



# BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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## WORK PROGRAM

### I-90 ALLSTON MULTIMODAL MODELING PHASE 2

JANUARY 18, 2024

#### 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** 13809

##### Client

Massachusetts Department of Transportation (MassDOT) Highway Division

*Client Supervisor: Susan Harrington*

##### Project Supervisors

*Principal: Rosemary McCarron*

*Manager: Ben Dowling*

##### Funding Source

MassDOT On-Call Support Contract

#### Schedule and Budget

**Schedule:** Seven months from notice to proceed

**Budget:** \$250,000

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

This work program will expand upon prior Central Transportation Planning Staff (CTPS) work modeling of the Allston Multimodal Project. The project is expected to dramatically improve livability and connectivity for residents of the Allston neighborhood of Boston. It will enhance regional mobility through improvements to Interstate 90 (I-90) and its abutting interchange and create a new stop on the Worcester/Framingham commuter line, to be known as West Station.

CTPS has previously provided support for this project's planning efforts, most recently under a Phase 1 scope (approved by the Boston MPO in June 2023). MassDOT and its project team are currently developing a Supplemental Draft Environmental Impact Report and have requested that CTPS produce travel-demand forecasts to help understand the transportation impacts and opportunities of the project.

## Objective(s)

CTPS will support MassDOT, project stakeholders, and the project team by using the CTPS regional travel demand model set to produce data on highway volumes, transit volumes, and mode splits in the study area for multiple model scenarios.

## Work Description

As described in Tasks 1 through 6 below, CTPS will estimate transit ridership and roadway volumes for I-90, the Allston Interchange, and the surface roadway network surrounding the interchange. This work is the continuation of prior modeling efforts for this study.

### **Task 1 Model One Base Year Scenario**

CTPS will model one base year scenario to include a new split zone for Transportation Analysis Zone (TAZ) 246 and reconfigured centroid connectors to produce highway assignments for TAZ 246 and the new TAZ. This base year scenario will incorporate land use data from MAPC's updated UrbanSim run based on input from Harvard University and the City of Boston on existing conditions.

#### ***Products of Task 1***

- Trip generation estimates for the immediate study area by TAZ
- Mode splits for the immediate study area
- AM and PM peak-period network plots with roadway-link volumes
- Trip tables by time period and by mode for all modeled modes that serve the study area, aggregated at a geography defined by MassDOT and the project team

- Tabular daily and peak-period summaries of systemwide route-level ridership for the Worcester/Framingham commuter rail line, rapid transit (Blue, Green, Red, and Orange Lines), and local Massachusetts Bay Transportation Authority (MBTA) buses (Routes 57, 64, T66, 70/70A, and 86)
- Tabular daily and peak-period summaries of station-level ridership at Auburndale, West Newton, Newtonville, Boston Landing, Lansdowne, Back Bay, and South Station, as well as all stations west of Auburndale on the Framingham/Worcester commuter rail line, Harvard Square, Central Square, Kendall Square, Packard's Corner, Babcock Street, Amory Street, Lechmere, as well as Green Line central subway and B Branch surface stations

## **Task 2 Model Two Build Scenarios**

CTPS will model two Forecast-Year Build scenarios. The land use scenarios are developed from the Metropolitan Area Planning Council's (MAPC) UrbanSim model and approved by MassDOT and informed by project stakeholders. One scenario will assume the 3L Realignment alternative. The other scenario will model the 3-Bridge Interchange Realignment alternative.

The Build scenarios will include a new split zone for TAZ 246 and reconfigured centroid connectors as described in Task 1. The Build scenario will also incorporate expected changes to transit operations in the horizon year as specified by MassDOT. These changes are expected to include the addition of West Station, rerouting of MBTA Route 64 to serve West Station, updated commuter rail headways, Bus Network Redesign implementation, and private shuttle service to the study area. These Build scenarios will be compared to the no-build scenario completed in Phase 1 of this study.

### ***Products of Task 2***

- Trip generation estimates for the immediate study area by TAZ for all scenarios
- Mode splits for the immediate study area and the area within a one-mile radius of West Station for all scenarios
- AM and PM peak-period network plots with roadway-link volumes for all scenarios
- AM and PM peak-period select link plots for 13 selected locations and five TAZs

- Trip tables by time period and by mode for all modeled modes that serve the study area, aggregated at a geography defined by MassDOT and the project team
- Tabular daily and peak-period summaries of systemwide route-level ridership for the Worcester/Framingham commuter rail line, rapid transit (Blue, Green, Red, and Orange Lines), local MBTA buses (Routes T57, 64, T66, T70, and 86), and any new shuttles identified by MassDOT and the project team, for all scenarios
- Tabular daily and peak-period summaries of station-level ridership at West Station, Auburndale, West Newton, Newtonville, Boston Landing, Lansdowne, Back Bay, and South Station, as well as all stations west of Auburndale on the Framingham/Worcester commuter rail line, Harvard Square, Central Square, Kendall Square, Packard's Corner, Babcock Street, Amory Street, Lechmere, as well as Green Line central subway and B Branch surface stations
- Tabular summary of boarding and alighting by period, station access and egress mode (walk vs. transfer), and direction of travel at West Station
- Tabular summary of boarding and alighting by period at West Station for MBTA Route 64 and private shuttles serving the station.
- Tabular summary of crowding by peak period and direction on the Worcester/Framingham commuter rail line; Green Line B Branch, and central subway; and buses and private shuttles serving the study area

### **Task 3 Metric Definition and Preparation of Results**

CTPS will explore the model results to identify which metrics are most relevant to understanding the project impacts and opportunities. As part of the exploration process, CTPS will evaluate how model factors, including shadow parking cost and the level of work-from-home behavior, influence model metrics such as vehicle trip attractions to the study area, mode share, and transit ridership. Some model outputs, including transit ridership, may require additional processing to ensure that model results reflect real world constraints. Through an iterative process, CTPS will work with MassDOT to define metrics of interest for this study and prepare these results for model scenarios.

#### ***Products of Task 3***

- Evaluation of model inputs and metrics related to parking and work from home
- Post processing of results based on transit constraints

#### **Task 4 Sensitivity Analyses**

CTPS will evaluate how changes in transit network and land use assumptions influence the metrics defined in the previous tasks.

##### ***Subtask 4.1 Bus Lane Sensitivity***

CTPS will perform a sensitivity analysis for the implementation of bus lanes in the local project area. MassDOT and the project team will provide CTPS with maps and specifications of the bus lanes to be implemented.

##### ***Subtask 4.2 Land Use Sensitivity***

CTPS will perform a sensitivity analysis of the land use assumptions for TAZ 246/246A. MassDOT will provide CTPS with an alternate land use projection for the forecast year. Based on this model scenario, CTPS will provide the outputs specified in Task 2.

##### ***Products of Task 4***

- CTPS will present results to understand the affect that bus lanes and land use changes may have on metrics of interest in the study area

#### **Task 5 Project Coordination**

CTPS will coordinate with MassDOT, project stakeholders, and the project team throughout the study, which is expected to result in the submission of an environmental filing. CTPS will collaborate with MassDOT and project stakeholders to promote understanding of the modeling process and outcomes. This coordination is expected to include two presentations to the Allston Multimodal Project task force. These presentations will provide information on the most recent model version and promote understanding of potential project assumptions and how those assumptions could influence model outcomes.

##### ***Products of Task 5***

- Attendance at various internal team meetings
- Presentations to the project task force

#### **Task 6 Project Documentation**

CTPS will document its work and the project in a project memorandum.

##### ***Products of Task 6***

- Memorandum

**Exhibit 1**  
**ESTIMATED SCHEDULE**  
**I-90 Allston Multimodal Modeling Phase 2**

Task	Month						
	1	2	3	4	5	6	7
1. Model One Base Year Scenario	A		B				
2. Model Two Build Scenarios		C			D	E	
3. Metric Definition and Preparation of Results							
4. Sensitivity Analyses							F
5. Project Coordination							
6. Project Documentation						G	

**Products/Milestones**

- A: Interim Base Year Scenario
- B: Final Base Year Scenario
- C: Interim Build Scenario 1
- D: Interim Build Scenario 2
- E: Final Build Scenarios
- F: Sensitivity Analysis Results
- G: Technical Memo

**Exhibit 2**  
**ESTIMATED COST**  
**I-90 Allston Multimodal Modeling Phase 2**

<b>Direct Salary and Overhead</b>	<b>\$250,000</b>
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Task	Person-Weeks by Pay Grade					Direct Salary	Overhead (120.3%)	Total Cost
	G-9	G-8	G-7	G-6	Total			
1. Model One Base Year Scenario	2.0	1.0	5.0	4.0	12.0	\$21,529	\$25,899	\$47,428
2. Model Two Build Scenarios	2.0	2.0	10.0	8.0	22.0	\$38,250	\$46,015	\$84,265
3. Metric Definition and Preparation of Results	4.0	2.0	6.0	4.0	16.0	\$30,065	\$36,169	\$66,234
4. Sensitivity Analyses	1.0	0.5	3.5	3.0	8.0	\$14,012	\$16,857	\$30,870
5. Project Coordination	1.0	0.5	0.5	0.0	2.0	\$4,330	\$5,209	\$9,539
6. Project Documentation	0.2	0.3	1.2	1.2	3.0	\$5,295	\$6,369	\$11,664
Total	10.2	6.3	26.2	20.2	63.0	\$113,481	\$136,518	\$250,000

<b>Other Direct Costs</b>	<b>\$0</b>
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<b>TOTAL COST</b>	<b>\$250,000</b>
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**Funding**

MassDOT Contract

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.

The Boston Region MPO also complies with the Massachusetts Public Accommodation Law, M.G.L. c 272 sections 92a, 98, 98a, which prohibits making any distinction, discrimination, or restriction in admission to, or treatment in a place of public accommodation based on race, color, religious creed, national origin, sex, sexual orientation, disability, or ancestry. Likewise, the Boston Region MPO complies with the Governor's Executive Order 526, section 4, which requires that all programs, activities, and services provided, performed, licensed, chartered, funded, regulated, or contracted for by the state shall be conducted without unlawful discrimination based on race, color, age, gender, ethnicity, sexual orientation, gender identity or expression, religion, creed, ancestry, national origin, disability, veteran's status (including Vietnam-era veterans), or background.

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

Title VI Specialist  
Boston Region MPO  
10 Park Plaza, Suite 2150  
Boston, MA 02116  
[civilrights@ctps.org](mailto:civilrights@ctps.org)

**By Telephone:**

857.702.3700 (voice)

For people with hearing or speaking difficulties, connect through the state MassRelay service:

- **Relay Using TTY or Hearing Carry-over:** 800.439.2370
- **Relay Using Voice Carry-over:** 866.887.6619
- **Relay Using Text to Speech:** 866.645.9870

For more information, including numbers for Spanish speakers, visit <https://www.mass.gov/massrelay>.