West Seattle and Ballard
Link Extensions

Level 2 Alternatives Evaluation Matrices

September 2018

SOUNDTRANSIT

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APPENDIX A

Level 2 Screening Evaluation
Criteria, Measures, Methods and Thresholds

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.			
Reliable Service	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, at-grade crossings, etc.) and redundancy and ability to reroute service	High = Low likelihood of service interruptions and good redundancy Medium = Limited likelihood of service interruptions and adequate redundancy Low = High likelihood of service interruptions and/or limited redundancy
Travel Times	LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	High = Travel time approximately 15% faster than the average for all alternatives Medium = Travel time is close to the average for all alternatives Low = Travel time approximately 15% slower than the average for all alternatives
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.			
Regional Connectivity	LRT network integration	Ability to accommodate spine segmentation for regional light rail transit (LRT) system connectivity and operational flexibility to meet future demand	High = Facilitates additional connectivity and operational flexibility beyond spine segmentation Medium = Facilitates spine segmentation for operational flexibility consistent with ST3 Plan Low = Does not facilitate spine segmentation
Transit Capacity	Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	High = Includes new light rail tunnel through downtown with additional improvements Medium = Includes new light rail tunnel through downtown consistent with ST3 Plan Low = Does not include new light rail tunnel through downtown consistent with ST3 Plan
Projected Transit Demand	Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	High = At least 5% greater than average of population and employment within study segment Medium = Within 5% of average of population and employment within study segment Low = At least 5% less than average of population and employment within study segment
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.			
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	High = Station(s) located in regional growth center(s) in study segment Medium = Station(s) located within reasonable walking distance of regional growth center(s) in study segment Low = Regional growth center(s) in study segment not served
	Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	High = Station(s) located in manufacturing/industrial center(s) in study segment Medium = Station(s) located within reasonable walking distance of manufacturing/industrial center(s) in study segment Low = Manufacturing/industrial center(s) in study segment not served
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	High = 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 Low = 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.			
ST3 Consistency	Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High = Mode, route and general station locations consistent with ST3 Plan Medium = Mode, route and general station locations moderately consistent with ST3 Plan Low = Mode, route and general station locations not consistent with ST3 Plan
	Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks (e.g., right-of-way [ROW] acquisition needs, in-water work restrictions, regulatory compliance process, etc.)	High = 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 Low = Major potential effects to implementation schedule for WSBLE Project as included in ST3 Plan
	Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	High = Facilitates special trackwork and/or provides reliable system operations Medium = Facilitates some special trackwork and/or provides moderately reliable system operations Low = 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	High = 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 easily mitigated Low = Substantial engineering constraints, deviations to standards, authority having jurisdiction's acceptance requires substantial mitigation, substantial ROW issues, and/or unique design considerations

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Technical Feasibility (continued)	Constructability issues	Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)	High = Lower construction complexity and lower construction risks (e.g., minimal utility conflicts, building impacts, impacts to existing infrastructure, etc.) Medium = Moderate construction complexity and moderate construction risks Low = Higher construction complexity requiring special mitigation and higher construction risks
	Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	High = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Low = 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 (includes alignment and stations, but not for items such as rolling stock) comparison based on conceptual design quantities and current Sound Transit unit pricing (2017$)	High = Conceptual capital cost less than 10% (or more) of ST3 Representative Project Medium = Conceptual capital cost between 10% less and 10% more of ST3 Representative Project Low = Conceptual capital cost greater than 10% (or more) of ST3 Representative Project
	Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts, including annual and lifecycle costs	High = System operational requirements would have lower O&M cost implications Medium = System operational requirements would have moderate O&M cost implications Low = System operational requirements would have higher O&M cost implications
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.			
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities (activity nodes served, as described below) for low-income and minority populations within station areas and how the project would improve access for low-income and minority populations along the system to these nodes, as well as access for low-income and minority populations in the study area to major regional employment and educational destinations	High = Would improve access to activity nodes for higher than city average populations of minority and low-income populations Medium = Would not affect access to activity nodes for higher than city average populations of minority and low-income populations Low = Would worsen access to activity nodes for higher than city average populations of minority and low-income populations
		Percentage of rent-restricted or subsidized rental units within 10-minute walkshed (i.e., rent-and income-restricted housing units)	High = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is more than 40% Medium = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is 20% to 40% Low = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is less than 20%
	Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Low-income population within analysis area is more than 6% higher than city average Medium = Low-income population within analysis area is within 6% (+/-) of city average Low = Low-income population within analysis area is more than 6% below city average
	Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Minority population within analysis area is more than 6% higher than city average Medium = Minority population within analysis area is within 6% (+/-) of city average Low = Minority population within analysis area is more than 6% below city average
	Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Youth population within analysis area is more than 6% higher than city average Medium = Youth population within analysis area is within 6% (+/-) of city average Low = Youth population within analysis area is more than 6% below city average
	Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Elderly population within analysis area is more than 6% higher than city average Medium = Elderly population within analysis area is within 6% (+/-) of city average Low = Elderly population within analysis area is more than 6% below city average
	Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	High = LEP population within analysis area is more than 6% higher than city average Medium = LEP population within analysis area is within 6% (+/-) of city average Low = LEP population within analysis area is more than 6% below city average
	Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Disabled population within analysis area is more than 6% higher than city average Medium = Disabled population within analysis area is within 6% (+/-) of city average Low = Disabled population within analysis area is more than 6% below city average

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
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	Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	High = Over 70% of station walkshed within Urban Centers and Villages Medium = Between 30% and 70% of station walkshed within Urban Centers and Villages Low = Less than 30% of station walkshed within Urban Centers and Villages
	Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	High = Station locations have greater consistency with local land use plans Medium = Station locations have moderate consistency with local land use plans Low = Station locations have less consistency with local land use plans
	Activity nodes served	Number of activity nodes (e.g., points of interest, gathering spaces, food banks, educational institutions, parks and recreational resources) within 10-minute walkshed of stations	High = Greater than 5% of average activity nodes within combined 10-minute walkshed of stations Medium = Within 5% of average activity nodes within combined 10-minute walkshed of stations Low = Lower than 5% of average activity nodes within combined 10-minute walkshed of stations
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, transportation network companies [TNC]) at stations	High = Good to excellent passenger transfer opportunities Medium = Adequate passenger transfer opportunities Low = Limited passenger transfer opportunities
	Bus/rail and rail/rail integration	Assessment of peak-hour bus and rail trips that stop within one block of proposed station locations relative to the total number of peak-hour bus and rail trips within a 700 foot walk of proposed stations	High = Good to excellent transit integration opportunities and high number of routes serving station Medium = Average to good transportation integration opportunities and number of routes serving station Low = Limited transportation integration opportunities and/or low number of routes serving station
	Bicycle accessibility	Percent of bicycle facility miles (i.e., neighborhood greenway, bicycle lanes, protected bicycle lanes, and trails) to total roadway miles within 10-minute bikeshed of stations	High = Greatest percent of bicycle facility miles compared to other segment alternatives with average to high bikeshed area Medium = 2% less bicycle facility miles compared to other segment alternatives or alternatives with low to average bikeshed area Low = 4% less bicycle facility miles compared to other segment alternatives
	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	High = Higher number of intersections, good to excellent pedestrian access and fewest impediments Medium = Moderate number of intersections, average to good pedestrian access and average impediments Low = Limited number of intersections, 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)	High = Greater percent of properties with development potential Medium = Moderate percent of properties with development potential Low = Lower percent of properties with development potential
	Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	High = 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 Low = 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 City Landmarks	Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle City Landmark properties based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle City Landmark data	High = Less than 5 historic properties potentially affected Medium = Between 5 and 15 historic properties potentially affected Low = Greater than 15 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	High = 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 Low = More than 75 percent of alternative length within Very High Risk or High Risk probability areas

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Environmental Effects (continued)	Parks and recreational resources	Number of and estimated acres of potential permanent impacts to parks and recreational resources	High = Less than 1 acre of potential permanent impacts to parks Medium = Between 1 and 4 acres of potential permanent impacts to parks Low = More than 4 acres of potential permanent impacts to parks
	Water resources	Estimated acres of potential permanent in-water impacts	High = No potential permanent in-water impacts Medium = Up to 0.5 acre of potential permanent in-water impacts Low = More than 0.5 acre of potential permanent in-water impacts
	Fish and wildlife habitat	Estimated acres of potential permanent impact to fish and wildlife habitat using city of Seattle environmentally critical areas	High = Less than 1 acres of potential permanent fish and wildlife habitat impacts Medium = Between 1 and 5 acres of potential permanent fish and wildlife habitat impacts Low = More than 5 acres of potential permanent fish and wildlife habitat impacts
	Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	High = Less than 5 hazardous materials properties potentially affected Medium = Between 5 and 15 hazardous materials properties potentially affected Low = Greater than 15 hazardous materials properties 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	High = Less than 0.5 mile adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high, and low potential to affect SEPA Scenic Routes Medium = Between 0.5 and 1.0 mile adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high, and/or moderate potential to affect SEPA Scenic Routes Low = Greater than 1.0 mile potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high, and/or high potential to affect SEPA Scenic Routes
	Noise and vibration	Assessment of the number of potentially affected noise and vibration sensitive receivers, including residences, libraries, performance halls, schools, churches, and selected parks within 350 feet of alignment; presence of known noise and vibration sensitive facilities will be noted	High = Less than 250 noise and vibration sensitive receivers potentially affected Medium = Between 250 and 500 noise and vibration sensitive receivers potentially affected Low = Greater than 500 noise and vibration sensitive receivers potentially affected
	Property acquisitions and displacements	Number of properties potentially affected; does not include potential permanent or temporary easements or area for construction staging, traction power substations (TPSS) or underground station entrances	High = Less than approximately 30% of range of values within study segment Medium = Between approximately 30% and 70% of range of values within study segment Low = Greater than approximately 70% of range of values within study segment
		Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances	High = Less than approximately 30% of range of values within study segment Medium = Between approximately 30% and 70% of range of values within study segment Low = Greater than approximately 70% of range of values within study segment
		Square feet of potential business displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances	High = Greater than approximately 70% of range of values within study segment Medium = Between approximately 30% and 70% of range of values within study segment Low = Less than approximately 30% of range of values within study segment
	Construction impacts	Assessment of temporary construction impacts to community, 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	High = Lower potential impact on community relative to other alternatives in segment Medium = Moderate potential for impacts to community relative to other alternatives in segment Low = More substantial potential for impacts to community relative to other alternatives in segment
	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 and displacement risk from station area redevelopment	High = Little to no potential impact on minority or low-income communities Medium = Moderate potential for impacts on minority or low-income communities Low = Substantial potential for impacts on minority or low-income communities

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Traffic Operations	Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations, including potential lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken	High = 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 Low = 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	High = 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 Low = 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 and future freight mobility and future freight capacity expansion opportunities, including both on land and water	High = 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 Low = Substantial effects on both land and water freight mobility and capacity expansion
	Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	High = Minimal effects on local businesses, as well as commercial and industrial areas Medium = Moderate effects on local businesses, as well as commercial and industrial areas Low = Substantial effects on local businesses, as well as commercial and industrial areas

Notes:

1. Based on Draft Purpose and Need Statement, with revisions incorporated from feedback received during the Level 1 evaluation.
2. Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
3. Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; “High” = higher ability to achieve measure, “Medium” = moderate ability to achieve measure, “Low” = lower ability to achieve measure; no weighting will be applied.

APPENDIX B

West Seattle/Duwamish Segment
Level 2 Evaluation Matrices

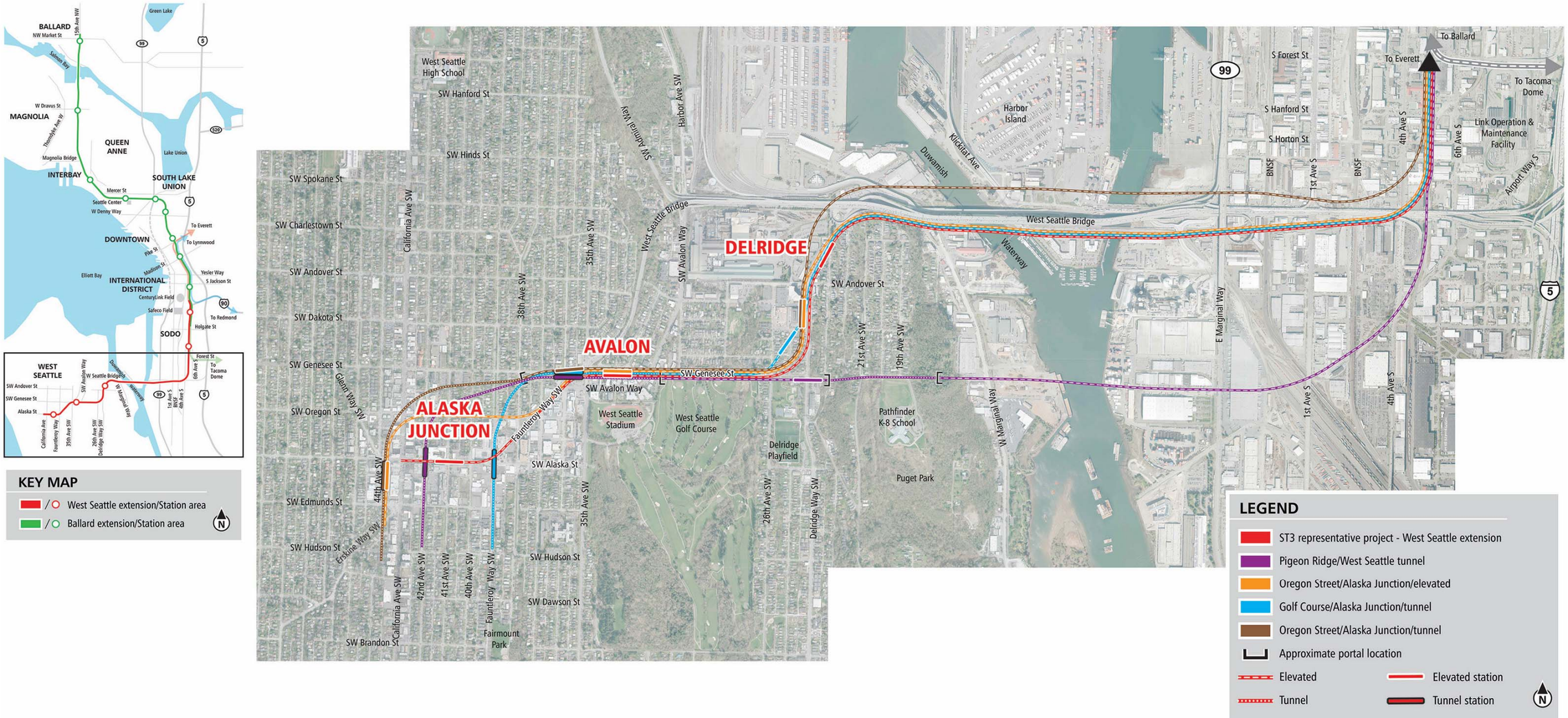

Figure B-1 West Seattle/Duwamish Segment—Level 2 Alternatives

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.						
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	High	High	High	High	High
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.						
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	11,200	12,500	12,000	10,700	12,500
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.						
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	Low	Medium	Low	High	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.						
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	Medium	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	Low	High	Low	Low
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	High	High	High	High	High
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	Medium	Low	Medium	Medium	High
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Low	Low	Low	Low	Medium
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Medium	High	Medium	Medium	Medium
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$1,200 million increase	Similar	$700 million increase	$500 million increase
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	High	Medium	High	Medium	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	Medium	Medium	Medium	Medium	Medium
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	15%	13%	14%	15%	13%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	25% / 21%	24% / 21%	23% / 21%	26% / 21%	23% / 21%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	22% / 26%	23% / 26%	21% / 26%	23% / 26%	21% / 26%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	13% / 17%	14% / 17%	14% / 17%	13% / 17%	14% / 17%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	16% / 13%	15% / 13%	15% / 13%	16% / 13%	15% / 13%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	3% / 4%	3% / 4%	3% / 4%	3% / 4%	3% / 4%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	9% / 9%	9% / 9%	9% / 9%	9% / 9%	9% / 9%
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.						
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	34%	31%	31%	35%	29%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	High	High	High	High	High
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	40	41	42	38	42
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	Medium	High	Medium	Medium	High
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	Medium	High	Medium	Medium	High
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	14%	14%	15%	14%	15%
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 within 10-minute walkshed of stations	Medium	High	High	High	High
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	13%	13%	13%	15%	12%
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	Low	Medium	Medium	High

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
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 City Landmarks	Number of NRHP listed or eligible properties potentially affected	1	1	1	1	2
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	1.5	3.5	1.5	2.8	0.6
Water resources	Estimated acres of potential permanent in-water impacts	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	3.7	5.3	3.7	3.7	1.9
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	11	7	8	14	14
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	1.3	0.6	1.5	0.9	0.7
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	Low	Low	Low	Medium	Low
Property acquisitions and displacements	Number of properties potentially affected	High	High	Low	High	Low
	Number of potential residential unit displacements	Medium	Low	Low	High	Low
	Square feet of potential business displacements	High	Medium	Low	High	Medium
Construction impacts	Assessment of temporary construction impacts to community, 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	Low	High	Low	Medium	Medium
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	High	High	High	High	High
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	Low	High	Medium	High	Medium
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Low	High	Medium	Medium	High
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	Medium	Medium	Medium	Medium	Low

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment						
Purpose and Need / Evaluation Measures and Methods		**Alternatives**				
		ST3 Representative Project	**Pigeon Ridge/West Seattle Tunnel**	**Oregon Street/Alaska Junction/Elevated**	**Golf Course/Alaska Junction/Tunnel**	**Oregon Street/Alaska Junction/Tunnel**
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	Medium	High	Low	Medium	Medium

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: High = Less than 95 parcels; Medium = Between 95 and 115 parcels; Low = More than 115 parcels
   Number of potential residential displacements: High = Less than 85 units; Medium = Between 85 and 145 units; Low = More than 145 units
   Area of potential business displacements: High = Less than 650,000 square feet; Medium = Between 650,000 and 750,000 square feet; Low = More than 750,000 square feet

Key to Rating	Alternative Performance		
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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives: ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
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	Potential service interruptions and recoverability	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.						
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	11,200 • Approximately 11,200 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	12,500 • Approximately 12,500 forecasted population and employment within 10-minute walkshed of stations 6% greater than segment average due to well-spaced West Seattle stations and more southern Delridge Station	12,000 • Approximately 12,000 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	10,700 • Approximately 10,700 forecasted population and employment within 10-minute walkshed of stations 9% lower than segment average due to closely spaced Avalon and Alaska Junction stations	12,500 • Approximately 12,500 forecasted population and employment within 10-minute walkshed of stations 6% greater than segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.						
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
Regional Centers Served	Station proximity to PSRC-designated manufacturing/industrial centers	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Low • Alaska Junction Station oriented east-west; difficult to turn south for future extension • Requires elevated structure on California Avenue SW	Medium • Alaska Junction Station oriented north-south in tunnel	Low • Alaska Junction Station elevated and oriented north-south, but west of California Avenue SW • Likely would require elevated structure extending south along California Avenue SW or parallel facility	High • Alaska Junction Station oriented north-south in tunnel • Closer to 35th Avenue SW	Medium • Alaska Junction Station in tunnel and oriented north-south, but west of California Avenue SW

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.						
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	Medium • Mode, route and general station locations moderately consistent with ST3 Plan due to location of Alaska Junction Station relative to Alaska Junction neighborhood	High • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	Low • Inclusion of tunnel could increase implementation schedule	High • Implementation schedule anticipated to be similar to ST3 Plan	Low • Inclusion of tunnel could increase implementation schedule	Low • Inclusion of tunnel could increase implementation schedule
	Potential ST3 operating plan effects	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Medium • Steep and unstable slope at Pigeon Point • Elevated column and pier close to Burlington Norther Santa Fe (BNSF) Railway tracks at SR 99 ramp • Long span bridges with straddle bents over S Spokane Street and SR 99 • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway	Low • Tunnel portal in steep and unstable slope at Pigeon Ridge • Elevated guideway over Union Pacific Railroad (UPRR) Argo Yard • High-level, long-span bridge over Duwamish Waterway	Medium • Steep and unstable slope at Pigeon Point • Elevated column and pier close to BNSF Railway tracks at SR 99 ramp • Long span bridges with straddle bents over S Spokane Street and SR 99 • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway	Medium • Steep and unstable slope at Pigeon Point • Elevated column and pier close to BNSF Railway tracks at SR 99 ramp • Long span bridges with straddle bents over S Spokane Street and SR 99 • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway	High • Avoids steep and unstable slope at Pigeon Point • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway
	Constructability issues	Low • Potential soil stabilization challenge at Pigeon Point • Potential maintenance of traffic challenges during construction over S Spokane Street, SR 99 south of West Seattle Bridge and its adjacent ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street, Fauntleroy Way SW and SW Alaska Street • Limited areas for construction staging and laydown for elevated long-span guideway spanning SR 99 • Limited in-water work window to construct long span bridges over east and west waterway	Low • Coordination of construction access and staging for elevated guideway over active UPRR Argo yard • Potential soil stabilization challenge at tunnel portal locations at Pigeon Ridge • Construction of guideway under Seattle City Light (SCL) high voltage overhead line • Limited in-water work window to construct long span bridges over Duwamish Waterway • Potential maintenance of traffic challenges during construction over Delridge Way SW, along SW Genesee Street, and under Fauntleroy Way SW and SW Alaska Street	Low • Potential soil stabilization challenge at Pigeon Point • Potential maintenance of traffic challenges during construction over S Spokane Street, SR 99 south of West Seattle Bridge and its adjacent ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street, Fauntleroy Way SW, SW Oregon Street and over California Avenue SW • Limited areas for construction staging and laydown for elevated long-span guideway spanning SR 99 • Limited in-water work window to construct long span bridges over east and west waterway	Low • Potential soil stabilization challenge at Pigeon Point • Potential maintenance of traffic challenges during construction over S Spokane Street, SR 99 south of West Seattle Bridge and its adjacent ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street, and under Fauntleroy Way SW and SW Alaska Street • Limited areas for construction staging and laydown for elevated long-span guideway spanning SR 99 • Limited in-water work window to construct long span bridges over east and west waterway	Medium • Avoids challenges of construction in Pigeon Point area • Coordination of construction access and staging for guideway columns and associated ground improvements at Terminal 18 on Harbor Island • Potential maintenance of traffic challenges during construction over West Seattle Bridge and Delridge ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street and over Fauntleroy Way SW • Limited in-water work window to construct long span bridges over east and west waterway

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment							
Purpose and Need / Evaluation Criteria / Measures			Alternatives				
			ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Technical Feasibility (continued)	Operational constraints		Medium	High	Medium	Medium	Medium
			• Dual direction Operations and Maintenance Facility (OMF) access would be viable • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed	• Dual direction OMF access would be viable and improved • Larger radius curves would result in potentially higher speeds	• Dual direction Operating and Maintenance Facility (OMF) access would be viable • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed	• Dual direction OMF access would be viable • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed	• Single direction OMF access would be viable; connecting guideway could be longer than other alternatives in this segment • Larger radius curves crossing West Seattle Bridge and avoiding Pigeon Point would result in potentially higher speeds
Financial Sustainability	Conceptual capital cost comparison		--	$1,200 million increase	Similar	$700 million increase	$500 million increase
			• Baseline for capital cost comparison to other alternatives within segment	• Approximately $1,200 million more than the ST3 Representative Project	• Similar to the ST3 Representative Project	• Approximately $700 million more than the ST3 Representative Project	• Approximately $500 million more than the ST3 Representative Project
	Operating cost impacts		High	Medium	High	Medium	Medium
			• Elevated guideway could result in lower operating and maintenance costs (O&M) costs compared with alternatives that have tunnels	• Tunnel could result in higher O&M costs compared with elevated guideway alternatives	• Elevated guideway could result in lower O&M costs compared with alternatives that have tunnels	• Tunnel could result in higher O&M costs compared with elevated guideway alternatives	• Tunnel could result in higher O&M costs compared with elevated guideway alternatives
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.							
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	Medium	Medium	Medium	Medium	Medium
			• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
		Percent of rent-restricted or subsidized rental units	15%	13%	14%	15%	13%
			• 15% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 13% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 14% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 15% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 13% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives: ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Historically Underserved Populations (continued)	Low-income population	25% / 21% • City average is 24% • Low-income population within 10-minute walkshed is 1% above city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $84,880, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.1, similar to city average of 2.1	24% / 21% • City average is 24% • Low-income population within 10-minute walkshed is the same as city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $87,148, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.2, slightly higher than city average of 2.1	23% / 21% • City average is 24% • Low-income population within 10-minute walkshed is 1% below city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $84,880, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for the walksheds is 2.1, similar to city average of 2.1	26% / 21% • City average is 24% • Low-income population within 10-minute walkshed is 2% above city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $82,704, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.1, similar to city average of 2.1	23% / 21% • City average is 24% • Low-income population within 10-minute walkshed is 1% below city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $87,576, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.1, similar to city average of 2.1
	Minority population	22% / 26% • City average is 34% • Minority population within 10-minute walkshed is 12% below city average • Minority population within 15-minute rideshed is 8% below city average	23% / 26% • City average is 34% • Minority population within 10-minute walkshed is 11% below city average • Minority population within 15-minute rideshed is 8% below city average	21% / 26% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 8% below city average	23% / 26% • City average is 34% • Minority population within 10-minute walkshed is 11% below city average • Minority population within 15-minute rideshed is 8% below city average	21% / 26% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 8% below city average
	Youth population (under 18)	13% / 17% • City average is 15% • Youth population within 10-minute walkshed is 2% below city average • Youth population within 15-minute rideshed is 2% above city average	14% / 17% • City average is 15% • Youth population within 10-minute walkshed is 1% below city average • Youth population within 15-minute rideshed is 2% above city average	14% / 17% • City average is 15% • Youth population within 10-minute walkshed is 1% below city average • Youth population within 15-minute rideshed is 2% above city average	13% / 17% • City average is 15% • Youth population within 10-minute walkshed is 2% below city average • Youth population within 15-minute rideshed is 2% above city average	14% / 17% • City average is 15% • Youth population within 10-minute walkshed is 1% below city average • Youth population within 15-minute rideshed is 2% above city average
	Elderly population (65 and over)	16% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 4% above city average • Elderly population within 15-minute rideshed is 1% above city average	15% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average	15% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average	16% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 4% above city average • Elderly population within 15-minute rideshed is 1% above city average	15% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average
	Limited English Proficiency (LEP) population	3% / 4% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	3% / 4% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	3% / 4% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	3% / 4% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	3% / 4% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives: ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Historically Underserverd Populations	Disabled population	9% / 9%	9% / 9%	9% / 9%	9% / 9%	9% / 9%
		• City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	• City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	• City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	• City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	• City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minuteute rideshed is the same as the city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.						
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	34%	31%	31%	35%	29%
		• 34% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the walkshed within an Urban Village is at the Alaska Junction Station	• 31% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the walkshed within an Urban Village is at the Alaska Junction Station	• 31% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the West Seattle Junction Hub Urban Village is within the Alaska Junction Station walkshed	• 35% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the walkshed within an Urban Village is at the Alaska Junction Station due to the walkshed area being the smallest of all alternatives	• 29% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the West Seattle Junction Hub Urban Village is within the Alaska Junction Station walkshed
	Station locations consistent with current local land use plans	High	High	High	High	High
		• Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	• Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	• Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	• Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	• Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area
	Activity nodes served	40	41	42	38	42
		• 40 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	• 41 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	• 42 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	• 38 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	• 42 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office
Modal Integration	Passenger transfers	Medium	High	Medium	Medium	High
		• Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Avalon Station east of Fauntleroy Way SW is more difficult to access compared to other station locations at or just west of Fauntleroy Way SW	• Most station locations provide space for adjacent bus and drop-off/pick-up connections	• Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Avalon Station east of Fauntleroy Way SW is more difficult to access compared to other station locations at or just west of Fauntleroy Way SW	• Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Delridge Station location east of 26th Avenue SW is more difficult to access from bus routes on Delridge Way SW compared to other alternatives	• Most station locations provide space for adjacent bus and drop-off/pick-up connections

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Modal Integration (continued)	Bus/rail and rail/rail integration	Medium • Average to good transportation integration opportunities; 71% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings such as at Avalon Station located east of Fauntleroy Way SW	High • Most stations provide connections adjacent to all streets; 88% of transit routes less than one block walk of stations	Medium • Average to good transportation integration opportunities; 71% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings such as at Avalon Station located east of Fauntleroy Way SW	Medium • Average to good transportation integration opportunities; 73% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings such as at Delridge Station east of 26th Avenue SW	High • Most stations provide connections adjacent to all streets; 88% of transit routes less than one block walk of stations
	Bicycle accessibility	14% • 14% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.5 square miles • Similar bike facilities as other segment alternatives	14% • 14% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.6 square miles • Similar bike facilities as other segment alternatives	15% • 15% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 4.7 square miles • Similar bike facilities as other segment alternatives	14% • 14% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.1 square miles • Similar bike facilities as other segment alternatives	15% • 15% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 4.7 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Medium • 199 intersections within combined walkshed • 92% of sidewalk/trail miles to total roadway miles within combined walkshed • Major freight route near the Avalon Station • Delridge Station is located near the Duwamish Manufacturing/Industrial Center • Delridge Station is not located near a traditional street grid to provide good pedestrian access and is located near the West Seattle Bridge eastbound on-ramp with limited existing pedestrian crossings on Delridge Way SW	High • 201 intersections within combined walkshed • 91% of sidewalk/trail miles to total roadway miles within combined walkshed • Major freight route near the Avalon Station • Delridge Station is centrally located near a signalized intersection with a set of stairs leading to Pigeon Ridge, east of the station	High • 215 intersections within combined walkshed • 89% of sidewalk/trail miles to total roadway miles within combined walkshed • Delridge Station is located on west side of arterial within a relatively flat area • Delridge Station is located near the Duwamish Manufacturing/Industrial Center • Major freight route near the Avalon Station	High • 170 intersections within combined walkshed; fewest number of intersections due to a smaller combined walkshed compared to other West Seattle alternatives • 92% of sidewalk/trail miles to total roadway miles within combined walkshed • Delridge Station is centrally located and near a signalized intersection at SW Genesee Street and within a relatively flat area • Major freight route near the Avalon and Alaska Junction stations • The multi-leg intersection at SW Alaska Street and Fauntleroy Way SW is complex	High • 228 intersections within combined walkshed; greatest number of intersections mostly due to a larger combined walkshed compared to other West Seattle alternatives • 89% of sidewalk/trail miles to total roadway miles within combined walkshed • Delridge Station is located on west side of arterial within a relatively flat area • Delridge Station is located near the Duwamish Manufacturing/Industrial Center • Major freight route near the Avalon Station
Station Area Development Opportunities	Development potential	13% • 13% of parcels with redevelopment potential	13% • 13% of parcels with redevelopment potential	13% • 13% of parcels with redevelopment potential	15% • 15% of parcels with redevelopment potential; alternative has more redevelopable land within walksheds than other alternatives, indicating the walksheds have more parcels that are underdeveloped (relative to current zoning) and/or unlikely to redevelop (such as parks, public facilities, churches, and condos)	12% • 12% of parcels with redevelopment potential
	Equitable development opportunities	Low • Limited opportunities at all three station locations	Low • Limited opportunities at Delridge and Avalon stations • Some opportunities at Alaska Junction Station	Medium • Greater opportunity near Delridge Station • Limited opportunities at Avalon and Alaska Junction stations	Medium • Greater opportunity near Delridge Station based on Station Charrette • Limited opportunities at Avalon and Alaska Junction stations	High • Greater opportunities near Delridge and Alaska Junction stations • A tunnel configuration at Alaska Junction Station provides greater opportunities than elevated configuration in similar location

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment						
Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
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 City Landmarks	1 • 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	1 • 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	1 • 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	1 • 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	2 • 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low • 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 • Bridge crossing in area with greater disturbance from construction of other infrastructure	Low • 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 minimally disturbed in this area 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	Low • 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 • Bridge crossing in area with greater disturbance from construction of other infrastructure	Low • 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 • Bridge crossing in area with greater disturbance from construction of other infrastructure	Low • 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 • Bridge crossing in area with greater disturbance from construction of other infrastructure
	Parks and recreational resources	1.5 • Approximately 1.5 acres of permanent impacts to 3 parks: Harbor Marina Corporate Center open space at Terminal 102, West Duwamish Greenbelt, and West Seattle Golf Course	3.5 • Approximately 3.5 acres of permanent impacts to 4 parks: Delridge Playfield, Pigeon Point Park, West Duwamish Greenbelt, and West Seattle Golf Course	1.5 • Approximately 1.5 acres of permanent impacts to 3 parks: Harbor Marina Corporate Center at Terminal 102, West Duwamish Greenbelt, and West Seattle Golf Course	2.8 • Approximately 2.8 acres of permanent impacts to 3 parks: Harbor Marina Corporate Center at Terminal 102, West Duwamish Greenbelt, and West Seattle Golf Course	0.6 • Approximately 0.6 acre of permanent impact to 1 park: West Seattle Golf Course
	Water resources	< 0.1 • Approximately < 0.1 acre of permanent impact in West Duwamish Waterway	< 0.1 • Approximately < 0.1 acre of permanent impact in Duwamish Waterway (main channel)	< 0.1 • Approximately < 0.1 acre of permanent impact in West Duwamish Waterway	< 0.1 • Approximately < 0.1 acre of permanent impact in West Duwamish Waterway	< 0.1 • Approximately < 0.1 acre of permanent impact in both West and East Duwamish Waterways
	Fish and wildlife habitat	3.7 • Approximately 3.7 acres of permanent habitat impacts • Requires clearing steep slope on Pigeon Point; revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment	5.3 • Approximately 5.3 acres of permanent habitat impacts • Requires clearing for elevated guideway and tunnel portal; areas within 200 feet on each side of alignment may likely only be replanted with low-growing trees and shrubs • Historical presence of bald eagle and great blue heron nests within 200 feet of north side of the alignment	3.7 • Approximately 3.7 acres of permanent habitat impacts • Requires clearing steep slope on Pigeon Point; revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment	3.7 • Approximately 3.7 acres of permanent habitat impacts • Requires clearing steep slope on Pigeon Point; revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment	1.9 • Approximately 1.9 acres of permanent habitat impacts • Avoids impacts on West Duwamish Greenbelt

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives				
			ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Environmental Effects (continued)	Hazardous materials		11 • Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	7 • Approximately 7 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Lower Duwamish Waterway Superfund Site	8 • Approximately 8 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	14 • Approximately 14 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	14 • Approximately 14 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)
	Visual		1.3 • More than 1 mile elevated guideway near visually sensitive viewers; about 900 feet over 75 feet high • Highest point in a visually sensitive area would be about 160 feet (along SW Genesee Street) • About 0.3 mile would be on Fauntleroy Way SW, a State Environmental Policy Act (SEPA) Scenic Route • Would be approximately 100 feet south of the West Seattle Bridge, a SEPA Scenic Route	0.6 • Between 0.5 and 1 mile of elevated guideway near visually sensitive viewers; none over 75 feet high • Future light rail bridge structure over Duwamish Waterway would be in an area without adjacent infrastructure, but also has limited visual sensitivity	1.5 • More than 1 mile of elevated guideway near visually sensitive areas; longest over 75 feet high • Highest point in a visually sensitive area would be about 160 feet (along SW Genesee Street) • About 0.2 mile would be on Fauntleroy Way SW, a SEPA Scenic Route • Would be approximately 100 feet south of the West Seattle Bridge, a SEPA Scenic Route	0.9 • Between 0.5 and 1 mile of elevated guideway near visually sensitive viewers; none over 75 feet high • Would be approximately 100 feet south of the West Seattle Bridge, a SEPA Scenic Route	0.7 • Between 0.5 and 1 mile of elevated guideway near visually sensitive viewers; about 40% over 75 feet high • Highest point in a visually sensitive area would be about 140 feet (along SW Genesee Street) • Avalon Station would be elevated over Fauntleroy Way SW, a SEPA Scenic Route • Would be up to 300 feet north of the West Seattle Bridge, a SEPA Scenic Route
	Noise and vibration		Low • Approximately 830 noise and vibration sensitive receivers within 350 feet of the alternative	Low • Approximately 530 noise and vibration sensitive receivers within 350 feet of the alternative	Low • Approximately 650 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 460 noise and vibration sensitive receivers within 350 feet of the alternative	Low • Approximately 530 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	High • Less than 95 parcels affected	High • Less than 95 parcels affected	Low • More than 115 parcels affected	High • Less than 95 parcels affected	Low • More than 115 parcels affected
		Number of potential residential unit displacements	Medium • Between 85 and 145 potential residential unit displacements • Displacements would occur in Delridge neighborhood and around Avalon Station	Low • More than 145 potential residential unit displacements • Displacements would primarily occur around Alaska Junction Station	Low • More than 145 potential residential unit displacements • Displacements would occur in Delridge neighborhood and around Avalon and Alaska Junction stations	High • Less than 85 potential residential unit displacements • Displacements would occur in Delridge neighborhood and around Avalon Station	Low • More than 145 potential residential unit displacements • Displacements would occur in Delridge neighborhood, for the tunnel portal west of Fauntleroy Avenue SW, and around Avalon and Alaska Junction stations

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives				
			ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Environmental Effects (continued)	Property acquisitions and displacements (continued)	Square feet of potential business displacements	High • Less than 650,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, and near the Alaska Junction	Medium • Between 650,000 and 750,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas	Low • More than 750,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, along the west side of Delridge Way SW, and around the Alaska Junction	High • Less than 650,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, and along the west side of Delridge Way SW	Medium • Between 650,000 and 750,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, and along the west side of Delridge Way SW
	Construction impacts		Low • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW, SW Genesee Street, and SW Alaska Street, as well as the north edge of Pigeon Point • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), Fauntleroy Way SW (23,000 cars per day), and SW Alaska Street (12,000 cars per day); diversion of these vehicles could create traffic impacts on other roadways	High • Potentially least disruptive to the Delridge and Pigeon Point neighborhoods • Potential for visual, noise and vibration impacts on residences on or near SW Genesee Street for elevated guideway and station construction, and near 42nd Avenue SW for tunnel station construction • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day) and SW Genesee Street (4,200 cars per day); and potential for traffic impacts on Fauntleroy Way SW (23,000 cars per day), SW Alaska Street (12,000 cars per day) and 42nd Avenue SW (less than 5,000 cars per day) for cut-and-cover station construction; diversion of these vehicles could create traffic impacts on other roadways • Impacts on other major roadways would generally be avoided • Construction could impact use of a portion of Youngstown Cultural Arts Center, Delridge Playfield (which includes the Delridge Community Center and Skatepark) and West Seattle Golf Course properties for the greater West Seattle community	Low • Greatest potential disruption to the Alaska Junction neighborhood • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW, SW Genesee Street, SW Oregon Street, California Avenue SW and 44th Avenue SW, as well as the north edge of Pigeon Point • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), Fauntleroy Way SW (23,000 cars per day), and SW Oregon Street (9,500 cars per day); diversion of these vehicles could create traffic impacts on other roadways	Medium • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW, SW Genesee Street and Fauntleroy Way SW, as well as the north edge of Pigeon Point • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), and Fauntleroy Way SW (23,000 cars per day); diversion of these vehicles could create traffic impacts on other roadways • Construction could impact use of a portion the West Seattle Golf Course for the greater West Seattle community	Medium • Construction on the north side of the West Seattle Bridge would reduce construction impacts on the Pigeon Point neighborhood • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW and SW Genesee Street for elevated guideway and station construction, and around 44th Avenue SW and SW Alaska Street for tunnel station construction • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), and Fauntleroy Way SW (23,000 cars per day); diversion of these vehicles could create traffic impacts on other roadways
	Burden on minority and low-income populations		High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Traffic Operations	Traffic circulation and access	Low • Alignment in street along Delridge Way SW, Fauntleroy Way SW and SW Alaska Street; driveway access changes expected for parcels along these streets and SW Genesee Street	High • Most of alignment is outside of roadways or in a tunnel	Medium • Alignment in street along Fauntleroy Way SW and SW Oregon Street; driveway access changes expected for parcels along these streets and SW Genesee Street	High • Most of alignment is outside of roadways or in a tunnel • Local street impacts within Delridge at station location	Medium • Requires closing 37th Avenue SW roadway approaching the tunnel portal; however, local circulation is still possible with the grid-like street network in the area • Driveway access changes expected for parcels along SW Genesee Street
	Transportation facilities	Low • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps, major intersections in West Seattle (Fauntleroy Way SW/SW Alaska Street, Fauntleroy Way SW/SW Genesee Street) • Modification to planned Fauntleroy Boulevard Project and potential RapidRide improvements on Delridge corridor • Partial use of SW Alaska Street to accommodate station	High • Transportation facilities affected include crossing West Seattle Bridge and SR 99 (although less challenging compared to other alternatives); major intersection in West Seattle (Fauntleroy Way SW/SW Genesee Street)	Medium • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps, major intersections in West Seattle (Fauntleroy Way SW/SW Genesee Street) • Modification to planned Fauntleroy Boulevard Project and potential RapidRide improvements on Delridge corridor	Medium • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps, major intersection in West Seattle (Fauntleroy Way SW/SW Genesee Street)	High • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps (although less challenging compared to other alternatives) , major intersection in West Seattle (Fauntleroy Way SW/SW Genesee Street) • Modification to planned Fauntleroy Boulevard Project and potential RapidRide improvements on Delridge corridor
Economic Effects	Freight movement and access on land and water	Medium • Maintains BNSF lines on south end of Harbor Island • No direct impacts expected to emergency access bridge over east waterway • Bridges would span Duwamish navigation channel, but could have temporary construction impacts to waterway operations • Columns along Delridge Way SW, Fauntleroy Way SW, and SW Alaska Street could affect truck access to local businesses • No direct impacts expected to Terminal 5 or Terminal 18 access or operations	Medium • Potentially requires a column in the main waterway, but outside of navigation channel • Potential impact to internal yard operations at Terminal 106 • Potential for temporary construction impacts to S Idaho Street • Potential for temporary construction impacts to Nucor Terminal 105 truck and rail movements • Avoids Port of Seattle container Terminal 5, 18 and 25, as well as Port industrial properties at Terminal 102 and 104	Medium • Maintains BNSF lines on south end of Harbor Island • No direct impacts expected to emergency access bridge over east waterway • Bridges would span Duwamish navigation channel, but could have temporary construction impacts to waterway operations • Columns along Delridge Way SW and Fauntleroy Way SW could affect truck access to local businesses • No direct impacts expected to Terminal 5 or Terminal 18 access or operations	Medium • Maintains BNSF lines on south end of Harbor Island • No direct impacts expected to emergency access bridge over east waterway • Bridges would span Duwamish navigation channel, but could have temporary construction impacts to waterway operations • Columns along Delridge Way SW could affect truck access to local businesses • No direct impacts expected to Terminal 5 or Terminal 18 access or operations	Low • Possible temporary construction parking and gate queue storage impacts at Terminal 18, including vehicle access to Westway Feed Products and Harley Marine Services • Maintains rail access to Westway Feed Products • Bridges would span both east and west waterways, navigation not likely permanently affected • Alternate moorage locations could be needed for fuel barges that are frequently stored in East Waterway (adjacent to and across from Harley Marine) • Could displace buildings at Terminal 7 (private)

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Economic Effects (continued)	Business and commerce effects	Medium	High	Low	Medium	Medium
		• Lower amount of business displacement of West Seattle alternatives, but could displace several businesses along Fauntleroy Way SW • Could displace several industrial businesses on both sides of Duwamish Waterway and in Terminal 102 office complex • Could displace multi-story office building for Delridge Station • Construction traffic impacts within Duwamish industrial area, Harbor Island Terminals 102 and 104, and smaller businesses along Fauntleroy Way SW and SW Alaska Street	• Moderate amount of business displacement of West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway • Could displace one grocery store in Alaska Junction area • Reduced construction traffic impacts to small businesses because alternative would be in a tunnel in West Seattle; some construction traffic impacts within Duwamish industrial area and smaller businesses along 42nd Avenue SW	• Greatest amount of business displacement of West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway and in Terminal 102 office complex • Could displace multi-story office buildings for Delridge Station • Could displace multiple businesses on California Avenue SW and remove much of the off-street parking in Alaska Junction area • Construction traffic impacts within Duwamish industrial area and smaller businesses along Fauntleroy Way SW, SW Oregon Street, California Avenue SW and 44th Avenue SW	• Lower amount of business displacement of West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway and in Terminal 102 office complex • Reduced construction traffic impacts to small businesses because alternative would be in a tunnel within West Seattle; some construction traffic impacts to businesses along Fauntleroy Way SW	• Moderate amount of business displacement compared to other West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway and on Harbor Island, but avoids Terminal 102 • Reduced construction traffic impacts to small businesses because alternative would be in a tunnel west of 37th Avenue SW • Some construction traffic impacts on Harbor Island and within Duwamish industrial area and smaller businesses along 44th Avenue SW • Could displace multi-story office buildings for Delridge Station

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT 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		
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APPENDIX C

SODO and Chinatown/International District Segment
Level 2 Evaluation Matrices

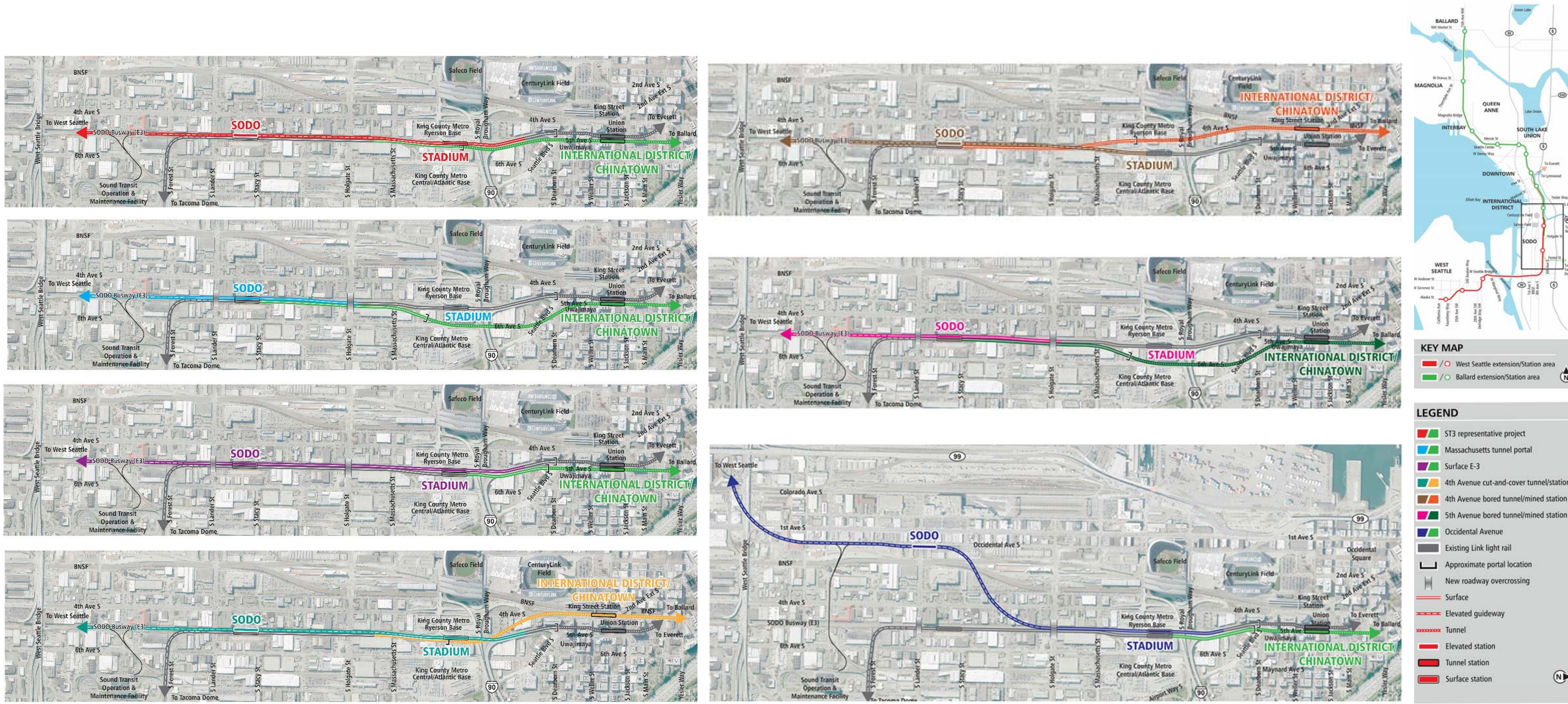

Figure C-1 SODO and Chinatown/International District Segment—Level 2 Alternatives

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.								
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	Low	Medium	High	High	Low	Low	Medium
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.								
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	High	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	35,900	35,900	35,900	37,100	35,300	35,300	35,900
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.								
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	1	1	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	Medium	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.								
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	Medium	High	High	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	High	High	High	Low	Low	Medium
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	Medium	Medium	High	High	High	Low	Medium
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	Medium	Medium	Medium	Low	Low	Low	Medium
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Medium	Medium	Medium	Low	Low	Low	Medium
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Medium	Medium	High	Medium	Medium	Low	Medium
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$200 million decrease	$400 million decrease	Similar (+$200 million in SODO)	$600 million increase	$500 million increase	Similar

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	Medium	Medium	High	Medium	Medium	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.								
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	High	High	High	High	High	High	High
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	80%	80%	80%	73%	75%	75%	80%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	59% / 49%	59% / 49%	59% / 49%	58% /49%	57% / 49%	57% / 49%	59% / 49%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	65% / 54%	65% / 54%	65% / 54%	65% / 53%	63% / 54%	63% / 54%	65% / 54%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	7% / 7%	7% / 7%	7% / 7%	7% / 8%	6% / 7%	6% / 7%	7% / 7%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	30% / 19%	30% / 19%	30% / 19%	30% / 18%	28% / 19%	28% / 19%	30% / 19%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	24% / 19%	24% / 19%	24% / 19%	24% / 19%	25% / 19%	25% / 19%	24% / 19%
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.								
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	41%	41%	41%	37%	41%	41%	41%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	57	57	57	56	54	54	57
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	High	Medium	Medium	Medium	Medium	Low	Low
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	21%	21%	21%	21%	21%	21%	21%
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 within 10-minute walkshed of stations	Medium	Medium	Medium	Medium	Medium	Medium	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	14%	14%	14%	15%	13%	13%	14%
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	Medium	Low	High	Medium	Low	Medium
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 City Landmarks	Number of NRHP listed or eligible properties potentially affected	3	2	3	3	5	2	3
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	0	0	0	0	0	0	0
Water resources	Estimated acres of potential permanent in-water impacts	0	0	0	0	0	0	0
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	0	0	0	0	0	0	0
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	4	9	4	6	5	9	9
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	0	0	0	0	0	0	0
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Property acquisitions and displacements	Number of properties potentially affected	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Number of potential residential unit displacements	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Square feet of potential business displacements	High	Low	High	Low	Low	High	Low
Construction impacts	Assessment of temporary construction impacts to community, 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	Low	High	Medium	Medium	Low	Low	High
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	Medium	Medium	Medium	Medium	Low	Low	High
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	Medium	High	Medium	Medium	Low	Medium	High
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Low	High	Medium	Medium	Low	Low	High

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Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	Medium	High	Medium	Low	Low	Low	High
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	Medium	Medium	Medium	Low	Medium	Medium	High

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: Medium = Between 10 and 20 parcels, due to small variation in impacts all alternatives in this segment were rated equally
   Number of potential residential displacements: Medium = Less than 50 units, due to small variation in impacts all alternatives in this segment were rated equally
   Area of potential business displacements: High = Less than 200,000 square feet; Medium = Between 200,000 and 325,000 square feet; Low = More than 325,000 square feet

Key to Rating	Alternative Performance		
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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
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	Potential service interruptions and recoverability	Low • Continue to have at-grade crossings for existing Link light rail at Royal Brougham Way S, S Lander Street and S Holgate Street	Medium • Proposed roadway overpasses for grade separation at Lander and Holgate; existing Link light rail would continue to have an at-grade crossing at Royal Brougham Way S	High • No at-grade crossings; proposed roadway overpasses for grade separation at S Lander Street and S Holgate Street, and closure of through vehicle traffic on Royal Brougham Way S	High • No at-grade crossings; proposed roadway overpasses for grade separation at S Lander and S Holgate Street, and closure of through vehicle traffic on Royal Brougham Way S
Travel Times	LRT travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates spine segmentation	Medium • Facilitates spine segmentation	High • Facilitates additional connectivity and operational flexibility beyond spine segmentation	Medium • Facilitates spine segmentation
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	37,100 • Approximately 37,100 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	Medium • Mode, route and general station locations moderately consistent with ST3 Plan due to location of SODO Station and degraded transfer with existing SODO Station assumed in ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
	Potential ST3 operating plan effects	Medium • May not facilitate all desired special trackwork for track interconnections	Medium • May not facilitate all desired special trackwork for track interconnection but more opportunities than ST3 Representative Project	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Medium • Could require Washington State Department of Transportation (WSDOT)/East Link structure modifications • Elevated guideway would likely require greatest amount of ground improvements • Could result in impacts to King County Ryerson Base during construction • Potential location of guideway columns to minimize impact to Burlington Northern-Santa Fe (BNSF)/Union Pacific Railroad (UPRR) • Could require "S" development encroachment and right-of-way (ROW) needs	Medium • Could result in proximity issue to existing foundations of WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Could require Seattle Department of Transportation (SDOT) approval for roadway grade separations (S Lander Street, S Holgate Street) • Least impact to King County Ryerson Base • BNSF/UPRR freight rail impacted north of S Lander Street due to roadway grade separation • Could require "S" development minimal encroachment	Medium • Minimizes impacts to WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Reduces design of cut-and-cover tunnel in assumed poor soils and high water table • Could require SDOT approval for roadway grade separations (S Lander Street, S Holgate Street) and Royal Brougham Way S closure • Additional ROW is needed at the King County Ryerson Base for the new Stadium Station west of the existing station (to remain) • BNSF/UPRR freight rail likely impacted north of S Lander Street due to roadway overcrossing and SODO Station footprint • Potential "S" development encroachment and ROW needs	Low • Concept increases long-span elevated guideway structure • Long-span crossing of BNSF active tracks, LRT mainline and OMF connection • OMF connection includes elevated guideway • At-grade guideway from Stadium Station to the north likely resulting in less impacts to WSDOT/East Link structures • Reduces interference to E3 busway and SCL overhead transmission lines • Could require SDOT approval for roadway grade separations (S Lander Street, S Holgate Street) and Royal Brougham Way S closure • Additional ROW is needed at the King County Ryerson Base for the new Stadium Station west of the existing station (to remain) • BNSF/UPRR freight rail likely impacted north of S Lander Street due to roadway grade separation

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Technical Feasibility (continued)	Constructability issues	Medium • Bored tunnel portal in Chinatown/International District constrained work area • Light rail lines at different elevations for most of E3 busway would create limited area for construction staging, which could result in increased service disruption • Proximity to Immigration and Naturalization Service (INS) (historic immigration building) property could restrain work area • South tunnel portal requires WSDOT/East Link structure modifications • Cut-and-cover tunnel constrained work zone, headroom issues (i.e., construction clearance below the existing WSDOT ramps), poor soils and high water table • Cut-and-cover tunnel portal and retained cut and proximity to operating trackway may need temporary track and temporary closure of Stadium Station	Medium • Bored tunnel portal, with largest work zone for tunnel portal • Light rail lines at different elevations for most of E3 busway would create limited area for construction staging, which could result in increased service disruption • Proximity to D-2 ramp and SR 90 ramp foundations crossing Royal Brougham Way S, may require ground improvements or other measures to existing foundations • No construction on existing LRT line north of S Holgate Street and no impacts to Stadium Station • Bored tunnel and portal through poor soils and high water table	Medium • Bored tunnel portal in Chinatown/International District constrained work area • Cut-and-cover tunnel portal south of Seattle Boulevard in constrained work area • South cut-and-cover tunnel portal would not require WSDOT/East Link structure modifications • No impacts to Stadium Station • Both light rail lines at-grade in E3 busway would increase area for construction staging, which would likely result in least amount of service disruption • Roadway overcrossing structures in poor soils; would require protection of existing utilities • Proximity to INS (historic immigration building) property could constrain work area	Low • Increases long-span elevated guideway structure • Bored tunnel portal in Chinatown/International District in constrained work area • Cut-and-cover tunnel portal south of Seattle Boulevard in constrained work area • South cut-and-cover tunnel portal would likely not require WSDOT/East Link structure modifications • No impacts to existing Stadium Station • Both light rail lines at-grade in E3 busway would likely increase area for track construction phasing • Roadway overcrossing structures in poor soils and would require protection of existing utilities • Proximity to INS (historic immigration building) property could constrain work area
	Operational constraints	Medium • Generally meets operational goals and pocket tracks • At-grade roadway crossings on Ballard to Tacoma Line at S Holgate Street and S Lander Street, and on Everett-West Seattle Line at Royal Brougham Way S • Provides connection between West Seattle and Ballard lines; some movements may require reversing directions	Medium • Meets operational goals and pocket tracks • At-grade roadway crossings on Everett to West Seattle Line at Royal Brougham Way S (existing) • Provides connection between West Seattle and Ballard lines	High • Meets operational goals and pocket tracks • Eliminates light rail grade crossings for both lines • More opportunities for special trackwork and connections between West Seattle and Ballard lines	Medium • Meets operational goals and pocket tracks • Eliminates light rail grade crossings for both lines • Degraded connection to OMF results in less efficient operations • Layout includes special trackwork for pocket track and double cross over connecting LRT lines; southbound Ballard line to southbound West Seattle line would require traveling reverse direction
Financial Sustainability	Conceptual capital cost comparison	-- • Baseline for capital cost comparison to other alternatives within segment	$200 million decrease • Approximately $200 million less than the ST3 Representative Project	$400 million decrease • Approximately $400 million less than the ST3 Representative Project	Similar (+$200 million in SODO) • Similar to the ST3 Representative Project (+$200 million in SODO)
	Operating cost impacts	Medium • Elevated guideway could result in higher O&M costs compared with at-grade alignment	Medium • Longer tunnel could result in higher O&M costs compared with at-grade alignment	High • At-grade alignment and shorter tunnel could result in lowest O&M costs	Medium • Elevated guideway could result in higher O&M costs compared with at-grade alignment

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2): ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	High • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	High • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	High • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	High • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area
		Percent of rent-restricted or subsidized rental units	80% • 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	80% • 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	80% • 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	73% • 73% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units
	Low-income population		59% / 49% • City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	59% / 49% • City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	59% / 49% • City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	58% /49% • City average is 24% • Low-income population within 10-minute walkshed is 34% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1
	Minority population		65% / 54% • City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	65% / 54% • City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	65% / 54% • City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	65% / 53% • City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 19% above city average
	Youth population (under 18)		7% / 7% • City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	7% / 7% • City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	7% / 7% • City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	7% / 8% • City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 7% below city average

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2): ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue
Historically Underserved Populations (continued)	Elderly population (65 and over)	20% / 19% • City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	20% / 19% • City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	20% / 19% • City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	20% / 19% • City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average
	Limited English Proficiency (LEP) population	30% / 19% • City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	30% / 19% • City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	30% / 19% • City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	30% / 18% • City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 10% above city average • Predominant language spoken by LEP populations is Chinese
	Disabled population	24% / 19% • City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	24% / 19% • City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	24% / 19% • City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	24% / 19% • City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	41% • International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	41% • International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	41% • International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	37% • International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 37% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (638 acres) due to the long block sizes, therefore skewing the percentage
	Station locations consistent with current local land use plans	Medium • Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	Medium • Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	Medium • Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	Medium • Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands
	Activity nodes served	57 • 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	57 • 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	57 • 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	56 • 56 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue
Modal Integration	Passenger transfers	High • Most station locations provide space for adjacent bus and drop-off/pick-up connections	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station
	Bus/rail and rail/rail integration	Medium • Good bus access at proposed stations; 93% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station	Medium • Average to good transportation integration opportunities; 68% of transit routes less than one block walk of stations • Limited opportunities to site bus zones adjacent to SODO Station with S Lander Street grade separation • Good transfer opportunities at International District/Chinatown Station	Medium • Average to good transportation integration opportunities; 68% of transit routes less than one block walk of stations • Limited opportunities to site bus zones adjacent to SODO Station with S Lander Street grade separation • Good transfer opportunities at International District/Chinatown Station	Medium • Good bus access at proposed stations; 93% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station • Degraded rail/rail integration due to distance between SODO stations
	Bicycle accessibility	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.7 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Medium • 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 205 intersections within combined walksheds • 71% of sidewalk/trail miles to total roadway miles within combined walksheds • The SODO Station is located closer to 1st Avenue S with limited access to the west due to railroad ROW and industrial uses • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center
Station Area Development Opportunities	Development potential	14% • Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential	14% • Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential	14% • Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential	15% • Little difference among alternatives since station locations are similar • 15% of parcels with redevelopment potential • Slight increase compared to other alternatives due to location of SODO Station on Occidental Avenue S

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue
Station Area Development Opportunities (continued)	Equitable development opportunities	Low • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane	Medium • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane • Property acquisitions along 6th Avenue S could create potential equitable development opportunities	Low • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane	High • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station and near the SODO Station on Occidental Avenue S; however, most of the area is zoned for manufacturing/industrial uses, which may impact the types of equitable development opportunities • Greatest amount of property acquisitions could create potential equitable development opportunities
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 City Landmarks	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	2 • 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts
	Potential archaeological resources	Low • 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	Low • 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	Low • 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	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted
	Water resources	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts
	Fish and wildlife habitat	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts
	Hazardous materials	4 • Approximately 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	9 • Approximately 9 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	4 • Approximately 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	6 • Approximately 6 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue
Environmental Effects (continued)	Visual		0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views
	Noise and vibration		Medium • Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	Medium • Between 10 and 20 parcels affected	Medium • Between 10 and 20 parcels affected	Medium • Between 10 and 20 parcels affected	Medium • Between 10 and 20 parcels affected
	Property acquisitions and displacements (continued)	Number of potential residential unit displacements	Medium • Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	Medium • Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	Medium • Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	Medium • Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station
		Square feet of potential business displacements	High • Less than 200,000 square feet of potential business displacements • Displacements would occur primarily around the International District/Chinatown Station	Low • More than 325,000 square feet of potential business displacements • Displacements would occur primarily around the S Massachusetts Street portal and potentially around International District/Chinatown Station	High • Less than 200,000 square feet of potential business displacements • Displacements would occur primarily around the International District/Chinatown Station	Low • More than 325,000 square feet of potential business displacements • Displacements would occur primarily in SODO and around International District/Chinatown Station
	Construction impacts		Low • Most disruptive construction of 5th Avenue S alignments and stations • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood • Construction of cut-and-cover tunnel and International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail	High • Less disruptive than the ST3 Representative Project because it would have a bored tunnel south of the International District/Chinatown Station • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood from construction of International District/Chinatown Station • Construction of cut-and-cover International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Construction of at-grade guideway and SODO Station in E3 busway would periodically disrupt travel on existing light rail, but would be less than ST3 Representative Project because there would be no disruption of existing Stadium Station service because no construction is proposed in this area • Construction of grade-separated roadways at S Lander Street and S Holgate Street could affect traffic circulation in the SODO area and affect travel to/from adjacent neighborhoods	Medium • Less disruptive than the ST3 Representative Project because it would have less cut-and-cover tunnel construction south of the International District/Chinatown Station • Construction of cut-and-cover International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood • Construction of SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail • Construction of grade-separated roadways at S Lander Street and S Holgate Street could affect traffic circulation in the SODO area and affect travel to/from adjacent neighborhoods	Medium • Construction of cut-and-cover tunnel and International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood • Construction of elevated guideway along Occidental Avenue and SODO and Stadium stations could affect traffic circulation in the SODO area and affect travel to/from adjacent neighborhoods

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Environmental Effects (continued)	Burden on minority and low-income populations	Medium • Construction of cut-and-cover tunnel and cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	Medium • Construction of cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city averages • Bored tunnel construction between Massachusetts Street and International District/Chinatown Station would be less than for cut-and-cover alternatives and would have less impact on this community • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	Medium • Construction of International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	Medium • Construction of cut-and-cover tunnel and cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk
Traffic Operations	Traffic circulation and access	Medium • Similar to existing conditions	High • Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street	Medium • Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street; these benefits are offset somewhat by the permanent closure of Royal Brougham Way S at the busway	Medium • Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street; these benefits are offset somewhat by the permanent closure of Royal Brougham Way S at the busway
	Transportation facilities	Low • Transportation facilities affected include WSDOT ramps, Ryerson Base, E3 busway and Seattle Boulevard S	High • Transportation facilities affected include S Lander Street, S Holgate Street grade separations and E3 busway	Medium • Transportation facilities affected include S Lander Street, S Holgate Street grade separations, Royal Brougham, Ryerson Base, E3 busway and Seattle Boulevard S	Medium • Transportation facilities affected include S Lander Street, S Holgate Street grade separations, Royal Brougham Way S, Ryerson Base, E3 busway and Seattle Boulevard S
Economic Effects	Freight movement and access on land and water	Medium • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Does not introduce any new at-grade crossings • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S	High • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Full grade separation at S Holgate Street and S Lander Street would improve truck freight mobility by reducing at-grade crossings • No impacts to Royal Brougham Way S are expected • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S	Medium • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Full grade separation at S Holgate Street and S Lander Street would improve truck freight mobility by reducing at-grade crossings • Would close Royal Brougham Way S to vehicle traffic • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S	Low • Columns could affect freight access to businesses located between 1st Avenue S and the BNSF Mainline that is provided by Occidental Avenue S • Temporary impacts to operations at BNSF Railway yard during construction of clear span bridge; no permanent impacts to freight rail • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Economic Effects (continued)	Business and commerce effects	Medium • Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for the cut-and-cover tunnel north of Royal Brougham Way S • Temporary construction traffic impacts on freight movement on S Lander Street, S Holgate Street, Royal Brougham Way S, and Seattle Boulevard S for construction over/under these roadways	Medium • Second greatest amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur around station areas and for the tunnel portal south of S Massachusetts Street • Temporary construction traffic impacts on freight movement on S Lander Street and S Holgate Street for grade separating these roadways	Medium • Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for the cut and cover tunnel north of Royal Brougham Way S • Temporary construction traffic impacts on freight movement on S Lander Street and S Holgate Street for grade separating these roadways • Permanent closure of Royal Brougham Way S would change traffic circulation patterns, but is not expected to substantially affect freight movement	Low • Greatest amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur on Occidental Avenue S and for the transition to the E3 busway • Impacts to freight access for businesses on Occidental Avenue S

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT 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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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	Potential service interruptions and recoverability	Low • Continue to have at-grade crossings for existing Link light rail at Royal Brougham Way S, S Lander Street and S Holgate Street	Low • Continue to have at-grade crossings for existing Link light rail at Royal Brougham Way S, S Lander Street and S Holgate Street	Medium • Proposed roadway overpasses for grade separation at S Lander Street and S Holgate Street; existing Link light rail would continue to have an at-grade crossing at Royal Brougham Way S	
Travel Times	LRT travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates spine segmentation	Medium • Facilitates spine segmentation	Medium • Facilitates spine segmentation	
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	
Projected Transit Demand	Ridership potential	35,300 • Approximately 35,300 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,300 • Approximately 35,300 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	
Sound Transit Long-Range Plan	Accommodates future LRT extension beyond ST3	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

	Purpose and Need / Evaluation Criteria / Measures	Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	
	Potential ST3 implementation schedule effects	Low • 4th Avenue viaduct rebuild could increase implementation schedule	Low • Partial 4th Avenue viaduct rebuild and very deep mined station could increase implementation schedule	Medium • Very deep mined station could increase implementation schedule	
	Potential ST3 operating plan effects	High • Facilitates special trackwork and provides reliable system operations	Low • Does not facilitate special trackwork or provide reliable system operations	Medium • May not facilitate all desired special trackwork for track interconnection but more opportunities than ST3 Representative Project	
Technical Feasibility	Engineering constraints	Low • Would require 4th Avenue S viaduct and retaining wall demolition and reconstruction S Washington Street to Seattle Boulevard S, construction on high volume arterial and adjacent to BNSF active trackway • Three tunnels in close proximity at S Washington Street; Ballard line cut-and-cover tunnel just east of BNSF tunnel portal • Minimal clearance over existing Downtown Seattle Transit Tunnel (DSTT); likely service disruption to existing LRT operating in DSTT • Yesler Bridge and King County Administration building likely to be impacted • Royal Brougham Way S tunnel crossing under roadway, under active LRT mainline • WSDOT ramp structure modifications required • E3 busway from Stadium Station to S Forest Street similar to ST3 Representative Project	Low • Would require 4th Avenue S viaduct demolition and reconstruction anticipated for mined station cavern • 4th Avenue S likely to have long-term closure • Vertical alignment to go below 4th Avenue S constraints results in deeper Midtown and International District/Chinatown stations • Profile grades are steep and less desirable • TBM Portal assumed in King County Ryerson bus base, property impacts likely from S Massachusetts Street to properties north of Royal Brougham Way S • E3 busway from Stadium Station to S Forest Street similar to ST3 Representative Project	Medium • Bored tunnel and mined station, with station access shaft off-street likely minimizes impacts to 5th Avenue S • Vertical alignment to go below 5th Avenue S results in deeper Midtown and International District/Chinatown stations • Profile grades are steep and less desirable • Proximity issue to existing foundations of WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Design of bored tunnel and portal in poor soils and high water table • Reduced impact to King County Ryerson Base	
	Constructability issues	Low • Constructability issues related to cut-and-cover tunnel 4th Avenue; demolition and reconstruction of key facilities and work in close proximity to existing infrastructure • Light rail lines at different elevations for most of E3 busway would create limited area for track construction phasing • South tunnel portal likely to require WSDOT structure modifications • Cut-and-cover tunnel constrained work zone, headroom issues, poor soils and high water table • Cut-and-cover tunnel portal and retained cut may need temporary track and temporary closure of Stadium Station	Low • Constructability issues related to bored tunnel and mined station on 4th Avenue S; demolition and reconstruction of 4th Avenue viaduct and work in close proximity existing infrastructure • Shallow ground improvement likely at specific sections with liquefiable soils in tunnel section • Light rail lines at different elevations for most of E3 busway likely resulting in increased service disruption	Medium • Bored tunnel and mined station would be below 5th Avenue S wall pile foundation • Shallow ground improvement likely at specific sections with liquefiable soils • Station access shaft would likely require ground treatment • Bored tunnel portal, with largest work zone for tunnel portal • Light rail lines at different elevations for most of E3 busway likely resulting in increased service disruption • Tunnel proximity to ramp foundations may require ground improvements • Bored tunnel and portal through poor soils and high water table	

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment						
Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Technical Feasibility (continued)	Operational constraints		Medium • Generally meets operational goals and pocket tracks • At-grade roadway crossings on Ballard to Tacoma Line at S Holgate Street and S Lander Street, and on Everett to West Seattle Line at Royal Brougham Way S • Provides connection between West Seattle and Ballard lines; some movements may require reversing directions	Low • Pocket tracks are provided similar to ST3 Representative Project • Based on current layout of West Seattle and Ballard Link Extensions, connection would only be accommodated through the OMF connection • Adding a crossover at the south end of International District/Chinatown Station would be difficult given the track vertical geometry and additional viaduct reconstruction	Medium • Meets operational goals and pocket tracks • At-grade roadway crossings on Everett to West Seattle Line at Royal Brougham Way S (existing) • Provides connection between West Seattle and Ballard lines	
Financial Sustainability	Conceptual capital cost comparison		$600 million increase • Approximately $600 million more than the ST3 Representative Project	$500 million increase • Approximately $500 million more than the ST3 Representative Project	Similar • Similar to the ST3 Representative Project	
	Operating cost impacts		Medium • Elevated guideway could result in higher O&M costs compared with at-grade alignment	Medium • Elevated guideway could result in higher O&M costs compared with at-grade alignment	Medium • Longer tunnel could result in higher O&M costs compared with at-grade alignment	
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	High • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	High • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	High • International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	
		Percent of rent-restricted or subsidized rental units	75% • 75% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	75% • 75% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	80% • 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Historically Underserved Populations (continued)	Low-income population	57% / 49%	57% / 49%	59% / 49%	
		• City average is 24% • Low-income population within 10-minute walkshed is 33% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	
	Minority population	63% / 54%	63% / 54%	65% / 54%	
		• City average is 34% • Minority population within 10-minute walkshed is 29% above city average • Minority population within 15-minute rideshed is 20% above city average	• City average is 34% • Minority population within 10-minute walkshed is 29% above city average • Minority population within 15-minute rideshed is 20% above city average	• City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	
	Youth population (under 18)	6% / 7%	6% / 7%	7% / 7%	
		• City average is 15% • Youth population within 10-minute walkshed is 9% below city average • Youth population within 15-minute rideshed is 8% below city average	• City average is 15% • Youth population within 10-minute walkshed is 9% below city average • Youth population within 15-minute rideshed is 8% below city average	• City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	
	Elderly population (65 and over)	20% / 19%	20% / 19%	20% / 19%	
		• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	
	Limited English Proficiency (LEP) population	28% / 19%	28% / 19%	30% / 19%	
		• City average is 8% • LEP population within 10-minute walkshed is 20% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	• City average is 8% • LEP population within 10-minute walkshed is 20% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	• City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	
	Disabled population	25% / 19%	25% / 19%	24% / 19%	
		• City average is 9% • Disabled population within 10-minute walkshed is 16% above city average • Disabled population within 15-minute rideshed is 10% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 16% above city average • Disabled population within 15-minute rideshed is 10% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	41% • International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (582 acres) due to the long block sizes, therefore skewing the percentage	41% • International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (582 acres) due to the long block sizes, therefore skewing the percentage	41% • International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	
	Station locations consistent with current local land use plans	Medium • Strong local land use plans in the Pioneer Square and International District/Chinatown Station areas, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	Medium • Strong local land use plans in the Pioneer Square and International District/Chinatown Station areas, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	Medium • Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	
	Activity nodes served	54 • 54 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	54 • 54 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	57 • 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	
Modal Integration	Passenger transfers	Medium • Most station locations provide space for adjacent bus and drop-off/pick-up connections	Low • Most station locations provide space for adjacent bus and drop-off/pick-up connections • Deeper mined station not as convenient for ease of access and passenger transfers in comparison to shallower cut-and-cover stations	Low • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station • Deeper mined station not as convenient for ease of access and passenger transfers in comparison to shallower cut-and-cover stations	
	Bus/rail and rail/rail integration	Medium • Good bus access at proposed stations; 100% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station	Medium • Good bus access at proposed stations; 100% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station	Medium • Average to good transportation integration opportunities; 68% of transit routes less than one block walk of stations • Limited opportunities to site bus zones adjacent to SODO Station with S Lander Street grade separation • Good transfer opportunities at International District/Chinatown Station	

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Modal Integration (continued)	Bicycle accessibility	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	
	Pedestrian and persons with limited mobility accessibility	Medium • 215 intersections within combined walksheds • 71% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 215 intersections within combined walksheds • 71% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	
Station Area Development Opportunities	Development potential	13% • Little difference among alternatives since station locations are similar • 13% of parcels with redevelopment potential • Slight decrease compared to other alternatives due to location of International District/Chinatown Station	13% • Little difference among alternatives since station locations are similar • 13% of parcels with redevelopment potential	14% • Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential • Slight decrease compared to other alternatives due to location of International District/Chinatown Station	
	Equitable development opportunities	Medium • Some opportunities for equitable development south of Airport Way S between International District/Chinatown Station and Stadium Station west of I-90 bus lane • Property acquisitions along 4th Avenue S could create potential equitable development opportunities	Low • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station west of I-90 bus lane	Medium • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane • Property acquisitions along 6th Avenue S could create potential equitable development opportunities	
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 City Landmarks	5 • 5 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	2 • 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Environmental Effects (continued)	Potential archaeological resources	Low • 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	Low • 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	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	
	Parks and recreational resources	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	
	Water resources	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	
	Fish and wildlife habitat	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	
	Hazardous materials	5 • Approximately 5 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	9 • Approximately 9 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	9 • Approximately 9 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	
	Visual	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	
	Noise and vibration	Medium • Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	
	Property acquisitions and displacements — Number of potentially affected properties	Medium • Between 10 and 20 parcels affected	Medium • Between 10 and 20 parcels affected	Medium • Between 10 and 20 parcels affected	

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Environmental Effects (continued)	Property acquisitions and displacements (continued)	Number of potential residential unit displacements	Medium • Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	Medium • Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	Medium • Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	
		Square feet of potential business displacements	Low • More than 325,000 square feet of potential business displacements • Displacements would occur primarily in the Stadium area and Central Business District	High • Less than 200,000 square feet of potential business displacements • Displacements would occur primarily in Stadium area	Low • More than 325,000 square feet of potential business displacements • Displacements would occur primarily around the S Massachusetts Street portal and potentially around International District/Chinatown Station	
	Construction impacts		Low • Cut-and-cover tunnel and station construction would affect traffic on 4th Avenue S and require periodic closures and detours; 4th Avenue S is a Downtown Principal Arterial and a Major Freight Route that carries about 33,000 vehicles a day and diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood; reduced compared to alternatives on 5th Avenue S • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail	Low • Most disruptive construction of 4th Avenue S alignments and stations • Construction of mined tunnel and International District/Chinatown Station would require full closure of 4th Avenue S, which is a Downtown Principal Arterial and a Major Freight Route that carries about 33,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood; reduced compared to alternatives on 5th Avenue S • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail	High • Least disruptive construction of 5th Avenue S alignments and stations • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail • Construction of mined International District/Chinatown Station would avoid impacts on traffic on 5th Avenue S • Temporary noise, vibration and visual impacts would occur for adjacent residences	
	Burden on minority and low-income populations		Low • Construction of cut-and-cover tunnel and cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Partial closure of 4th Avenue S during construction has potential for cut-through traffic in Chinatown/International District • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk • Would displace multiple social services, including a homeless shelter	Low • Construction of International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Full closure of 4th Avenue S during construction has greatest potential for cut-through traffic in Chinatown/International District and would cause greater impacts than stations on 5th Avenue S • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	High • Construction of International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average; impacts would be less than alternatives with cut-and-cover International District/Chinatown Station • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (Chinatown/International District) displacement risk	

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Traffic Operations	Traffic circulation and access	Low • Reduced capacity on 4th Avenue S to facilitate station access would degrade traffic operations	Medium • Similar to existing conditions	High • Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street	
	Transportation facilities	Low • Transportation facilities affected include 4th Avenue S, Royal Brougham Way S, Ryerson Base, E3 busway and Seattle Boulevard S	Low • Transportation facilities affected include 4th Avenue S, Ryerson Base, E3 busway and Seattle Boulevard S	High • Transportation facilities affected include S Lander Street, S Holgate Street grade separations and E3 busway	
Economic Effects	Freight movement and access on land and water	Low • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Does not introduce any new at-grade crossings • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 4th Avenue S, a designated Major Freight Route; some traffic could be maintained during construction with increased congestion expected • Could affect BNSF operations during tunnel and station construction due to close proximity to tracks	Low •Use of BNSF spur track south of S Lander Street could affect rail freight operations • Does not introduce any new at-grade crossings • Bus relocation from E3 busway could affect freight routes • Construction of International District/Chinatown Station would affect freight traffic on 4th Avenue S, a designated Major Freight Route; full closure of 4th Avenue S during construction would require detours with increased congestion expected on detour routes • Could affect BNSF operations during station construction due to close proximity to tracks	High • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Full grade separation at S Holgate Street and S Lander Street would reduce at-grade crossings for freight • No impacts to Royal Brougham Way S • Bus relocation from E3 busway could affect freight routes • Mined International District/Chinatown Station would avoid freight impacts on 5th Avenue S	
	Business and commerce effects	Medium • Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for the cut-and-cover tunnel on 4th Avenue S • Impacts to freight movement during construction due to partial closure of 4th Avenue S, a designated Major Freight Route	Medium • Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for tunnel portal south of Royal Brougham Way S • Greatest impact of SODO alternatives on freight movement during construction due to full closure of 4th Avenue S, a designated Major Freight Route	High • Moderate amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for tunnel portal south of Royal Brougham Way S • Least disruptive to freight movement during construction	

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT 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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APPENDIX D

Downtown Segment

Level 2 Evaluation Matrices

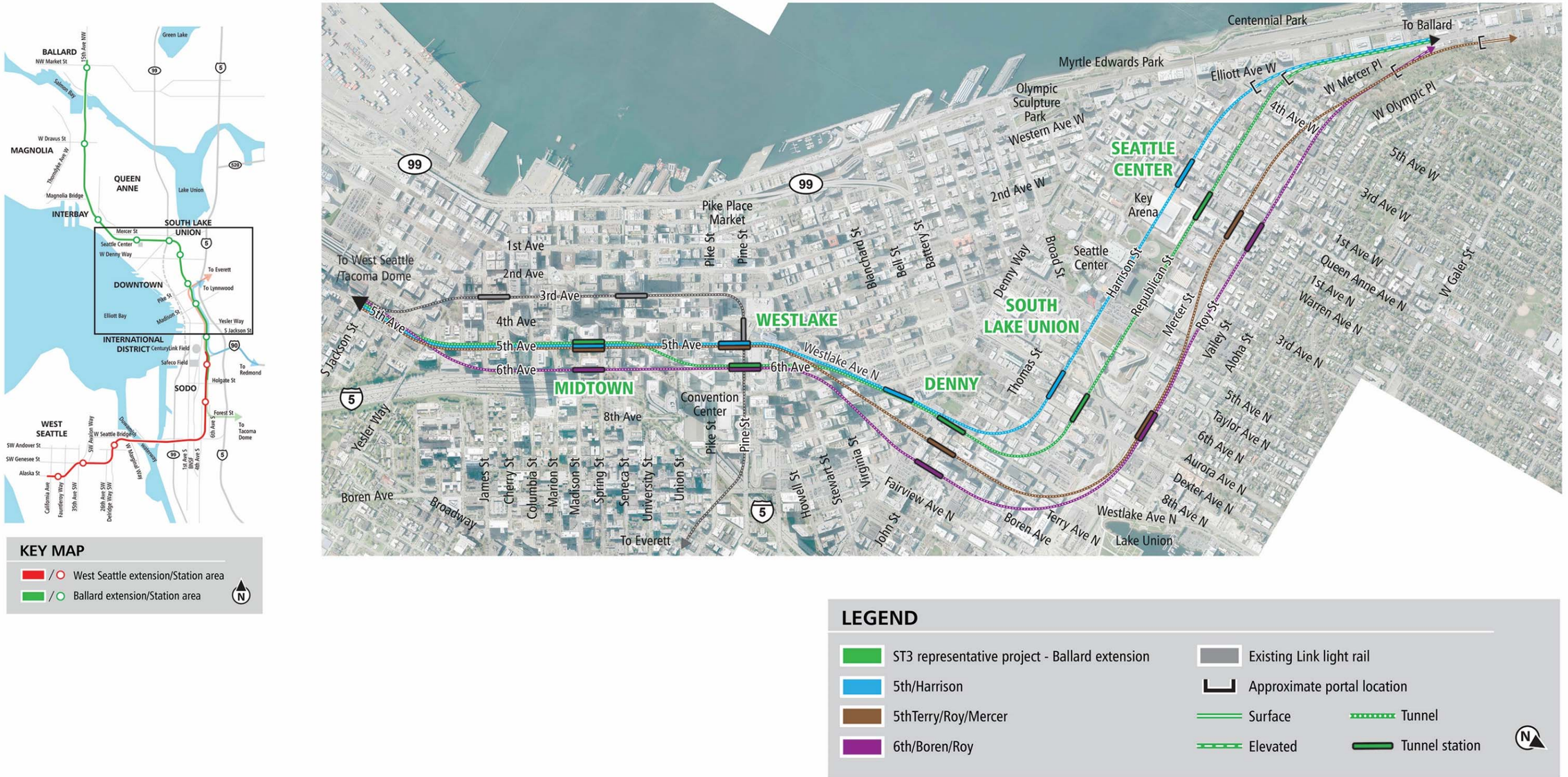

Figure D-1 Downtown Segment—Level 2 Alternatives

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Level 2 Alternatives Evaluation Summary

Downtown Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	High	High	High	High
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	8 to 9	8 to 9	8 to 9	8 to 9
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	167,800	163,300	176,700	176,700
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.					
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	3	3	3	3
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	N/A	N/A	N/A	N/A
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	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.					
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	High	High	High
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	High	High	High	High
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	Low	Low	Medium	Low
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Low	Low	Low	Low
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Medium	Medium	High	Medium
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$200 million increase	Similar	$200 million increase
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	Medium	Medium	Medium	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Downtown Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.					
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	Medium	Medium	Medium	Medium
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	27%	29%	24%	26%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	28% / 30%	29% / 30%	28% / 30%	28% / 30%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	36% / 36%	36% / 36%	34% / 36%	35% / 36%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	4% / 4%	4% / 4%	4% / 4%	4% / 4%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	14% / 13%	14% / 13%	15% / 13%	14% / 13%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	5% / 5%	5% / 5%	5% / 5%	5% / 5%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	12% / 12%	12% / 12%	12% / 12%	12% / 12%
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.					
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	95%	96%	91%	92%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	High	High	High	High
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	171	171	169	168
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	Low	Medium	Medium	Medium
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	Low	Medium	Low	Medium
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	23%	24%	23%	23%
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 within 10-minute walkshed of stations	High	High	High	High
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	12%	12%	12%	12%

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Downtown Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	High	Medium	Medium
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 City Landmarks	Number of NRHP listed or eligible properties potentially affected	31	35	23	34
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	0	0	1.1	0
Water resources	Estimated acres of potential permanent in-water impacts	0	0	0	0
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	0	0	1.1	0
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	18	12	23	18
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	0	0	< 0.1	0
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	High	Medium	Medium	High
Property acquisitions and displacements	Number of properties potentially affected	Medium	Medium	Medium	Medium
	Number of potential residential unit displacements	Medium	High	Low	Low
	Square feet of potential business displacements	High	Low	High	High
Construction impacts	Assessment of temporary construction impacts to community, 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	Medium	Low	Medium	High
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	Medium	Medium	Medium	Medium
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	High	High	High	High
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Medium	Low	High	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation Summary

Downtown Segment					
Purpose and Need / Evaluation Measures and Methods		**Alternatives**			
		ST3 Representative Project	**5th/Harrison**	**6th/Boren/Roy**	**5th/Terry/Roy/Mercer**
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	High	High	High	High
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	High	Low	Medium	Medium

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: Medium = Between 10 and 20 parcels, due to small variation in impacts all alternatives in this segment were rated equally
   Number of potential residential displacements: High = Less than 40 units; Medium = Between 40 and 90 units; Low = More than 90 units
   Area of potential business displacements: High = Less than 125,000 square feet; Medium = Between 125,000 and 200,000 square feet; Low = More than 200,000 square feet

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
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	Potential service interruptions and recoverability	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	167,800 • Approximately 167,800 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	163,300 • Approximately 163,300 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	176,700 • Approximately 176,700 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	176,700 • Approximately 176,700 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	3 • 3 out of 3 regional growth centers served (Seattle Central Business District [CBD], South Lake Union, Uptown Queen Anne)	3 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne)	3 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne)	3 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne)
	Station proximity to PSRC-designated manufacturing/industrial centers	N/A • No regional manufacturing/industrial centers in segment	N/A • No regional manufacturing/industrial centers in segment	N/A • No regional manufacturing/industrial centers in segment	N/A • No regional manufacturing/industrial centers in segment
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

	Purpose and Need / Evaluation Criteria / Measures	Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
	Potential ST3 operating plan effects	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Low • Tunneling under buildings would likely require measures to control ground settlements • Tiebacks of existing buildings may conflict with the tunnels, requiring special measures • Potential conflicts with existing 5th Avenue S retaining wall and its piles • Additional design and constructability challenges likely due to potential conflict with abandoned UPRR tunnels • Mined stations in soils below groundwater table would likely require additional measures • Fairly deep cut-and-cover stations below groundwater would need a watertight retaining box • Tunneling may affect sewer tunnels	Low • Similar engineering constraints and special design requirements as for ST3 Representative Project's tunnels and stations • Would likely have fewer utility crossings than ST3 Representative Project • Crosses underneath prominent buildings such as Seattle Center, Key Arena and is in closer proximity to SR 99 ramps • More buildings with tieback conflicts compared to the ST3 Representative Project	Medium • North portal located in landslide prone topography with sensitive/potentially unstable hill slopes • Tunneling under buildings would likely require measures to control ground settlements • Tiebacks of existing buildings may conflict with the tunnels requiring special measures, but fewer then on 5th Avenue S • I-5 retaining wall affects tunnel profile	Low • North portal located in landslide prone topography with sensitive/potentially unstable hill slopes • Tunneling under buildings would likely require measures to control ground settlements • Tiebacks of existing buildings may conflict with the tunnels requiring special measures
	Constructability issues	Low • Monitoring of buildings may be required during construction due to settlement • TBM may require special features and tighter specifications • Tieback removal in advance of TBM may require construction of mined tunnels • Challenging construction of large span sequentially mined station caverns (Midtown and Westlake stations) • Deep multilevel cut-and-cover with water cut-off and base stability issues in soils under groundwater • Deep sewers in proximity to tunnel and station may require tunnel boring controls and monitoring of work • Tight TBM operations and special construction requirements to negotiate sharper curves	Low • Similar constructability constraints and special construction methods as the ST3 Representative Project • Crosses underneath prominent buildings such as Seattle Center and Key Arena • Likely has more buildings with tieback conflicts but fewer utilities to address during construction compared to ST3 Representative Project	Low • Stabilization and protection measures needed to construct tunnel portals in unstable slopes • Tunnel and sequentially mined station's constructability challenges would be similar to ST3 Representative Project • Potential to mine through building tiebacks • Limited construction staging area for Midtown Station adjacent to I-5	Low • Similar constructability challenges and constraints related to tieback removal along 5th Avenue S as the ST3 Representative Project • Similar constructability challenges and constraints, and requirement of special construction methods and measures as the 6th/Boren/Roy Alternative • Crossing underneath a number of buildings similar to the 6th/Boren/Roy Alternative

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures			ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Technical Feasibility (continued)	Operational constraints		Medium • Tighter radius curve between Denny and South Lake Union stations, resulting in reduced speed	Medium • Tighter radius curve between Denny and South Lake Union stations, resulting in reduced speed • Higher grade between Midtown to Westlake stations compared to ST3 Representative Project	High • Largest radius curve resulting in potentially higher speeds • Fewer profile changes compared to ST3 Representative Project	Medium • Reduced radius curve compared to 6th/Boren/Roy Alternative • Fewer profile changes compared to ST3 Representative Project
Financial Sustainability	Conceptual capital cost comparison		-- • Baseline for capital cost comparison to other alternatives within segment	$200 million increase • Approximately $200 million more than the ST3 Representative Project	Similar • Similar to the ST3 Representative Project	$200 million increase • Approximately $200 million more than the ST3 Representative Project
Financial Sustainability	Operating cost impacts		Medium • O&M costs similar to other alternatives in segment	Medium • O&M costs similar to other alternatives in segment	Medium • O&M costs similar to other alternatives in segment	Medium • O&M costs similar to other alternatives in segment
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	Medium • Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
Historically Underserved Populations	Opportunities for low-income and minority populations	Percent of rent-restricted or subsidized rental units	27% • 27% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	29% • 29% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	24% • 24% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	26% • 26% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units
Historically Underserved Populations	Low-income population		28% / 30% • City average is 24% • Low-income population within 10-minute walkshed is 4% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $64,051, which is similar to 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1	29% / 30% • City average is 24% • Low-income population within 10-minute walkshed is 5% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $65,040, which is similar to 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1	28% / 30% • City average is 24% • Low-income population within 10-minute walkshed is 4% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $67,711, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1	28% / 30% • City average is 24% • Low-income population within 10-minute walkshed is 4% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $64,788, which is similar to 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Historically Underserved Populations (continued)	Minority population	36% / 36% • City average is 34% • Minority population within 10-minute walkshed is 2% above city average • Minority population within 15-minute rideshed is 2% above city average	36% / 36% • City average is 34% • Minority population within 10-minute walkshed is 2% above city average • Minority population within 15-minute rideshed is 2% above city average	34% / 36% • City average is 34% • Minority population within 10-minute walkshed is the same as city average • Minority population within 15-minute rideshed is 2% above city average	35% / 36% • City average is 34% • Minority population within 10-minute walkshed is 1% above city average • Minority population within 15-minute rideshed is 2% above city average
	Youth population (under 18)	4% / 4% • City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average	4% / 4% • City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average	4% / 4% • City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average	4% / 4% • City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average
	Elderly population (65 and over)	14% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 2% above city average • Elderly population within 15-minute rideshed is 1% above city average	14% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 2% above city average • Elderly population within 15-minute rideshed is 1% above city average	15% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average	14% / 13% • City average is 12% • Elderly population within 10-minute walkshed is 2% above city average • Elderly population within 15-minute rideshed is 1% above city average
	Limited English Proficiency (LEP) population	5% / 5% • City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese	5% / 5% • City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese	5% / 5% • City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese	5% / 5% • City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese
	Disabled population	12% / 12% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average	12% / 12% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average	12% / 12% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average	12% / 12% • City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	95% • Almost all of the combined station walkshed (95%) is within an Urban Center Village	96% • Almost all of the combined station walkshed (96%) is within an Urban Center Village	91% • Almost all of the combined station walkshed (91%) is within an Urban Center Village; the exception is the northern edge of the walkshed	92% • Almost all of the combined station walkshed (92%) is within an Urban Center Village; the exception is the northern edge of the walkshed
	Station locations consistent with current local land use plans	High • Local land use plans supportive of all five stations	High • Local land use plans supportive of all five stations	High • Local land use plans supportive of all five stations	High • Local land use plans supportive of all five stations

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Station Area Land Use Plan Consistency (continued)	Activity nodes served	171 • There are many activity nodes in Downtown Seattle (171), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center	171 • There are many activity nodes in Downtown Seattle (171), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center	169 • There are many activity nodes in Downtown Seattle (169), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center	168 • There are many activity nodes in Downtown Seattle (169), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center
Modal Integration	Passenger transfers	Low • South Lake Union Station at Republican Street/SR 99 creates difficult transfer environment; adequate transfer opportunities at other two stations	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones
	Bus/rail and rail/rail integration	Low • South Lake Union Station at Republican Street/SR 99 location precludes siting of many adjacent bus zones; 60% of transit routes less than one block walk of stations	Medium • Average to good transportation integration opportunities; 72% of transit routes less than one block walk of stations • Seattle Center Station location on Harrison Street has limited opportunities to site adjacent bus zones	Low • Denny (Boren Avenue) and Seattle Center (Roy Street) station locations are not adjacent to many bus trips; 49% of transit routes less than one block walk of stations	Medium • Average to good transportation integration opportunities; 73% of transit routes less than one block walk of stations • Some bus trips on Westlake Avenue are more than one block from Denny Station located on Terry Avenue
	Bicycle accessibility	23% • 23% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.9 square miles • Similar bike facilities as other segment alternatives	24% • 24% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.8 square miles • Similar bike facilities as other segment alternatives	23% • 23% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 5.1 square miles • Similar bike facilities as other segment alternatives	23% • 23% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 5.0 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	High • 517 intersections within combined walksheds • 79% of sidewalk/trail miles to total roadway miles within combined walksheds • Qualitative assessment of impediments is similar to other segment alternatives except the 6th/Boren/Roy Alternative	High • 494 intersections within combined walksheds • 79% of sidewalk/trail miles to total roadway miles within combined walksheds • Qualitative assessment of impediments is similar to other segment alternatives except the 6th/Boren/Roy Alternative	High • 555 intersections within combined walksheds • 78% of sidewalk/trail miles to total roadway miles within combined walksheds • This alternative has the most substantial grade changes within close proximity to a station and is the only alternative with a station close to I-5	High • 551 intersections within combined walksheds • 79% of sidewalk/trail miles to total roadway miles within combined walksheds • Qualitative assessment of impediments is similar to other segment alternatives except the 6th/Boren/Roy Alternative
Station Area Development Opportunities	Development potential	12% • All Downtown alternatives perform similarly, although this alternative has the lowest zoned capacity for additional households and jobs compared to the other alternatives within this segment; 12% of parcels with redevelopment potential	12% • All Downtown alternatives perform similarly; 12% of parcels with redevelopment potential	12% • All Downtown alternatives perform similarly; 12% of parcels with redevelopment potential	12% • All Downtown alternatives perform similarly; 12% of parcels with redevelopment potential
	Equitable development opportunities	Low • Limited opportunities near all downtown stations	High • Greatest opportunities primarily at north end of segment with more land potentially available for development	Medium • Greater opportunities near the South Lake Union Station	Medium • Greater opportunities near the South Lake Union Station

Key to Rating	Alternative Performance		
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Level 2 Alternatives Evaluation

Downtown Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
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 City Landmarks	31 • 31 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	35 • 35 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	23 • 23 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	34 • 34 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low • 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	Low • 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	Low • 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	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	1.1 • Approximately 1.1 acres of permanent impacts to 1 park: Kinnear Park	0 • No parks would be permanently impacted
	Water resources	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts
	Fish and wildlife habitat	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	1.1 • Approximately 1.1 acres of permanent habitat impacts • Impacts to Kinnear Park habitat	0 • No permanent fish and wildlife habitat impacts
	Hazardous materials	18 • Approximately 18 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	12 • Approximately 12 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	23 • Approximately 23 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	18 • Approximately 18 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Visual	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	< 0.1 • About 500 feet of elevated guideway would be in Kinnear Park exiting the tunnel portal	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views
	Noise and vibration	High • Approximately 110 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include KEXP, UW Medicine, and performance halls on Mercer Street	Medium • Approximately 450 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include KEXP and potentially biotech research facilities	Medium • Approximately 260 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include biotech research facilities such as the Allen Institute for Brain Science	High • Approximately 220 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include biotech research facilities such as the Allen Institute for Brain Science as well as performance halls on Mercer Street

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	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives			
			ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Environmental Effects (continued)	Property acquisitions and displacements	Number of potentially affected properties	Medium • Less than 10 parcels affected	Medium • Less than 10 parcels affected	Medium • Less than 10 parcels affected	Medium • Less than 10 parcels affected
		Number of potential residential unit displacements	Medium • Between 40 and 90 potential residential unit displacements • Displacements would occur around north tunnel portal	High • Less than 40 potential residential unit displacements • Displacements would occur around north tunnel portal	Low • More than 90 potential residential unit displacements • Displacements would occur around north tunnel portal	Low • More than 90 potential residential unit displacements • Displacements would occur around north tunnel portal
		Square feet of potential business displacements	High • Less than 125,000 square feet of potential business displacements • Additional business displacements likely for entrances to underground stations	Low • More than 200,000 square feet of potential business displacements • Displacements would occur between Seattle Center Station and north tunnel portal • Additional business displacements likely for entrances to underground stations	High • Less than 125,000 square feet of potential business displacements • Displacements would occur for South Lake Union Station located outside of public right-of-way • Additional business displacements likely for entrances to underground stations	High • Less than 125,000 square feet of potential business displacements • Displacements would occur for South Lake Union Station located outside of public right-of-way • Additional business displacements likely for entrances to underground stations
	Construction impacts		Medium • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal location on Republican Street would be most disruptive to neighborhood west of 4th Avenue W	Low • Would have greatest amount of cut-and-cover construction in a neighborhood • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal location on Harrison Street would be most disruptive to neighborhood west of 1st Avenue N	Medium • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal construction in Kinnear Park would affect use of the park for extended periods of time	High • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal construction in Kinnear Park would be limited to the northern edge of the park that does not have public uses, and use of the park should not be affected by construction

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment						
Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer	
Environmental Effects (continued)	Burden on minority and low-income populations	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel	
Traffic Operations	Traffic circulation and access	High • Tunnel alignment below grade; no permanent impacts to roadways	High • Tunnel alignment below grade; no permanent impacts to roadways	High • Tunnel alignment below grade; no permanent impacts to roadways	High • Tunnel alignment below grade; no permanent impacts to roadways	
	Transportation facilities	Medium • Transportation facilities affected include temporary closure of SR 99 off-ramp and Streetcar	Low • Transportation facilities affected include existing Westlake Station, SR 99 tunnel portal and Streetcar	High • Transportation facilities affected include I-5 walls and Aurora Avenue	Medium • Transportation facilities affected include existing Westlake Station, Aurora Avenue and Mercer Street	
Economic Effects	Freight movement and access on land and water	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements	
	Business and commerce effects	High • Least amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the north tunnel portal; additional business displacements would likely occur for station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas	Low • Greatest amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the north tunnel portal; additional business displacements would likely occur for station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas	Medium • Moderate amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the South Lake Union Station, which would be located outside of street right-of-way; additional business displacements would likely occur for station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas	Medium • Moderate amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the South Lake Union Station, which would be located outside of street right-of-way; additional business displacements would likely occur for other station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas	

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT 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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APPENDIX E

Interbay/Ballard Segment

Level 2 Evaluation Matrices

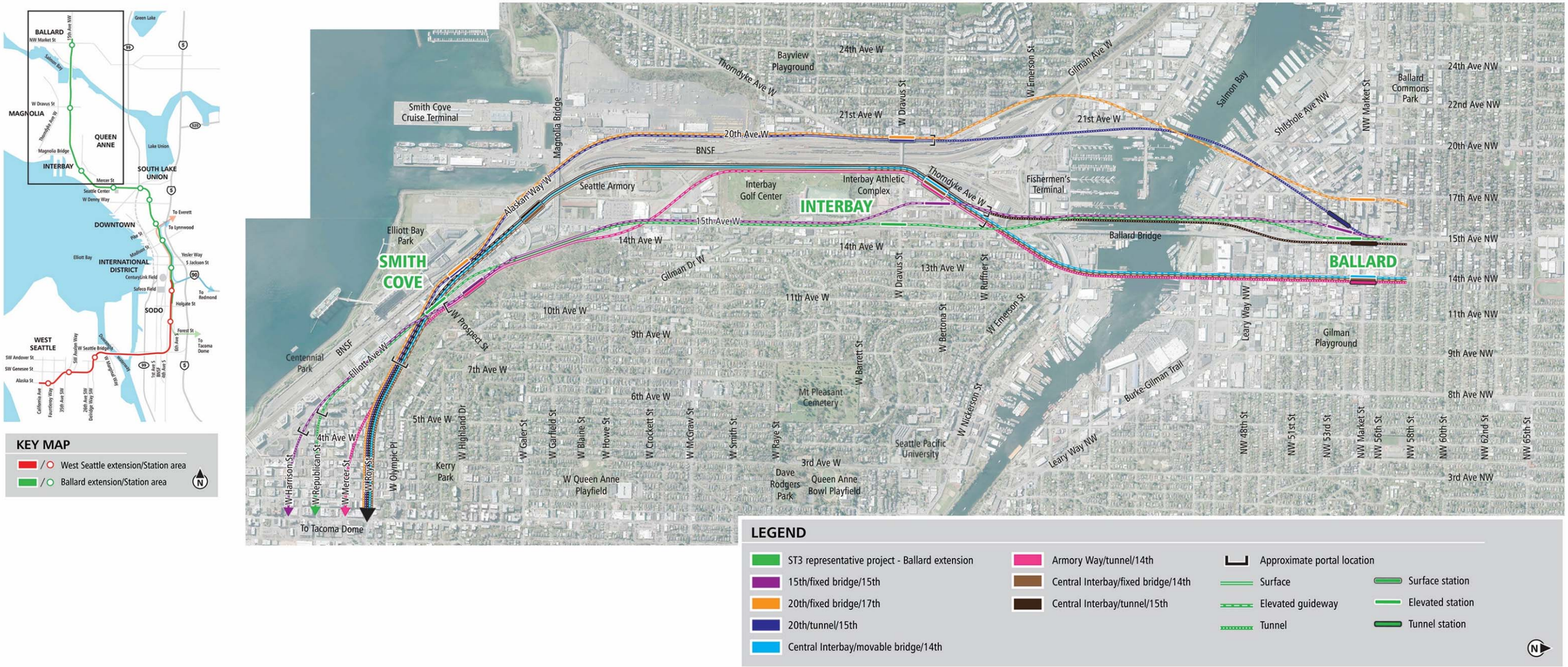

Figure E-1 Interbay/Ballard Segment—Level 2 Alternatives

Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.									
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	Low	High	High	High	Low	High	High	High
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.									
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	17,200	16,700	19,000	17,800	15,400	16,400	15,400	16,500
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.									
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	1	1	1	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	Medium	Medium	Low	High	Medium	High	Medium	High
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.									
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	High	High	High	High	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	High	High	High	High	High	High	High
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	Low	High	High	High	Low	High	High	High
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	Medium	Medium	Medium	Low	High	Low	High	Low
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Medium	Medium	Medium	Low	High	Low	High	Low
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Low	High	High	High	Low	High	High	High
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$200 million increase	$500 million increase	$700 million increase	$200 million increase	$300 million increase	$100 million increase	$500 million increase

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.									
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	8%	9%	8%	8%	8%	8%	8%	9%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	19% / 18%	20% / 18%	20% / 18%	20% / 18%	19% / 18%	19% / 18%	19% / 18%	19% / 18%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	9% / 12%	11% / 12%	11% / 12%	11% / 12%	12% / 12%	11% / 12%	12% / 12%	10% / 12%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	10% / 10%	10% / 10%	10% / 10%	10% / 10%	9% / 10%	9% / 10%	9% / 10%	10% / 10%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	4% / 3%	4% / 3%	4% / 3%	4% / 3%	3% / 3%	3% / 3%	3% / 3%	3% / 3%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	9% / 8%	9% / 8%	9% / 8%	9% / 8%	8% / 8%	8% / 8%	8% / 8%	9% / 8%
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.									
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	35%	34%	38%	31%	26%	28%	26%	36%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	26	32	36	33	24	23	24	35
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	High	Medium	Medium	High	High	High	High	High
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	19%	19%	19%	19%	17%	19%	17%	18%
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 within 10-minute walkshed of stations	Low	Medium	High	High	Low	Medium	Low	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	34%	34%	37%	35%	33%	33%	33%	34%
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	High	Low	Low	Medium	Medium	Medium	High
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 City Landmarks	Number of NRHP listed or eligible properties potentially affected	5	7	3	3	3	2	3	3
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	0.2	1	0.9	0.9	4.2	3.9	4.2	3.9
Water resources	Estimated acres of potential permanent in-water impacts	0.7	0.6	0	0	0.7	0	0.4	0
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	11	11	0.5	0.5	0.5	11.4	0.5	0.5
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	11	15	11	11	16	12	16	12
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	1.2	0.3	0.6	0.1	0.7	0.8	0.7	0.6
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	High	High	Low	Medium	High	High	High	High
Property acquisitions and displacements	Number of properties potentially affected	Medium	Low	Low	High	High	High	High	High
	Number of potential residential unit displacements	High	Low	Low	Medium	Medium	High	Medium	High
	Square feet of potential business displacements	Medium	Medium	Medium	High	Medium	High	Medium	Low
Construction impacts	Assessment of temporary construction impacts to community, 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	Low	Medium	Low	Medium	High	High	High	Medium
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	High	High	High	High	High	High	High	High
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	Low	Medium	Medium	High	Medium	High	Medium	High
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Medium	High	Low	Medium	Medium	High	Medium	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	Low	Medium	Medium	Medium	Medium	High	Medium	High
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	Low	Low	Medium	High	Medium	High	Medium	Medium

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: High = Less than 55 parcels; Medium = Between 55 and 80 parcels; Low = More than 80 parcels
   Number of potential residential displacements: High = Less than 100 units; Medium = Between 100 and 300 units; Low = More than 300 units
   Area of potential business displacements: High = Less than 375,000 square feet; Medium = Between 375,000 and 650,000 square feet; Low = More than 650,000 square feet

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
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	Potential service interruptions and recoverability	Low • Bridge openings would interrupt LRT operations • Restrictions to limit bridge openings during peak travel hours could be implemented, but the bridge could still be opened if requested from large ships of a certain size; it is unclear when and how often this could occur, but recoverability of LRT operations could be challenging	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Speed reduction was assumed for crossing movable bridge • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	17,200 • Approximately 17,200 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	16,700 • Approximately 16,700 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	19,000 • Approximately 19,000 forecasted population and employment within 10-minute walkshed of stations 13% greater than segment average due to the Interbay Station capturing more population to the west of 20th Avenue W and the Ballard Station on 17th Avenue NW also serving a larger market to the west	17,800 • Approximately 17,800 forecasted population and employment within 10-minute walkshed of stations 6% greater than segment average due to the Interbay Station capturing more population to the west of 20th Avenue W
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • All stations within reasonable walking distance of Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Elevated station on a north-south alignment south of NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	Medium • Elevated station on a north-south alignment south of NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	Low • Elevated station on a north-south alignment straddling NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is more challenging due to greater surface disruptions with the terminal station in an area of higher residential and business densities at 17th Avenue NW; an independent extension is also feasible with potentially less surface disruption compared to connected extension	High • Station on a north-south alignment south of NW Market Street; tail track north-south or east-west • A connected eastward extension per Long-Range Plan is more feasible and direct with potentially less surface disruptions; an independent extension is also feasible
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
	Potential ST3 operating plan effects	Low • Movable bridge degrades system operations due to system reliability effects and potential need for turnback operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Medium • Long spans and structures over existing interchanges • Coordination with Port of Seattle for column placements in Fishermen's Terminal • Movable bridge in a high seismic zone • Locating straddle bents to minimize roadway impacts along Elliott Avenue W, 15th Avenue W, 15th Avenue NW on both sides of NW Market Street • Reconfiguring roadway channelization to address capacity at intersections along 15th Avenue W/NW • Large diameter existing and planned utility constraints under Shilshole Avenue NW • Potential SCL overhead power line conflicts • Landslide hazard along hillside may require walls with tiebacks	Medium • Long spans and structures over existing interchanges • Coordination with Port of Seattle for column placements in Fishermen's Terminal • Locating straddle bents to minimize roadway impacts along Elliott Avenue W, and 15th Avenue NW north of NW Market Street • Reconfiguring roadway channelization to address capacity at intersections along Elliott Avenue W and 15th Avenue NW at NW Market Street • Potential SCL overhead power line conflicts • Large diameter existing and planned utility constraints under Shilshole Avenue NW • Landslide hazard along hillside may require walls with tiebacks	Medium • Long spans over BNSF Railway and Magnolia Bridge • Coordination with BNSF and Port of Seattle to accommodate current and future operations • Constrained column placements along existing roadways, trails, railroads, utilities and parks • Ground improvements for guideway columns • Potential roadway modifications at 20th Avenue W and W Dravus Street • Potential relocation of 144-inch-diameter combined sewer (CS) and W Commodore Way roadway • Coordinate bridge column locations with large diameter existing and planned utilities under W Commodore Way and Shilshole Avenue NW	Low • Long spans over BNSF Railway and Magnolia Bridge • Coordination with BNSF and Port of Seattle to accommodate current and future operations • Constrained column placements along existing roadways, trails, railroads, utilities and parks • Ground improvements for guideway columns • Potential tall walls with tiebacks for retained cut Interbay Station under W Dravus Street Bridge • Reconstruction of W Dravus Street Bridge end span may need to be designed to current seismic standards • Potential ground improvements in vicinity of tunnel portal • Deeper tunnel and Ballard Station to clear under large diameter planned SPU storage tunnel under Shilshole Avenue NW • Potential realignment of Elliott Bay Trail

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Technical Feasibility (continued)	Constructability issues		Medium • Potential maintenance of traffic challenges during construction along entire length of Elliott Avenue W and 15th Avenue W/NW, which are Principal Arterials • Potential challenges for construction of bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities for multiple piers would need to take into account vessel traffic in the navigation channel and fish windows • Limited areas for construction staging and laydown for construction of elevated guideway on both sides of Salmon Bay • Need to maintain access to maritime properties • Steep hillside along Queen Anne Hill prone to sliding	Medium • Potential maintenance of traffic challenges during construction along Elliott Avenue W and along 15th Avenue NW at NW Market Street, which are Principal Arterials • Potential challenges for construction of bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities for multiple piers would need to take into account vessel traffic in the navigation channel and fish windows • Limited areas for construction staging and laydown for construction of elevated guideway on both sides of Salmon Bay • Need to maintain access to maritime properties • Steep hillside along Queen Anne Hill prone to sliding	Medium • Coordination of construction access and staging for guideway columns and associated ground improvements with BNSF, Port of Seattle, Expedia, and city of Seattle • Maintenance of traffic challenges around guideway columns • Long duration of construction of fixed long span bridge across waterway • Could include in-water construction activities	Low • Coordination of construction access and staging for guideway columns and associated ground improvements with BNSF, Port of Seattle, Expedia, and city of Seattle • Potential maintenance of traffic challenges from phased construction of W Dravus Street bridge end spans • Potential for long duration closures of 20th Avenue W north of W Dravus Street for Tunnel Boring Machine (TBM) launch • Potential challenges identifying muck hauling routes time of day requirements • Construction of tunnel portal constrained between BNSF and 20th Avenue W roadway • Construction of cross passages under water may be challenging • Potential maintenance of traffic challenges associated with deep excavation for a cut-and-cover Ballard Station
	Operational constraints		Low • Movable bridge openings would have an impact on systemwide operations • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Fixed bridge would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Fixed bridge would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Tunnel would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment
Financial Sustainability	Conceptual capital cost comparison		-- • Baseline for capital cost comparison to other alternatives within segment	$200 million increase • Approximately $200 million more than the ST3 Representative Project	$500 million increase • Approximately $500 million more than the ST3 Representative Project	$700 million increase • Approximately $700 million more than the ST3 Representative Project
	Operating cost impacts		Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 30 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 35 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 35 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Historically Underserved Populations (continued)	Opportunities for low-income and minority populations (continued)	Percent of rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	9% • 9% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units
	Low-income population		19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $77,521, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	20% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 4% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $78,681, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	20% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 4% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $78,545, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.9, less than city average of 2.1	20% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 4% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,223, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1
	Minority population		21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average
	Youth population (under 18)		9% / 12% • City average is 15% • Youth population within 10-minute walkshed is 6% below city average • Youth population within 15-minute rideshed is 3% below city average	11% / 12% • City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average	11% / 12% • City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average	11% / 12% • City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average
	Elderly population (65 and over)		10% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average	10% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average	10% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average	10% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average
	Limited English Proficiency (LEP) population		4% / 3% • City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Spanish	4% / 3% • City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Spanish	4% / 3% • City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages	4% / 3% • City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages

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	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Historically Underserved Populations	Disabled population	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	35% • 35% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the third most area of the Hub Urban Village compared to the other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	34% • 34% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes an area of the Hub Urban Village • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	38% • 38% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the most area of the Hub Urban Village compared to the other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	31% • 31% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes an area of the Hub Urban Village • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station
	Station locations consistent with current local land use plans	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located between a Seattle Mixed zone and a Neighborhood Commercial zone, both supporting a mix of housing and commercial uses • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail	Medium • Expedia campus development at Smith Cove Station underway • Some recent planning efforts at Interbay area but primarily east of BNSF • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail	Medium • Expedia campus development at Smith Cove Station underway • Some recent planning efforts at Interbay area but primarily east of BNSF • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail
	Activity nodes served	26 • This alternative includes a station on the central/east side of central Ballard in a similar location to many of the other alternatives; the walkshed provides access to 26 activity nodes, including medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	32 • This alternative includes a station on the central/east side of central Ballard; the walkshed provides access to 32 activity nodes, including the Ballard Food Bank and Ballard Library • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	36 • This alternative includes a station centrally located in Ballard; the walkshed provides access to the highest number of activity centers (36) among the Interbay/Ballard Alternatives, including the Ballard Food Bank, Ballard Library, and Ballard Commons Park • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	33 • This alternative includes a station on the central/east side of central Ballard; the walkshed provides access to 33 activity nodes, including the Ballard Food Bank and Ballard Library • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield
Modal Integration	Passenger transfers	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Modal Integration (continued)	Bus/rail and rail/rail integration	High • Good bus access at proposed stations; 85% of transit routes less than one block walk of stations • Good bus integration at Smith Cove Station compared to other alternatives east of or west of Elliott Avenue W • Good integration at Interbay Station located on 15th Avenue W compared to stations locations near Thorndyke Avenue W/16th Avenue W • A few bus zones may be farther than a one block walk or require more than two signalized crossings at the Ballard Station east of 15th Avenue NW and south of Market Street NW	Medium • Average to good transportation integration opportunities; 75% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings at the Ballard Station west of 15th Avenue W and south of Market Street NW, at Interbay Station near 16th Avenue W, and at Smith Cove Station located east of Elliott Avenue W	Medium • Average to good transportation integration opportunities; 79% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings at the Ballard Station on 17th Avenue NW and at Smith Cove Station west of Elliott Avenue W • Interbay Station has relatively good transit integration compared to a station located near Thorndyke Avenue W as it has a simple bus reroute to station	High • Good bus access at proposed stations; 83% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings • Interbay Station has relatively good transit integration compared to a station located near Thorndyke Avenue W as it has a simple bus reroute to station
	Bicycle accessibility	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 5.0 square miles • Similar bike facilities as other segment alternatives	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.9 square miles • Similar bike facilities as other segment alternatives	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 5.1 square miles • Similar bike facilities as other segment alternatives	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 5.1 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Low • 178 intersections within walksheds • 92% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects three stations • Major freight route; affects three stations • NW Market Street/15th Avenue NW is major intersection, with bus, freight, and signal timing; affects Ballard Station • Proximity to industrial area with wide curb cuts/loading areas; although stations are near industrial zones, all station locations are away from main loading areas	Medium • 181 intersections within walksheds • 91% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove and Ballard Stations • Major freight route; affects Smith Cove and Ballard stations • NW Market Street/15th Avenue NW is major intersection with bus, freight, and signal timing; affects Ballard Station • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay Station	High • 177 intersections within walksheds • 93% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove Station • Proximity to industrial area with wide curb cuts/loading areas; affects Smith Cove Station • Helix Bridge near Smith Cove Station	High • 181 intersections within walksheds • 93% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove Station • NW Market Street/15th Avenue NW is major intersection with bus, freight, and signal timing; affects Ballard Station • Proximity to industrial area with wide curb cuts/loading areas; affects Smith Cove Station • Helix Bridge near Smith Cove Station
Station Area Development Opportunities	Development potential	34% • 34% of parcels with redevelopment potential	34% • 34% of parcels with redevelopment potential	37% • 37% of parcels with redevelopment potential; alternative has more redevelopable land within walkshed, indicating the walkshed has more parcels that are underdeveloped (relative to current zoning and/or fewer parcels in uses that are unlikely to redevelop (such as parks, public facilities, churches, and condos)	35% • 35% of parcels with redevelopment potential
	Equitable development opportunities	Low • Limited opportunities near all three station locations	High • Greater opportunities near all three station locations, with more land potentially available for development	Low • Limited opportunities near all three station locations	Low • Limited opportunities near all three station locations

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
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 City Landmarks	5 • 5 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	7 • 7 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low • 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	Low • 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	Low • 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	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources	0.2 • Approximately 0.2 acre of permanent impact to 1 park: SW Queen Anne Greenbelt	0.8 • Approximately 0.8 acre of permanent impact to 4 parks: Interbay Golf Course, Interbay P-patch, Kinnear Park, and SW Queen Anne Greenbelt	0.9 • Approximately 0.9 acre of permanent impact to 2 parks: Centennial Park and Kinnear Park	0.9 • Approximately 0.9 acre of permanent impact to 2 parks: Centennial Park and Kinnear Park
	Water resources	0.7 • More than 0.5 acre of permanent in-water impact	0.6 • More than 0.5 acre of permanent in-water impact	0 • No potential permanent in-water impacts	0 • No potential permanent in-water impacts
	Fish and wildlife habitat	11 • Approximately 11 acres of permanent habitat impacts • Requires clearing in SW Queen Anne Greenbelt for construction and slope stabilization	11 • Approximately 11 acres of permanent habitat impacts • Requires clearing in SW Queen Anne Greenbelt for construction and slope stabilization	0.5 • Approximately 0.5 acres of permanent habitat impacts • Potential impact at Kinnear Park	0.5 • Approximately 0.5 acres of permanent habitat impacts • Potential impact at Kinnear Park
	Hazardous materials	11 • Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	15 • Approximately 15 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	11 • Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	11 • Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Visual	1.2 • More than 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Elevated along Elliott Avenue W for 0.6 mile and along west side of 15th Avenue NW, SEPA Scenic Routes • Passes over about 1,000 feet of Salmon Bay and would be viewed by water users	0.3 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Elevated along Elliott Avenue W for 0.6 mile and along west side of 15th Avenue NW, SEPA • Passes over about 1,000 feet of Salmon Bay and would be viewed by water users	0.6 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W, under the Magnolia Bridge and over NW Market Street, SEPA Scenic Routes • Passes over about 500 feet of Salmon Bay and would be viewed by water users	0.1 • Less than 0.5 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Would be elevated for about 300 feet in Kinnear Park • Crosses over Elliott Avenue W, a SEPA Scenic Route • Would not cross over Salmon Bay

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Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Environmental Effects (continued)	Noise and vibration		High • Approximately 230 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 170 noise and vibration sensitive receivers within 350 feet of the alternative	Low • Approximately 700 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 470 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	Medium • Between 55 and 80 parcels affected	Low • More than 80 parcels affected	Low • More than 80 parcels affected	High • Less than 55 parcels affected
		Number of potential residential unit displacements	High • Less than 100 potential residential unit displacements • Displacements would primarily occur for elevated guideway on Elliott Avenue W	Low • More than 300 potential residential unit displacements • Displacements would primarily occur for elevated guideway on Elliott Avenue W, for the Interbay Station, and for the elevated guideway and Ballard Station	Low • More than 300 potential residential unit displacements • Displacements would primarily occur for Ballard Station and tail track	Medium • Between 100 and 300 potential residential unit displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway and Ballard Station
		Square feet of potential business displacements	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Ballard for elevated guideway and stations	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Ballard for elevated guideway and stations	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W, in North Interbay, and in Ballard for elevated guideway and stations	High • Less than 375,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway and Ballard Station
	Construction impacts		Low • Would be most disruptive to greater Interbay and Ballard neighborhoods • Potential for visual, noise and vibration impacts on residences on or near Elliott Avenue W, 15th Avenue W, 15th Avenue NW and NW Market Street • Potential for traffic impacts on Elliott Avenue W, 15th Avenue W, and 15th Avenue NW, which are principal arterials and major freight routes that carry about 35,000 to 50,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Medium • Potential for visual, noise and vibration impacts on residences on or near Elliott Avenue W, 15th Avenue W, 15th Avenue NW and NW Market Street from elevated guideway and station construction • Potential for traffic impacts on Elliott Avenue W, 15th Avenue W, and 15th Avenue NW, which are principal arterials and major freight routes that carry about 35,000 to 50,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Traffic impacts would be reduced compared to ST3 Representative Project because the guideway and stations would mostly be located outside of the right-of-way • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Low • Potential for visual, noise and vibration impacts on residences on or near 20th Avenue W, 15th Avenue NW and 17th Avenue NW from elevated guideway, bridge and station construction • Would be most disruptive to “core” of Ballard (west of 15th Avenue NW) • Potential for traffic impacts on 20th Avenue W, which carries about 7,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Construction of the Ballard Station between 17th Avenue NW and 15th Avenue NW and the Ballard Station would have temporary traffic impacts on the primary Ballard business district • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Medium • Potential for visual, noise and vibration impacts on residences on or near 20th Avenue W, 15th Avenue NW and 17th Avenue NW from elevated guideway, bridge and station construction • Would be most disruptive to “core” of Ballard (west of 15th Avenue NW) • Potential for traffic impacts on 20th Avenue W, which carries about 7,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Construction of the Ballard Station between 17th Avenue NW and 15th Avenue NW and the Ballard Station would have temporary traffic impacts on the primary Ballard business district • Access to businesses would be maintained, although the community may experience changes in access to some businesses

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Environmental Effects (continued)	Burden on minority and low-income populations	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk
Traffic Operations	Traffic circulation and access	Low • Right-of-way impacts on Elliott Avenue W, 15th Avenue W, and 15th Avenue NW (all high volume streets) • Left turn restrictions for most parcels along Elliott Avenue W and 15th Avenue W where the guideway is in the right-of-way	Medium • Right-of-way impacts to Elliott Avenue W (high volume roadway) • Left turn restrictions for most parcels along Elliott Avenue W where the guideway is in the right-of-way	Medium • Right-of-way impacts on 17th Avenue NW	High • Limited or no permanent roadway or property access impacts
	Transportation facilities	Medium • Transportation facilities affected include Elliott Avenue W/15th Avenue W, W Dravus Street, W Emerson Street interchange and 15th Avenue NW/ NW Market Street intersection	High • Transportation facilities affected include Elliott Avenue W/15th Avenue W and 15th Avenue NW/NW Market Street intersection	Low • Transportation facilities affected include Helix pedestrian bridge, W Dravus Street, Elliott Bay Trail, Magnolia Connector Trail, 20th Avenue W Improvements, 17th Avenue NW and NW Market Street	Medium • Transportation facilities affected include Helix pedestrian bridge, W Dravus Street, Elliott Bay Trail, Magnolia Connector Trail and 20th Avenue W Improvements
Economic Effects	Freight movement and access on land and water	Low • Construction would have temporary capacity impacts on 15th Avenue W • Columns in center roadway could affect long term traffic capacity associated with traffic spill-over from center turn lane into general lanes on 15th Avenue W; columns could affect queue lengths for left turn movements at minor intersections; columns would be placed to not affect left-turns onto Mercer Place • Temporary and permanent impacts to FVO operations and Dock 3 at Fishermen's Terminal are expected • Need to coordinate with BNSF during construction for crossing tracks near Ballard Bridge • Columns would maintain Ship Canal navigation channel, but could affect large vessel turning access movement to FVO/Fishermen's Terminal • Could remove center turn lane on 15th Avenue NW from NW 51st Street to NW 57th Street	Medium • Alignment on east side of Elliott Avenue W would avoid impacts to vehicle capacity on corridor and reduce construction impacts compared to ST3 Representative Project • Alignment on west side of 15th Avenue W with columns out of roadway not anticipated to affect long-term vehicle capacity on corridor; may experience traffic capacity impacts during construction, including at W Dravus Street interchange • Temporary and permanent impacts to FVO operations and Dock 3 at Fishermen's Terminal are expected • Need to coordinate with BNSF during construction for crossing tracks near Ballard Bridge • Fewer columns in water compared to movable bridges • Could remove center turn lane on 15th Avenue NW from NW Market Street to NW 57th Street	Medium • Crossing of BNSF tracks at Galer Street limited to temporary construction period impacts • Potential for construction period impacts near Terminal 91 access gate • Construction on west side of BNSF Balmer yard, would not preclude future spur tracks to Terminal 91 • Elevated crossing of Interbay BNSF railyard would span tracks • Maintains vehicle capacity on 20th Avenue W and W Dravus Street • Potential road relocation at 21st Avenue W and W Commodore Way to accommodate bridge column • Avoids permanent in-water columns, but may have construction period impacts to vessel movements • Avoids 15th Avenue W and 15th Avenue NW	Medium • Crossing of BNSF tracks at Galer Street limited to temporary construction period impacts • Potential for construction period impacts near Terminal 91 access gate • Construction on west side of Interbay BNSF yard, would not preclude future spur tracks to Terminal 91 • Temporary closure of W Dravus Street Bridge over railroad yard to construct undercrossing; would have detour impacts to other freight routes including W Emerson Street • Temporary closures of 20th Avenue W between W Dravus Street and W Bertona Street for tunnel portal

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Economic Effects (continued)	Business and commerce effects	Low • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Could displace FVO Fishermen's Terminal and Dock 3, which would reduce available moorage for fishing vessels • Could displace a small marina and multiple small businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W and 15th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 15th Avenue NW and smaller businesses along these streets	Low • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Could displace FVO at Fishermen's Terminal and limit operations of Dock 3 during construction, which would reduce available moorage for fishing vessels • Potential for indirect effects to businesses that rely on FVO • Could displace a small marina and multiple small businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W, 15th Avenue NW and the area west of 15th Avenue W and north of W Dravus Street • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 15th Avenue NW and smaller businesses along these streets	Medium • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Could avoid direct impacts to Fishermen's Terminal • Could displace some moorage at Salmon Bay Marina, Ballard Mill and Marina multiple small industrial businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W, but less than ST3 Representative Project and 15th/Fixed Bridge/15th Alternative • Would displace a similar number of small businesses on both sides of 15th Avenue NW as ST3 Representative Project and 15th/Fixed Bridge/15th Alternative • Construction traffic impacts on freight movement on Elliott Avenue W, W Dravus Street, W Emerson Place, and 15th Avenue NW and smaller businesses along these streets	High • Lowest amount of business displacement compared to other Interbay/Ballard alternatives • Tunnels could avoid impacts to maritime businesses including those at Fishermen's Terminal and marinas on Salmon Bay • Could displace several small businesses on Elliott Avenue W and 15th Avenue W, but less than ST3 Representative Project and 15th/Fixed Bridge/15th Alternative, and would displace fewer small businesses in Ballard • Construction traffic impacts on freight movement on Elliott Avenue W and W Dravus Street and smaller businesses along these streets, but would avoid impacts to W Emerson Place and 15th Avenue NW

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT 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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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
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	Potential service interruptions and recoverability	Low • Bridge openings would interrupt LRT operations • Restrictions to limit bridge openings during peak travel hours could be implemented, but the bridge could still be opened if requested from large ships of a certain size; it is unclear when and how often this could occur, but recoverability of LRT operations could be challenging	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Assumed the starting Smith Cove Station point is near the ST3 Representative location for comparison • A speed reduction was assumed for crossing movable bridge • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Assumed the starting Smith Cove Station point is near the ST3 Representative location for comparison • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Assumed the starting Smith Cove Station point is near the ST3 Representative location for comparison • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	15,400 • Approximately 15,400 forecasted population and employment within 10-minute walkshed of stations 8% lower than segment average due to the Ballard Station location on 14th Avenue NW further from the center of Ballard hub urban village	16,400 • Approximately 16,400 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	15,400 • Approximately 15,400 forecasted population and employment within 10-minute walkshed of stations 8% lower than segment average due to the Ballard Station location on 14th Avenue NW further from the center of Ballard hub urban village	16,500 • Approximately 16,500 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Elevated station on a north-south alignment straddling NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	High • Station on a north-south alignment at NW Market Street; tail track north-south or east-west • A connected eastward extension per Long-Range Plan is more feasible and direct with potentially less surface disruption; an independent extension is also feasible	Medium • Elevated station on a north-south alignment straddling NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	High • Station on a north-south alignment straddling NW Market Street; tail track north-south or east-west • A connected eastward extension per Long-Range Plan is more feasible and direct with potentially less surface disruptions; an independent extension is also feasible
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
	Potential ST3 operating plan effects	Low • Movable bridge degrades system operations due to system reliability effects and potential need for turnback operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	High • Long section of at grade guideway • Potential long spans over existing interchanges • Coordination with King County Wastewater for potential protection of 96-inch-diameter CS • Coordination with maritime properties for column placements and vessel movements • Coordination with city of Seattle for landfill under the Golf Course • Movable bridge in a high seismic zone • Potential relocation of existing King County Pump Station • Potential reconstruction of existing Magnolia bridge between BNSF and pump station • Potential for over excavation and ground improvements along guideway between Magnolia bridge and W Dravus Street bridge • Would need to maintain access to the waterway from the 14th Avenue NW Boat Ramp • Potential constraints for bridge column placement from large diameter utilities under Shilshole Avenue, and public park in 14th Avenue NW	Low • Coordination with King County Waste Water for protection of 96-inch-diameter CS • Coordination with city of Seattle for landfill under the Golf Course • Potential ground improvements in vicinity of tunnel portal and under 15th Avenue W • Deeper tunnel and Ballard Station to clear under large diameter planned SPU storage tunnel under Shilshole Avenue • Would need to maintain access to properties along Thorndyke Avenue W • Revised access to properties along W Armory Way • Potential for reconstruction of one span of Nickerson Street bridge over 15th Avenue W designed to current seismic standards • Landslide hazard along hillside may require walls with tiebacks	High • Long section of at grade guideway • Potential long spans over existing interchanges • Coordination with maritime properties for column placements and vessel movements • Coordination with King County Wastewater for potential protection of 96-inch-diameter CS • Coordination with city of Seattle for landfill under the Golf Course • Potential relocation of existing King County Pump Station • Potential reconstruction of existing Magnolia bridge between BNSF and pump station • Potential for over excavation and ground improvements along guideway between Magnolia bridge and W Dravus Street bridge • Would need to maintain access to the waterway from the 14th Avenue NW Boat Ramp • Potential constraints for bridge column placement from large diameter utilities under Shilshole Avenue, and public park in 14th Avenue NW	Low • Long section of at grade guideway • Coordination with city of Seattle for landfill under the Golf Course, and W Dravus Street bridge • Coordination with King County Wastewater for potential relocation and protection of 96-inch-diameter CS • Potential relocation of existing King County Pump Station • Potential reconstruction of existing Magnolia bridge between BNSF and pump station • Potential for over excavation and ground improvements along guideway between Magnolia bridge and W Dravus Street bridge • Would need to maintain access to properties along Thorndyke Avenue W post construction • Twin bore tunnel would require cross passages under Salmon Bay • Major utility constraints at Shilshole Avenue would require a deeper tunnel and Ballard Station • Reconstruction of W Dravus Street Bridge end spans would need to be designed to current seismic standards

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2): Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Technical Feasibility (continued)	Constructability issues	High • At grade guideway construction potentially less challenging • Coordination with King County Wastewater for relocation of existing Pump Station • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Potential challenges for construction of bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities for multiple piers would need to take into account vessel traffic in the navigation channel and fish windows • Limited construction staging and laydown areas on both sides of Salmon Bay • Potential utility relocations in 14th Avenue NW	Low • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Maintain access to properties along Thorndyke Avenue W during construction • Maintenance of traffic challenges for the phased construction of Nickerson Street bridge and Ballard Station • Potential challenges identifying muck hauling routes time of day requirements • Construction of cross passages under water may be challenging	High • At grade guideway construction potentially less challenging • Coordination with King County Wastewater for relocation of existing Pump Station • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Potential challenges and longer duration for construction of long span and taller bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities would need to take into account vessel traffic in the navigation channel and fish windows • Limited construction staging and laydown areas on both sides of Salmon Bay • Potential utility relocations in 14th Avenue NW	Low • At grade guideway construction potentially less challenging • Coordination with King County Wastewater for relocation of existing Pump Station • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Potential maintenance of traffic challenges for phased reconstruction of W Dravus Street bridge end spans • Maintain access to properties along Thorndyke Avenue W during construction • Potential challenges identifying muck hauling routes time of day requirements • Construction of cross passages under water may be challenging
	Operational constraints	Low • Movable bridge openings would have an impact on systemwide operations • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Tunnel would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Fixed bridge would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Tunnel would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment
Financial Sustainability	Conceptual capital cost comparison	$200 million increase • Approximately $200 million more than the ST3 Representative Project	$300 million increase • Approximately $300 million more than the ST3 Representative Project	$100 million increase • Approximately $100 million more than the ST3 Representative Project	$500 million increase • Approximately $500 million more than the ST3 Representative Project
	Operating cost impacts	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.					
Historically Underserved Populations	Opportunities for low-income and minority populations: Assessment of improved access to opportunities	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 35 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
	Opportunities for low-income and minority populations: Percent of rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	9% • 9% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Historically Underserved Populations (continued)	Low-income population	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1
	Minority population	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average
	Youth population (under 18)	12% / 12% • City average is 15% • Youth population within 10-minute walkshed is 3% below city average • Youth population within 15-minute rideshed is 3% below city average	11% / 12% • City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average	12% / 12% • City average is 15% • Youth population within 10-minute walkshed is 3% below city average • Youth population within 15-minute rideshed is 3% below city average	10% / 12% • City average is 15% • Youth population within 10-minute walkshed is 5% below city average • Youth population within 15-minute rideshed is 3% below city average
	Elderly population (65 and over)	9% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 3% below city average • Elderly population within 15-minute rideshed is 2% below city average	9% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 3% below city average • Elderly population within 15-minute rideshed is 2% below city average	9% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 3% below city average • Elderly population within 15-minute rideshed is 2% below city average	10% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average
	Limited English Proficiency (LEP) population	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Spanish	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages
	Disabled population	8% / 8% • City average is 9% • Disabled population within 10-minute walkshed is 1% below city average • Disabled population within 15-minute rideshed is 1% below city average	8% / 8% • City average is 9% • Disabled population within 10-minute walkshed is 1% below city average • Disabled population within 15-minute rideshed is 1% below city average	8% / 8% • City average is 9% • Disabled population within 10-minute walkshed is 1% below city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment					
Purpose and Need / Evaluation Criteria / Measures		**Alternatives (Set 2 of 2)**			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
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	Compatibility with Seattle designated Urban Centers and Villages	26% • 26% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the least area of the Hub Urban Village compared to other alternative • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	28% • 28% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the least area of the Hub Urban Village compared to other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	26% • 26% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the least area of the Hub Urban Village compared to other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	36% • 36% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the second most area of the Hub Urban Village compared to the other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station
	Station locations consistent with current local land use plans	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Ballard Station located on 14th Avenue NW is within Ballard Urban Design and Transportation Framework (2016) planning area; suggested commercial uses in this area	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Ballard Station located on 14th Avenue NW is within Ballard Urban Design and Transportation Framework (2016) planning area; suggested commercial uses in this area	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Ballard Station located on 14th Avenue NW is within Ballard Urban Design and Transportation Framework (2016) planning area; suggested commercial uses in this area	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail
	Activity nodes served	24 • This alternative includes a station on the most eastern side of central Ballard of all alternatives; the walkshed provides access to less activity nodes (24) than other alternatives • This alternative includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	23 • This alternative includes a station on the most eastern side of central Ballard of all alternatives; the walkshed provides access to less activity nodes (23) than other alternatives • This alternative includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	24 • This alternative includes a station on the most eastern side of central Ballard of all alternatives; the walkshed provides access to less activity nodes (24) than other alternatives • This alternative includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	35 • This alternative includes a station on the central/east side of central Ballard; the walkshed provides access to 35 activity nodes, including the Ballard Food Bank and Ballard Library • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield
Modal Integration	Passenger transfers	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones
	Bus/rail and rail/rail integration	High • Good bus access at proposed stations; 87% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW and 14th Avenue NW	High • Good bus access at proposed stations; 85% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW and 14th Avenue NW	High • Good bus access at proposed stations; 87% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW and 14th Avenue NW	High • Good bus access at proposed stations; 88% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment					
Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Modal Integration (continued)	Bicycle accessibility	17% • 17% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.6 square miles • Similar bike facilities as other segment alternatives	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.9 square miles • Similar bike facilities as other segment alternatives	17% • 17% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.6 square miles • Similar bike facilities as other segment alternatives	18% • 18% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.7 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Low • 168 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walkshed • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove and Ballard stations • Challenging intersections near Magnolia Bridge • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay and Smith Cove stations	Medium • 167 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove and Ballard stations • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay Station • Helix Bridge near Smith Cove Station	Low • 168 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove and Ballard stations • Challenging intersections near Magnolia Bridge • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay and Smith Cove stations	Medium • 175 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Ballard Station • Major freight route; affects Smith Cove and Ballard stations • NW Market Street/15th Avenue NW is major intersection with bus, freight, and signal timing; affects Ballard Station • Challenging intersections near Magnolia Bridge • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay and Smith Cove stations
Station Area Development Opportunities	Development potential	33% • 33% of parcels with redevelopment potential	33% • 33% of parcels with redevelopment potential	33% • 33% of parcels with redevelopment potential	34% • 34% of parcels with redevelopment potential
	Equitable development opportunities	Medium • Greater opportunities near the Smith Cove and Interbay stations	Medium • Greater opportunities near the Smith Cove and Interbay stations	Medium • Greater opportunities near the Smith Cove and Interbay stations	High • Greatest opportunities near all three station locations
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 City Landmarks	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	2 • 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low • 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	Low • 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	Low • 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	Low • 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

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Environmental Effects (continued)	Parks and recreational resources		4.2 • Approximately 4.2 acres of permanent impacts to 4 parks: 14th Avenue NW Boat Ramp, Interbay Athletic Field, Interbay Golf Course, and Kinnear Park	3.9 • Approximately 3.9 acres of permanent impacts to 3 parks: Interbay Athletic Field, Interbay Golf Course, and SW Queen Anne Greenbelt	4.2 • Approximately 4.2 acres of permanent impacts to 4 parks: 14th Avenue NW Boat Ramp, Interbay Athletic Field, Interbay Golf Course, and Kinnear Park	3.9 • Approximately 3.9 acres of permanent impacts to 3 parks: Interbay Athletic Field, Interbay Golf Course, and Kinnear Park
	Water resources		0.7 • More than 0.5 acre of permanent in-water impact	0 • No potential permanent in-water impacts	0.4 • Less than 0.5 acre of permanent in-water impact	0 • No potential permanent in-water impacts
	Fish and wildlife habitat		0.5 • Approximately 0.5 acre of permanent habitat impacts • Potential impact at Kinnear Park	11.4 • Approximately 11.4 acres of permanent habitat impacts • Requires clearing in SW Queen Anne Greenbelt for construction and slope stabilization	0.5 • Approximately 0.5 acre of permanent habitat impacts • Potential impact at Kinnear Park	0.5 • Approximately 0.5 acre of permanent habitat impacts • Potential impact at Kinnear Park
	Hazardous materials		16 • Approximately 16 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	12 • Approximately 12 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	16 • Approximately 16 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	12 • Approximately 12 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Visual		0.7 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W, under the Magnolia Bridge and over NW Market Street, SEPA Scenic Routes • Passes over about 700 feet of Salmon Bay and would be viewed by water users	0.8 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Adjacent to Elliott Avenue W, a SEPA Scenic Route • Would not cross over Salmon Bay	0.7 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W, under the Magnolia Bridge and over NW Market Street, SEPA Scenic Routes • Passes over about 700 feet of Salmon Bay and would be viewed by water users	0.6 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W and under the Magnolia Bridge, a SEPA Scenic Route • Would not cross over Salmon Bay
	Noise and vibration		High • Approximately 130 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 180 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 130 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 40 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	High • Less than 55 parcels affected	High • Less than 55 parcels affected	High • Less than 55 parcels affected	High • Less than 55 parcels affected
		Number of potential residential unit displacements	Medium • Between 100 and 300 potential residential unit displacements • Displacements would occur on North Queen Anne for bridge approach	High • Less than 100 potential residential unit displacements	Medium • Between 100 and 300 potential residential unit displacements • Displacements would occur on North Queen Anne for bridge approach	High • Less than 100 potential residential unit displacements

Key to Rating	Alternative Performance		
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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Environmental Effects (continued)	Property acquisitions and displacements (continued)	Square feet of potential business displacements	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Interbay for elevated guideway and stations	High • Less than 375,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway and in north Interbay for the Interbay Station	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Interbay for elevated guideway and stations	Low • More than 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway, in north Interbay for the Interbay Station and for the Ballard Station
	Construction impacts		High • Potential for visual, noise and vibration impacts on residences near W Dravus Street (west of 15th Avenue W) and between 15th Avenue W and 14th Avenue W from station and elevated guideway construction • Traffic impacts on Elliott Avenue W and 15th Avenue W would be limited to where guideway construction crosses these roadways • Construction under the Magnolia Bridge could have temporary traffic impacts on the Interbay and Magnolia neighborhoods; diversion of these vehicles could create traffic impacts on other roadways • Construction of the elevated guideway on 14th Avenue NW would have reduced potential for traffic impacts compared to alternatives on 15th Avenue NW because it is a lower volume road, and lower potential for impacts on residences because residential density around 14th Avenue NW is lower than areas to the west • Access to businesses would be maintained, although the community may experience changes in access to some businesses	High • Would be least disruptive to Ballard neighborhood • Potential for visual, noise and vibration impacts on residences near W Dravus Street (west of 15th Avenue W) and between 15th Avenue W and 14th Avenue W from station and elevated guideway construction • Traffic impacts on Elliott Avenue W and 15th Avenue W would be limited to where guideway construction crosses these roadways • Construction of the tunnel on 14th Avenue NW would have reduced potential for traffic impacts compared to elevated alternatives and alternatives on 15th Avenue NW, and residential density around 14th Avenue NW is lower than areas to the west • Construction of the Ballard Station would have potential for visual, noise and vibration impacts for adjacent residences • Access to businesses would be maintained, although the community may experience changes in access to some businesses	High • Potential for visual, noise and vibration impacts on residences near W Dravus Street (west of 15th Avenue W) and between 15th Avenue W and 14th Avenue W from station and elevated guideway construction • Traffic impacts on Elliott Avenue W and 15th Avenue W would be limited to where guideway construction crosses these roadways • Construction under the Magnolia Bridge could have temporary traffic impacts on the Interbay and Magnolia neighborhoods; diversion of these vehicles could create traffic impacts on other roadways • Construction of the elevated guideway on 14th Avenue NW would have reduced potential for traffic impacts compared to alternatives on 15th Avenue NW because it is a lower volume road, and lower potential for impacts on residences because residential density around 14th Avenue NW is lower than areas to the west • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Medium • Potential for visual, noise and vibration impacts on residences on or near W Dravus Street (west of 15th Avenue W), 15th Avenue NW and NW Market Street from elevated guideway and station construction • Potential for traffic impacts on 15th Avenue NW, which is a principal arterial and major freight route that carries about 35,000 to 50,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Construction under the Magnolia Bridge could have temporary traffic impacts on the Interbay and Magnolia neighborhoods; diversion of these vehicles could create traffic impacts on other roadways • Access to businesses would be maintained, although the community may experience changes in access to some businesses
	Burden on minority and low-income populations		High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk
Traffic Operations	Traffic circulation and access		Medium • Right-of-way impacts to 14th Avenue NW (low/moderate volumes), with potential turn restrictions at non-signalized intersections	High • Impacts to Armory Way right-of-way (low volume street) and adjacent parcels	Medium • Right-of-way impacts to 14th Avenue NW (low/moderate volumes), with potential turn restrictions at non-signalized intersections	High • Limited or no permanent roadway or property access impacts
	Transportation facilities		Medium • Transportation facilities affected include Helix pedestrian bridge, Galer Street Flyover, Magnolia Bridge, W Armory Way Bridge, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange	High • Transportation facilities affected include W Armory Way, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange	Medium • Transportation facilities affected include Helix pedestrian bridge, Galer Street Flyover, Magnolia Bridge, W Armory Way Bridge, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange	Medium • Transportation facilities affected include Helix pedestrian bridge, Galer Street Flyover, Magnolia Bridge, W Armory Way Bridge, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Economic Effects	Freight movement and access on land and water	Medium • Potential construction impacts on Elliott Avenue W limited to one elevated crossing location • Potential construction impacts on 15th Avenue W limited to one elevated crossing location • Construction adjacent to east side of BNSF lines west of Elliott Avenue W and on east side of Interbay BNSF yard • Potential full or partial closure of Magnolia Bridge during construction of undercrossing • Avoids direct impacts to Fishermen's Terminal • Columns would maintain Ship Canal navigation channel but could affect large vessel navigation to/from the Coastal Transportation and Maritime Academy/14th Avenue NW Boat Ramp area	High • Alignment on east side of Elliott Avenue W would avoid changes in circulation and construction impacts • Potential construction impacts on 15th Avenue W limited to one elevated crossing location • Avoids columns and in-water work in Salmon Bay • Avoids columns on 15th Avenue NW	Medium • Potential construction impacts on Elliott Avenue W limited to one elevated crossing location • Fewer columns in the water compared to movable bridge • Avoids columns on 15th Avenue NW • Potential full or partial closure of Magnolia Bridge during construction of undercrossing • Construction adjacent to east side of BNSF lines west of Elliott Avenue W and on east side of Interbay BNSF yard • Avoids direct impacts to Fishermen's Terminal • Columns would maintain Ship Canal navigation channel but could affect large vessel navigation to/from the Coastal Transportation and Maritime Academy/14th Avenue NW Boat Ramp area	High • Potential construction impacts on Elliott Avenue W limited to one elevated crossing location • Construction adjacent to east side of BNSF lines west of Elliott Avenue W and on east side of Interbay BNSF yard • Potential construction impacts on 15th Avenue W limited to one elevated crossing location • Avoids columns in water and impacts on Fishermen's Terminal • Avoids permanent impacts on 15th Avenue W and 15th Avenue NW • Potential full or partial closure of Magnolia Bridge during construction of undercrossing
	Business and commerce effects	Medium • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Would avoid impacts to Fishermen's Terminal, including FVO • Could displace at least one dock at Salmon Bay Terminals, which would reduce available moorage for fishing vessels • Could displace or affect operation of small businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Likely fewer small business displacements in Ballard than other alternatives on 15th Avenue NW or 17th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 14th Avenue NW and smaller businesses along these streets • Construction traffic impacts would be of shorter duration than ST3 Representative Project or 15th/Fixed Bridge/15th Alternative because the alignment would only cross 15th Avenue W at W Emerson Place	High • Second lowest amount of business displacement compared to other Interbay/Ballard alternatives • Tunnel could avoid maritime business impacts including those at Fishermen's Terminal, Salmon Bay Terminal, and smaller marinas • Could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Likely fewer small business displacements in Ballard than other alternatives on 15th Avenue NW or 17th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, and W Dravus Street and smaller businesses along these streets • Construction traffic impacts on 15th Avenue W would be of shorter duration than ST3 Representative Project or 15th/Fixed Bridge/15th Alternative because the alignment would only cross 15th Avenue W at W Emerson Place at two locations • Construction of the cut-and-cover Ballard Station on 14th Avenue NW would affect traffic and small businesses nearby, but would be less than Central Interbay/Movable Bridge/14th and Central Interbay/Fixed Bridge/14th alternatives	Medium • Would have a moderate amount of business displacement compared to other Interbay/Ballard alternatives • Would avoid impacts to Fishermen's Terminal, including FVO • Could displace at least one dock at Salmon Bay Terminals, which would reduce available moorage for fishing vessels • Could displace or affect operation of small businesses on the north side of Salmon Bay; could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Likely fewer small business displacements in Ballard than other alternatives on 15th Avenue NW or 17th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 14th Avenue NW and smaller businesses along these streets • Construction traffic impacts would be of shorter duration than ST3 or 15th/Fixed Bridge/15th because the alignment would only cross 15th Avenue W at W Emerson Place	Medium • Greatest amount of business displacement compared to other Interbay/Ballard alternatives • Tunnel could avoid maritime business impacts including those at Fishermen's Terminal, Salmon Bay Terminal, and smaller marinas • Could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Construction of the cut-and-cover Ballard Station on 15th Avenue NW would affect traffic and small businesses • Construction traffic impacts on freight movement on Elliott Avenue W, and W Dravus Street and smaller businesses along these streets

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT 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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