

Enhanced Transit: Streetcar or Bus Connection between Downtown Seattle and Capitol Hill Station via First Hill (John Street) (Seattle)

Project Number	N7a
Subarea	North King
Primary Mode Impacted	Link
Facility Type	Link Service
Version Number	2.0
Date Last Modified	5/23/2006

Project Locator Map



Short Project Description

Enhance transit service connections between First Hill, the Central Link light rail line, and downtown Seattle transit hubs with new transit service (streetcar or bus) along the Jackson Street / Broadway Avenue corridor.

Project Purpose: increase regional transit accessibility to First Hill.

Cost and Schedule

Cost (in Millions of 2005\$)

Schedule

Streetcar	Low	High
Agency Admin	\$6.3	\$7.2
Environmental Clearance and PE	\$2.7	\$3.1
Final Design, Specs, Permitting	\$6.8	\$7.8
ROW Acquisition	\$13.1	\$15.1
Construction	\$64.8	\$74.5
Vehicles	\$17.3	\$19.9
Contingency	\$6.3	\$7.2
Total	\$117.3	\$134.9

Proposed Schedule Not Yet Developed

Annual O&M	\$5.0
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Bus	Low	High
Agency Admin	\$0.7	\$0.8
Environmental Clearance and PE	\$0.5	\$0.5
Final Design, Specs, Permitting	\$0.5	\$0.5
ROW Acquisition	\$0.5	\$0.6
Construction	\$3.9	\$4.4
Vehicles	\$5.6	\$6.4
Contingency	\$1.1	\$1.3
Total	\$12.7	\$14.6

Annual O&M	\$3.5
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Design Basis	Conceptual
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Environmental Documentation Required

- Environmental Impact Statement Required
- Environmental Assessment Required
- Environmental Checklist Required

Enhanced Transit: Streetcar or Bus Connection between Downtown Seattle and Capitol Hill Station via First Hill (John Street) (Seattle)

Relationships to Other Projects

Relationship

Project

Complements

N7c Enhanced Transit: Streetcar Extension John Street to Aloha Street (Seattle)

Project Partners

City of Seattle DOT

King County Metro

Long Description

This capital project scope, and the companion capital cost estimate, are intended to include the entire project development cycle (agency and project administration, environmental clearance, design, all aspects of property acquisition, permits, agreements, construction, testing, commissioning and contingencies) from project initiation through the start-up of the revenue operations.

This project would enhance transit service connections between First Hill, the Central Link light rail line, and downtown Seattle transit hubs with new transit service (streetcar or bus) along the Jackson Street / Broadway Avenue corridor. Two options were considered for providing service between International District Station and Capitol Hill Station via Jackson Street, 12th Ave, Boren Avenue, and Broadway:

1. Streetcar
2. New bus route

The streetcar route would extend as far north as John Street. The bus route would provide service from 2nd Ave and Jackson to Aloha Street, as that would be the logical location for bus turnarounds.

Project Elements Included:

Streetcar (Option 1):

- At-grade in-street streetcar generally operating in curbside street lanes in combination of mixed traffic and business access transit-only lanes
- Approximately 2.2 miles in length
- Double-track entire alignment, using a one-way couplet on Jackson / King Street
- Business access transit-only lanes on Jackson (westbound only) from 5th Ave to 12th Ave and on Broadway southbound from James Street to Terrace Street and northbound from Alder Street to Seattle Central Community College at Olive Street
- Streetcar-only lane under I-5 on King Street
- 13 streetcar stops (Seven stops are constructed as a curb bulb-out, six stops fit with existing sidewalk. Amenities include shelters, signage, lighting, seating, and real-time passenger information)
- Light maintenance and vehicle storage facility
- Removal and replacement of the top 12 to 18 inches of pavement in streetcar lanes only
- Transit signal priority at up to 13 intersections
- Transit-only signal phase at 6 intersections
- 1 percent for art per ST policy
- 10 minute peak headways, 15 minute off-peak and weekends, 20 hours per day, 7 days per week
- Skoda-type low-floor vehicles and associated traction power supply facilities including 3 substations and OCS
- One-car trains
- 6 vehicles (including 2 spares)
- Pantograph overhead power supply
- Connection to Waterfront Streetcar on 5th Avenue

Bus (Option 2):

- Transit signal priority at up to 19 intersections
- Transit-only signal phase at 4 intersections
- Business access transit-only lanes on Jackson (westbound only) from 4th Ave to 12th Ave and on Broadway southbound from Olive Street to Terrace Street and northbound from Alder Street to Olive Street
- Enhanced shelters with real-time passenger information at all stops
- Bus bulbs at 5 stops (all other stops are curbside)
- 7 40-ft electric trolley coaches, including one spare
- 1 percent for art per ST policy
- 10-15 minute peak, off-peak and weekends, 20 hours per day, 6 days per week (16 hours per day Sunday)

Utilities:

- Relocation of major parallel water utilities (one 32" line, one 40" line)
- Relocation of overhead trolleybus wires where necessary (no poles)
- Protection and bridging for major utility crossings
- Installation of new poles for pantograph overhead power supply

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Right of-Way and Property Acquisition:

- ROW for maintenance base and vehicle storage
- Purchase of properties for widening to accommodate three 90 degree right turns at intersections
- Allowance for construction laydown area

Mitigation:

- The final project scope will include all mitigation(s) committed to by ST in pertinent, future project-level environmental documents
- Traffic mitigation during construction

Exclusions:

- Non-structural architectural and aesthetic elements in excess of the ST art program
- Replacement of displaced on-street parking
- Grade-separated pedestrian crossings
- Utility undergrounding
- Central radio communications
- Street, sidewalk and utility upgrades or betterments not directly needed to support bus or streetcar facilities and operations
- Demolition of closed bus zones
- Other stop (station) and trackway components and amenities not specifically included
- Ticket vending machines
- Community development fund
- Third party funding agreements

Permits Required:

- Building, electrical, mechanical, utility, construction-related
- Master use
- Street use

Agreements Required:

- City of Seattle
- WSDOT agreement for undercrossing of I-5
- King County Metro

ST has developed scope definitions for ST2 project proposals for the purposes of developing cost estimates, implementation schedules, a financial plan, and the estimation of project benefits. This scope definition should not be construed as a commitment that all defined features will be included in the final developed project.

Evaluation Measures

Measure	Measurement/ Rating: Streetcar	Measurement/ Rating: Bus	Notes
Average Weekday Ridership	3,000	1,000 - 2,000	
Capital Cost	\$117.3 - \$134.9	\$12.7 - \$14.6	in Millions of 2005\$
Annual Operating Cost	\$5.0	\$3.5	in Millions of 2005\$
Travel Time & Reliability	Medium	Medium	
Connectivity & Integration	Medium	Medium	
Land Use & Development	High	High	
Customer Experience	Medium	Medium	
Risk Avoidance	Medium	High	

Enhanced Transit: Streetcar or Bus Connection between Downtown Seattle and Capitol Hill Station via First Hill (John Street) (Seattle)

Key Issues and Benefits

Issues

- It is Sound Transit's policy that light rail lines are "provided primarily in separated rights-of-way with traffic signal preemption ..." (ST Long Range Plan, 07/2005). The streetcar option considered in this project would operate in mixed traffic with signal priority, and in transit-only lanes.
- An exception to this policy to serve First Hill could re-open debate about whether or not Sound Transit should build and operate streetcars, and could call into question the scope of other light rail lines being considered for ST2
- A possible justification for an exception could be that the 1996 Sound Move plan intended for First Hill to be connected to the light rail system with a station, but the station was deleted due to high technical risk.
- The methodology and assumptions for the conceptual design and cost estimate are based on the example set by the Seattle DOT's South Lake Union (SLU) Streetcar Project. The capital cost estimate developed for the First Hill streetcar is based on the assumption that a similar level of stakeholder coordination and cooperation during design and construction as seen for the SLU Streetcar Project will be achieved.

Benefits

- Improves speed, reliability and capacity of transit connections between the First Hill neighborhood, downtown Seattle and Capitol Hill, in lieu of a station on the regional light rail line.
- Streetcar Option 1 may be a catalyst for new mixed use development in the corridor.
- Both options support planning goals and policy being proposed in City of Seattle's Livable South Downtown plan.

Enhanced Transit: Connection between Downtown Seattle and Capitol Hill Station via First Hill - Madison Corridor (Seattle)

Project Number	N7b
Subarea	North King
Primary Mode Impacted	Link
Facility Type	Link Service
Version Number	2.0
Date Last Modified	5/23/2006

Project Locator Map



Short Project Description

Enhance transit service connections between First Hill, the Central Link light rail line, and downtown Seattle transit hubs with bus transit improvements in the Madison Street corridor.

Project Purpose: increase regional transit accessibility to First Hill.

Cost and Schedule

Cost (in Millions of 2005\$)

Schedule

Option 1 - BAT Lanes	Low	High
Agency Admin	\$1.2	\$1.3
Environmental Clearance and PE	\$0.8	\$0.9
Final Design, Specs, Permitting	\$0.8	\$0.9
ROW Acquisition	\$0.8	\$1.0
Construction	\$6.6	\$7.5
Vehicles	\$8.8	\$10.1
Contingency	\$1.8	\$2.0
Total	\$20.7	\$23.8

Proposed Schedule Not Yet Developed

Annual O&M	\$2.5
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Option 2 - Reduce to 4 lanes	Low	High
Agency Admin	\$1.2	\$1.4
Environmental Clearance and PE	\$0.8	\$1.0
Final Design, Specs, Permitting	\$0.8	\$1.0
ROW Acquisition	\$0.9	\$1.0
Construction	\$7.0	\$8.0
Vehicles	\$8.8	\$10.1
Contingency	\$1.8	\$2.1
Total	\$21.4	\$24.6

Annual O&M	\$2.5
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Design Basis	Conceptual
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Environmental Documentation Required

- Environmental Impact Statement Required
- Environmental Assessment Required
- Environmental Checklist Required

Enhanced Transit: Connection between Downtown Seattle and Capitol Hill Station via First Hill - Madison Corridor (Seattle)

Relationships to Other Projects

Relationship

Project

Relationship	Project

Project Partners

City of Seattle DOT

King County Metro

Long Description

This capital project scope, and the companion capital cost estimate, are intended to include the entire project development cycle (agency and project administration, environmental clearance, design, all aspects of property acquisition, permits, agreements, construction, testing, commissioning and contingencies) from project initiation through the start-up of the revenue operations.

This project would enhance transit service connections between First Hill, the Central Link light rail line, and downtown Seattle transit hubs with bus transit improvements in the Madison Street corridor. Two options were considered for this corridor:

1. Business Access Transit-only lanes 1st Avenue to Broadway, with eastbound bus-only contraflow lane from 1st Ave to 6th Ave
2. Removal of center two-way left-turn lane, wider travel lanes and sidewalks from 8th Ave to Summit Ave, with eastbound bus-only contraflow lane from 1st Ave to 6th Ave

Project Elements Included:

- Removal of on-street parking from 1st Ave to Broadway
- Transit signal priority at 8 intersections
- Transit-only signal phase at one intersection
- 1 percent for art per ST policy
- 5 minute peak headways, 10 minute off-peak and weekends, 20 hours per day, 7 days per week
- 11 40-ft electric trolley coaches, including spares
- Enhanced shelters with real-time passenger information at all stops
- Bus-only eastbound contraflow lane from 1st Ave to 6th Ave
- Trolley wire extension one block each of Madison Street, Western Ave, and Marion Street, and on Madison Street from 1st Ave to 6th Ave
- Traction power system upgrade near Broadway and Madison
- Option 1 only: curbside BAT lanes from 6th Ave to Broadway
- Option 2 only: removal of center turn lane from 8th Ave to Broadway, with widened auto travel lanes and sidewalks

Utilities:

- Electrical

Right of-Way and Property Acquisition:

- Miscellaneous easements

Mitigation:

- The final project scope will include all mitigation(s) committed to by ST in pertinent, future project-level environmental documents
- Traffic mitigation during construction

Exclusions:

- Non-structural architectural and aesthetic elements in excess of the ST art program
- Replacement of displaced on-street parking
- Grade-separated pedestrian crossings
- Other stop (station) and trackway components and amenities not specifically included
- Utility undergrounding
- Street, sidewalk and utility upgrades or betterments not directly needed to support bus facilities and operations
- Maintenance base expansion for fleet additions

Permits Required:

- Building, electrical, mechanical, utility, construction-related

Agreements Required:

- City of Seattle
- King County Metro

ST has developed scope definitions for ST2 project proposals for the purposes of developing cost estimates, implementation schedules, a financial plan, and the estimation of project benefits. This scope definition should not be construed as a commitment that all defined features will be included in the final developed project.

Enhanced Transit: Connection between Downtown Seattle and Capitol Hill Station via First Hill - Madison Corridor (Seattle)

Evaluation Measures

<i>Measure</i>	<i>Measurement/ Rating</i>	<i>Notes</i>
Average Weekday Ridership	2,000	
Capital Cost (Option 1)	\$20.7 - \$23.8	in Millions of 2005\$
Capital Cost (Option 2)	\$21.4 - \$24.6	in Millions of 2005\$
Annual Operating Cost (Option 1)	\$2.5	in Millions of 2005\$
Annual Operating Cost (Option 2)	\$2.5	in Millions of 2005\$
Travel Time & Reliability	Medium	
Connectivity & Integration	Medium	
Land Use & Development	High	
Customer Experience	Medium	
Risk Avoidance	High	

Key Issues and Benefits

Issues

- Project scope includes adding service to an existing King County bus route (Route 12) to provide more capacity and greater frequency in the corridor. Estimated operating costs shown are incremental, including an assumed split from the Route 10 and use of a new turnaround in downtown Seattle via Western Avenue.
- Ridership forecast shown above is total daily boardings after adding more frequent service between new terminal on Western and existing turnback at 15th and Madison.
- Project capital cost is roughly split 50/50 across investments supporting higher service level and changes made to streets and signals to improve travel speed. Reliability is improved by both actions.

Benefits

- Improves speed, reliability and service level of transit connections between the First Hill neighborhood and downtown Seattle, in lieu of a station on the regional light rail line.
- Ease of use may improve due to consolidating both directions of travel onto Madison Street in downtown.

Enhanced Transit: Streetcar Extension John Street to Aloha Street (Seattle)

Project Number	N7c
Subarea	North King
Primary Mode Impacted	Link
Facility Type	Link Service
Version Number	2.0
Date Last Modified	5/23/2006

Project Locator Map



Short Project Description

Enhance transit service connections between First Hill, the Central Link light rail line, and downtown Seattle transit hubs with extension of streetcar from John Street to Aloha street along the Jackson Street / Broadway Avenue corridor.

Project Purpose: increase regional transit accessibility to First Hill.

Cost and Schedule

Cost (in Millions of 2005\$)

Schedule

Streetcar	Low	High
Agency Admin	\$1.2	\$1.4
Environmental Clearance and PE	\$0.5	\$0.6
Final Design, Specs, Permitting	\$1.3	\$1.5
ROW Acquisition	\$0.4	\$0.4
Construction	\$13.0	\$15.0
Vehicles	\$5.5	\$6.4
Contingency	\$1.5	\$1.7
Total	\$23.5	\$27.1

Proposed Schedule Not Yet Developed

Annual O&M	\$1.5
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Design Basis	Conceptual
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Environmental Documentation Required

- Environmental Impact Statement Required
- Environmental Assessment Required
- Environmental Checklist Required

Relationships to Other Projects

Relationship	Project
Dependent on	N7a Enhanced Transit: Streetcar or Bus Connection between Downtown Seattle and Capitol Hill Station via First Hill (John Street) (Seattle)

Project Partners

City of Seattle DOT
King County Metro

Enhanced Transit: Streetcar Extension John Street to Aloha Street (Seattle)

Long Description

This capital project scope, and the companion capital cost estimate, are intended to include the entire project development cycle (agency and project administration, environmental clearance, design, all aspects of property acquisition, permits, agreements, construction, testing, commissioning and contingencies) from project initiation through the start-up of the revenue operations.

This project would enhance transit service connections between First Hill, the Central Link light rail line, and downtown Seattle transit hubs with extension of streetcar from John Street to Aloha street along the Jackson Street / Broadway Avenue corridor.

Project Elements Included:

- At-grade in-street streetcar operating in mixed traffic
- Approximately 0.6 miles in length
- Double-track entire alignment of extension except turnback between Roy and Aloha Streets
- 3 streetcar stops (2 constructed as a curb bulb-out, 1 fit into existing sidewalk. Amenities include shelters, signage, lighting, seating, and real time passenger information)
- Removal and replacement of the top 12 to 18 inches of pavement in streetcar lanes only
- Transit signal priority at up to 5 intersections
- 1 percent for art per ST policy
- 10 minute peak headways, 15 minute off-peak and weekends, 20 hours per day, 7 days per week
- Skoda-type low-floor vehicles and associated traction power supply facilities including 1 substation and OCS
- One-car trains
- 1 vehicle
- Pantograph overhead power supply

Utilities:

- Relocation of overhead trolleybus wires where necessary
- Protection and bridging for major utility crossings where necessary
- Installation of new poles for pantograph overhead power supply

Right of-Way and Property Acquisition:

- Miscellaneous easements

Mitigation:

- The final project scope will include all mitigation(s) committed to by ST in pertinent, future project-level environmental documents
- Traffic mitigation during construction

Exclusions:

- Non-structural architectural and aesthetic elements in excess of the ST art program
- Replacement of displaced on-street parking
- Grade-separated pedestrian crossings
- Utility undergrounding
- Community development fund
- Street, sidewalk and utility upgrades or betterments not directly needed to support bus or streetcar facilities and operations
- Demolition of closed bus zones
- Other stop (station) and trackway components and amenities not specifically included
- Fare vending equipment
- Central radio communications
- Third party funding agreements

Permits Required:

- Building, electrical, mechanical, utility, construction-related
- Master use
- Street use

Agreements Required:

- City of Seattle
- King County Metro

ST has developed scope definitions for ST2 project proposals for the purposes of developing cost estimates, implementation schedules, a financial plan, and the estimation of project benefits. This scope definition should not be construed as a commitment that all defined features will be included in the final developed project.

Enhanced Transit: Streetcar Extension John Street to Aloha Street (Seattle)

Evaluation Measures

<i>Measure</i>	<i>Measurement/ Rating</i>	<i>Notes</i>
Average Weekday Ridership	500	Incremental increase over estimate of 3,000 for IDS-John Street
Capital Cost	\$23.5 - \$27.1	in Millions of 2005\$
Annual Operating Cost	\$1.5	in Millions of 2005\$
Travel Time & Reliability	Medium	
Connectivity & Integration	Medium	
Land Use & Development	High	
Customer Experience	Medium	
Risk Avoidance	Medium	

Key Issues and Benefits

Issues

- The methodology and assumptions for the conceptual design and cost estimate are based on the example set by Seattle DOT's South Lake Union (SLU) Streetcar Project. The capital cost estimate developed for the First Hill streetcar is based on the assumption that a similar level of stakeholder coordination and cooperation during design and construction as seen for the SLU Streetcar Project will be achieved.
- Cost estimates are valid for simultaneous construction of this extension with Project N7a (First Hill Streetcar to John Street); additional costs would be encountered if extension were implemented at a later date.

Benefits

- Improves speed, reliability and capacity of transit connections between the First Hill neighborhood and Capitol Hill.
- Enhances service between North Capitol Hill and University Link station at John Street.