

# Silver Line Phase III

## Boston, Massachusetts

(November 2002)

### Description

The Massachusetts Bay Transportation Authority (MBTA) is proposing to implement Phase III of the Silver Line BRT system, consisting of a tunnel connection between the existing South Station and New England Medical Center Station in downtown Boston. This tunnel provides the operational link connecting Silver Line Phase I, defined as the Washington Street Replacement Service between Dudley Square in Roxbury and downtown, and the Silver Line Phase II, consisting of the tunnel extending from South station to the World Trade Center in the waterfront area combined with service to and from Logan International Airport.

The Phase III project is comprised of a BRT tunnel following alignments along Essex Street and Tremont Street. The Essex Street alignment follows Essex Street between South Station and Boylston Station. Beginning at the new Silver Line Station at South Station (constructed as part of the Silver Line Phase II effort), two additional Silver Line stations will be constructed as part of the Essex Street alignment at the existing Chinatown (Orange Line/Heavy Rail) and Boylston (Green Line/Light Rail) Stations.

This project will provide substantially faster travel time by transit between the Back Bay business district and the Waterfront area. In addition, low-income people living in the Roxbury and South End neighborhoods will have a direct connection to all MBTA subway lines as well as new development in the Waterfront area, including the new Boston Convention and Exhibition Center, and Logan International Airport.

<b>Summary Description</b>	
<b>Proposed Project:</b>	Silver Line Phase III- MBTA 1.06 Miles, 3 Stations
<b>Total Capital Cost (\$YOE):</b>	\$951.9 Million
<b>Section 5309 New Starts Share (\$YOE):</b>	\$571.1 Million (60%)
<b>Annual Operating Cost (2020 \$YOE):</b>	\$9.0 Million
<b>Ridership Forecast (2020):</b>	32,500 Average Weekday Boardings 13,100 Daily New Riders
<b>Opening Year Ridership Forecast:</b>	N/A
<b>FY 2004 Finance Rating:</b>	Medium
<b>FY 2004 Project Justification Rating:</b>	Medium
<b>FY 2004 Overall Project Rating:</b>	Recommended

The overall project rating of *Recommended* is based on the existing high densities in the corridor, the mobility improvements estimated to result from the proposed investment, and the commitment of local funds to construct and operate the project. The overall project rating applies to this *Annual Report on New Starts* and reflects conditions as of November 2002. Project

evaluation is an ongoing process. As New Starts projects proceed through project development, the estimates of cost, benefits, schedules, and impacts are refined. **The FTA ratings and recommendations will be updated annually to reflect new information, changing conditions, and refined financing plans.**

The project includes a proposed Federal share of 60 percent in Section 5309 New Starts funding. The Administration is seeking legislation that would limit the Federal New Starts share to no more than 50 percent beginning in FY2004. Future ratings of this project would be affected by that change.

## Status

In February 1993, the MBTA completed an Alternatives Analysis and selected a 1.5-mile underground transit tunnel from Boylston Station to the World Trade Center combined with surface bus operations as the Locally Preferred Alternative (LPA). This alternative, referred to as the Full Build Transitway, was proposed in response to funding availability. The Final Environmental Impact Statement was completed in December 1993. FTA issued a Record of Decision in May 1994 applicable to the Full Build Transitway.

In 1994, FTA signed a Full Funding Grant Agreement for \$330.73 million with the MBTA for the South Boston Piers Transitway – Phase I that is part of the Full Build Transitway from South Station to the World Trade Center. It is currently under construction and is scheduled to be in revenue operation by December 2003.

Currently, the Silver Line Phase III is the remaining part of the Full Build Transitway (a tunnel connection between South Station and Boylston Station) combined with a continuation of the tunnel under Tremont Street to connect with Washington Street service at New England Medical Center. MBTA is currently working on an Environmental Assessment for Phase III scheduled for completion in the Summer 2003.

Section 3030(a)(86) of the Transportation Efficiency Act for the 21<sup>st</sup> Century (TEA-21) authorizes the “South Boston – Piers Transitway” for Final Design and construction. No Section 5309 New Starts funds have been appropriated for Phase III.

## Evaluation

The following criteria have been estimated in conformance with FTA's *Reporting Instructions for the Section 5309 New Starts Criteria*, updated in June 2002. The project will be reevaluated when it is ready to advance to Final Design, and for next year's *Annual Report on New Starts*.

<b>Project Justification Quantitative Criteria</b>		
<b>Mobility Improvements Rating: High</b>		
	<b><u>New Start vs. Baseline</u></b>	
Average Employment Per Station	144,844	
Average Low Income Households Per Station	2,754	
Transportation System User Benefit Per Project Passenger Mile (Minutes)	27.7	
<b>Environmental Benefits Rating: High</b>		
	<b><u>New Start vs. Baseline</u></b>	
<b><u>Criteria Pollutants Reduced (tons)</u></b>		
Carbon Monoxide (CO)	914	
Nitrogen Oxide (NO <sub>x</sub> )	156	
Hydrocarbons	81	
Particulate Matter (PM <sub>10</sub> )	0.0	
Carbon Dioxide (CO <sub>2</sub> )	46,288	
<b><u>Annual Energy Savings (Million)</u></b>		
BTU	603,661	
<b>Cost Effectiveness Rating: Low</b>		
	<b><u>New Start vs. Baseline</u></b>	
Cost per Transportation System User Benefit (current year dollars/hour)	\$29.99	
<b>Operating Efficiencies Rating: Medium</b>		
	<b><u>Baseline</u></b>	<b><u>New Start</u></b>
System Operating Cost per Passenger Mile (current year dollars)	\$0.29	\$0.29

[ ] indicate an increase in emissions.

## **Project Justification**

### **Rating: Medium**

The *Medium* project justification rating reflects the corridor's exceptionally strong transit-supportive land use environment supported by recent and ongoing new development, as well as current efforts to create higher densities of activity with new development now taking place in the Waterfront area. With the continued improvement in FTA's project evaluation process, including the introduction of the transportation system user benefit measure, the value of proposed transit projects can be more accurately assessed. Accordingly, FTA intends to put additional emphasis on the cost-effectiveness measure. This year, the project has received a "low" rating for cost-effectiveness, which raises concerns about the merits of the project for Federal funding. FTA strongly encourages the sponsor to improve the cost-effectiveness.

Phase III would serve approximately 32,500 average weekday boardings. Based on the 1990 Census data, there are an estimated 3,602 low-income households within ½-mile radius of the proposed stations, or roughly 44 percent of the total households within ½-mile of the proposed stations. There are an estimated 182,198 jobs located within ½-mile of the proposed stations. The Metropolitan Boston area is designated by the U.S. Environmental Protection Agency (EPA) as a “serious non-attainment area” for ozone. The Silver Line phase III project has an incremental cost per incremental trip value of \$18.20.

## **Existing Land Use, Transit-Supportive Land Use Policies and Future Patterns**

### **Rating: High**

The *High* land use rating reflects strong existing land use and favorable transit-supportive policies in the corridor. Population densities, employment densities, plans and proposed development are transit-supportive with pedestrian-minded designs in place.

**Existing Conditions:** The Silver Line study area connects the Washington Street corridor to the downtown financial district and the South Boston Waterfront. The Silver Line is located in an established urban environment limited to redevelopment and infill opportunities with many of Boston’s existing and proposed activity centers located within and adjacent to the Silver Line corridor. Estimates indicate an average population density of 12,047 persons per square mile and 220,373 employees served by the system (base year 1995). Washington Street links multiple distinct neighborhoods with a variety of high-density residential and commercial uses. One in four Boston residents live within five blocks of the corridor. Downtown Boston has major concentrations of office employment, the city’s retail shopping core, most of the city’s major hotels, tourist destinations, major transportation facilities and residential areas. As a result of employment growth and a strong economic climate within the Urban Core, the vacancy rate is two percent for Class A office space. South Boston Waterfront has an increasing number of mixed uses including office, tourist/recreation and residential. Although over half of the land between Fort Point Channel and the Fish Pier is vacant or underutilized, development is continuing at a rapid pace with rezoning, development and infill as demonstrated by the Seaport Public Realm Plan.

**Future Plans, Policies and Performance:** Development in suburban areas and the urban fringe of Boston is limited in many areas by local land conservation policies and a general lack of developable land. In particular, the Seaport Public Realm Plan provided a master plan for the Seaport District (including the South Boston Waterfront and Fort Point areas) including a greater focus on mixed-use development with hotels located near the new Boston Convention and Exhibition Center. The Fort Point District Plan, the South Boston Transportation Study and the Municipal Harbor Plan structure area development within a pedestrian-oriented layout. In addition, the City of Boston and Logan Airport have instituted freezes on commercial parking spaces in the CBD and airport vicinity. Recently completed developments demonstrating a strong orientation toward transit and pedestrian access include the John Joseph Moakley United States Courthouse, the Millennium Development, an air-rights complex directly over South Station, the renovation of the Liberty Tree site for occupancy by the Massachusetts Registry of Motor Vehicles and the construction of a new Suffolk Law School facility.

## Local Financial Commitment

### **Rating: Medium**

The *Medium* local finance commitment rating was determined by the *Medium* rating for the capital finance plan

### **Proposed Non-Section 5309 New Starts Share of Total Project Costs: 40%**

### **Rating: Medium**

The financial strategy for the project assumes Section 5309 New Starts funds and local funds.

## Locally Proposed Financial Plan

<b><u>Proposed Source of Funds</u></b>	<b><u>Total Funding (\$million)</u></b>	<b><u>Percent of Total</u></b>
<b>Federal:</b> Section 5309 New Starts	\$571.1	60.0%
<b>Local:</b> Bond Proceeds	\$380.8	40.0%
<b>Total:</b>	<b>\$951.9</b>	100.0 %

**NOTE:** Funding proposal reflects assumptions made by project sponsors, and are not DOT or FTA assumptions. Total may not add due to rounding.

## Stability and Reliability of Capital Financing Plan

### **Rating: Medium**

The *Medium* rating reflects the strong dedicated revenue streams available to MBTA; however there is only a 40 percent non-Section 5309 New Starts share. The rating also reflects MBTA's

obligation of \$2 billion of transit improvements via an interagency consent order, and a very conservative 50 percent construction cost contingency.

**Agency Capital Financial Condition:** MBTA's capital financial condition is below average. FTA is concerned with the overall vehicle replacement and rehabilitation requirements. The average age of the bus fleet is 12 years; many of MBTA's buses are older than 12 years. The agency does have a comprehensive capital plan to replace many of its aging vehicles over the next five years; however additional maintenance will be required as the fleet ages. FTA is concerned that the agency's unprogrammed capital funding will not be available in future years to meet its fleet management needs. In addition, the Massachusetts Department of Environmental Protection (DEP) and the Massachusetts Executive Office of Transportation Construction (EOTC) entered into a consent order that obligates MBTA to complete approximately \$2 billion in capital projects within specific time frames, including the Silver Line Phase III. Although these projects are included in the MPO's long range plan, the MBTA has not included all projects required under the consent order in its capital plans. The agency has assumed the receipt of significant discretionary Federal funding to complete several of the projects. If all consent order projects were included in MBTA's capital improvement program and/or Federal funding (Section 5309 New Starts funding) was not received at the levels anticipated, MBTA would be forced to re-prioritize its capital program potentially impacting its ability to rehabilitate and maintain its transit systems.

**Capital Cost Estimates and Contingencies:** The capital cost of the project is based on preliminary estimates primarily taken from MBTA's experience with the construction of the Transitway project. The MBTA has provided a very conservative construction contingency of 50 percent since its capital cost estimates have not yet been refined. Specific inflationary assumptions used by MBTA to develop the project's cost have not been provided by MBTA to date.

**Existing and Committed Funding:** All local funding is being provided from already existing sources of funding. The project will need to be included in the MPO's TIP and the entire project budget will need to be included in MBTA's capital investment program. The MBTA has currently programmed \$42 million in local funding for the project in its currently approved capital investment program.

**New and Proposed Sources:** No new sources of funding are proposed for this project.

## **Stability and Reliability of Operating Finance Plan**

### **Rating: Medium**

The *Medium* rating reflects MBTA's ability to operate and maintain its system assuming that the agency is able to control its operating costs in the near future. The impact of the Silver Line Phase III on MBTA's overall operations will be minimal. Projected operating costs of the project approximate one percent of MBTA's overall operating costs.

**Agency Operating Financial Condition:** In its first year of operations (fiscal year 2001) under the "forward funding" mechanism, MBTA realized positive operating results. Sales tax revenues collected were in excess of forecasts and MBTA was successful in implementing a fare increase

while simultaneously realizing ridership gains. In fiscal year 2002, due to present economic conditions, sales tax revenues have declined. However, the MBTA's revenue stream was generally unaffected due to the establishment of a minimum "floor" in the Authority's enabling legislation. MBTA's ability to comply with the consent order and operate and rehabilitate its transit systems is heavily dependent on its ability to control its operating costs.

**Operating Cost Estimates and Contingencies:** Annual net operating and maintenance expenses for the proposed project are estimated to be \$9.0 million in the project's first year of revenue operations. Little information was provided by MBTA regarding its operating and maintenance cost methodology and the service parameters that drive costs. No explanation of the inflationary assumptions for labor or materials were provided, nor was any description of assumed service levels. Information on average fares and passenger trips for both the project and the entire system was also absent.

**Existing and Committed Funding:** The MBTA's operating and maintenance funding will be drawn from the dedicated revenues that are currently already available to the agency.

**New and Proposed Funding Sources:** No new sources of funding are proposed for use with this project.

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