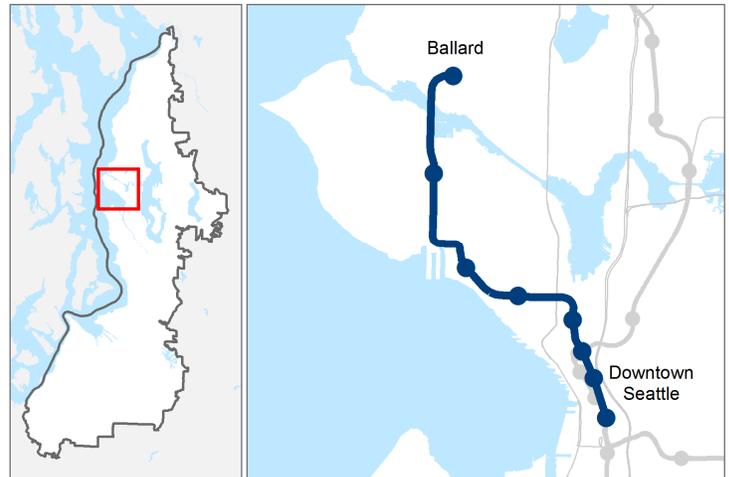


# C-01c: Downtown Seattle to Ballard (Market Street vicinity) LRT, primarily elevated/tunnel options

<b>Project Number</b>	C-01c
<b>Subarea</b>	North King
<b>Primary Mode</b>	Light Rail
<b>Facility Type</b>	Corridor
<b>Length</b>	7.5 miles
<b>Version Number</b>	ST Board Workshop
<b>Date Last Modified</b>	11-25-2015

## PROJECT AREA AND REPRESENTATIVE ALIGNMENT



### SHORT PROJECT DESCRIPTION

This project would provide light rail from Downtown Seattle to Ballard’s Market Street area via Uptown and Interbay with tunnel and elevated sections. It would use a tunnel to cross the Ship Canal. Eight stations are contained within this alignment – one aerial and seven underground.

*Note: The elements included in this representative project will be refined during future phases of project development and are subject to change.*

### KEY ATTRIBUTES

<b>REGIONAL LIGHT RAIL SPINE</b> <i>Does this project help complete the light rail spine?</i>	No
<b>CAPITAL COST</b> <i>Cost in Millions of 2014 \$</i>	\$4,960 — \$5,307
<b>RIDERSHIP</b> <i>2040 daily boardings</i>	67,000 — 87,000
<b>PROJECT ELEMENTS</b>	<ul style="list-style-type: none"> <li>• Approximately 7.5 miles of light rail in combination of elevated and tunnel</li> <li>• One elevated station: Interbay South</li> <li>• Seven underground stations: Ballard, Interbay North, Interbay South, Uptown, South Lake Union, Westlake, Midtown, International District/Chinatown</li> <li>• Stations are designed for 4-car trains</li> <li>• New tunnel under Salmon Bay</li> <li>• Operations and maintenance facility</li> <li>• Purchase of 35 light rail vehicles</li> <li>• Peak headways: 6 minutes</li> <li>• 1 percent for art per Sound Transit policy</li> <li>• Non-motorized access facilities (bicycle/pedestrian), transit-oriented development (TOD)/planning due diligence, bus/rail integration facilities, and sustainability measures (see separate document titled “Common Project Elements”)</li> </ul>
<b>NOT INCLUDED</b>	<ul style="list-style-type: none"> <li>• Parking not included</li> <li>• See separate document titled “Common Project Elements”</li> </ul>
<b>ISSUES &amp; RISKS</b>	<ul style="list-style-type: none"> <li>• Risk and complexity associated with a tunnel through Downtown Seattle, Ballard, and Salmon Bay</li> <li>• Complexity associated with one elevated and one tunnel crossing through BNSF right-of-way</li> <li>• Constructing a tunnel under Salmon Bay</li> <li>• Location and construction of operations and maintenance facility</li> <li>• An alignment to the east of the Magnolia Bridge on-ramp may require acquiring private property and</li> </ul>

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KEY ATTRIBUTES

ISSUES & RISKS

- potentially public park land, and require construction at the foot of a steep slope
- Tunnel construction in mature urban environment, including potential of encountering elevator shafts, electrical grounding rods, geothermal wells
- Impacted by C-03a: Downtown Seattle to West Seattle
- Light rail currently operates in Seattle and specific station area standards are codified; light rail is included in the Comprehensive Plan and other planning documents

# C-01c: Downtown Seattle to Ballard (Market Street vicinity) LRT, primarily elevated/tunnel options

Sound Transit has developed a conceptual scope of work for this candidate project for the purpose of generating a representative range of costs, both capital and operating; and benefits, including ridership forecasts, TOD potential, multi-modal access and others. This information is being developed to assist the Sound Transit Board as it develops an ST3 system plan, including phasing of investments and financial plan, for voter consideration. Final decisions on project elements (e.g., alignment, profile, number of stations, station locations, and number of parking stalls) will be determined after completion of system planning, project level environmental review, and preliminary engineering during which additional opportunities for public participation will be provided. Therefore, this scope definition should not be construed as a commitment that all representative features will be included in the final developed project.

## Long Description:

This project would connect Downtown Seattle to the Market Street vicinity in Ballard, including a primarily elevated corridor along the west side of the existing Interbay rail corridor, and potentially include tunnels under Salmon Bay and Uptown. The representative alignment for this light rail project would be a tunnel under NW Market Street in Ballard starting at 15<sup>th</sup> Avenue NW, turning south to cross under Salmon Bay and then along 22<sup>nd</sup> Avenue W and then 20<sup>th</sup> Avenue through the Interbay corridor. The alignment would then transition to an elevated alignment south of Thorndyke Avenue W, continuing through the Interbay corridor. It would then turn east, crossing the BNSF tracks along the north side of the Magnolia Bridge. It would then turn south and continue along Elliott Avenue W. The alignment would transition to a tunnel alignment through the Uptown neighborhood and continue downtown to a tunnel portal and terminus south of Royal Brougham Way. This project includes eight stations – one elevated and seven underground.

## Assumptions:

- Alignment generally along existing arterials
- Traction power substations are generally placed at 1-mile intervals, close to stations, if possible, with additional right-of-way acquisition included
- For non-motorized station access allowances, the Ballard, Interbay North, and Uptown stations are categorized as Urban stations and the South Lake Union, Westlake, Midtown, and International District/Chinatown stations are categorized as Urban/CBD stations; the Interbay South station is categorized as an Urban station with a Major Bicycle Intercept
- For bus/rail integration, facilities have been assumed at the Ballard and Interbay South stations

## Environmental:

Sound Transit will complete project-level state and federal environmental reviews as necessary; provide mitigation for significant impacts; obtain and meet the conditions of all required permits and approvals; and strive to exceed compliance and continually improve its environmental performance.

## Utilities:

Utility relocation as needed to complete the project, including fiber optics, sewer, water, overhead electric/communications, etc.

## Right-of-Way and Property Acquisition:

- Generally located within existing city-owned street right-of-way
- Potential property acquisitions anticipated at stations
- Potential easements anticipated for tunnel alignments under privately-owned properties
- The alignment would require property acquisition for the operations and maintenance facility, access to the facility, and traction power substations
- City of Seattle could potentially serve as partner for tunnel easements under publicly-held properties such as Seattle Center
- Property acquisition for bus/rail integration facility

## Potential Permits/Approvals Needed:

- Building permits: Electrical, Mechanical, Plumbing
- Utility connection permits
- Construction-related permits (clearing and grading, stormwater management, street use, haul routes, use of city right-of-way)
- Master use
- Land use approvals (Conditional use, design review, site plans, Comprehensive Plan or development code consistency, Special Use Permits)
- Coordination with US Army Corps of Engineers
- All required local, state, and federal environmental permits
- NEPA/SEPA and related regulations

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**Project Dependencies:**

Requires development of independent operations and maintenance facility. However, if this project is combined with project C-03a or C-03c, then cost savings could be achieved with construction of only one new OMF.

**Potential Project Partners:**

- City of Seattle
- King County
- U.S. Army Corps of Engineers
- Transit partner serving this project: King County Metro
- U.S. Coast Guard
- FTA
- Port of Seattle

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## Cost:

Sound Transit has developed a conceptual scope of work for this candidate project for the purpose of generating a representative range of costs, both capital and operating; and benefits, including ridership forecasts, TOD potential, multi-modal access and others. This information is being developed to assist the Sound Transit Board as it develops an ST3 system plan, including phasing of investments and financial plan, for voter consideration. Final decisions on project elements (e.g., alignment, profile, number of stations, station locations, and number of parking stalls) will be determined after completion of system planning, project level environmental review, and preliminary engineering during which additional opportunities for public participation will be provided. Therefore, this scope definition should not be construed as a commitment that all representative features will be included in the final developed project.

In Millions of 2014\$

ITEM	COST	COST WITH RESERVE
Agency Administration	\$263.58	\$282.03
Preliminary Engineering & Environmental Review	\$152.19	\$162.85
Final Design & Specifications	\$302.96	\$324.17
Property Acquisition & Permits	\$328.74	\$351.75
Construction	\$3,090.21	\$3,306.52
Construction Management	\$272.67	\$291.75
Third Parties	\$60.79	\$65.05
Vehicles	\$185.50	\$198.49
Contingency	\$302.96	\$324.17
<b>Total</b>	<b>\$4,959.60</b>	<b>\$5,306.77</b>

Design Basis:

Conceptual

The costs expressed above include allowances for TOD planning and due diligence, Sustainability, Bus/rail integration facilities, and Non-Motorized Access. These allowances, as well as the costs for Parking Access included above, are reflected in the following table. Property acquisition costs are not included in the table below, but are included within the total project cost above.

ITEM	COST	COST WITH RESERVE
TOD planning and due diligence	\$0.91	\$0.98
Sustainability	\$3.34	\$3.58
Parking access	N/A	N/A
Non-motorized (bicycle/pedestrian) access	\$40.64	\$43.49
Bus/rail integration facilities	\$5.51	\$5.89

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## Evaluation Measures:

MEASURE	MEASUREMENT/RATING	NOTES	
 <b>Regional Light Rail Spine</b> <i>Does project help complete regional light rail spine?</i>	No		
 <b>Ridership</b> <i>2040 daily station boardings</i>	67,000 — 87,000		
 <b>Capital Cost</b> <i>Cost in Millions of 2014 \$</i>	\$4,960 — \$5,307		
 <b>Annual O&amp;M Cost</b> <i>Cost in Millions of 2014 \$</i>	\$45.17		
 <b>Travel Time</b> <i>In-vehicle travel time along the project (segment)</i>	19 min		
 <b>Reliability</b> <i>Quantitative/qualitative assessment of alignment/route in exclusive right-of-way</i>	High	100% in exclusive right-of-way	
 <b>System Integration</b> <i>Qualitative assessment of issues and effects related to connections to existing local bus service and potential future integration opportunities</i>	High	Medium-low to high number of existing transit connections and strong opportunities for integration with realigned bus service	
	<b>Ease of Non-motorized Access</b> <i>Qualitative assessment of issues and effects related to non-motorized modes</i>	Medium-High	Medium to high intersection densities providing non-motorized access, with no unique barriers
	<b>Percent of Non-motorized Mode of Access</b> <i>Percent of daily boardings</i>	75-85%	
 <b>Connections to PSRC-designated Regional Centers</b> <i>Number of PSRC-designated regional growth and manufacturing/industrial centers served</i>	4 centers	Ballard-Interbay MIC, Uptown, South Lake Union, Seattle CBD	
	<b>Land Use and Development/TOD Potential</b> <i>Quantitative/qualitative assessment of adopted Plans &amp; Policies and zoning compatible with transit-supportive development within 0.5 mile of potential stations</i>	Medium-High	Strong support in local and regional plans; approx. 30% land is compatibly zoned
	<i>Qualitative assessment of real estate market support for development within 1 mile of potential corridor</i>	High	Very strong market support
	<i>Density of activity units (population and employment for 2014 and 2040) within 0.5 mile of potential station areas</i>	Pop/acre: 2014: 22; 2040: 33 Emp/acre: 2014: 65; 2040: 97 Pop+Emp/acre: 2014: 87; 2040: 130	
	<b>Socioeconomic Benefits</b> <i>Existing minority / low-income populations within 0.5 mile of potential station areas</i>	32% minority; 17% low-income	
	<i>2014 and 2040 population within 0.5 mile of potential station areas</i>	Pop: 2014: 69,500; 2040: 105,900	
	<i>2014 and 2040 employment within 0.5 mile of potential station areas</i>	Emp: 2014: 205,300; 2040: 308,500	

For additional information on evaluation measures, see <http://soundtransit3.org/document-library>