

C-01d: Downtown Seattle to Ballard (Market Street vicinity) LRT, primarily at-grade along Westlake Avenue

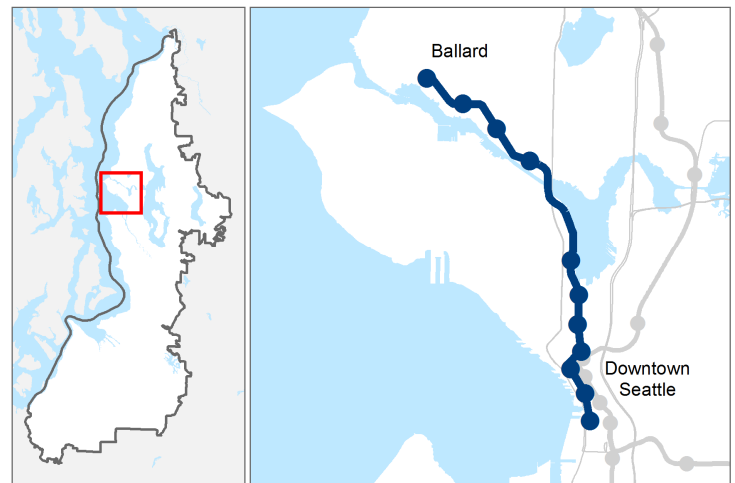
Project Number	C-01d
Subarea	North King
Primary Mode	Light Rail
Facility Type	Corridor
Length	6.6 miles
Version	ST Board Workshop
Date Last Modified	11-25-2015

SHORT PROJECT DESCRIPTION

This project would build light rail from Downtown Seattle to Ballard's Market Street area via Westlake Avenue and serve South Lake Union and Fremont. It would be built at-grade in exclusive lanes with signal priority. It would use a tunnel to cross the Ship Canal.

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

PROJECT AREA AND REPRESENTATIVE ALIGNMENT



KEY ATTRIBUTES

REGIONAL LIGHT RAIL SPINE <i>Does this project help complete the light rail spine?</i>	No
CAPITAL COST <i>Cost in Millions of 2014 \$</i>	\$1,725 — \$1,846
RIDERSHIP <i>2040 daily boardings</i>	29,000 — 37,000
PROJECT ELEMENTS	<ul style="list-style-type: none"> • Approximately 5.1 miles of mostly at-grade light rail • One underground station: Fremont • Ten at-grade stations: Ballard West, Ballard, Fremont West, West Lake Union, South Lake Union North, South Lake Union, Westlake, Pike Place Market, Midtown, and Pioneer Square • At-grade stations are approximately 200 feet long to accommodate 2-car trains • Tunnel station is approximately 400 feet long to accommodate up to 4-car trains • New tunnel under Lake Washington Ship Canal • Operations and maintenance facility • Purchase of 23 light rail vehicles • Peak headways: 6 minutes • 1 percent for art per Sound Transit policy • 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")
NOT INCLUDED	<ul style="list-style-type: none"> • Parking not included • See separate document titled "Common Project Elements"
ISSUES & RISKS	<ul style="list-style-type: none"> • Displacing vehicle travel lanes for the alignment • Side-platform stations would partially occupy existing sidewalk and would be space-constrained • Limited left turns in Downtown, Queen Anne, and Fremont • A number of track crossing locations for driveway access and right turns at intersections may need to be

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KEY ATTRIBUTES

ISSUES & RISKS

- maintained in some locations
- Maintaining access for businesses for deliveries
- Risk and complexity associated with new tunnel under Lake Washington Ship Canal
- At-grade stations could create complexity for future system expansion potential
- Location and construction of operations and maintenance facility
- Tunnel construction in mature urban environment, including potential of encountering elevator shafts, electrical grounding rods, geothermal wells
- Maintenance of traffic during construction on arterials
- The alignment on Westlake Avenue would be located in the same location as the existing South Lake Union Streetcar which would be removed, and the alignment on Stewart Street and 1st Avenue would be located in the same location as the proposed Center City Connector; these transit options would most likely not be able to co-exist due to conflicts with street width and right-of-way space limitations, stations, platforms, and overhead catenary system
- Potential conflicts with existing utilities
- Impacted by C-03b: West Seattle to Downtown Seattle At-grade
- At-grade profiles included in this project could result in more potential conflicts with other modes; this could affect speed and reliability
- 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
- Due to the constrained right-of-way available in areas such as Downtown Seattle and South Lake Union, cross-sections below city minimum width requirements are assumed; coordination and possible exemptions would be needed from the City of Seattle, otherwise, as an alternative to seeking an exemption, acquisition of additional, high-value right-of-way would be required

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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 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 build light rail from downtown Seattle to Ballard's Market Street area via Westlake Avenue and serve South Lake Union and Fremont. It would be built at-grade in exclusive lanes with signal priority. This could include either a new movable bridge near the Fremont Bridge or new tunnel under the Ship Canal. The representative alignment for this light rail project would be at-grade along NW Market Street starting at 24th Avenue NW, turning onto Leary Way NW through Ballard. The alignment would transition to a tunnel along N 36th Street through Fremont and under the Lake Washington Ship Canal. The alignment would transition back to an at-grade alignment along Westlake Avenue N to South Lake Union and Downtown Seattle. The alignment would turn onto Stewart Street and then 1st Avenue, terminating at approximately Royal Brougham Way. This project contains eleven stations – ten at-grade and one 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
- Modifications to existing bus service and stops would be coordinated with partner agencies
- For non-motorized station access allowances, the Ballard West and West Lake Union stations are categorized as Urban stations and the South Lake Union, Westlake, Pike Place Market, Midtown, and Pioneer Square stations are categorized as Urban/CBD stations; the Ballard, Fremont West, and Fremont stations are categorized as Urban stations with a Major Bicycle Intercept, and the South Lake Union North station is categorized as an Urban/CBD station with a Major Bicycle Intercept
- For bus/rail integration, facilities have been assumed at the Ballard station
- Due to the constrained right-of-way available in areas such as Downtown Seattle and South Lake Union, cross-sections below city minimum width requirements are assumed

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:

- The alignment would require displacing vehicle travel lanes, and would not expand ROW except at some intersections and stations
- Potential property acquisitions anticipated at stations and intersections where protected turns are to be maintained
- The alignment would require property acquisition for the operations and maintenance facility, access to the facility, and traction power substations
- 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-03b, then cost savings could be achieved with construction of only one new OMF.

Potential Project Partners:

- City of Seattle
- US Army Corps of Engineers
- Transit partner serving project: King County Metro
- King County
- FTA

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Cost:

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In Millions of 2014\$

ITEM	COST	COST WITH RESERVE
Agency Administration	\$91.78	\$98.21
Preliminary Engineering & Environmental Review	\$52.92	\$56.62
Final Design & Specifications	\$103.97	\$111.25
Property Acquisition & Permits	\$75.88	\$81.19
Construction	\$1,060.48	\$1,134.71
Construction Management	\$93.57	\$100.12
Third Parties	\$20.99	\$22.46
Vehicles	\$121.90	\$130.43
Contingency	\$103.97	\$111.25
Total	\$1,725.45	\$1,846.24

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	\$1.13	\$1.21
Sustainability	\$20.53	\$21.97
Parking access	N/A	N/A
Non-motorized (bicycle/pedestrian) access	\$51.63	\$55.24
Bus/rail integration facilities	\$2.75	\$2.95

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Evaluation Measures:

MEASURE	MEASUREMENT/RATING	NOTES
 Regional Light Rail Spine <i>Does project help complete regional light rail spine?</i>	No	
 Ridership <i>2040 daily station boardings</i>	29,000 — 37,000	
 Capital Cost <i>Cost in Millions of 2014 \$</i>	\$1,725 — \$1,846	
 Annual O&M Cost <i>Cost in Millions of 2014 \$</i>	\$37.91	
 Travel Time <i>In-vehicle travel time along the project (segment)</i>	25 min	
 Reliability <i>Quantitative/qualitative assessment of alignment/route in exclusive right-of-way</i>	Medium-High	Primarily at-grade; reliability could be affected by cross street traffic
 System Integration <i>Qualitative assessment of issues and effects related to connections to existing local bus service and potential future integration opportunities</i>	Medium-High	Low to high number of existing daily transit connections from Ballard to Pioneer Square and opportunities for integration with realigned bus service
 Ease of Non-motorized Access <i>Qualitative assessment of issues and effects related to non-motorized modes</i>	Medium-High	Low to high intersection densities providing non-motorized access with SR 99 a barrier within 1/2 mile of Westlake Avenue N
 Connections to PSRC-designated Regional Centers <i>Number of PSRC-designated regional growth and manufacturing/industrial centers served</i>	3 centers	Ballard-Interbay MIC, South Lake Union, Seattle CBD
 Land Use and Development/TOD Potential <i>Quantitative/qualitative assessment of adopted Plans & Policies and zoning compatible with transit-supportive development within 0.5 mile of potential stations</i> <i>Qualitative assessment of real estate market support for development within 1 mile of potential corridor</i> <i>Density of activity units (population and employment for 2014 and 2040) within 0.5 mile of potential station areas</i>	Medium-High High Pop/acre: 2014: 22; 2040: 30 Emp/acre: 2014: 62; 2040: 94 Pop+Emp/acre: 2014: 84; 2040: 124	Strong support in local and regional plans; approx. 35% land is compatibly zoned Very strong market support
 Socioeconomic Benefits <i>Existing minority / low-income populations within 0.5 mile of potential station areas</i> <i>2014 and 2040 population within 0.5 mile of potential station areas</i> <i>2014 and 2040 employment within 0.5 mile of potential station areas</i>	28% minority; 16% low-income Pop: 2014: 64,500; 2040: 90,000 Emp: 2014: 183,200; 2040: 277,100	

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