use of a portion of Youngstown Cultural Arts Center, Delridge Playfield (which includes Delridge Community Center and Skate Park), and could have greater construction effect to the West Seattle Golf Course</li></ul>
	Burden on minority and low-income populations	Higher	Higher	Higher	Higher
		<ul style="list-style-type: none"><li>Located in an area where minority or low-income populations are not above the city average</li></ul>	<ul style="list-style-type: none"><li>Located in an area where minority or low-income populations are not above the city average</li></ul>	<ul style="list-style-type: none"><li>Located in an area where minority or low-income populations are not above the city average</li></ul>	<ul style="list-style-type: none"><li>Located in an area where minority or low-income populations are not above the city average</li></ul>
Traffic Operations	Traffic circulation and access effects	Medium	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>Could affect driveway access and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street</li></ul>	<ul style="list-style-type: none"><li>Could affect driveway and roadway capacity/turn lanes along Delridge Way SW and SW Genesee Street</li></ul>	<ul style="list-style-type: none"><li>Limited effects to driveway access and roadway capacity/turn lanes because the alignment is outside of Delridge Way SW right-of-way</li></ul>	<ul style="list-style-type: none"><li>Limited effects to driveway access and roadway capacity/turn lanes because the alignment is outside of major arterial rights-of way</li></ul>
	Effects on transportation facilities	Medium	Medium	Medium	Higher
		<ul style="list-style-type: none"><li>Could affect Delridge Way SW corridor and West Seattle Bridge</li></ul>	<ul style="list-style-type: none"><li>Could affect the Delridge Way SW corridor and West Seattle Bridge</li></ul>	<ul style="list-style-type: none"><li>Could affect the Delridge Way SW corridor and West Seattle Bridge</li></ul>	<ul style="list-style-type: none"><li>Fewer effects to the Delridge Way SW corridor</li></ul>

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	Pigeon Point Tunnel
		Delridge Station North of Andover South Duwamish Crossing	Delridge Station South of of Andover South Duwamish Crossing	Delridge Station North of Genesee North Duwamish Crossing	
Economic Effects	Effects on freight movement	Medium	Medium	Medium	Higher
		<ul style="list-style-type: none"><li>• Elevated guideway columns could affect truck access to local businesses on Delridge Way SW</li><li>• Construction of elevated guideway columns would potentially have limited effects associated with the guideway crossing the West Marginal Way Major Freight Route</li><li>• Truck and rail access to Nucor Steel could be affected by the elevated guideway columns and Delridge Station</li><li>• South bridge crossing would span the Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations and BNSF railroad bridge</li><li>• No direct effects expected to Terminal 5 or Terminal 18 access or operations</li></ul>	<ul style="list-style-type: none"><li>• Elevated guideway columns could potentially affect truck access to local businesses on Delridge Way SW</li><li>• Potential to add a traffic signal at SW Dakota Street/Delridge Way SW intersection would likely divert some local traffic away from heavy freight movements on SW Andover Street</li><li>• Construction of elevated guideway columns would potentially have limited affected associated with the guideway crossing the W Marginal Way SW Major Freight Route</li><li>• South bridge crossing would span the Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations and BNSF railroad bridge</li><li>• No direct effects expected to Terminal 5 or Terminal 18 access or operations</li></ul>	<ul style="list-style-type: none"><li>• Elevated guideway columns could affect truck access to local businesses on Delridge Way SW</li><li>• Potential to add a traffic signal at SW Dakota Street/Delridge Way SW intersection would likely divert some local traffic away from heavy freight movements on SW Andover Street</li><li>• Truck and rail access to Nucor Steel could be affected by the elevated guideway columns and Delridge Station</li><li>• Construction of elevated guideway columns could potentially have effects associated with the guideway crossing the West Marginal Way SW Major Freight Route</li><li>• North bridge crossing would span Duwamish Waterway navigation channel, but could have temporary construction impacts to waterway operations</li><li>• Possible temporary construction parking and gate queue storage impacts at Terminal 18 on Harbor Island; rail access to businesses would be maintained</li></ul>	<ul style="list-style-type: none"><li>• Delridge Station would straddle Delridge Way SW and have minimal truck effects on access to local businesses on Delridge Way SW</li><li>• Construction of elevated guideway columns could potentially have effects associated with the guideway crossing the West Marginal Way SW Major Freight Route</li><li>• South bridge crossing would span Duwamish Waterway navigation channel, but could have temporary construction effects to waterway operations and marina</li><li>• No direct effects expected to Terminal 5 or Terminal 18 access or operations</li></ul>
	Business and commerce effects	Medium	Medium	Lower	Medium
		<ul style="list-style-type: none"><li>• Could have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish Manufacturing/Industrial Center (MIC)</li><li>• Could displace small businesses that mostly serve local community</li><li>• Could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals on Duwamish Waterway</li><li>• Potential construction period effects such as lane closures and access changes, to local businesses on or near Delridge Way SW and south side of West Seattle Bridge</li></ul>	<ul style="list-style-type: none"><li>• Could have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish MIC</li><li>• Could displace small businesses that mostly serve local community</li><li>• Could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals on Duwamish Waterway</li><li>• Potential construction period effects such as lane closures and access changes, to local businesses on or near Delridge Way SW and south side of West Seattle Bridge</li></ul>	<ul style="list-style-type: none"><li>• Would have the greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish MIC</li><li>• Could displace small businesses that mostly serve local community</li><li>• Duwamish Waterway crossing north of West Seattle Bridge may displace some water-dependent businesses</li><li>• 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)</li><li>• Potential construction period effects such as lane closures and access changes to local businesses on or near Delridge Way SW and north side of West Seattle Bridge</li></ul>	<ul style="list-style-type: none"><li>• Could have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Duwamish MIC</li><li>• Could displace small businesses that mostly serve local community</li><li>• Could displace businesses that support international and domestic trade through Port of Seattle and Northwest Seaport Alliance terminals on Duwamish Waterway</li><li>• Potential construction period effects, such as lane closures and access changes, to local businesses on or near Delridge Way SW and south side of West Seattle Bridge</li></ul>

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

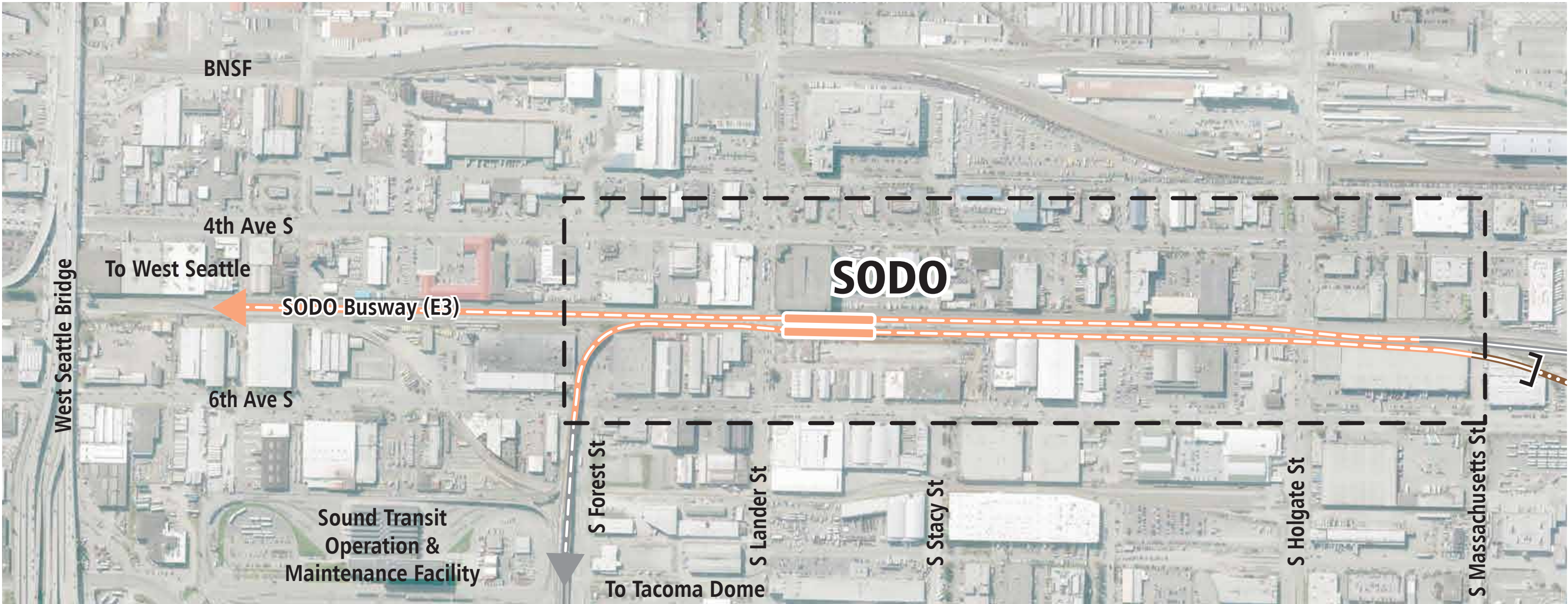
The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.



## **Initial Assessment Results**

SODO Elevated





SODO Double Elevated

LEGEND

Level 3 CID 5th Avenue Tunnel Alternatives

Elevated alignment

At-grade alignment

Initial Assessment - SODO Double Elevated

Elevated alignment

Elevated station

Approximate portal location

Existing LINK

Area evaluated





SODO Partial Elevated

LEGEND

Level 3 CID 5th Avenue Tunnel Alternatives

Elevated alignment

At-grade alignment

Initial Assessment - SODO Partial Elevated

Elevated alignment

At-grade alignment

Elevated station

At-grade station

Approximate portal location

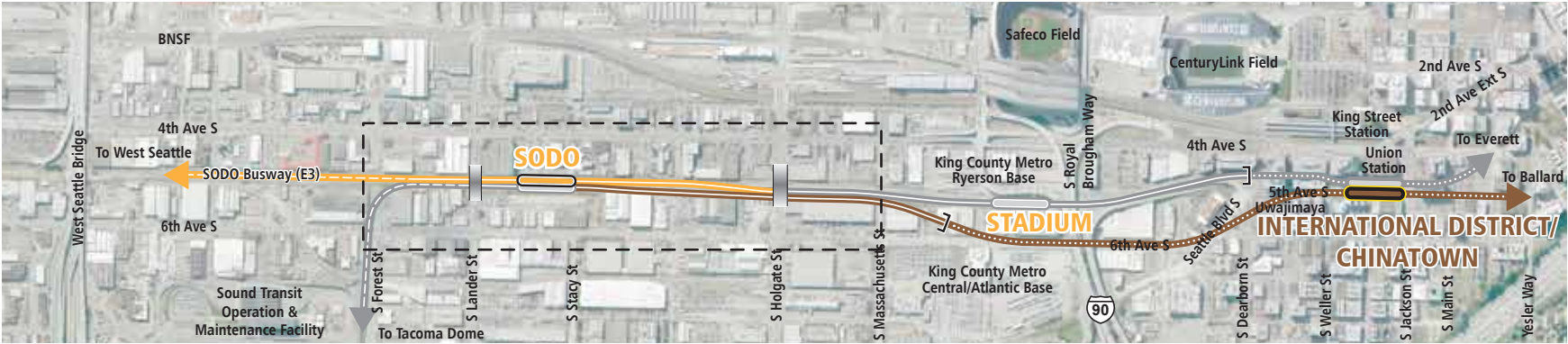
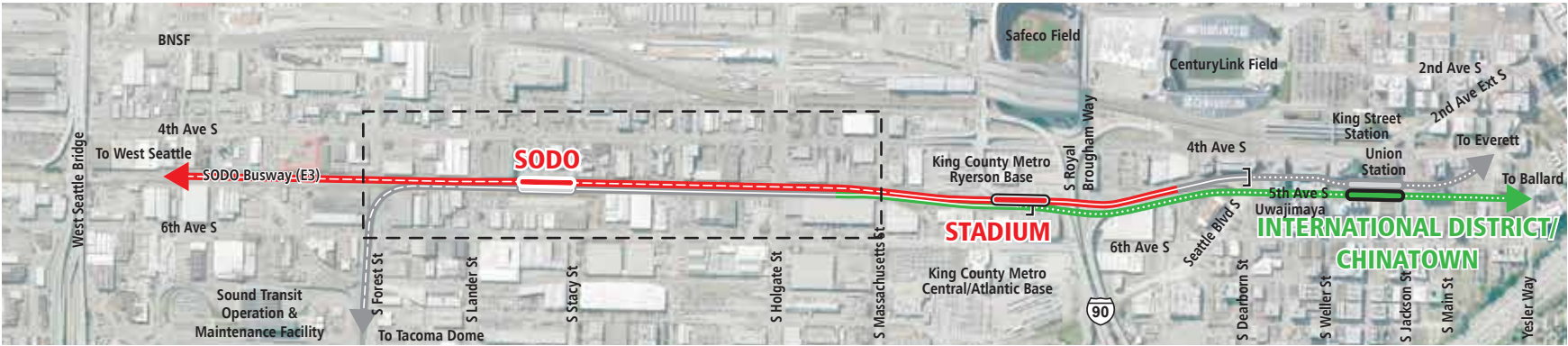
Existing LINK

Area evaluated



# Pre Draft-EIS Initial Assessment Results

9-12-2019



## Level 3 Alternatives

LEGEND			
ST3 Representative Project		West Seattle Elevated/C-ID 5th Ave/Downtown 6th Ave/Ballard Elevated	
Elevated alignment	Elevated alignment	West Seattle Tunnel/C-ID 4th Ave/Downtown 5th Ave/Ballard Tunnel	
Surface alignment	Surface alignment	Elevated alignment	Surface alignment
Tunnel alignment	Tunnel alignment	Tunnel alignment	Tunnel alignment option
Elevated station	Surface station	Surface station	Tunnel station option (shallow or deep)
Surface station	Tunnel station option (shallow or deep)		
Tunnel station			
Approximate portal location	Existing elevated alignment	Existing surface alignment	Existing tunnel alignment
Street overpass	Existing surface station	Existing tunnel station	Area evaluated



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
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
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	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, horizontal curvature, movable bridge, etc.)	Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection
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
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.			
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



Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Modal Integration (continued)	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 = 1 or less historic properties potentially affected Medium = Between 2 and 3 historic properties potentially affected Lower = More than 3 historic properties potentially affected
	Hazardous materials	Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites	Higher = 5 or less hazardous materials sites potentially affected Medium = Between 6 and 10 hazardous sites potentially affected Lower = More than 1 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 = 0.5 miles or less adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high in visually sensitive areas, and low potential to affect SEPA Scenic Routes Medium = Between 0.6 and 1 miles adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high in visually sensitive areas, and/or moderate potential to affect SEPA Scenic Routes Lower = More than 1 miles potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high in visually sensitive areas, and/or high potential to affect SEPA Scenic Routes
	Property acquisitions and displacements	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 20 potential residential unit displacements Medium = Between approximately 20 and 40 potential residential unit displacements Lower = More than approximately 40 potential residential unit displacements
		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 250,000 square feet of potential business displacements Medium = Between approximately 250,000 and 500,000 square feet of potential business displacements Lower = More than approximately 500,000 square feet of potential business displacements

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Environmental Effects (continued)	Community construction impacts	Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below	Higher = Lower potential for impacts to community relative to other alternatives Medium = Moderate potential for impacts to community relative to other alternatives Lower = More substantial potential for impacts to community relative to other alternatives
	Burden on minority and low-income populations	Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities	Higher = Little to no potential impact to minority or low-income communities relative to other alternatives Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives Lower = Substantial potential for impacts to minority or low-income communities relative to other alternatives
Traffic 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.
  - 2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
  - 3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
  - 4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
  - 5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; “Higher” = higher ability to achieve measure, “Medium” = moderate ability to achieve measure, “Lower” = lower ability to achieve measure; no weighting will be applied.
  - 6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

Purpose and Need / Evaluation Measures	Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives	
	ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	SODO Double Elevated	SODO Partial Elevated
	Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander		
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	2	0	0	0	1
Potential service interruptions and recoverability	Lower	Higher	Higher	Higher	Higher
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
LRT network integration	Medium	Higher	Higher	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.					
Potential ST3 operating plan effects	Lower	Higher	Higher	Higher	Higher
Engineering constraints	Medium	Medium	Medium	Lower	Medium
Constructability issues	Medium	Higher	Higher	Lower	Medium
Operational constraints	Lower	Higher	Higher	Lower	Medium
Conceptual capital cost comparison (2018\$ in millions)	--	\$200 million decrease	\$200 million decrease	\$300 million increase	Similar to ST3 Representative
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.					
Passenger transfers	Medium	Medium	Higher	Higher	Higher
Bus/rail and rail/rail integration	Medium	Medium	Higher	Higher	Higher
Bicycle infrastructure and accessibility	Medium	Medium	Medium	Medium	Medium
Pedestrian and persons with limited mobility accessibility	Medium	Medium	Medium	Medium	Medium
Development potential	Medium	Medium	Medium	Medium	Medium
Equitable development opportunities	Lower	Lower	Lower	Lower	Lower
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks	0	0	0	0	0
Hazardous materials sites	1	4	1	6	3
Visual effects (miles of sensitive viewers)	Higher	Higher	Higher	Higher	Higher

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Measures	Level 3 Alternatives			Pre-DEIS Initial Assessment Alternatives	
	ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	SODO Double Elevated	SODO Partial Elevated
	Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander		
Potential residential unit displacements	Higher	Higher	Higher	Higher	Higher
Potential business displacements	Higher	Medium	Higher	Lower	Lower
Community construction impacts	Higher	Medium	Medium	Lower	Medium
Burden on minority and low-income populations	Medium	Medium	Medium	Lower	Medium
Traffic circulation and access effects	Medium	Higher	Higher	Higher	Medium
Effects on transportation facilities	Medium	Medium	Medium	Lower	Medium
Effects on freight movement	Medium	Higher	Higher	Lower	Medium
Business and commerce effects	Higher	Medium	Higher	Lower	Lower

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		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander
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	2	0	0
		• Approximately 2 at-grade crossings; the existing Link light rail line would continue to have at-grade crossings at S Holgate Street and S Lander Street in SODO	• No at-grade crossings; proposed new roadway overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections on both the new and existing light rail line	• No at-grade crossings; proposed new Roadway overpasses at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections on both the new and existing light rail line
	Potential service interruptions and recoverability	Lower	Higher	Higher
		• No connection between West Seattle and Ballard lines in SODO limits operational flexibility and recoverability	• Accommodates connection between West Seattle and Ballard lines in SODO • Shared pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability	• Accommodates connection between West Seattle and Ballard lines in SODO • Shared pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.				
Regional Connectivity	LRT network integration	Medium	Higher	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) • Limited operational flexibility on overall Link system due to lack of connection between West Seattle and Ballard lines	• 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
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	Potential ST3 operating plan effects	Lower	Higher	Higher
		• Does not facilitate track interconnections in SODO	• Facilitates all pocket tracks and crossovers needed to provide reliable system operations	• Facilitates all pocket tracks and crossovers needed to provide reliable system operations

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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

Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives	
		SODO Double Elevated	SODO Partial Elevated
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	0	1
		<ul style="list-style-type: none"><li>No at-grade crossings; proposed elevated light rail guideway at S Lander and S Holgate streets in SODO would improve Link light rail reliability by removing at-grade intersections on both the new and existing light rail line</li></ul>	<ul style="list-style-type: none"><li>Approximately 1 at-grade crossing; proposed elevated light rail guideway at S Lander Street and proposed roadway overcrossing at S Holgate Street in SODO would improve Link light rail reliability by removing at-grade intersections; would maintain at-grade intersection of existing light rail line at S Lander Street</li></ul>
	Potential service interruptions and recoverability	Higher	Higher
		<ul style="list-style-type: none"><li>Accommodates connection between West Seattle and Ballard lines in SODO</li><li>Shared pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability</li></ul>	<ul style="list-style-type: none"><li>Accommodates connection between West Seattle and Ballard lines in SODO</li><li>Shared pocket tracks on the West Seattle and Ballard lines in SODO accommodate operational flexibility and recoverability</li></ul>
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.			
Regional Connectivity	LRT network integration	Higher	Higher
		<ul style="list-style-type: none"><li>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)</li><li>Accommodates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel</li></ul>	<ul style="list-style-type: none"><li>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)</li><li>Accommodates connections between West Seattle and Ballard lines in SODO, but some train movements require out-of-direction travel</li></ul>
plement 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	Potential ST3 operating plan effects	Higher	Higher
		<ul style="list-style-type: none"><li>Facilitates all pocket tracks and crossovers needed to provide reliable system operations</li></ul>	<ul style="list-style-type: none"><li>Facilitates all pocket tracks and crossovers needed to provide reliable system operations</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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



Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander
Technical Feasibility	Engineering constraints	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>Minimizes roadway modifications, no major cross street work</li><li>Elevated guideway in poor soils and adjacent to active Link tracks</li></ul>	<ul style="list-style-type: none"><li>Substantial roadway modifications on S Lander and S Holgate streets to construct roadway overcrossings</li><li>No elevated light rail guideway</li><li>Enables connection to all four alternatives in Chinatown/International District</li></ul>	<ul style="list-style-type: none"><li>Substantial roadway modifications on S Lander and S Holgate streets to construct roadway overcrossings</li><li>No elevated light rail guideway</li><li>Enables connection to all four alternatives in Chinatown/International District</li></ul>
	Constructability issues	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>Limited interruptions of existing Central Link light rail to connect new lines to existing, likely can be done with single-track operations or potential off-peak closures</li><li>Would likely require additional ground improvements for the elevated guideway</li></ul>	<ul style="list-style-type: none"><li>Limited interruptions of existing Central Link light rail to connect new lines to existing, likely can be done with single-track operations or potential off-peak closures</li><li>Construction of S Lander Street and S Holgate Street overcrossings above active light rail tracks</li><li>Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Lander Street and S Holgate Street overcrossings at the intersections</li></ul>	<ul style="list-style-type: none"><li>Limited interruptions of existing Central Link light rail to connect new lines to existing and reconstruct existing SODO Station, likely can be done with single-track operations or potential off-peak closures</li><li>Construction of S Lander Street and S Holgate Street overcrossings above active light rail tracks</li><li>Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Lander Street and S Holgate Street overcrossings at the intersections</li></ul>
	Operational constraints	Lower	Higher	Higher
		<ul style="list-style-type: none"><li>No connection between West Seattle and Ballard extension lines in SODO creates operational constraints</li></ul>	<ul style="list-style-type: none"><li>Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</li></ul>	<ul style="list-style-type: none"><li>Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives	
		SODO Double Elevated	SODO Partial Elevated
Technical Feasibility	Engineering constraints	Lower <ul style="list-style-type: none"><li>• Longest section of elevated guideway in poor soils and adjacent to active Link tracks</li><li>• Would require complex engineering to tie new curved elevated structure into existing Central Link light rail line in constrained right-of-way along S Forest Street with adjacent buildings</li><li>• Substantial roadway modification on S Holgate Street to lower roadway approximately eight feet with retaining walls and grading resulting in access changes; would likely require a stormwater pump station</li><li>• Enables connection to the 5th Avenue Cut-and-Cover, 5th Avenue Deep Mined, and 4th Avenue Cut-and-Cover International District/Chinatown Station</li><li>• May connect to the 4th Avenue Deep Mined International District/Chinatown Station with additional challenges: would likely require operation at maximum grade or elimination of a pocket track; additional challenges to construct cut-and-cover tunnel below light rail track</li></ul>	Medium <ul style="list-style-type: none"><li>• Substantial roadway modifications on S Holgate Street to construct roadway overcrossing</li><li>• Elevated guideway in poor soils and adjacent to active Link tracks, but less than with ST3 Representative Project</li><li>• Enables connection to the 5th Avenue Cut-and-Cover, 5th Avenue Deep Mined, and 4th Avenue Cut-and-Cover International District/Chinatown Station</li><li>• May connect to the 4th Avenue Deep Mined International District/Chinatown Station with additional challenges: would likely require operation at maximum grade or elimination of a pocket track; additional challenges to construct cut-and-cover tunnel below light rail track</li></ul>
	Constructability issues	Lower <ul style="list-style-type: none"><li>• To elevate the existing Central Link light rail it would likely require two extensive shutdowns to construct; one period of at least approximately two to three months and one period of at least approximately four to six months, assuming accelerated construction schedule</li><li>• Would require temporary structure/shoofly to connect existing Central Link light rail tracks to West Seattle line</li><li>• Would likely require additional ground improvements for the elevated guideway; longest section of elevated guideway compared to other alternatives</li></ul>	Medium <ul style="list-style-type: none"><li>• Limited interruptions of existing Central Link light rail to connect new lines to existing and reconstruct existing SODO Station, likely can be done with single-track operations or potential off-peak closures</li><li>• Construction of S Holgate Street overcrossing above active light rail tracks</li><li>• Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Holgate Street overcrossing at the intersections</li><li>• Would likely require additional ground improvements for the elevated guideway</li></ul>
	Operational constraints	Lower <ul style="list-style-type: none"><li>• Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</li><li>• Transitioning for pocket tracks and special trackwork introduces additional curves with less desirable operating speeds</li><li>• Two extensive shutdowns of existing Central Link light rail to construct would likely require extensive temporary additional bus service to replace Central Link service</li><li>• Temporary structure/shoofly during construction with tight curve would result in slower train speeds for a duration of approximately two years</li><li>• Light rail transit vehicles from the north would be unable to access the Forest Street Operations and Maintenance Facility for a period of at least approximately four to six weeks during construction</li><li>• Central Link light rail shutdown during construction would result in less frequent light rail service throughout the system</li></ul>	Medium <ul style="list-style-type: none"><li>• Provides all needed track connections and pocket tracks with reasonable spacing for switching between northbound and southbound tracks for both lines</li><li>• Transitioning for pocket tracks and special trackwork introduces additional curves with less desirable operating speeds</li></ul>

Alternative Performance

Key to Rating

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander
Financial Sustainability	Conceptual capital cost comparison (2018\$ in millions)	--	\$200 million decrease	\$200 million decrease
		<ul style="list-style-type: none"><li>Baseline for capital cost comparison to other alternatives</li></ul>	<ul style="list-style-type: none"><li>Approximately \$200 million less than the ST3 Representative Project if connected with 5th Avenue shallow tunnel in Chinatown/International District</li><li>Lower cost in SODO due to at-grade guideway and station</li><li>Lower cost in Chinatown/International District due to reduced cut-and-cover construction on 5th Avenue S</li></ul>	<ul style="list-style-type: none"><li>Approximately \$200 million less than the ST3 Representative Project if connected with 5th Avenue shallow tunnel in Chinatown/International District</li><li>Approximately \$250 million more than the ST3 Representative Project if connected with 4th Avenue shallow tunnel in Chinatown/International District</li><li>Lower cost in SODO due to at-grade guideway and station</li><li>Higher cost in Chinatown/International District due to 4th Avenue S viaduct reconstruction</li></ul>
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.				
Modal Integration	Passenger transfers	Medium	Medium	Higher
		<ul style="list-style-type: none"><li>Elevated West Seattle line and at-grade Ballard line would require vertical circulation to transfer between the light rail lines</li><li>At-grade S Lander Street would result in less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</li></ul>	<ul style="list-style-type: none"><li>At-grade West Seattle and Ballard lines would require vertical circulation to transfer between the light rail lines</li><li>S Lander Street overcrossing would require vertical circulation to transfer between bus stops on S Lander Street and the light rail lines</li></ul>	<ul style="list-style-type: none"><li>At-grade West Seattle and Ballard lines would require vertical circulation to transfer between the light rail lines</li><li>S Lander Street overcrossing would require vertical circulation to transfer between bus stops on S Lander Street and the light rail lines</li><li>SODO Station located closer to S Lander Street would improve passenger transfers to/from buses on S Lander Street</li></ul>
	Bus/rail and rail/rail integration	Medium	Medium	Higher
		<ul style="list-style-type: none"><li>Would require vertical circulation to transfer between the light rail lines</li><li>Less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</li></ul>	<ul style="list-style-type: none"><li>Would require vertical circulation to transfer between light rail lines and between light rail and buses</li></ul>	<ul style="list-style-type: none"><li>Would require vertical circulation to transfer between light rail lines and between light rail and buses</li><li>Platform closer to S Lander Street to reduce distance to bus/rail transfer</li></ul>
	Bicycle infrastructure and accessibility	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</li></ul>	<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</li></ul>	<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</li></ul>
	Pedestrian and persons with limited mobility accessibility	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>Number of intersections and sidewalk coverage similar for all alternatives</li></ul>	<ul style="list-style-type: none"><li>Number of intersections and sidewalk coverage similar for all alternatives</li></ul>	<ul style="list-style-type: none"><li>Number of intersections and sidewalk coverage similar for all alternatives</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives	
		SODO Double Elevated	SODO Partial Elevated
Financial Sustainability	Conceptual capital cost comparison (2018\$ in millions)	\$300 million increase	Similar to ST3 Representative
		<ul style="list-style-type: none"><li>• Approximately \$300 million more than the ST3 Representative Project if connected with 5th Avenue shallow tunnel in Chinatown/International District</li><li>• Additional cost not included in ST3 financial plan or evaluation methodology</li></ul>	<ul style="list-style-type: none"><li>• Similar cost to the ST3 Representative Project if connected with 5th Avenue shallow tunnel in Chinatown/International District</li></ul>
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			
Modal Integration	Passenger transfers	Higher	Higher
		<ul style="list-style-type: none"><li>• Elevated West Seattle and Ballard lines would require vertical circulation to transfer between the light rail lines</li><li>• Elevated West Seattle and Ballard lines above S Lander Street would require vertical circulation to transfer between bus stops on S Lander Street and the light rail lines</li><li>• SODO Station located closer to S Lander Street would improve passenger transfers to/from buses on S Lander Street</li><li>• Opportunity for more direct transfers to/from buses with maintained E3 busway</li></ul>	<ul style="list-style-type: none"><li>• Elevated West Seattle line and at-grade Ballard line would require vertical circulation to transfer between the light rail lines</li><li>• At-grade S Lander Street would result in less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</li><li>• SODO Station located closer to S Lander Street would improve passenger transfers to/from buses on S Lander Street</li><li>• Opportunity for more direct transfers to/from buses with maintained E3 busway</li></ul>
	Bus/rail and rail/rail integration	Higher	Higher
		<ul style="list-style-type: none"><li>• Would require vertical circulation to transfer between light rail lines and between light rail and buses</li><li>• Platform closer to S Lander Street to reduce distance to bus/rail transfer</li><li>• Opportunity for more integrated bus transfers with maintained E3 busway</li></ul>	<ul style="list-style-type: none"><li>• Would require vertical circulation to transfer between the light rail lines</li><li>• Less vertical circulation required to transfer between bus stops on S Lander Street and the at-grade Ballard line</li><li>• Platform closer to S Lander Street to reduce distance to bus/rail transfer</li><li>• Opportunity for more integrated bus transfers with maintained E3 busway</li></ul>
	Bicycle infrastructure and accessibility	Medium	Medium
		<ul style="list-style-type: none"><li>• Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</li></ul>	<ul style="list-style-type: none"><li>• Existing multi-use bike facilities within a 10-minute ride from stations include, SODO Trail, I-90 Trail and West Seattle Trail</li></ul>
	Pedestrian and persons with limited mobility accessibility	Medium	Medium
		<ul style="list-style-type: none"><li>• Number of intersections and sidewalk coverage similar for all alternatives</li></ul>	<ul style="list-style-type: none"><li>• Number of intersections and sidewalk coverage similar for all alternatives</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander
Station Area Development Opportunities	Development potential	Medium	Medium	Medium
		• Development potential would be similar for all alternatives	• Development potential would be similar for all alternatives	• Development potential would be similar for all alternatives
	Equitable development opportunities	Lower	Lower	Lower
		• Limited equitable development opportunities in SODO due to lack of residential zoning	• Limited equitable development opportunities in SODO due to lack of residential zoning	• Limited equitable development opportunities in SODO due to lack of residential zoning
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.				
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks	0	0	0
		• No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project	• No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project	• No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project
	Hazardous materials sites	1	4	1
		• 1 contaminated site of higher concern within the alternative footprint or within an intersecting parcel	• 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• 1 contaminated site of higher concern within the alternative footprint or within an intersecting parcel
	Visual effects (miles of sensitive viewers)	Higher	Higher	Higher
		• Elevated guideway and SODO Station would not be near visually sensitive viewers • Would include approximately 0.5 miles of new elevated guideway which would bring visual change along the alignment	• At-grade alignment and SODO station would not be near sensitive viewers • New S Holgate Street and S Lander Street overpasses would bring visual change along the alignment	• At-grade alignment and SODO station would not be near sensitive viewers • New S Holgate Street and S Lander Street overpasses would bring visual change to the alignment
	Potential residential unit displacements	Higher	Higher	Higher
		• No potential residential unit displacements	• No potential residential unit displacements	• No potential residential unit displacements
	Potential business displacements	Higher	Medium	Higher
		• Fewer than approximately 250,000 square feet of potential business displacements	• Between approximately 250,000 and 500,000 square feet of potential business displacements	• Fewer than approximately 250,000 square feet of potential business displacements

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives	
		SODO Double Elevated	SODO Partial Elevated
Station Area Development Opportunities	Development potential	Medium	Medium
		• Development potential would be similar for all alternatives	• Development potential would be similar for all alternatives
	Equitable development opportunities	Lower	Lower
		• Limited equitable development opportunities in SODO due to lack of residential zoning	• Limited equitable development opportunities in SODO due to lack of residential zoning
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.			
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks	0	0
		• No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project	• No known NRHP-listed, NRHP-eligible, and/or Seattle Landmark properties could be directly affected by the project
	Hazardous materials sites	6	3
		• 6 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• 3 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Visual effects (miles of sensitive viewers)	Higher	Higher
		• Elevated guideway and SODO Station would not be near visually sensitive viewers • Would include approximately 0.5 miles of new dual elevated guideway; the elevated guideway structure would be wider than the guideway for the other alternatives, bringing greater visual change along the alignment	• Elevated guideway and SODO Station would not be near visually sensitive viewers • Would include approximately 0.5 miles of new elevated guideway and a new S Holgate Street overcrossing which would bring visual change along the alignment
	Potential residential unit displacements	Higher	Higher
		• No potential residential unit displacements	• No potential residential unit displacements
	Potential business displacements	Lower	Lower
		• More than approximately 500,000 square feet of potential business displacements • Guideway and station footprint would require additional right-of-way in vicinity of S Lander Street intersection	• More than approximately 500,000 square feet of potential business displacements • Elevated West Seattle SODO station shifted closer to Lander would require additional right-of-way in vicinity of S Lander Street intersection

Alternative Performance

Key to Rating

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander
Environmental Effects (continued)	Community construction impacts	Higher	Medium	Medium
		<ul style="list-style-type: none"><li>• Construction of elevated guideway and SODO station in E3 busway would have short, off-peak travel disruptions on existing light rail</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li></ul>	<ul style="list-style-type: none"><li>• Construction of at-grade guideway and SODO Station in E3 busway would short, off-peak travel disruptions on existing light rail</li><li>• Closure of S Lander Street and S Holgate Street during construction would potentially contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li></ul>	<ul style="list-style-type: none"><li>• Construction of at-grade guideway and SODO Station in E3 busway would short, off-peak travel disruptions on existing light rail</li><li>• Closure of S Lander Street and S Holgate Street during construction would potentially contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li></ul>
	Burden on minority and low-income populations	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>• SODO station would be located in an area of moderate displacement risk</li><li>• Construction would result in short, off-peak travel disruptions to passengers traveling from areas where minority or low-income populations are above the city average</li></ul>	<ul style="list-style-type: none"><li>• SODO station would be located in an area of moderate displacement risk</li><li>• Construction would result in short, off-peak travel disruptions to passengers traveling from areas where minority or low-income populations are above the city average</li></ul>	<ul style="list-style-type: none"><li>• SODO station would be located in an area of moderate displacement risk</li><li>• Construction would result in short, off-peak travel disruptions to passengers traveling from areas where minority or low-income populations are above the city average</li></ul>
Traffic Operations	Traffic circulation and access effects	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>• No change to circulation in SODO due to maintenance of at-grade crossings of the existing Link light rail line with S Lander and S Holgate streets</li></ul>	<ul style="list-style-type: none"><li>• Improvements to circulation in SODO due to removal of at-grade Link light rail crossings at S Lander and S Holgate streets</li></ul>	<ul style="list-style-type: none"><li>• Improvements to circulation in SODO due to removal of at-grade Link light rail crossings at S Lander and S Holgate streets</li></ul>
	Effects on transportation facilities	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>• Affected facilities in SODO include Ryerson Base, Central/Atlantic Base and E3 busway</li><li>• Would result in displacement of the E3 Busway</li></ul>	<ul style="list-style-type: none"><li>• Affected facilities in SODO include S Lander Street, S Holgate Street, Ryerson Base, Central/Atlantic Base and E3 busway</li><li>• Would result in displacement of the E3 Busway</li><li>• Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Lander Street and S Holgate Street overcrossings at the intersections</li></ul>	<ul style="list-style-type: none"><li>• Affected facilities in SODO include S Lander Street, S Holgate Street, Ryerson Base, Central/Atlantic Base and E3 busway</li><li>• Would result in displacement of the E3 Busway</li><li>• Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Lander Street and S Holgate Street overcrossings at the intersections</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives	
		SODO Double Elevated	SODO Partial Elevated
Environmental Effects (continued)	Community construction impacts	Lower	Medium
		<ul style="list-style-type: none"><li>• Construction of double elevated guideway and SODO station in E3 busway would require two extensive shutdowns of existing Central Link light rail to construct; one period of at least approximately two to three months and one period of at least approximately four to six months, requiring extensive temporary additional bus service to replace Central Link service</li><li>• Partial or full closure of S Holgate Street to lower the roadway would potentially contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li></ul>	<ul style="list-style-type: none"><li>• Construction of elevated guideway and SODO station in E3 busway would have short, off-peak travel disruptions on existing light rail</li><li>• Closure of S Holgate Street to construct the overcrossing would potentially contribute to congestion on 1st Avenue S, 4th Avenue S, Edgar Martinez Drive S, and Airport Way S</li><li>• Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li></ul>
	Burden on minority and low-income populations	Lower	Medium
		<ul style="list-style-type: none"><li>• SODO station would be located in an area of moderate displacement risk</li><li>• Construction would result in extensive light rail travel disruptions to passengers traveling from areas where minority or low-income populations are above the City of Seattle average, such as Rainier Valley, Tukwila, SeaTac, Kent, Des Moines, and other communities to the south</li></ul>	<ul style="list-style-type: none"><li>• SODO station would be located in areas of moderate displacement risk</li><li>• Construction would result in short, off-peak travel disruptions to passengers traveling from areas where minority or low-income populations are above the city average</li></ul>
Traffic Operations	Traffic circulation and access effects	Higher	Medium
		<ul style="list-style-type: none"><li>• Improvements to circulation in SODO due to removal of at-grade Link light rail crossings at S Lander and S Holgate streets</li></ul>	<ul style="list-style-type: none"><li>• Improvements to circulation in SODO due to removal of the at-grade Link light rail crossing at S Holgate Street; maintains the at-grade crossing of the existing Link light rail at S Lander Street</li></ul>
	Effects on transportation facilities	Lower	Medium
		<ul style="list-style-type: none"><li>• Affected facilities in SODO include Central Link light rail line, S Holgate Street, Ryerson Base, Central/Atlantic Base and E3 busway</li><li>• Would likely require two extensive shutdowns of existing Central Link light rail to construct, requiring extensive temporary additional bus service to replace Central Link service</li><li>• Connection to the 5th Avenue International District/Chinatown Station alternatives would result in new downtown tunnel portal shifting slightly further north, reducing space available for KC Metro bases</li><li>• Would maintain the E3 Busway</li></ul>	<ul style="list-style-type: none"><li>• Affected facilities in SODO include S Holgate Street, Ryerson Base, Central/Atlantic Base and E3 busway</li><li>• Connection to the 5th Avenue International District/Chinatown Station alternatives would result in new downtown tunnel portal shifting further north, reducing space available for KC Metro bases</li><li>• Potential traffic disruptions on 6th Avenue S related to construction of cut-and-cover tunnel below</li><li>• Would maintain the E3 Busway</li><li>• Potential partial closure on 4th Avenue S and 6th Avenue S likely required for construction of S Holgate Street overcrossing at the intersections</li></ul>

Alternative Performance			
Key to Rating	Lower Performing	Medium Performing	Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Elevated West Seattle at Lander and Holgate	SODO At-Grade	SODO At-Grade with SODO Station Closer to Lander
Economic Effects	Effects on freight movement	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>• Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations</li><li>• Bus relocation from E3 busway could potentially affect freight routes in SODO</li><li>• Reduced potential construction effects to freight delivery associated with not building the S Lander Street and S Holgate Street overpass</li><li>• There would continue to be minor delays to freight delivery associated with retaining the S Lander Street and S Holgate Street at-grade crossings</li></ul>	<ul style="list-style-type: none"><li>• Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations</li><li>• Bus relocation from E3 busway could potentially affect freight routes in SODO</li><li>• Construction of overpasses at S Lander Street and S Holgate Street would require temporary closure and could potentially affect local freight delivery</li><li>• Full grade separation at S Lander Street and S Holgate Street would improve long-term freight mobility</li></ul>	<ul style="list-style-type: none"><li>• Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations</li><li>• Bus relocation from E3 busway in SODO could potentially affect freight routes</li><li>• Construction of overpasses at S Lander Street and S Holgate Street would require temporary closure and could potentially affect local freight delivery</li><li>• Full grade separation at S Lander Street and S Holgate Street would improve long-term freight mobility</li></ul>
	Business and commerce effects	Higher	Medium	Higher
		<ul style="list-style-type: none"><li>• Would have the least amount of business displacements, the majority of which would be industrial or light-industrial businesses</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway</li></ul>	<ul style="list-style-type: none"><li>• Would have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway</li></ul>	<ul style="list-style-type: none"><li>• Would have the least amount of business displacements, the majority of which would be industrial or light-industrial businesses</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway</li></ul>

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



Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives	
		SODO Double Elevated	SODO Partial Elevated
Economic Effects	Effects on freight movement	Lower	Medium
		<ul style="list-style-type: none"><li>• Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations</li><li>• Reduced construction impacts to freight associated with not building the S Lander Street overpass</li><li>• Construction associated with lowering S Holgate Street could potentially require temporary full or partial closure and affect freight delivery</li><li>• Construction of the new elevated guideway and reconstruction of the existing Central Link light rail line on elevated guideway could affect local freight delivery due to additional road closure</li><li>• Two extensive shutdowns of existing Central Link light rail for construction could substantially increase bus traffic in the area and could affect freight movement</li></ul>	<ul style="list-style-type: none"><li>• Use of BNSF spur track south of S Lander Street in SODO could potentially affect rail freight operations</li><li>• Construction of the overpass at S Holgate Street could potentially require temporary closure and could affect freight delivery</li><li>• Full grade separation at S Holgate Street would improve truck freight mobility by reducing at-grade crossings</li><li>• Reduced potential construction impacts to freight delivery associated with not building the S Lander Street overpass</li><li>• There would continue to be minor delays to freight delivery associated with retaining the S Lander Street at-grade crossing</li></ul>
	Business and commerce effects	Lower	Lower
		<ul style="list-style-type: none"><li>• Would have the greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway</li></ul>	<ul style="list-style-type: none"><li>• Would have the greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses</li><li>• Could displace small businesses that mostly serve local community</li><li>• Potential construction period effects, such as lane closures and access changes, to local businesses on or near S Forest Street, S Lander Street, S Holgate Street, S Massachusetts Street, and the E3 busway</li></ul>

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

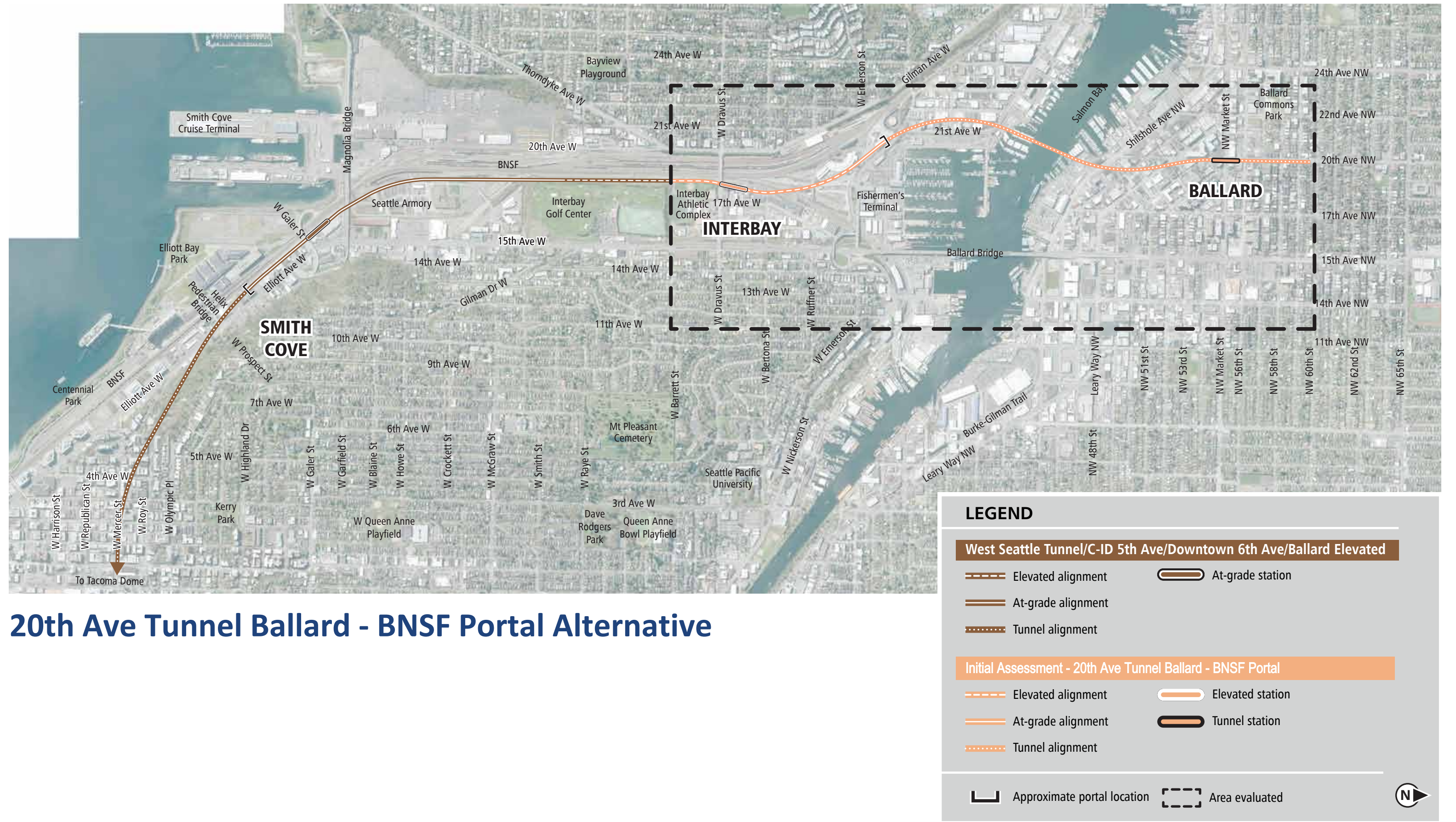
The Pre-DEIS Initial Assessment is based on a limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives for environmental review in an Environmental Impact Statement.



## Initial Assessment Results

# 20th Ave Ballard Tunnel



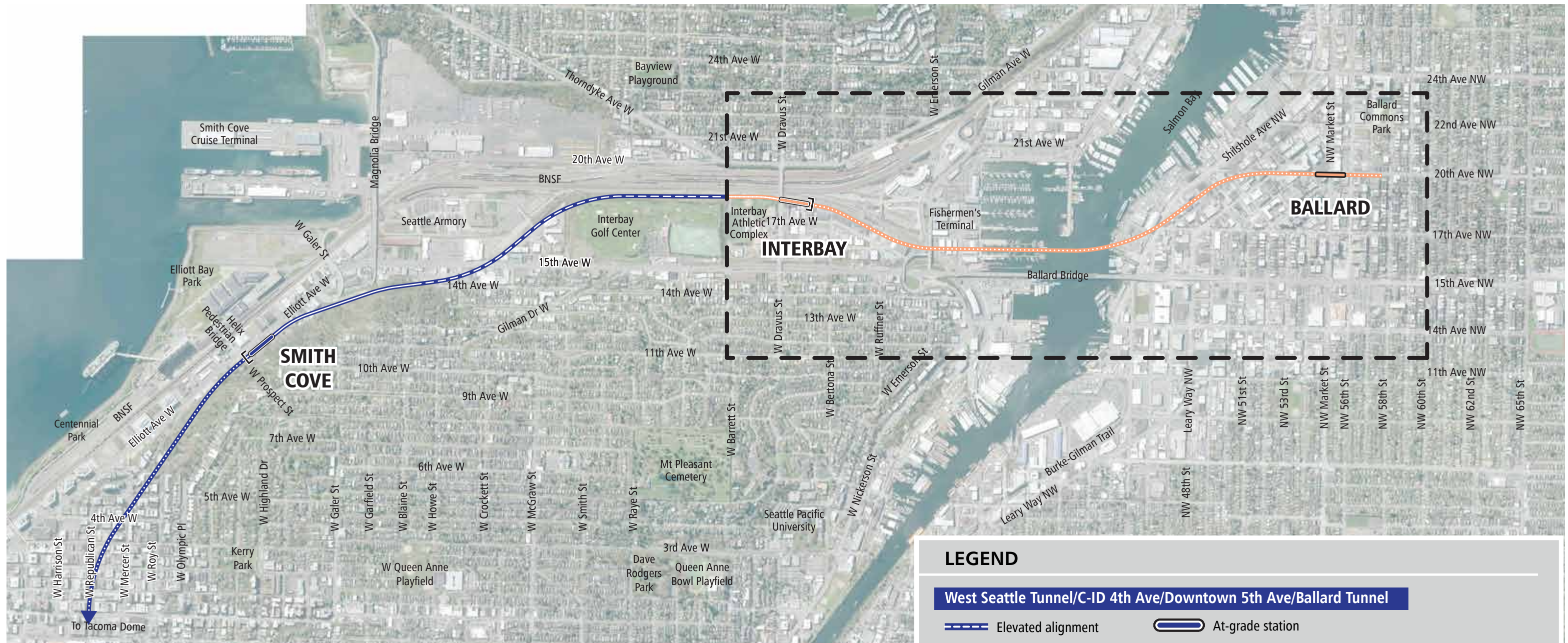


20th Ave Tunnel Ballard - BNSF Portal Alternative

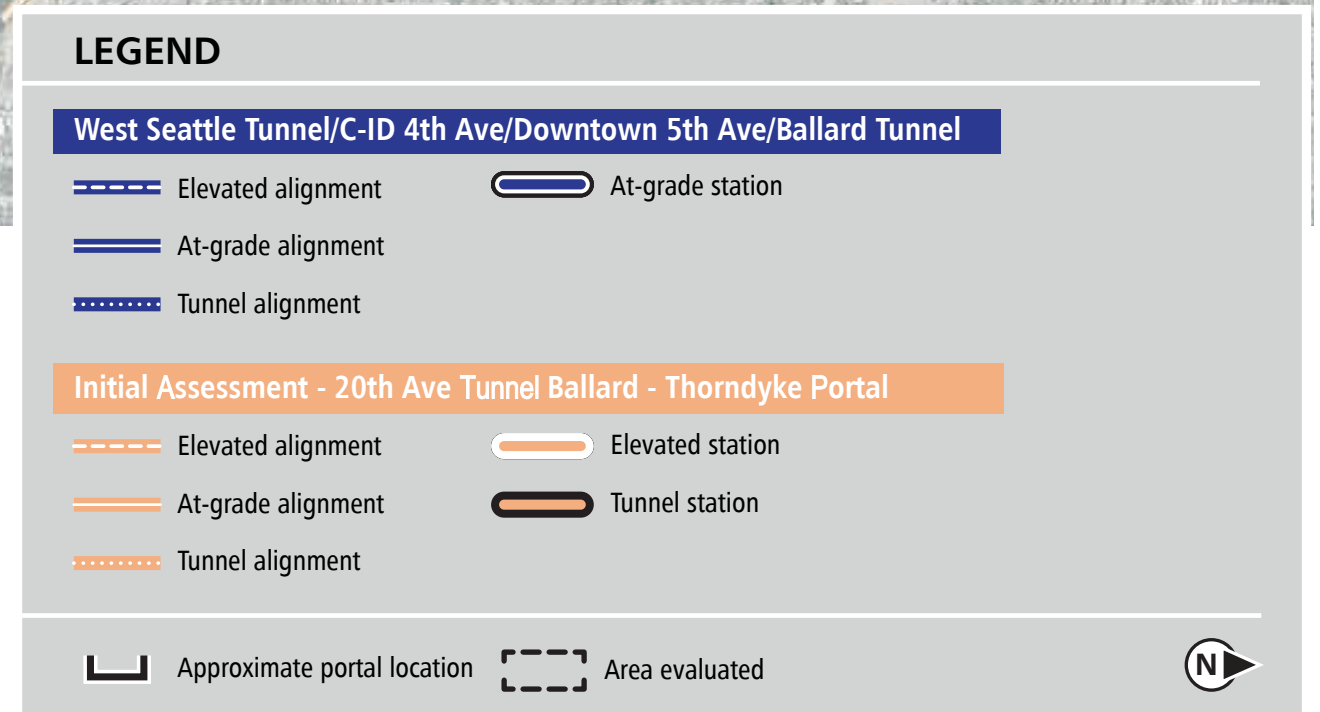


# Pre Draft-EIS Initial Assessment Results

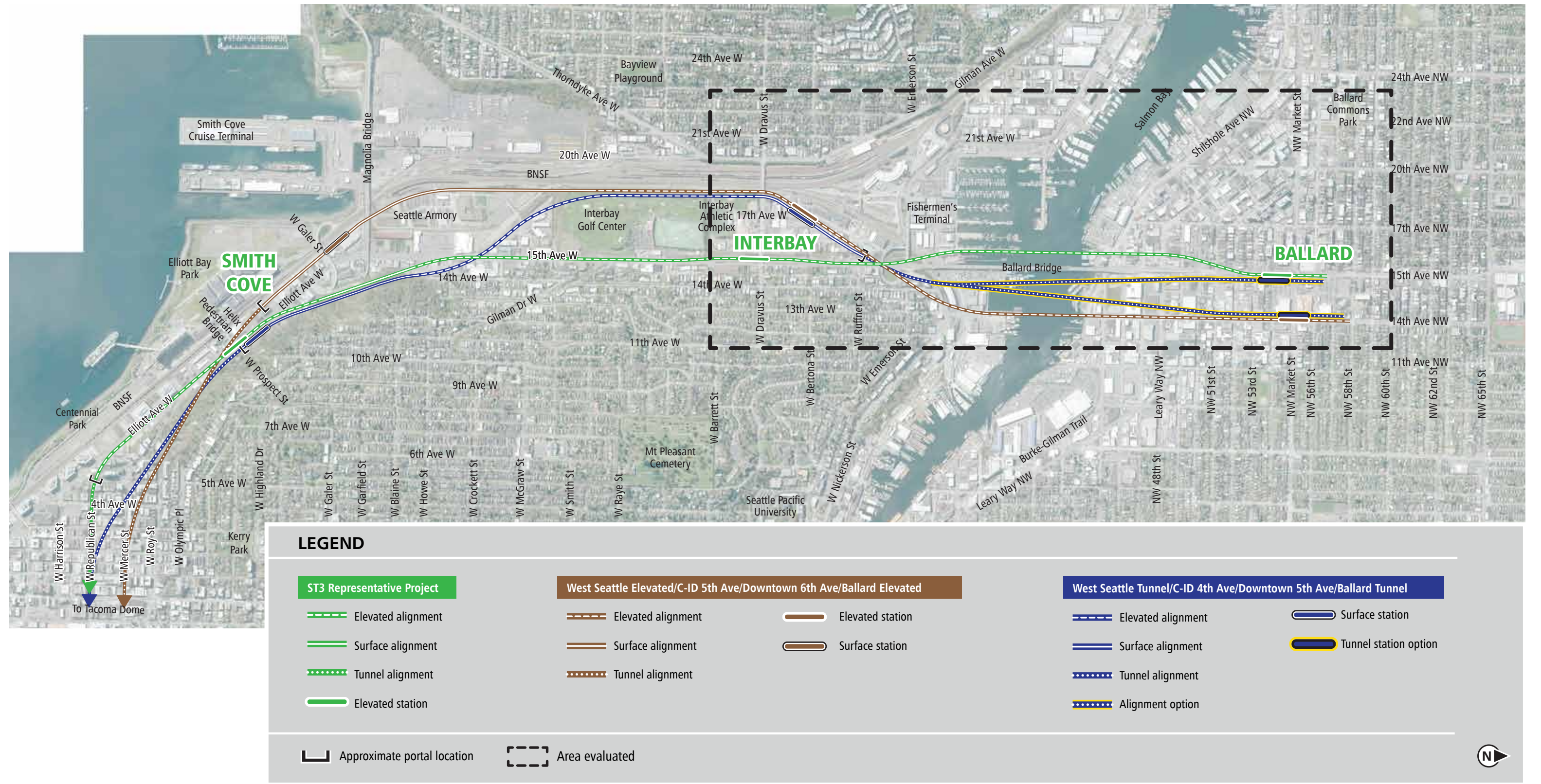
**9-12-2019**



## 20th Ave Tunnel Ballard - Thorndyke Portal Alternative







Level 3 Alternatives



Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.			
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	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
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.			
Technical Feasibility	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, horizontal curvature, movable bridge, etc.)	Higher = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Lower = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection
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
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
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



Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Modal Integration (continued)	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 within bikeshed area Medium = Moderate quality of bicycle facilities within bikeshed area Lower = Lower quality of bicycle facilities 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 = 1 or less historic properties potentially affected Medium = Between 2 and 3 historic properties potentially affected Lower = More than 3 historic properties potentially affected
	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 2 acres of potential permanent impacts to parks Lower = 2 acres or more 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
	Hazardous materials	Number of contaminated hazardous materials sites of high concern potentially affected, including Superfund sites	Higher = 5 or less hazardous materials sites potentially affected Medium = Between 6 and 10 hazardous sites potentially affected Lower = More than 10 hazardous materials sites potentially affected
	Property acquisitions and displacements	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 25 residential unit displacements Medium = Between approximately 25 and 100 residential unit displacements Lower = More than approximately 100 residential unit displacements
		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 150,000 square feet of potential business displacements Medium = Between approximately 150,000 and 300,000 square feet of potential business displacements Lower = More than approximately 300,000 square feet of potential business displacements

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Environmental Effects (continued)	Community construction impacts	Assessment of temporary construction impacts to communities, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas; potential construction impacts that affect freight and business/commerce are addressed in other criteria below	Higher = Lower potential for impacts to community relative to other alternatives Medium = Moderate potential for impacts to community relative to other alternatives Lower = More substantial potential for impacts to community relative to other alternatives
	Burden on minority and low-income populations	Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities	Higher = Little to no potential impact to minority or low-income communities relative to other alternatives Medium = Moderate potential for impacts to minority or low-income communities relative to other alternatives Lower = Substantial potential for impacts to minority or low-income communities relative to other alternatives
Traffic 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.
  - 2. Criteria used are a subset of the criteria used for Level 1, Level 2, and Level 3, based on differentiating factors in the subsegment evaluated.
  - 3. Thresholds were modified from Level 1, Level 2, and Level 3 for the more focused subsegments in order to compare the initial assessment alternatives to the same area of the Level 3 alternatives.
  - 4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
  - 5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; “Higher” = higher ability to achieve measure, “Medium” = moderate ability to achieve measure, “Lower” = lower ability to achieve measure; no weighting will be applied.
  - 6. Minority population is defined in US Department of Transportation Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

Purpose and Need / Evaluation Measures	Level 3 Alternatives				Pre-DEIS Initial Assessment Alternatives	
	ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel		20th Ave Ballard Tunnel - BNSF Tunnel Portal	20th Ave Ballard Tunnel - Thorndyke Tunnel Portal
			14th Ave Ballard Tunnel	15th Ave Ballard Tunnel		
	Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated				
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.						
Average weekday trips on Ballard extensions (year 2042)	Medium	Medium	Medium	Medium	Medium	Medium
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit’s Regional Transit Long-Range Plan.						
Population / job densities served (persons per acre, year 2040)	Medium	Medium	Medium	Medium	Higher	Higher
Accommodates future LRT extension beyond ST3	Medium	Medium	Medium	Medium	Medium	Medium
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.						
Engineering constraints	Lower	Medium	Medium	Medium	Lower	Lower
Constructability issues	Lower	Medium	Medium	Medium	Lower	Lower
Operational constraints	Lower	Higher	Higher	Higher	Medium	Medium
Conceptual capital cost comparison (2018\$ in millions)	--	\$100 million increase (north of Dravus only)	\$350 million increase (north of Dravus only)	\$350 million increase (north of Dravus only)	\$750 million increase (north of Dravus only)	\$450 million increase (north of Dravus only)
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.						
Proximity to Seattle-designated Urban Centers and Villages	Medium	Medium	Medium	Medium	Higher	Higher
Passenger transfers	Medium	Higher	Higher	Medium	Higher	Higher
Bus/rail and rail/rail integration	Medium	Higher	Higher	Medium	Medium	Medium
Bicycle infrastructure and accessibility	Medium	Medium	Medium	Medium	Medium	Medium
Pedestrian and persons with limited mobility accessibility	Higher	Medium	Medium	Higher	Higher	Higher
Development potential	Medium	Lower	Medium	Medium	Higher	Higher
Equitable development opportunities	Lower	Lower	Medium	Medium	Higher	Higher
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	2	3	3	3	7	8
Parks and recreational resources (acres)	0.0	1.1	0.8	0.8	1.0	0.9
Water resources (acres)	0.5	0.5	0.0	0.0	0.0	0.0

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Measures	Level 3 Alternatives				Pre-DEIS Initial Assessment Alternatives	
	ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel		20th Ave Ballard Tunnel - BNSF Tunnel Portal	20th Ave Ballard Tunnel - Thorndyke Tunnel Portal
	Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated	14th Ave Ballard Tunnel	15th Ave Ballard Tunnel		
Hazardous materials sites	5	10	11	10	8	8
Potential residential unit displacements	Higher	Lower	Higher	Higher	Lower	Medium
Potential business displacements	Medium	Lower	Medium	Medium	Medium	Higher
Community construction impacts	Lower	Medium	Medium	Medium	Lower	Lower
Burden on minority and low-income populations	Higher	Higher	Higher	Higher	Higher	Higher
Traffic circulation and access effects	Lower	Medium	Higher	Higher	Higher	Higher
Effects on transportation facilities	Lower	Medium	Higher	Higher	Medium	Medium
Effects on freight movement	Lower	Medium	Higher	Higher	Medium	Higher
Business and commerce effects	Medium	Lower	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

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated	14th Ave Ballard Tunnel
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.				
Projected Transit Demand	Average weekday trips on Ballard extensions (year 2042)	Medium	Medium	Medium
		• Average weekday trips on the Ballard extension would be similar for all alternatives	• Average weekday trips on the Ballard extension would be similar for all alternatives	• Average weekday trips on the Ballard extension would be similar for all alternatives
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	Population / job densities served (persons per acre, year 2040)	Medium	Medium	Medium
		• Population and employment densities would be less than average for the ST3 Representative Project in this 15th Avenue NW Ballard Station location due to its distance from the center of the Ballard Urban Village	• Population and employment densities would be less than average for the 14th Avenue Elevated Ballard Station due to its distance from the center of the Ballard Urban Village	• Population and employment densities would be less than average for the 14th Avenue Tunnel Ballard Station due to its distance from the center of the Ballard Urban Village.
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium	Medium	Medium
		• Elevated Ballard Station oriented north-south along 15th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	• Elevated Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	• Tunnel Ballard Station oriented north-south along 14th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.				
Technical Feasibility	Engineering constraints	Lower	Medium	Medium
		• Straddle bents likely required to minimize roadway impacts along 15th Avenue W in Interbay, as well as NW Market Street in Ballard • Movable bridge could require column placements in Salmon Bay and coordination with maritime properties and vessel movements • Complex movable bridge over Salmon Bay in a high seismic zone	• 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	• Potential need for ground improvements along guideway between W Dravus Street and 15th Avenue W in Interbay, and for tunnel boring under Nickerson Street bridge in Interbay

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures			Pre-DEIS Initial Assessment Alternatives	
		West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	20th Ave Ballard Tunnel - BNSF Tunnel Portal	20th Ave Ballard Tunnel - Thorndyke Tunnel Portal
		15th Ave Ballard Tunnel		
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.				
Projected Transit Demand	Average weekday trips on Ballard extensions (year 2042)	Medium	Medium	Medium
		• Average weekday trips on the Ballard extension would be similar for all alternatives	• Average weekday trips on the Ballard extension would be similar for all alternatives	• Average weekday trips on the Ballard extension would be similar for all alternatives
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	Population / job densities served (persons per acre, year 2040)	Medium	Higher	Higher
		• Population and employment densities would be less than average for the 15th Avenue Tunnel Ballard Station for this station location due to its distance from the center of the Ballard Urban Village	• Population and employment densities would be greater than average for the 20th Avenue Tunnel Ballard Station due to its proximity to the center of the Ballard Urban Village	• Population and employment densities would be greater than average for the 20th Avenue NW Tunnel Ballard Station due to its proximity to the center of the Ballard Urban Village
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium	Medium	Medium
		• Tunnel Ballard Station oriented north-south along 15th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives	• Tunnel Ballard Station oriented north-south along 20th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives • Less direct for a future extension to the north or east than alternatives with a terminus along 14th Avenue NW or 15th Avenue NW	• Tunnel Ballard Station oriented north-south along 20th Avenue NW would accommodate a future extension to the north or east, similar to all alternatives • Less direct for a future extension to the north or east than alternatives with a terminus along 14th Avenue NW or 15th Avenue NW
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.				
Technical Feasibility	Engineering constraints	Medium	Lower	Lower
		• Potential need for ground improvements along guideway between W Dravus Street and 15th Avenue W in Interbay, and for tunnel boring under Nickerson Street bridge in Interbay • 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	• Would require relocation of 144-inch diameter major King County combined sewer pipeline, resulting in increased engineering complexity and schedule/cost risk to construct while maintaining operation of pipeline • Would require a long span elevated structure with large foundations to cross BNSF railroad tracks	• Would require underpinning of foundations of a portion of W Dravus Street bridge • Would require relocation of 96-inch diameter major King County combined sewer pipeline, resulting in increased engineering complexity and schedule/cost risk to construct while maintaining operation of pipeline • Would require tunnel to be deeper compared to 14th Avenue NW tunnel and 15th Avenue NW tunnel alternatives In order to avoid the Nickerson Bridge retrofit structure • Lowered alignment approaching tunnel portal would result in Interbay Station in deep trench approximately 40 feet below BNSF yard and 60 feet below W Dravus Street in constrained space below the W Dravus Street bridge

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated	14th Ave Ballard Tunnel
Technical Feasibility (continued)	Constructability issues	Lower	Medium	Medium
		<ul style="list-style-type: none"><li>• Potential challenges maintaining traffic during construction along 15th Avenue W in Interbay and 15th Avenue NW in Ballard</li><li>• Movable bridge would require in-water construction activities for multiple piers in Salmon Bay and need to take into account vessel traffic in the navigation channel, fish windows and tribal treaty fishing</li></ul>	<ul style="list-style-type: none"><li>• Coordination likely required with BNSF Railway in Interbay</li><li>• Fixed bridge would require in-water construction activities for piers in Salmon Bay and need to take into account vessel traffic in the navigation channel, fish windows, and tribal treaty fishing</li></ul>	<ul style="list-style-type: none"><li>• Coordination likely required with BNSF Railway in Interbay</li><li>• Construction under the Nickerson Street bridge in Interbay creates potential challenges for maintenance of traffic</li><li>• Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages</li></ul>
	Operational constraints	Lower	Higher	Higher
		<ul style="list-style-type: none"><li>• Movable bridge openings over Salmon Bay would result in periodic service interruptions, which would impact systemwide operations</li></ul>	<ul style="list-style-type: none"><li>• Fixed bridge over Salmon Bay would not require openings for vessel traffic associated with a movable bridge</li></ul>	<ul style="list-style-type: none"><li>• Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge</li></ul>
Financial Sustainability	Conceptual capital cost comparison (2018\$ in millions)	--	\$100 million increase (north of Dravus only)	\$350 million increase (north of Dravus only)
		<ul style="list-style-type: none"><li>• Baseline for capital cost comparison to other alternatives</li></ul>	<ul style="list-style-type: none"><li>• Approximately \$100 million more than the ST3 Representative Project</li><li>• Additional cost for elevated guideway outside of public right-of-way compared to ST3 Representative Project</li></ul>	<ul style="list-style-type: none"><li>• Approximately \$350 million more than the ST3 Representative Project</li><li>• Higher cost for additional tunnel construction</li><li>• Cost of additional tunnels not included in ST3 financial plan or evaluation methodology</li></ul>
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	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>• 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</li></ul>	<ul style="list-style-type: none"><li>• 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</li></ul>	<ul style="list-style-type: none"><li>• 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</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures			Pre-DEIS Initial Assessment Alternatives	
		West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	20th Ave Ballard Tunnel - BNSF Tunnel Portal	20th Ave Ballard Tunnel - Thorndyke Tunnel Portal
		15th Ave Ballard Tunnel		
Technical Feasibility (continued)	Constructability issues	Medium	Lower	Lower
		<ul style="list-style-type: none"><li>• Coordination likely required with BNSF Railway in Interbay</li><li>• Construction under the Nickerson Street bridge in Interbay creates potential challenges for maintenance of traffic</li><li>• Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages</li></ul>	<ul style="list-style-type: none"><li>• Maintaining operation of 144-inch diameter major King County combined sewer pipeline during construction would increase construction challenges and schedule/cost risk</li><li>• Construction of Ballard Station would be more constrained than with other alternatives due to narrower right-of-way along 20th Avenue NW</li><li>• Potential closure of the Intersection of 21st Avenue W and W Emerson Street for the cut-and-cover tunnel</li><li>• Potential traffic disruptions on W Dravus Street for construction of elevated Interbay Station</li><li>• Coordination required with BNSF Railroad in Interbay for construction of tunnel portal in BNSF property with approximately 1,000-foot long transition from retained fill/cut</li><li>• Requires long span of elevated structure over BNSF tracks to avoid disruption to freight service and need for rail reconstruction</li><li>• Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages</li></ul>	<ul style="list-style-type: none"><li>• Maintaining operation of 96-inch diameter major King County combined sewer pipeline during construction would increase construction challenges and schedule/cost risk</li><li>• Construction of Ballard Station would be more constrained than with other alternatives due to narrower right-of-way along 20th Avenue NW</li><li>• Coordination likely required with BNSF Railway in Interbay</li><li>• Construction under the W Emerson Street bridge in Interbay creates potential challenges for maintenance of traffic</li><li>• Potential challenges identifying muck hauling routes for tunnel construction and constructing cross passages</li><li>• Includes reconstruction of portion of W Dravus Street bridge and potential retrofit or reconstruction of W Emerson Street bridge</li></ul>
	Operational constraints	Higher	Medium	Medium
		<ul style="list-style-type: none"><li>• Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge</li></ul>	<ul style="list-style-type: none"><li>• Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge</li><li>• Would include additional curves, resulting in lower operating speeds than other alternatives</li><li>• Tunnel would be approximately 200 to 500 feet shorter than tunnel to 14th Avenue NW or 15th Avenue NW</li></ul>	<ul style="list-style-type: none"><li>• Tunnel under Salmon Bay would not require openings for vessel traffic associated with a movable bridge</li><li>• Would include additional curves and steeper grades, resulting in lower operating speeds than other alternatives</li><li>• Tunnel would be approximately 1,400 to 1,700 feet longer than tunnel to 14th Avenue NW or 15th Avenue NW, requiring additional ventilation and emergency egress</li></ul>
Financial Sustainability	Conceptual capital cost comparison (2018\$ in millions)	\$350 million increase (north of Dravus only)	\$750 million increase (north of Dravus only)	\$450 million increase (north of Dravus only)
		<ul style="list-style-type: none"><li>• Approximately \$350 million more than the ST3 Representative Project</li><li>• Higher cost for additional tunnel construction</li><li>• Cost of additional tunnels not included in ST3 financial plan or evaluation methodology</li></ul>	<ul style="list-style-type: none"><li>• Approximately \$750 million more than the ST3 Representative Project</li><li>• Higher cost for additional tunnel construction</li><li>• Additional right-of-way costs in downtown Ballard</li><li>• Cost of additional tunnels not included in ST3 financial plan or evaluation methodology</li></ul>	<ul style="list-style-type: none"><li>• Approximately \$450 million more than the ST3 Representative Project</li><li>• Higher cost for additional tunnel construction</li><li>• Additional right-of-way costs in downtown Ballard</li><li>• Cost of additional tunnels not included in ST3 financial plan or evaluation methodology</li></ul>
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	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>• 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</li></ul>	<ul style="list-style-type: none"><li>• Ballard Station located on 20th Avenue NW is closer to the center of the Ballard Hub Urban Village than the station alternatives on 14th Avenue NW and 15th Avenue NW</li></ul>	<ul style="list-style-type: none"><li>• Ballard Station located on 20th Avenue NW is closer to the center of the Ballard Hub Urban Village than the station alternatives on 14th Avenue NW and 15th Avenue NW</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated	14th Ave Ballard Tunnel
Modal Integration	Passenger transfers	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>Transfers from southbound buses on 15th Avenue NW would require crossing 15th Avenue NW</li></ul>	<ul style="list-style-type: none"><li>Opportunity for buses in all directions to serve station entrances without requiring passengers to cross a street</li><li>Pick-up and drop-off activity can be distributed over several blocks</li></ul>	<ul style="list-style-type: none"><li>Opportunity for buses in all directions to serve station entrances without requiring passengers to cross a street</li><li>Pick-up and drop-off activity can be distributed over several blocks</li></ul>
	Bus/rail and rail/rail integration	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>Ballard station is adjacent to north/south bus routes on 15th Avenue NW</li><li>Ballard Station on east side of 15th Avenue NW south of NW Market Street provides less opportunity for integration with buses on both sides of 15th Avenue NW</li></ul>	<ul style="list-style-type: none"><li>Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street</li></ul>	<ul style="list-style-type: none"><li>Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street</li></ul>
	Bicycle infrastructure and accessibility	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail</li><li>There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: 8th Avenue NW, Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Ave NW, and Nickerson Street</li></ul>	<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include : Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail</li><li>There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: 8th Avenue NW, Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Avenue NW, and Nickerson Street</li></ul>	<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail</li><li>There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: 8th Avenue NW, Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Avenue NW, and Nickerson Street</li></ul>
	Pedestrian and persons with limited mobility accessibility	Higher	Medium	Medium
		<ul style="list-style-type: none"><li>Interbay Station on 15th Avenue W 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, but extends further east into Queen Anne neighborhood</li><li>Alternative with 15th Avenue NW Ballard Station includes slightly more intersections within combined walkshed than alternatives with 14th Avenue NW Ballard Station</li></ul>	<ul style="list-style-type: none"><li>Interbay Station on 17th Avenue W has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station extends farther west towards Magnolia neighborhood than the ST3 Representative Project, but less far into Queen Anne neighborhood</li><li>Ballard Station on 14th Avenue NW has a lower percentage of sidewalks and trails than other alternatives</li></ul>	<ul style="list-style-type: none"><li>Interbay Station on 17th Avenue W has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station extends farther west towards Magnolia neighborhood than the ST3 Representative Project, but less far into Queen Anne neighborhood</li><li>Ballard Station on 14th Avenue NW has a lower percentage of sidewalks and trails than other alternatives</li></ul>

Key to Rating

Alternative Performance

Lower Performing

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Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives		
		West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	20th Ave Ballard Tunnel - BNSF Tunnel Portal	20th Ave Ballard Tunnel - Thorndyke Tunnel Portal
		15th Ave Ballard Tunnel		
Modal Integration	Passenger transfers	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>Transfers from southbound buses on 15th Avenue NW would require crossing 15th Avenue NW</li><li>Drop-offs more challenging compared to station options on lower-volume streets</li></ul>	<ul style="list-style-type: none"><li>Opportunity for buses in all directions to serve station entrances without requiring passengers to cross a street</li><li>Good passenger access to downtown Ballard area; Pick-up and drop-off activity can be distributed over several blocks</li></ul>	<ul style="list-style-type: none"><li>Opportunity for buses in all directions to serve station entrances without requiring passengers to cross a street</li><li>Good passenger access to downtown Ballard area; Pick-up and drop-off activity can be distributed over several blocks</li></ul>
	Bus/rail and rail/rail integration	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>Ballard station is adjacent to north/south bus routes on 15th Avenue NW</li><li>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</li></ul>	<ul style="list-style-type: none"><li>Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street</li><li>Ballard station on 20th Avenue NW would require greater out-of-direction travel for connecting bus routes to continue north on 15th Avenue NW than other alternatives, adding delay</li><li>Ballard Station on 20th Avenue NW may have constrained areas for bus zones</li></ul>	<ul style="list-style-type: none"><li>Ballard Station straddling NW Market Street provides good integration with buses on both sides of the street</li><li>Ballard station on 20th Avenue NW would require greater out-of-direction travel for connecting bus routes to continue north on 15th Avenue NW than other alternatives, adding delay</li><li>Ballard Station on 20th Avenue NW may have constrained areas for bus zones</li></ul>
	Bicycle infrastructure and accessibility	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail</li><li>There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: 8th Avenue NW, Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Avenue NW, and Nickerson Street</li></ul>	<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail</li><li>There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: Thorndyke Ave W/20th Ave W/Gilman Avenue W, NW 45th Street/Shilshole Avenue NW, and Nickerson Street</li><li>The 20th Avenue NW station location is closer to the Burke-Gilman Trail and NW 58th Greenway than other alternatives</li></ul>	<ul style="list-style-type: none"><li>Existing multi-use bike facilities within a 10-minute ride from stations include: Burke-Gilman Trail, Elliot Bay Trail, and Ship Canal Trail</li><li>There are existing in-street, separated bike facilities within a 10-minute ride from stations, particularly: Thorndyke Avenue W/20th Avenue W/Gilman Avenue W, NW 45th Street/Shilshole Avenue NW, and Nickerson Street</li><li>The 20th Avenue NW station location is closer to the Burke-Gilman Trail and NW 58th Greenway than other alternatives</li></ul>
	Pedestrian and persons with limited mobility accessibility	Higher	Higher	Higher
		<ul style="list-style-type: none"><li>Interbay Station on 17th Avenue W has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station extends farther west towards Magnolia neighborhood than the ST3 Representative Project, but less far into Queen Anne neighborhood</li><li>Alternative with 15th Avenue NW Ballard Station includes slightly more intersections within combined walkshed than alternatives with 14th Avenue NW Ballard Station</li></ul>	<ul style="list-style-type: none"><li>Interbay Station on 17th Avenue W has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station extends farther west towards Magnolia neighborhood than the ST3 Representative Project, but less far into Queen Anne neighborhood</li><li>Alternative with 20th Avenue NW Ballard Station includes more intersections within combined walkshed than alternatives with the Ballard Station at 14th Avenue NW or 15th Avenue NW</li></ul>	<ul style="list-style-type: none"><li>Interbay Station on 17th Avenue W has a lower percentage of sidewalks and trails than other alternatives; walkshed for this station extends farther west towards Magnolia neighborhood than the ST3 Representative Project, but less far into Queen Anne neighborhood</li><li>Alternative with 20th Avenue NW Ballard Station includes more intersections within combined walkshed than alternatives with the Ballard Station at 14th Avenue NW or 15th Avenue NW</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated	14th Ave Ballard Tunnel
Station Area Development Opportunities	Development potential	Medium	Lower	Medium
		• Moderate development opportunities with elevated station at 15th Ave NW due to smaller surplus lots than tunnel alternatives	• Fewer development opportunities with elevated Ballard Station at 14th Avenue NW due to project footprint almost entirely within street right-of-way and majority industrial zoning south of Ballard station	• Greater development opportunities due to tunnel construction resulting in increased surplus land available; however, proximity to industrial zoning allows for less density than 20th Ave Ballard Tunnel alternative
	Equitable development opportunities	Lower	Lower	Medium
		• Lower equitable development opportunities with elevated station at 15th Avenue NW due to smaller surplus lots than tunnel alternatives and industrial zoning southeast of station	• Lower equitable development opportunities with elevated station at 14th Avenue NW due to project footprint almost entirely within street right-of-way and majority industrial zoning south of Ballard station	• Greater equitable development opportunities due to tunnel construction resulting in increased surplus land available; however, proximity to industrial zoning allows for fewer equitable development opportunities than 20th Ave Ballard Tunnel alternative
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	2	3	3
		• 2 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project	• 3 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project	• 3 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project
	Parks and recreational resources (acres)	0.0	1.1	0.8
		• No permanent impacts to parks	• Approximately 1.1 acres of potential permanent impacts to Interbay Athletic Field and 14th Avenue NW Boat Ramp	• Approximately 0.8 acres of potential permanent impacts to Interbay Athletic Field
	Water resources (acres)	0.5	0.5	0.0
		• More than 0.5 acres of potential permanent in-water impacts	• More than 0.5 acres of potential permanent in-water impacts	• No potential permanent in-water impacts
	Hazardous materials sites	5	10	11
		• 5 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• 10 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Potential residential unit displacements	Higher	Lower	Higher
		• Fewer than approximately 25 potential residential unit displacements	• More than approximately 100 potential residential unit displacements	• Fewer than approximately 25 potential residential unit displacements

Key to Rating	Alternative Performance		
	Lower Performing	Medium Performing	Higher Performing

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Purpose and Need / Evaluation Criteria / Measures			Pre-DEIS Initial Assessment Alternatives	
		West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	20th Ave Ballard Tunnel - BNSF Tunnel Portal	20th Ave Ballard Tunnel - Thorndyke Tunnel Portal
		15th Ave Ballard Tunnel		
Station Area Development Opportunities	Development potential	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>Greater development opportunities due to tunnel construction resulting in increased surplus land available; however, proximity to industrial zoning allows for less density than 20th Ave Ballard Tunnel alternative</li></ul>	<ul style="list-style-type: none"><li>Greater development opportunities due to tunnel construction resulting in increased surplus land available</li><li>Greater development opportunities due to increased density allowed with Mixed-Use and Multi-Family Residential zoning within station walkshed</li></ul>	<ul style="list-style-type: none"><li>Greater development opportunities due to tunnel construction resulting in increased surplus land available</li><li>Greater development opportunities due to increased density allowed with Mixed-Use and Multi-Family Residential zoning within station walkshed</li></ul>
	Equitable development opportunities	Medium	Higher	Higher
		<ul style="list-style-type: none"><li>Greater equitable development opportunities due to tunnel construction resulting in increased surplus land available; however, proximity to industrial zoning allows for fewer equitable development opportunities than 20th Ave Ballard Tunnel alternative</li></ul>	<ul style="list-style-type: none"><li>Greater equitable development opportunities due to tunnel construction resulting in increased surplus land available</li><li>Greater equitable development opportunities due to Mixed-Use and Multi-Family Residential zoning within station walkshed</li></ul>	<ul style="list-style-type: none"><li>Greater equitable development opportunities due to tunnel construction resulting in increased surplus land available</li><li>Greater equitable development opportunities due to Mixed-Use and Multi-Family Residential zoning within station walkshed</li></ul>
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	3	7	8
		<ul style="list-style-type: none"><li>3 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project</li></ul>	<ul style="list-style-type: none"><li>7 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project</li><li>Includes tunnel beneath Ballard Historic District</li></ul>	<ul style="list-style-type: none"><li>8 NRHP-listed, NRHP-eligible, and/or Seattle Landmark Properties could be affected by the project</li><li>Includes tunnel beneath Ballard Historic District</li></ul>
	Parks and recreational resources (acres)	0.8	1.0	0.9
		<ul style="list-style-type: none"><li>Approximately 0.8 acres of potential permanent impacts to Interbay Athletic Field</li></ul>	<ul style="list-style-type: none"><li>Approximately 1.0 acres of potential permanent impacts to Interbay Athletic Field</li></ul>	<ul style="list-style-type: none"><li>Approximately 0.9 acres of potential permanent impacts to Interbay Athletic Field</li></ul>
	Water resources (acres)	0.0	0.0	0.0
		<ul style="list-style-type: none"><li>No potential permanent in-water impacts</li></ul>	<ul style="list-style-type: none"><li>No potential permanent in-water impacts</li></ul>	<ul style="list-style-type: none"><li>No potential permanent in-water impacts</li></ul>
	Hazardous materials sites	10	8	8
		<ul style="list-style-type: none"><li>10 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li></ul>	<ul style="list-style-type: none"><li>8 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li></ul>	<ul style="list-style-type: none"><li>8 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel</li></ul>
Potential residential unit displacements	Higher	Lower	Medium	
	<ul style="list-style-type: none"><li>Fewer than approximately 25 potential residential unit displacements</li></ul>	<ul style="list-style-type: none"><li>More than approximately 100 potential residential unit displacements</li></ul>	<ul style="list-style-type: none"><li>Between approximately 25 and 100 potential residential unit displacements</li></ul>	

Key to Rating	Alternative Performance		
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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated	14th Ave Ballard Tunnel
Environmental Effects (continued)	Potential business displacements	Medium	Lower	Medium
		<ul style="list-style-type: none"><li>Between approximately 150,000 and 300,000 square feet of potential business displacements</li></ul>	<ul style="list-style-type: none"><li>More than approximately 300,000 square feet of potential business displacements</li></ul>	<ul style="list-style-type: none"><li>Between approximately 150,000 and 300,000 square feet of potential business displacements</li></ul>
	Community construction impacts	Lower	Medium	Medium
		<ul style="list-style-type: none"><li>Potential for visual, noise, and vibration impacts on residences near 15th Avenue W, 15th Avenue NW and NW Market Street</li><li>Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li><li>Lane closures during construction on 15th Avenue W in Interbay and 15th Avenue NW in Ballard contribute to widespread diversion and increased congestion in Lower Queen Anne and the Westlake and SR 99 corridors</li></ul>	<ul style="list-style-type: none"><li>Potential for visual, noise, and vibration impacts on residences near 15th Avenue W and 14th Avenue W (north of W Emerson Street), and NW Market Street</li><li>Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li></ul>	<ul style="list-style-type: none"><li>Potential for visual, noise, and vibration impacts on residences near NW Market Street</li><li>Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling</li><li>Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses</li></ul>
	Burden on minority and low-income populations	Higher	Higher	Higher
		<ul style="list-style-type: none"><li>Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk</li></ul>	<ul style="list-style-type: none"><li>Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk</li></ul>	<ul style="list-style-type: none"><li>Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk</li></ul>
Traffic Operations	Traffic circulation and access effects	Lower	Medium	Higher
		<ul style="list-style-type: none"><li>Lengthy segments of elevated guideway along principal arterial 15th Ave W/NW could eliminate or truncate left turn lanes, reduce capacity, and restrict turning movements</li></ul>	<ul style="list-style-type: none"><li>Includes elevated guideway along 14th Avenue NW, a lower-volume street</li><li>Columns could affect access by restricting certain turning movements.</li></ul>	<ul style="list-style-type: none"><li>Alignment in tunnel limits permanent effects to traffic circulation and access</li></ul>
	Effects on transportation facilities	Lower	Medium	Higher
		<ul style="list-style-type: none"><li>Fully elevated guideway along 15th Avenue W in Interbay and 15th Avenue NW in Ballard</li><li>Highest number of potential conflicts with existing and planned transportation infrastructure</li><li>Affected facilities include W Dravus Street, the Emerson interchange, 15th Avenue W, 15th Avenue NW, and the 15th Avenue NW/NW Market Street intersection</li></ul>	<ul style="list-style-type: none"><li>Fully elevated guideway primarily outside of roadway right-of-way and along 14th Avenue NW in Ballard; avoids 15th Avenue W and 15th Avenue NW</li><li>Reduced number of potential conflicts with existing and planned transportation infrastructure compared to ST3 Representative Project</li><li>Affected facilities include W Dravus Street, the Emerson interchange and 14th Avenue NW/NW Market Street intersection</li></ul>	<ul style="list-style-type: none"><li>Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities</li><li>Affected facilities include the Emerson interchange</li></ul>

Key to Rating

Alternative Performance

Lower Performing

Medium Performing

Higher Performing

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Purpose and Need / Evaluation Criteria / Measures		Pre-DEIS Initial Assessment Alternatives		
		West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel	20th Ave Ballard Tunnel - BNSF Tunnel Portal	20th Ave Ballard Tunnel - Thorndyke Tunnel Portal
		15th Ave Ballard Tunnel		
Environmental Effects (continued)	Potential business displacements	Medium	Medium	Higher
		• Between approximately 150,000 and 300,000 square feet of potential business displacements	• Between approximately 150,000 and 300,000 square feet of potential business displacements	• Fewer than approximately 150,000 square feet of potential business displacements
	Community construction impacts	Medium	Lower	Lower
		• Potential for visual, noise, and vibration impacts on residences near NW Market Street • Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling • Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses	• Potential for visual, noise, and vibration impacts on residences near 20th Avenue NW and NW Market Street • Construction for cut-and-cover tunnel Ballard Station would occur in the core of the Ballard Hub Urban Village • Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling • Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses	• Potential for visual, noise, and vibration impacts on residences near 20th Avenue NW and NW Market Street • Construction for cut-and-cover tunnel Ballard Station would occur in the core of the Ballard Hub Urban Village • Includes reconstruction of portion of W Dravus Street bridge and potential retrofit or reconstruction of W Emerson Street bridge • Greater amount of construction vehicles in the Interbay/Ballard neighborhoods for tunnel excavation material hauling • Access to businesses would be maintained throughout the corridor, although the community may experience changes in access to some businesses
	Burden on minority and low-income populations	Higher	Higher	Higher
		• Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk	• Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk	• Interbay and Ballard stations would be located in areas where minority or low-income populations are not above the city average and located in areas of lower displacement risk
Traffic Operations	Traffic circulation and access effects	Higher	Higher	Higher
		• Alignment in tunnel limits permanent effects to traffic circulation and access	• Alignment in tunnel limits permanent effects to traffic circulation and access	• Alignment in tunnel limits permanent effects to traffic circulation and access
	Effects on transportation facilities	Higher	Medium	Medium
		• Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities • Affected facilities include the Emerson interchange	• Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities • Affected facilities include construction over live BNSF rail tracks and temporary construction-related impacts to W Emerson Place	• Tunnels in Ballard and routing in Interbay reduce the number of potential conflicts with other transportation facilities • Affected facilities in Interbay/Ballard include reconstruction of portion of W Dravus Street bridge, potential retrofit or reconstruction of W Emerson Street bridge

Key to Rating

Alternative Performance

Lower Performing

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Purpose and Need / Evaluation Criteria / Measures		Level 3 Alternatives		
		ST3 Representative Project	West Seattle Elevated/Downtown 6th Ave/Ballard Elevated	West Seattle Tunnel/Downtown 5th Ave/Ballard Tunnel
		Movable Bridge 15th Ave Ballard Elevated	Fixed Bridge 14th Ave Ballard Elevated	14th Ave Ballard Tunnel
Economic Effects	Effects on freight movement	Lower	Medium	Higher
		<ul style="list-style-type: none"><li>• Elevated guideway columns could affect truck access to local businesses on 15th Avenue W and 15th Avenue NW; this alternative would have greatest potential direct impact to truck freight routes of all alternatives</li><li>• Construction activities would be conducted along and affect the 15th Avenue W and 15th Avenue NW Major Freight Routes</li><li>• Construction of elevated guideway columns would likely have limited impacts associated with the guideway crossing the following Major Freight Routes: Shilshole Avenue NW, NW Leary Way and NW Market Street</li><li>• Potential 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 could be very difficult to relocate</li><li>• 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</li><li>• Construction of the elevated Ballard Station would occur on 15th Avenue NW and close to NW Market Street, both of which are a Major Freight Route. Construction of the station could have limited impact to freight movement on 15th Avenue NW and NW Market Street</li></ul>	<ul style="list-style-type: none"><li>• Construction of elevated guideway columns could have limited potential impacts associated with the guideway crossing the following Major Freight Routes: 15th Avenue W, Shilshole Avenue NW, NW Leary Way and NW Market Street</li><li>• Construction on the east side of BNSF yard in Interbay</li><li>• 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 could be difficult to relocate</li><li>• 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 could be difficult to relocate</li><li>• Columns in 14th Avenue NW would restrict turning movements for businesses in the Ballard MIC</li><li>• Construction of the elevated Ballard Station would occur on 14th Avenue NW straddling NW Market Street which is a Major Freight Route; construction of the station could have limited impact to freight movement on NW Market Street</li></ul>	<ul style="list-style-type: none"><li>• Construction on the east side of Interbay BNSF yard in Interbay</li><li>• Construction associated with the tunnel portal could affect local freight access</li><li>• Tunnel avoids in-water columns in Salmon Bay and impacts on Fishermen's Terminal</li><li>• Construction of the tunnel Ballard Station would occur beneath 14th Avenue NW straddling NW Market Street which is a Major Freight Route; construction of the station could have temporary impact to freight movement on NW Market Street</li></ul>
	Business and commerce effects	Medium	Lower	Medium
		<ul style="list-style-type: none"><li>• Could have moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay Manufacturing/Industrial Center (MIC)</li><li>• Could displace small businesses in Ballard that mostly serve local community</li><li>• Could displace businesses that support international and domestic trade through terminals on Salmon Bay</li><li>• Potential construction period impacts, such as lane closures and access changes, to local businesses on or near 15th Avenue W in Interbay; 15th Avenue NW and NW Market Street in Ballard</li><li>• 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</li><li>• Other water dependent businesses could be displaced on north side of Salmon Bay (i.e., marina for recreational vessels)</li></ul>	<ul style="list-style-type: none"><li>• Could have the greatest amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MIC</li><li>• Could displace small businesses in Interbay that are service-or light-industrial-oriented</li><li>• Could displace businesses that support international and domestic trade through terminals on Salmon Bay</li><li>• Potential construction period effects such as lane closures and access changes, to local businesses on or near 14th Avenue W, 17th Avenue W, 16th Avenue W and 13th Avenue W in Interbay, 14th Avenue NW and NW Market Street in Ballard</li><li>• 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 routes</li><li>• Other water dependent businesses could be displaced</li></ul>	<ul style="list-style-type: none"><li>• Could have a moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MIC</li><li>• Potential construction period effects such as lane closures and access changes, to local businesses on or near 15th Avenue W, 17th Avenue W, 16th Avenue W and 13th Avenue W in Interbay; 14th Avenue NW and NW Market Street in Ballard</li><li>• Could displace small businesses in Interbay that are service-or light-industrial-oriented</li><li>• Tunnel under Salmon Bay would avoid permanent maritime business impacts, including those at Fishermen's Terminal</li></ul>

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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		15th Ave Ballard Tunnel		
Economic Effects	Effects on freight movement	Higher	Medium	Higher
		<ul style="list-style-type: none"><li>• Construction on the east side of Interbay BNSF yard in Interbay</li><li>• Construction associated with the tunnel portal could affect local freight access</li><li>• Tunnel avoids in-water columns in Salmon Bay and impacts on Fishermen's Terminal</li><li>• Construction of the tunnel Ballard Station would occur beneath 15th Avenue NW and close to NW Market Street, both of which are Major Freight Routes; construction of the station could have temporary impact to freight movement on 15th Avenue NW and NW Market Street, but less impact compared to the alternative with the elevated station</li></ul>	<ul style="list-style-type: none"><li>• Construction on the east side of Interbay BNSF yard in Interbay could require relocation of some BNSF operations due to the proximity of guideway construction and tunnel excavation</li><li>• Construction associated with the tunnel could affect local freight access</li><li>• Tunnel avoids in-water columns in Salmon Bay and impacts on Fishermen's Terminal</li><li>• Construction of the tunnel Ballard Station would occur beneath 20th Avenue NW straddling NW Market Street which is a Major Freight Route; construction of the station could have temporary impact to freight movement on NW Market Street</li></ul>	<ul style="list-style-type: none"><li>• Construction on the east side of Interbay BNSF yard in Interbay</li><li>• Construction associated with the tunnel could affect local freight access</li><li>• Tunnel avoids in-water columns in Salmon Bay and impacts on Fishermen's Terminal</li><li>• Construction of the tunnel Ballard Station would occur beneath 20th Avenue NW straddling NW Market Street which is a Major Freight Route; construction of the station could have temporary impact to freight movement on NW Market Street</li></ul>
	Business and commerce effects	Medium	Medium	Medium
		<ul style="list-style-type: none"><li>• Could have a moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MIC</li><li>• Potential construction period impacts, such as lane closures and access changes, to local businesses on or near 15th Avenue W, 16th Avenue W in Interbay; 17th Avenue W, 15th Avenue NW and NW Market Street in Ballard</li><li>• Could displace small businesses in Interbay that are service-or light-industrial-oriented</li><li>• Tunnel under Salmon Bay would avoid permanent maritime business impacts, including those at Fishermen's Terminal</li></ul>	<ul style="list-style-type: none"><li>• Could have a moderate amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MIC</li><li>• Potential construction period impacts, such as lane closures and access changes, to local businesses on or near 17th Avenue W in Interbay, 20th Avenue NW and NW Market Street in Ballard</li><li>• Could displace small businesses in Interbay that are service-or light-industrial-oriented</li><li>• Tunnel under Salmon Bay would avoid permanent maritime business impacts, including those at Fishermen's Terminal</li></ul>	<ul style="list-style-type: none"><li>• Could have the least amount of business displacements, the majority of which would be industrial or light-industrial businesses in Interbay MIC</li><li>• Potential construction period impacts, such as lane closures and access changes, to local businesses on or near 17th Avenue W in Interbay, 20th Avenue NW and NW Market Street in Ballard</li><li>• Could displace small businesses in Interbay that are service-or light-industrial-oriented</li><li>• Tunnel under Salmon Bay would avoid permanent maritime business impacts, including those at Fishermen's Terminal</li></ul>

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