



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Stephanie Pollack, MassDOT Secretary and CEO and MPO Chair
Karl H. Quackenbush, Executive Director, MPO Staff

MEMORANDUM

DATE July 20, 2017
TO Boston Region Metropolitan Planning Organization
FROM Karl H. Quackenbush, Executive Director
RE Work Program for the North-South Rail Link Feasibility Reassessment

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization (MPO), upon the recommendation of the Massachusetts Department of Transportation (MassDOT), votes to approve the work program for the North-South Rail Link Feasibility Reassessment presented in this memorandum

Project Identification

Unified Planning Work Program Classification

Agency and Other Client Transportation Planning Studies and Technical Analyses

CTPS Project Number

11157

Client

MassDOT, Office of Transportation Planning
Project Supervisor: Scott Hamwey

CTPS Project Supervisors

Principal: Scott Peterson
Manager: Florence Ngai

Funding

MassDOT Contract # (to be determined)

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 any work in the Unified Planning Work Program.

Background

The North-South Rail Link project is a proposal to connect Boston's North Station and South Station by rail. The rail link would provide more transit connectivity to the region by connecting transit markets. Currently, people traveling by rail between these stations must make two or more transfers. The rail link would allow for a one-seat ride. A Draft Environmental Impact Report (DEIR) for this project was undertaken between 1995 and 2003; however, the project was not pursued at the time. Since 2003, Boston has experienced many changes in economy, land use, and transportation demand, and construction technology has also improved at the same time. This study is a feasibility reassessment that will update any prior work and determine whether further technical and financial analyses are necessary.

Central Transportation Planning Staff (CTPS) personnel time and budget estimates reflect attendance at a maximum of two public meetings and five project team meetings. CTPS will also fulfill any data requests from the project team for which the data are readily available.

Objectives

The principal objectives of this work program are as follows:

1. Perform a market analysis for the North-South Rail Link project
2. Provide modeling support to the project team to examine the existing roadway and transit conditions and future-year forecasts

Work Description

The five tasks in this work program are described below.

Task 1 Coordinate with Project Team and Review Previous Studies and Plans

CTPS will provide modeling support to the project team over an eight-month period to update ridership estimates and assess the benefits and burdens associated with this project. CTPS will work with the project team throughout the study. In the event of project delays beyond the control of CTPS, the timing of project deliverables will be consistent with revised schedules set by the project team.

CTPS will review previous studies and plans associated with the North-South Rail Link proposal. These plans and studies include the 2003 Major Investment Study (MIS) and DEIR, the 1995–97 technical memorandum, and documentation from the Central Artery Rail Link Task Force.

Products of Task 1

- Understanding and knowledge regarding the project and its history
- Coordination with the project team, attendance at meetings, and other assistance as needed

Task 2 Conduct a Market Analysis

CTPS will conduct a market analysis for this project to understand the potential geographic markets that could benefit from the rail link. This will involve identifying suburb-to-suburb and city-to-city pairings to determine which markets are likely beneficiaries of the rail link, and attempting to quantify the travel demand between the markets. In conducting this analysis, CTPS will review travel patterns from U.S. Census Bureau data and the 2011 Massachusetts Travel Survey. CTPS will also conduct a geographic information system (GIS) analysis of potential markets using trip tables from the Boston regional model sets. In addition, CTPS will identify the suburban areas where a mode shift could potentially happen.

Under the direction of the project team, CTPS will conduct a second market analysis focused on areas in the vicinity of commuter rail stations. The project team will analyze development-policy interventions, identify the areas, and provide CTPS with the land use data needed for the market analysis.

Product of Task 2

- Technical memorandum documenting findings and assumptions

Task 3 Estimate Ridership

Subtask 3.1 Perform Base-Year Model Calibration for the Study Area

CTPS will perform a base-year model calibration for the study area. This task consists of refining and enhancing the Boston region model set for all of eastern Massachusetts, which is the market area for the commuter rail system. Specific attention will be paid to the core area and several stations there—South Station, North Station, and Back Bay Station.

The results of running the base-year model will be summarized in sufficient detail to provide systemwide statistics, such as daily boardings and alightings during the AM peak period (6:00 AM to 9:00 AM) and the PM peak period (3:00 PM to 6:00 PM). CTPS will also perform calibration and summarization of the regional highway networks, paying particular attention to the facilities that provide connections between the markets identified in Task 2.

Products of Subtask 3.1

- Calibrated base-year model
- Graphic and tabular summaries of relevant roadway and transit data

Subtask 3.2 Model a 2040 No-Build Scenario

CTPS will model a 2040 No-Build scenario based upon the transportation network in the Boston Region MPO's Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*. The results will be summarized in the same fashion as in Subtask 3.1. In addition, CTPS will summarize the travel patterns by transit corridor and at key stations such as North Station, South Station, and Back Bay Station.

The assumptions underlying the 2040 No-Build scenario will be consistent with those in the LRTP and MassDOT's Capital Investment Plan, and/or other major investment projects under the direction of the project team.

Products of Subtask 3.2

- No-Build scenario
- Tabular summaries of ridership for system and lines, for key modes
- Tabular summaries of traffic volume on key roadways
- Tabular summaries of travel patterns by transit corridor and at key stations

Subtask 3.3 Model 2040 Build Scenarios

The 2040 Build scenarios will include five alternatives and eight scenario runs. Three of the alternatives will test the two-track two-station tunnel and four-track three-station tunnel scenarios, and the remaining two alternatives will test surface-only infrastructure. The service plans that these scenarios will be based on will be developed by the project team. CTPS will perform detailed analyses of the model results, which will include close examination of the travel time associated with different scenarios and origin-destination pairs. CTPS will also monitor traffic volumes on key roadways in the study area to gauge the impact the project may have on highways. A crowding analysis will also be performed to gauge the impact the project will have on parallel transit services.

Products of Subtask 3.3

- Tabular summaries of ridership for system and lines, for key modes
- Tabular summaries of traffic volume on key roadways

Subtask 3.4 Model 2040 Post-Model Run Alternatives

CTPS will perform two post-model analyses for two build alternatives in Subtask 3.3. One of the alternatives will involve variations of the two tunnel scenarios. The objective is to examine the potential effect on ridership of current zoning and regulations that encourage transit-oriented developments around commuter rail stations in suburban communities, and widespread access to affordable and reliable first- and last-mile transportation options in these communities.

Products of Subtask 3.4

- Tabular summaries of ridership for the system and for key modes

Task 4 Support of Economic, Environmental, and Health Analyses

CTPS will perform air quality and environmental justice analyses, as well as supply data to the project team to support analyses that will determine economic impacts. CTPS will also provide the project team PM peak period data for a health impact assessment.

Products of Task 4

- Tabular summaries of the results of air quality and environmental justice analyses, as well as supporting data for economic and health analyses

Task 5 Prepare a Final Memorandum or Report

CTPS will produce a final memorandum or report that will summarize the findings of the study.

Product of Task 5

- Memorandum or report

Estimated Schedule

It is estimated that this project will be completed eight months after work commences. A detailed breakdown of the schedule is presented in Exhibit 1.

Estimated Cost

The total cost of this project is estimated to be \$251,765. This includes the cost of 76.5 person weeks of staff time and overhead at the rate of 105.66%. A detailed breakdown of estimated costs is presented in Exhibit 2.

Exhibit 1
ESTIMATED SCHEDULE
North-South Rail Link Feasibility Reassessment

Task	Month							
	1	2	3	4	5	6	7	8
1. Coordinate with Project Team and Review Previous Studies and Plans	[Task 1: Months 1-8]							
2. Conduct a Market Analysis	[Task 2: Months 1-2]							
3. Estimate Ridership	[Task 3: Months 1-7]							
4. Support Economic, Environmental, and Health Analyses				[Task 4: Months 3-7]				
5. Prepare a Final Memorandum or Report							[Task 5: Months 7-8]	

Exhibit 2
ESTIMATED COST
North-South Rail Link Feasibility Reassessment

Direct Salary and Overhead									\$251,765
Task	Person-Weeks					Direct Salary	Overhead (105.66%)	Total Cost	
	M-1	P-5	P-4	P-3	Total				
1. Coordinate with Project Team and Review Previous Studies and Plans	3.0	1.5	1.0	0.0	5.5	\$9,821	\$10,377	\$20,198	
2. Conduct a Market Analysis	1.1	2.1	0.0	2.2	5.4	\$8,759	\$9,255	\$18,014	
3. Estimate Ridership	11.5	10.0	12.1	10.5	44.1	\$70,139	\$74,109	\$144,248	
4. Support Economic, Environmental, and Health Analyses	3.0	4.0	2.4	5.1	14.5	\$22,789	\$24,078	\$46,867	
5. Prepare a Final Memorandum or Report	2.5	0.0	4.5	0.0	7.0	\$10,910	\$11,527	\$22,437	
Total	21.1	17.6	20.0	17.8	76.5	\$122,418	\$129,347	\$251,765	
Other Direct Costs									\$0
TOTAL COST									\$251,765

Funding
 MassDOT Contract TBD