

# Link LRT: Conversion of Tacoma Link to Central Link Technology

Project Number	S5
Subarea	Pierce
Primary Mode Impacted	Link
Facility Type	Link Service
Version Number	2.0
Date Last Modified	3/17/2006

**Project Locator Map**



## Short Project Description

Make necessary modifications to existing Tacoma Link to allow future operations using light rail vehicles similar to what will be operating on Central Link.

**Project Purpose:** To allow Tacoma Link to operate light rail vehicles similar to what will be operating on Central Link. Two-car operations from King County could integrate with this system, but four-car trains could not and a transfer would be required (e.g. at Tacoma Dome Station).

## Cost and Schedule

**Cost (In Millions of 2005\$)**

**Schedule**

	Low	High
Agency Admin	\$1.5	\$1.7
Environmental Clearance and PE	\$0.5	\$0.5
Final Design, Specs, Permitting	\$1.1	\$1.3
ROW Acquisition	\$1.4	\$1.6
Construction	\$9.8	\$11.3
Vehicles	\$11.3	\$13.0
Contingency	\$0.9	\$1.0
<b>Total</b>	<b>\$26.5</b>	<b>\$30.4</b>

**Proposed Schedule Not Yet Developed**

**Design Basis** Conceptual

**Additional Annual O&M\*** \$0.1

\* In Millions of 2005 dollars

## Environmental Documentation Required

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

## Relationships to Other Projects

Relationship	Project
Dependent on	Any extensions of system will need to utilize same light rail technology (See S6 and S7)

## Project Partners

Agency	
City of Tacoma	
Pierce Transit	

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## 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 will upgrade the existing Tacoma Link to allow future operations by light rail vehicles (LRV) similar to what will be operated on Central Link. These vehicles are 95-feet long and are capable of being coupled. These LRV's operate on 1500 volt power. Currently, Tacoma Link uses 66-foot modern low floor streetcars serving station platforms that can accommodate vehicles of up to 100 feet in length. Also, Tacoma Link operates with 750 volt power.

Upgrading Tacoma Link to accommodate Central Link LRV's will require lengthening the platforms at each of the five existing stations located along the alignment (Tacoma Dome, S. 25th, Union Station/S. 19th, Convention Center/S. 15th, Theater District/S. 9th). With 2-car trains operating between Tacoma Dome Station and Theater District Station, each platform would have to be extended to 200 feet. The design of the Tacoma Link stations allows for potential expansion to accommodate trains with up to 2 Central Link type LRV's. The upgrade to accommodate 95-foot LRV's will also require modification of the power from 750 volts to 1500 volts.

## Project Elements Included:

- Extension of each Tacoma Link station platform to 200 feet (5 stations total)
- As part of the station platform extensions, provision of additional shelters, signage, lighting, and other amenities similar to what is currently provided at existing Tacoma Link stations.
- Modifying the power for Tacoma Link from 750 volts to 1500 volts; major components of this modification include: replacing insulators and clamps for OCS cantilever, replacing insulators and clamps for OCS cross-span, replacing surge arresters for feeder poles, and replacing the 2 existing substations.
- Replace three existing modern low floor streetcars with 3 LRV's (2 for service and one as a spare)
- Expand existing O+M facility for Tacoma Link
- Bus bridge during power conversion
- 1 percent for art per ST policy

## Utilities:

- Electrical for station lighting.

## Right-of-Way and Property Acquisition:

- Allowances for potential need for construction staging area in downtown Tacoma (10% of construction costs)

## Mitigation:

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

## Exclusions:

- Non-structural architectural and aesthetic elements in excess of the ST art program
- Public restrooms
- Track improvements
- Undergrounding of overhead utilities
- Community development funding

## Permits Required:

- Building, electrical, mechanical, utility, construction-related, City of Tacoma construction permits
- Upgrade from 750V to 1500V will require a new agreement with City of Tacoma as well as potential operating cost increases.

## Agreements Required:

- City of Tacoma

*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.*

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## Evaluation Measures

<i>Measure</i>	<i>Measurement/ Rating</i>	<i>Notes</i>
Average Weekday Ridership	N/A	
Capital Cost	\$26.5 - \$30.4	in Millions of 2005\$
Annual Operating Cost	\$0.1	in Millions of 2005\$
Travel Time & Reliability	N/A	
Connectivity & Integration	High	N/A
Land Use & Development	High	
Customer Experience	Medium	
Risk Avoidance	Medium	

## Key Issues and Benefits

### Issues:

- Rail service closure during the power conversion, platform extension, maintenance facility construction and system testing.
- Slower travel time along downtown route due to lower light rail vehicle speeds required to negotiate the turn westbound on 25th to northbound on Pacific. Turn radius at this location is 90 feet. Central Link design criteria calls for 100-foot minimum radius for in-street operations.
- For 1500 volt power, the minimum height from the top of rail (TOR) to existing overhead wires needs to be 20 feet. In some locations along Tacoma Link, the height between TOR and overhead wires is 18 feet. (August 2003 Operations and Maintenance Plan for Tacoma Link, Section 2.1 - footnote 1) One location is along Commerce where the wire is 18 feet from TOR to clear a pedestrian bridge connected to the Convention Center. Power conversion in this location could require a design deviation.
- Future peak-period demand on Central Link will require four-car trains between Seattle and Federal Way; however, these trains could not continue into downtown Tacoma (even with this project) since the downtown platforms will only accommodate two-car trains. A transfer would be required at a station outside of downtown (e.g. Tacoma Dome or Federal Way.)
- Many features of the existing Tacoma Link infrastructure would be replaced or modified well prior to the end of their useful life (e.g. vehicles and stations).

### Benefits:

- Provides higher capacity rail service to meet future growth in travel demand.