BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Stephanie Pollack, MassDOT Secretary and CEO and MPO Chair
Tegin L. Teich, Executive Director, MPO Staff

WORK PROGRAM

GREEN LINE CORRIDOR TRANSFORMATION

OCTOBER 15, 2020

Proposed Motion

The Boston Region Metropolitan Planning Organization (MPO) votes to approve this work program.

Project Identification

Unified Planning Work Program (UPWP) Classification

Agency and Other Client Transportation Planning Studies and Technical Analyses

Project Number 22217

Client

Massachusetts Department of Transportation (MassDOT), Office of Transportation Planning
Client Supervisor: Doug Johnson

Project Supervisors

Principal: Marty Milkovits
Manager: Bruce Kaplan

Funding Source

MassDOT Contract Federal Fiscal Year 2020 SPR | Work Program Task A.27

Schedule and Budget

Schedule: Twelve months from notice to proceed

Budget: $157,000

Schedule and budget details are shown in Exhibits 1 and 2, respectively.

Relationship to MPO Work

This study is supported in full with non-MPO funding. Committing MPO staff to this project will not impinge on the quality or timeliness of MPO-funded work.

Background

The Green Line, the oldest portion of the Massachusetts Bay Transportation Authority's (MBTA) rapid transit system, is the longest light rail system in the United States. It serves more than 200,000 riders on an average day, delivering robust accessibility and mobility to residents and visitors alike. Despite its utility, the Green Line is plagued by challenges along various surface (above ground) segments, including short distances between stops that contribute to travel delays, and the inaccessibility of many stops to riders with disabilities. MassDOT and the MBTA have been conducting extensive work over the past few years to modernize and upgrade the Green Line. The Central Transportation Planning Staff (CTPS) assisted in these analyses in 2017 and 2018, under the *Green Line Corridor Study*, particularly examining the Green Line's short- and long-term capacity and demand needs.

MassDOT is currently studying stop reconfiguration concepts, accessibility enhancements, and corridor alternatives along the surface subsections of the Green Line branches. CTPS has been requested to assist MassDOT and its study team with this work. With the completion of this study, the MBTA will be well-positioned to implement a strategic improvement and action plan along the Green Line corridor.

Objective(s)

The objectives of this work program are to support MassDOT and its project team by the following means:

1. Collecting data about current Green Line use, service levels, and competing modes
2. Assisting in the development of transit service planning scenarios, including a potential extension of the E Line branch to Hyde Square
3. Assisting in the analysis of Green Line surface station consolidation scenarios
4. Using the Boston Region travel demand model set to assess the existing Green Line conditions, and to analyze various transit improvement scenarios for the two different horizon years, 2030 and 2040

Work Description

The nine tasks in this work program are described below.

Task 1 Coordinate with and Support Project Team

Staff will provide support to the project team. In the event of project delays beyond the control of CTPS, the timing of project deliverables will be consistent with a revised schedule developed in collaboration with the project team.

Products of Task 1

- Coordination with the project team
- Attendance at as many as seven internal meetings
- Attendance at as many as two external meetings
- Review of project team documents

Task 2 Data Gathering to Support the Analysis

CTPS will support the project team by obtaining, collecting, and sharing data on transit service operational characteristics, transit usage, and demographics along the Green Line corridor. Staff will coordinate with the project team to achieve consensus on data sets to be used in technical analyses.

Products of Task 2

Consistent data sets that can be used for demand modeling and other technical work by the project team

Task 3 Perform Base-Year Model Calibration for the Study Area

This task consists of refining and enhancing the Boston Region MPO's travel demand model set for the areas currently served by the Green Line. Staff will pay particular attention to replicating existing conditions for the surface stations on the Green Line branches, adjacent corridor bus routes (39, 57), and the surrounding roadways. Staff will also compile available study area transit and roadway counts. The results of running the base-year model will be summarized in sufficient detail to provide systemwide transit and study area-specific transit data, such as daily boardings, alightings, access-mode shares at Green Line surface stations, and boardings on selected parallel bus routes, particularly during the AM peak period (6:00 AM to 9:00 AM) and the PM peak period (3:00 PM to 6:00 PM).

Products of Task 3

- A multimodal travel demand model set calibrated to the study area
- Graphic and tabular summaries of relevant roadway, nonmotorized, and transit data, including analyses of volume-to-capacity ratios and peak loads

Task 4 Model the 2030 and 2040 No-Build Scenario

Staff will develop the 2030 and 2040 no-build scenarios based on the most recent demographic assumptions and multimodal transportation networks in the Boston Region MPO's Long-Range Transportation Plan, and in consultation with the project team. The regional travel demand model set's mode choice and assignment components will be used to prepare the same categories of estimated traffic and transit volumes for this scenario that were generated in Task 3 for the base year, so that the base-year and no-build scenarios can be compared.

Products of Task 4

- No-build scenarios for 2030 and 2040

- Graphic and tabular summaries of relevant roadway, nonmotorized, and transit data, including analyses of volume-to-capacity ratios and peak loads

Task 5 Model Enhancement Scenarios for the Individual Green Line Branches

Based on input from the project team, staff will model scenarios containing future improvements proposed for the B, C and E Green Line branch surface corridors for both 2030 and 2040. A discrete package of improvements will be modeled separately for each of these Green Line branches. Staff will summarize the results in the same fashion as in Task 4, so that the results can be compared with each other, and the base-year and no-build scenarios. These scenarios will each use the same 2030 and 2040 trip tables produced by the regional travel demand model set's trip generation and trip distribution model routines in Task 4.

Products of Task 5

- Individual enhancement scenarios for the Green Line B, C, and E branches for 2030 and 2040
- Graphic and tabular summaries of relevant roadway, nonmotorized, and transit data, including analyses of volume-to-capacity ratios and peak loads

Task 6 Model a Combined Enhancement Scenario for the Green Line

Based on input from the project team, staff will model a scenario containing all of the future improvements proposed for the B, C, and E Line surface corridors in Task 5, and will summarize the results in the same fashion as in Task 4, so that the results can be compared with the other modeled scenarios. This scenario will use the same 2030 and 2040 trip tables produced by the regional travel demand model set's trip generation and trip distribution model routines in Task 4.

Products of Task 6

- Combined Green Line Branch Enhancement scenarios for 2030 and 2040
- Graphic and tabular summaries of relevant roadway, nonmotorized, and transit data, including analyses of volume-to-capacity ratios and peak loads

Task 7 Model E Line Extension Scenario

Staff will model a scenario, with input from the project team and based on Task 6's combined enhancement scenario, that extends Green Line E branch service from Heath Street to Hyde Square. This alternative may also involve modifications to roadways and other transit services along the E Line surface corridor. Staff will summarize the results in the same fashion as in Task 4, so that the results can be compared with the other modeled scenarios. However, parallel MBTA services in this corridor, specifically Route 39, will be analyzed in greater detail than in the earlier tasks. These scenarios will each use the same 2030 and 2040 trip tables produced by the regional travel demand model set's trip generation and trip distribution model routines in Task 4.

Products of Task 7

- E Line Extension scenarios for 2030 and 2040
- Graphic and tabular summaries of relevant roadway, nonmotorized, and transit data, including analyses of volume-to-capacity ratios and peak loads

Task 8 Perform Environmental Justice Analyses

CTPS will conduct environmental justice analyses for modeled scenarios selected by MassDOT and the MBTA. After identifying communities of concern, specified performance measures (accessibility to health care, higher education, and jobs; mobility and congestion; and environmental impacts) will be used as indicators of benefits and burdens for environmental justice and non-environmental justice communities. Primary analytical focus will most likely be placed on the E Line Extension scenario, as this scenario was identified in the *Go Boston 2030* study as a way to offer better transit connections to an existing environmental justice community. Analysis will be conducted in accordance with local, state, and federal environmental justice policy guidance.

Products of Task 8

- Tabular summaries of the results of the environmental justice analyses
- Brief memorandum documenting the findings, including disproportional burdens and disproportional benefits analyses

Task 9 Document Methodology and Results

CTPS staff will produce a memorandum that summarizes the methodology and findings of the project. Staff will also assist the project team with products connected to the modeling results.

Products of Task 9

- Brief memorandum documenting the project's methodology and results
- Archived electronic version of salient project materials for future reference

The Boston Region Metropolitan Planning Organization (MPO) operates its programs, services, and activities in compliance with federal nondiscrimination laws including Title VI of the Civil Rights Act of 1964 (Title VI), the Civil Rights Restoration Act of 1987, and related statutes and regulations. Title VI prohibits discrimination in federally assisted programs and requires that no person in the United States of America shall, on the grounds of race, color, or national origin (including limited English proficiency), be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination under any program or activity that receives federal assistance. Related federal nondiscrimination laws administered by the Federal Highway Administration, Federal Transit Administration, or both, prohibit discrimination on the basis of age, sex, and disability. The Boston Region MPO considers these protected populations in its Title VI Programs, consistent with federal interpretation and administration. In addition, the Boston Region MPO provides meaningful access to its programs, services, and activities to individuals with limited English proficiency, in compliance with U.S. Department of Transportation policy and guidance on federal Executive Order 13166.

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A complaint form and additional information can be obtained by contacting the MPO or at http://www.bostonmpo.org/mpo_non_discrimination. To request this information in a different language or in an accessible format, please contact

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Boston Region MPO
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Boston, MA 02116
civilrights@ctps.org
857.702.3700 (voice)
617.570.9193 (TTY)

Exhibit 1
ESTIMATED SCHEDULE
Green Line Corridor Transformation

Task	Month 1	2	3	4	5	6	7	8	9	10	11	12
1. Coordinate with and Support Project Team												
2. Data Gathering to Support the Analysis												
3. Perform Base-Year Model Calibration for the Study Area												
4. Model the 2030 and 2040 No-Build Scenarios												
5. Model Enhancement Scenarios for the Individual Green Line Branches												
6. Model a Combined Enhancement Scenario for the Green Line												
7. Model E Line Extension Scenario												
8. Perform Environmental Justice Analyses												
9. Document Methodology and Results												

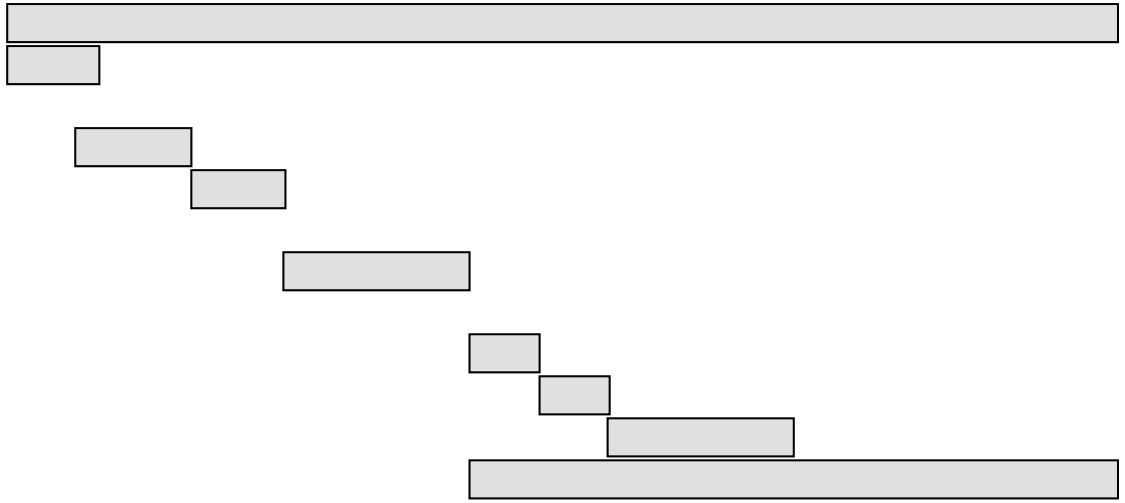

Exhibit 2
ESTIMATED COST
Green Line Corridor Transformation

Direct Salary and Overhead	**$157,000**

	Task	Person-Weeks M-1	P-5	P-4	P-2	Total	Direct Salary	Overhead (106%)	Total Cost
1.	Coordinate with and Support Project Team	1.5	2.0	0.0	0.0	3.5	$6,762	$7,168	$13,931
2.	Data Gathering to Support the Analysis	0.8	2.0	0.0	0.0	2.8	$5,368	$5,690	$11,058
3.	Perform Base-Year Model Calibration for the Study Area	1.0	5.0	0.0	0.0	6.0	$11,792	$12,500	$24,292
4.	Model the 2030 and 2040 No-Build Scenarios	0.5	4.0	0.0	0.0	4.5	$8,876	$9,409	$18,284
5.	Model Enhancement Scenarios for the Individual Green Line Branches	0.8	8.0	0.0	0.0	8.8	$17,287	$18,324	$35,611
6.	Model a Combined Enhancement Scenario for the Green Line	0.5	2.0	0.0	0.0	2.5	$4,903	$5,197	$10,100
7.	Model E Line Extension Scenario	0.5	3.0	0.0	0.0	3.5	$6,889	$7,303	$14,192
8.	Perform Environmental Justice Analyses	0.2	0.2	1.2	3.0	4.7	$6,022	$6,384	$12,406
9.	Document Methodology and Results	1.5	2.5	0.0	0.5	4.5	$8,313	$8,812	$17,126
	Total	7.2	28.8	1.2	3.5	40.7	$76,214	$80,787	$157,000

Other Direct Costs	**$0**

TOTAL COST	**$157,000**

Funding

MassDOT Contract FFY 2020 SPR | Work Program Task A.27