

I-405 Bus Rapid Transit

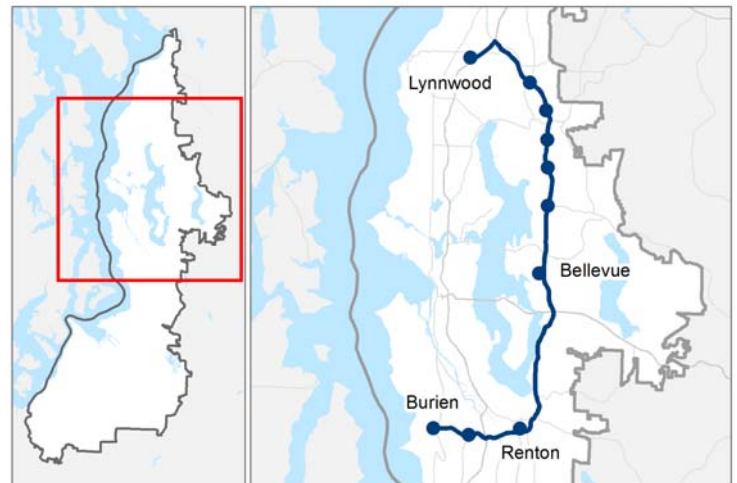
Subarea	East King
Primary Mode	BRT
Facility Type	Corridor
Length	37 miles
Version	Draft ST3 Plan
Date Last Modified	April 21, 2016

SHORT PROJECT DESCRIPTION

This project would establish Bus Rapid Transit (BRT) that would operate primarily in the I-405 express toll system between Lynnwood to Renton and in the high-occupancy vehicle (HOV) lanes from Renton to Tukwila on I-405. From Tukwila to Burien, BRT would operate in bus-only lanes on SR 518. Improvements include parking, stations, station access improvements, BRT lanes on SR 518 and bus-only lanes on NE 85th Street in Kirkland from 6th Street to I-405 for other transit service.

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>	\$687 — \$735
RIDERSHIP <i>2040 daily project riders</i>	11,000 — 13,000
PROJECT ELEMENTS	• BRT station pair at the Lynnwood Transit Center: minor improvements including signage • BRT station pair at the Canyon Park Park-and-Ride using outside flyer stops on SR 527 ramps: improvements include signage, lighting, shelters and benches, off-board fare payment, and real-time bus arrival • BRT station pair at the UW Bothell campus using outside flyer stops on NE 195th Street ramps: improvements include signage, lighting, shelters and benches, off-board fare payment, and real-time bus arrival • BRT station pair at the Brickyard Park-and-Ride using outside flyer stops on NE 160th Street ramps: improvements include signage, lighting, shelters and benches, off-board fare payment, and real-time bus arrival • BRT station pair at Totem Lake using existing in-line station on NE 128th Street direct access ramps: minor improvements including signage • 1,000 stall parking garage constructed at Kingsgate Park-and-Ride (removal of 200 surface stalls, 800 net new stalls) • BRT inline station at Central Kirkland (vicinity of NE 85th Street) with pedestrian access to bus stops along both directions of NE 85th Street • Two-way, outside-only bus lanes on NE 85th Street between I-405 to 6th Street Kirkland • BRT station pair at the Bellevue Transit Center: minor improvements including signage • BRT station pair at South Renton with transit center/bus layover

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KEY ATTRIBUTES	
PROJECT ELEMENTS	• 700 parking stalls constructed at South Renton • BRT station pair at the Tukwila International Boulevard Link Station: minor improvements including signage • BRT station pair at Burien Transit Center: minor improvements including signage • BRT lanes and transit signal priority on S. 154th Street from the Tukwila International Boulevard Station to the SR 518 on and off-ramps, on SR 518 from S. 154th Street to terminus of SR 518 at SR 509, and on SW 148th Street from SR 509 to the Burien Transit Center. • BRT vehicle fleet purchase of 34 coaches (3-door articulated coaches with ST BRT livery) • Peak headways: 10 minutes • Per-bus allowance as necessary for construction of a bus base • 1 percent for art per Sound Transit policy • Non-motorized access facilities (bicycle/pedestrian) and transit-oriented development (TOD)/planning due diligence (see separate document titled "Common Project Elements")
NOT INCLUDED	• Direct access ramps or HOV-to-HOV direct connector ramps • Enhanced aesthetic surface treatments on the retaining walls • Bus service on NE 85th Street • Operations beyond the I-405 and SR 518 BRT corridor • Sustainability measures and bus/rail integration facilities not included for BRT projects on WSDOT right-of-way • See separate document titled "Common Project Elements"
ISSUES & RISKS	• Relies on WSDOT to maintain adequate speed and reliability of I-405 express toll lane system • Construction at the Brickyard Park-and-Ride would need to avoid the Tolt Pipeline, an existing water supply pipeline that runs under the current northern surface parking lot in a southeast to northwest direction • At the NE 85th Street inline station the posted speeds and curve radii of the interchange "loop" ramps will need to be reduced to avoid major interchange ramp reconstruction and right-of-way impacts; the reconstruction of the I-405 bridges over NE 85th Street will create construction staging challenges to maintain the movement of high volumes of traffic through this interchange • Construction of the bus-only lanes in the NE 85th Street corridor would require embankment widening and retaining walls on NE 85th Street, including substantial lengths between 114th Avenue NE and 6th Street, and widening of the NE 85th Street bridge over the Cross Kirkland Corridor. • Widening of three bridges that cross over major highways (SR 518, SR 509, and Des Moines Memorial Drive) • Construction of new retaining walls along SR 518 • Remediation may be required for poor soil conditions and hazardous materials

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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, 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 establish BRT that would operate primarily in the I-405 express toll system for approximately 30 miles between Lynnwood to Renton via I-405, in the HOV lanes for most of the 4 miles from Renton to Tukwila via I-405, and in new BRT lanes on SR 518 for approximately 3 miles (37 total miles). Improvements include parking, stations, station access improvements, and bus/BRT-only lanes. A 1,000 stall parking garage will be constructed at Kingsgate Park-and-Ride, and a 700 stall parking facility would be constructed at the S. Renton Transit Center. The Central Kirkland BRT inline station would include elevators to bus stops on NE 85th Street. Bus-only lanes would be constructed in Kirkland on NE 85th Street between I-405 and 6th Street. BRT lanes would be constructed between the Tukwila International Boulevard Link Station and the Burien Transit Center on S. 154th Street, SR 518, and SW 148th Street. BRT would serve the Lynnwood Transit Center, Canyon Park, UW Bothell, Brickyard, Totem Lake, Central Kirkland, Bellevue Transit Center, S. Renton Transit Center, Tukwila International Boulevard Link Station, and the Burien Transit Center.

Assumptions:

- BRT would operate in general purpose lanes on I-5 (between the Lynnwood Transit Center and I-405)
- BRT would operate in general purpose lanes on I-405 between I-5 and Brickyard (using shoulder bus lanes in southbound direction in two segments)
- Leaving Brickyard, BRT would transition from general purpose lanes to I-405 express toll lanes, continuing to Totem Lake freeway station
- BRT would operate in I-405 express toll lanes between Totem Lake and South Renton, accessing the Bellevue Transit Center from the NE 6th Street HOV direct access ramp
- From the South Renton transit center, southbound BRT buses would enter I-405 on Rainier Avenue general purpose on-ramp and weave over to the inside HOV lanes towards I-5. Close to I-5, buses would weave over to general purpose lanes continuing to SR 518 and the Tukwila International Boulevard Link Station. Northbound BRT buses would follow this routing in the reverse direction.
- The Tukwila International Boulevard station to the Burien Transit Center would include new bus-only lanes on SR 518
- For the UW Bothell station, pedestrian improvements are included for access to the BRT stations along the NE 195th corridor; in addition, the design estimate includes station/system access allowance costs for additional access improvements, possibly connecting to the existing North Creek trail
- Construction of a parking garage at Kingsgate will temporarily displace parking and parking may be temporarily provided nearby; costs for temporary parking replacement have been included in the cost estimate for this project, but a specific location for the parking replacement has not been identified
- At the Brickyard Park-and-Ride, the new northbound flyer stop will be served by a braided ramp that connects directly to I-405 and SR 522; this braided ramp is currently under construction; buses using the northbound flyer station stop and continuing north on I-405 will need to weave across general purpose traffic
- New or upgraded traffic signals would be provided along NE 85th Street for the bus-only lanes
- Multiple retaining walls along the north and south sides of NE 85th Street in Kirkland to accommodate bus-only lanes
- Widening of the NE 85th Street bridge over the Cross Kirkland Corridor to accommodate bus-only lanes
- Multiple bridge widenings and retaining walls for the BRT-only lanes along S. 154th Street, SR 518, and SW 148th Street.
- For non-motorized station access allowances, the Lynnwood Transit Center and Bellevue Transit Center stations are categorized as urban stations and intermodal transit centers, and the Canyon Park, UW Bothell, Brickyard, Totem Lake, Central Kirkland, and S. Renton stations are characterized as suburban stations. The Tukwila International Boulevard BRT Station is categorized as a suburban station and an intermodal transit center. The Burien Transit Center BRT station is categorized as an urban station.

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.
- Construction at the Brickyard Park-and-Ride will need to avoid the Tolt pipeline

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Right-of-Way and Property Acquisition:

- Right-of-way acquisition and easements as needed to complete the project
- For the Central Kirkland inline station, property acquisition will be needed along both on-ramps to I-405 for the widening of the mainline required by the inline station in the I-405 median
- For the bus-only lanes in the NE 85th Street corridor in Kirkland, property acquisition will be needed along both sides of NE 85th Street between 120th Avenue NE and 6th Street.
- The new and improved flyer stops at Canyon Park, UW Bothell, and Brickyard, the improved Totem Lake in-line station and the new Kingsgate parking garage will be constructed within WSDOT right-of-way
- Per-bus allowance as necessary for construction of a bus base. It assumed that a bus base will be built along this corridor.

Potential Permits/Approvals Needed:

- FHWA approval for modifications to interchanges and ramps
- WSDOT and FHWA approvals for use of and/or crossings of I-5, I-405, SR 518 and SR 509 rights-of-way
- Agreements with WSDOT and King County Metro for use of park-and-rides, outside flyer stops, and in-line stations
- 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)
- All required local, state, and federal environmental permits
- NEPA/SEPA and related regulations

Project Dependencies:

- WSDOT I-405 Master Plan widening projects

Potential Project Partners:

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| <ul style="list-style-type: none"> • WSDOT • Cities of Lynnwood, Bothell, Kirkland, Bellevue, Renton, Tukwila, Seatac, and Burien • UW Bothell • FTA | <ul style="list-style-type: none"> • King County • FHWA • Transit partners serving project: Community Transit & King County Metro |
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Cost:

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In Millions of 2014\$

ITEM	COST	COST WITH RESERVE
Agency Administration	\$36.61	\$39.18
Preliminary Engineering & Environmental Review	\$20.59	\$22.03
Final Design & Specifications	\$39.68	\$42.46
Property Acquisition	\$42.22	\$45.18
Construction	\$404.73	\$433.06
Construction Management	\$35.71	\$38.21
Third Parties	\$9.34	\$9.99
Vehicles	\$57.97	\$62.03
Contingency	\$39.68	\$42.46
Total	\$686.53	\$734.59

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	\$2.15	\$2.30
Sustainability	N/A	N/A
Parking access	\$88.90	\$95.12
Non-motorized (bicycle/pedestrian) access	\$6.98	\$7.47
Bus/rail integration facilities	N/A	N/A

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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 project riders</i>	11,000 — 13,000	The I-405 BRT project definition includes separate operating lines north and south connecting in downtown Bellevue and does not double count the transfers between the two lines at Bellevue.
 Capital Cost <i>Cost in Millions of 2014 \$</i>	\$687 — \$735	
 Annual O&M Cost <i>Cost in Millions of 2014 \$</i>	\$27	
 Travel Time <i>In-vehicle travel time along the project (segment)</i>	87 min	
 Reliability <i>Quantitative/qualitative assessment of alignment/route in exclusive right-of-way</i>	Medium	Operates in general purpose lanes and express toll lanes. Relies on WSDOT to manage the express toll lanes to provide speed and reliability
 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 medium-high number of existing daily transit connections and future integration opportunities with light rail service
 Ease of Non-motorized Access <i>Qualitative assessment of issues and effects related to non-motorized modes</i>	Medium-Low	Low to medium intersection densities with freeways and large parcels barriers to nonmotorized access at some stations.
	Percent of Non-motorized Mode of Access <i>Percent of daily boardings</i>	20-85%
 Connections to PSRC-designated Regional Centers <i>Number of PSRC-designated regional growth and manufacturing/industrial centers served</i>	7 centers	Lynnwood, Bothell Canyon Park, Kirkland Totem Lake, Bellevue Downtown, Renton, SeaTac, Burien
 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 Medium Pop/acre = 2014: 7; 2040: 13 Emp/acre: 2014: 13; 2040: 22 Pop+Emp/acre: 2014: 20; 2040: 34	Moderate support in local and regional plans; approx. 45% land is compatibly zoned Moderate 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>	39% Minority; 13% Low-Income Pop: 2014: 35,500; 2040: 63,400 Emp: 2014: 65,300; 2040: 109,900	

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