



# BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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Arnold J. Soolman  
Director, MPO Staff

The Boston Region MPO,  
the federally designated  
entity responsible for  
transportation decision-  
making for the 101 cities  
and towns in the MPO  
region, is composed of:

MassDOT Office of Planning and  
Programming  
City of Boston  
City of Newton  
City of Somerville  
Town of Bedford  
Town of Braintree  
Town of Framingham  
Town of Hopkinton  
Metropolitan Area Planning Council  
Massachusetts Bay Transportation  
Authority Advisory Board  
Massachusetts Bay Transportation  
Authority  
MassDOT Highway Division  
Massachusetts Port Authority  
Regional Transportation Advisory  
Council (nonvoting)  
Federal Highway Administration  
(nonvoting)  
Federal Transit Administration  
(nonvoting)

## MEMORANDUM

**DATE** April 1, 2010  
**TO** Transportation Planning and Programming Committee  
of the Boston Region Metropolitan Planning Organization  
**FROM** Arnold J. Soolman, CTPS Director  
**RE** Work Program for: Analysis of Silver Line Service to Airport Station  
and Chelsea

### ACTION REQUIRED

Review and approval

### PROPOSED MOTION

That the Transportation Planning and Programming Committee of the Boston Region Metropolitan Planning Organization, upon the recommendation of the Massachusetts Department of Transportation, vote to approve the work program for Analysis of Silver Line Service to Airport Station and Chelsea in the form of the draft dated April 1, 2010.

### PROJECT IDENTIFICATION

Unified Planning Work Program Classification  
Technical Support/Operations Analysis

CTPS Project Number  
23318

Client  
Massachusetts Department of Transportation  
*Project Supervisor:* Scott Hamwey

CTPS Project Supervisors  
*Principal:* Karl Quackenbush  
*Manager:* Scott Peterson

Funding  
New MBTA Task Order

## IMPACT ON MPO WORK

The MPO staff has sufficient resources to complete this work in a capable and timely manner. By undertaking this work, the MPO staff will neither delay the completion of nor reduce the quality of other work in the UPWP.

## BACKGROUND

MBTA Silver Line Bus Rapid Transit service presently operates between South Station and Logan Airport, making five stops at the airport. However, the existing service does not connect to the Blue Line and does not directly serve any community directly adjacent to the airport. The objectives of this study are to investigate the possibility of extending the existing Silver Line service to a connection with the Blue Line at Airport Station, and to study the potential to extend service beyond Airport Station to the city of Chelsea. The project will be undertaken as part of the FFY 2009 MBTA Unified Planning Work Program tasks.

## OBJECTIVES

The principal objectives of this work program are:

- To examine existing travel patterns using surveys and travel demand model flows
- To develop service plans to maximize service in response to demand
- To measure the demand in the corridor using the competing modes
- To document the assumptions, methodology, and results of the analysis
- To provide general planning support to MassDOT in this effort

## WORK DESCRIPTION

CTPS will support Analysis of Silver Line Service to Airport Station and Chelsea being advanced by MassDOT using a forecast year of 2020. CTPS will also examine the benefits of using the East Boston Bypass and proposed Grand Junction Railroad busway as a means to improve mobility in this corridor.

### Task 1 Perform Base-Year Model Calibration

The transit component of the current CTPS travel model is calibrated to 2006 ridership data. For the purposes of this study, CTPS will update the base-year model to the year 2008. For model calibration, CTPS will utilize the most current transit ridership data, pedestrian information, and traffic counts, and the recently completed transit onboard survey data.

The model will be calibrated and validated to 2008 conditions. The transportation services being calibrated include the transit lines (focusing on the Silver Line and Blue Line), existing bus routes (focusing on Route 112), and commuter rail lines. Also, key intersections in the corridor—those for which traffic volume impacts will be required—

will be examined, as necessary, in order to properly replicate existing observed volumes. Travel times and speeds on the roadways will be examined as well.

The results of running the base-year model will be summarized in sufficient detail to provide transit and traffic volumes at key intersections in the study area using the Regional Travel Demand Model and the Logan Ground Access Model.

*Product(s) of Task 1*

A well-calibrated travel demand model set, with outputs showing the transit, highway, air quality, and travel characteristics of the transportation system.

**Task 2 Prepare Inputs for Forecast Years**

CTPS will produce inputs for the forecast the year 2020. Model inputs— socioeconomic data, congested highway travel times, auto-operating costs, CBD parking costs, transit fares, and travel times—will be consistent with the currently adopted land use and background transportation projects assumed in the 2008 amended Regional Transportation Plan (RTP) and in the SIP.

*Product(s) of Task 2*

Model inputs for the forecast year.

**Task 3 Conduct No-Build Model Runs for the Forecast Year**

Using the model work done for the RTP, CTPS will create the no-build network for the 2020 forecast year. The results will be summarized at the same levels of detail as for the base year. The no-build model set will be run twice, once having the East Boston Bypass open only to commercial vehicles and a second time with it open to mixed traffic to develop estimates of ranges of travel times that can be used in Task 4.

*Product(s) of Task 3*

A complete summary of travel and air quality forecasts for the no-build scenarios.

**Task 4 Develop Service Plan Scenarios for Three Alternatives**

Several service scenarios will be developed to determine stop locations and headways to be modeled. In each scenario, consideration will be especially paid to fare policy as well to the possible continuing presence of Massport shuttle services to the Airport Station. A maximum of 5 service plans will be developed for this project. The alternatives the service plans will be developed for are:

1. Reroute bus Route 112 to Airport Station with frequency improvements via East Boston Bypass and Central Avenue. This alternative will be examined

with different assumptions for the East Boston Bypass, once with it open only to commercial traffic and a second time with it open to mixed traffic.

2. Implement new Silver Line route from the Chelsea commuter rail station to South Station via the proposed Grand Junction Railroad busway in Chelsea, East Boston Bypass, and Airport Station, with one additional intermediate stop in Chelsea.
3. Implement new Silver Line route from Chelsea at Bellingham Square to South Station via Central Avenue, East Boston Bypass, and Airport Station, with one additional intermediate stop in Chelsea.

*Product of Task 4*

Service plan scenarios for modeling in the next task.

Task 5 Examine Alternatives Using Different Service Plans

Pivoting off of the 2020 no-build, a maximum of 5 model runs will be made to test various service plans associated with the three alternatives identified in task 4.

*Product(s) of Task 5*

A summary of key travel and air quality characteristics for the build scenarios.

Task 6 Estimate Capital and Operating Costs

Estimates of capital and operating costs will be developed for each of the various modeled service scenarios.

*Product of Task 6*

Capital and operating cost estimates for each of the various service scenarios modeled

Task 7 Document Results

The results of Tasks 1 through 6 will be documented in a technical memorandum

*Product of Task 7*

Technical memorandum

Task 8 Provide General Support to MassDOT

Provide general support to MassDOT, via planning, modeling, and/or coordination with stakeholders, in the development and analysis of this project.

*Product(s) of Task 8*  
General support.

#### ESTIMATED SCHEDULE

It is estimated that this project will be completed 6 months after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 2.

#### ESTIMATED COST

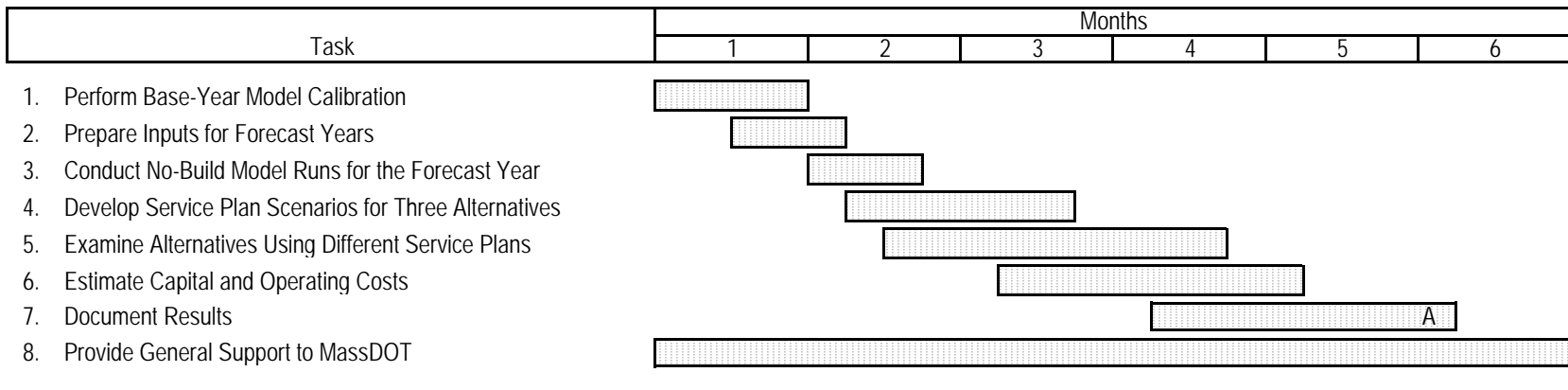
The total cost of this project is estimated to be \$59,500. This includes the cost of 22.0 person-weeks of staff time, overhead at the rate of 88.99 percent, and travel. A detailed breakdown of estimated costs is presented in Exhibit 3.

KQ/SP/sp

Exhibit 1



Exhibit 2  
**ESTIMATED SCHEDULE**  
 Analysis of Silver Line Service to Airport Station and Chelsea



Products/Milestones  
 A: Technical memorandum

Exhibit 3  
**ESTIMATED COST**  
 Analysis of Silver Line Service to Airport Station and Chelsea

<b>Direct Salary and Overhead</b>	<b>\$59,500</b>
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Task	Person-Weeks						Direct Salary	Overhead (@ 88.99%)	Total Cost
	M-1	P-5	P-4	P-3	P-2	Total			
1. Perform Base-Year Model Calibration	0.3	3.5	0.0	0.0	0.2	4.0	\$6,164	\$5,485	\$11,648
2. Prepare Inputs for Forecast Years	0.1	0.2	1.0	0.5	0.0	1.8	\$2,217	\$1,973	\$4,190
3. Conduct No-Build Model Runs for the Forecast Year	0.2	0.2	1.2	0.0	0.5	2.1	\$2,537	\$2,258	\$4,796
4. Develop Service Plan Scenarios for Three Alternatives	0.2	0.4	1.4	0.0	0.0	2.0	\$2,673	\$2,379	\$5,052
5. Examine Alternatives Using Different Service Plans	0.5	3.7	0.0	1.2	0.0	5.4	\$7,953	\$7,078	\$15,031
6. Estimate Capital and Operating Costs	0.5	1.0	2.0	0.0	0.0	3.5	\$4,854	\$4,319	\$9,173
7. Document Results	0.5	1.0	0.0	0.3	0.0	1.8	\$2,671	\$2,377	\$5,048
8. Provide General Support to MassDOT	0.5	1.0	0.0	0.0	0.0	1.5	\$2,414	\$2,148	\$4,562
Total	2.8	11.0	5.6	1.9	0.7	22.0	\$31,483	\$28,017	\$59,500

<b>Other Direct Costs</b>	<b>\$0</b>
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<b>TOTAL COST</b>	<b>\$59,500</b>
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*Funding*  
 New MBTA Task Order