



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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

MEMORANDUM

DATE May 21, 2015
TO Boston Region Metropolitan Planning Organization
FROM Karl H. Quackenbush
CTPS Executive Director
RE Work Program for: Go Boston 2030: Modeling Support

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization, upon the recommendation of the Transportation Department of the City of Boston, vote to approve the work program for Go Boston 2030: Modeling Support, presented in this memorandum

Project Identification

Unified Planning Work Program Classification

Planning Studies

CTPS Project Number

22126

Client

City of Boston, Boston Transportation Department
Project Supervisor: Vineet Gupta

CTPS Project Supervisors

Principal: Scott Peterson
Manager: Bruce Kaplan

Funding

Future City of Boston Contract

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 UPWP.

Background

Go Boston 2030 is an initiative launched by the City of Boston to develop a new transportation plan for Boston for the next 5, 10, and 15 years. Ultimately, a comprehensive, long-term Action Plan will be developed; it will have transformative policies and projects designed to increase equity in mobility, improve the economy, better connect people to jobs and education, and protect the environment. A key first step in developing this Action Plan is understanding the impact of anticipated development on Boston's transportation networks. The Go Boston 2030 initiative is led by the Boston Transportation Department, working in collaboration with many other City agencies, MassDOT, and the MBTA. CTPS has been asked to provide travel demand modeling support for this effort.

Objectives

The principal objectives of this support work are:

1. To develop a version of the Boston Region MPO's regional travel demand model set specifically calibrated to 2012 data pertaining to the city of Boston
2. To develop a future 2030 land-use build-out scenario for the city of Boston
3. To provide modeling support to the project team to examine 2030 horizon-year roadway and transit conditions

Work Description

The five tasks in this work program are described below.

Task 1 Perform Base-Year Model Calibration

This task consists of refining and enhancing the Boston Region MPO's regional travel demand model set. Specific attention will be paid to replicating the existing conditions of the transit and primary-arterial roadway networks within the city of Boston. The results of running the 2012 base-year model will be summarized in sufficient detail to provide roadway data and systemwide and Boston-specific transit data, such as daily boardings, alightings, and access-mode shares at major rapid transit stations and bus route boardings during the AM peak period (6:00 to 9:00 AM) and the PM peak period (3:00 to 6:00 PM).

Product of Task 1

An updated calibrated multimodal travel demand model set

Task 2 Model the 2030 No-Build Scenario

CTPS will develop a 2030 no-build scenario for this study based on historical demography and the latest multimodal transportation networks in the Boston Region MPO's Long-Range Transportation Plan (LRTP). The same 2012 base-year land use data that were used in Task 1 will be assumed for the no-build scenario for the city of Boston, unlike the demography for the non-Boston municipalities in the regional model set, which will be the adopted LRTP land use assumptions for the 2030 horizon year. After the regional travel demand model set's trip generation and trip distribution model routines have been run, a trip-flow matrix for the 2030 horizon year will be developed. The mode choice and assignment components of the model set will be used to estimate the same categories of estimated traffic and transit volumes for this scenario that were used in Task 1 for the base year so that the base-year and no-build scenarios can be compared.

Products of Task 2

- 2030 no-build scenario
- Graphic and tabular summaries of relevant roadway and transit data, including analyses of volume-to-capacity ratios and peak loads

Task 3 Develop and Model 2030 Build Scenario and Quantify Its Impact on the Transportation System

The City of Boston will provide CTPS with projections of the population and employment growth that will result from anticipated new developments within the city. These projections will be combined with the demographic projections generated in Task 2, and will be used to run the regional travel demand model set's trip generation and trip distribution routines to produce a build-scenario horizon-year trip-flow matrix. The regional travel demand model set will then be used to generate the same categories of estimated traffic and transit volumes from this build scenario as the categories that were used in Task 2. CTPS will summarize these results and compare them to the results of the base-year and 2030 no-build model runs. The results will include roadway and transit volumes in the city of Boston, systemwide person-trips and vehicle-trips by mode by time of day, and transit boardings at selected stations and on selected bus routes. Other build scenarios, which will test modifications of Boston's transportation systems and demography, may be studied at a future date, depending on additional available funding, and are not included in this scope of work.

Products of Task 3

- 2030 build scenario

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

Task 4 Perform Air Quality and Environmental-Justice Analyses

Subtask 4.1 Perform Air Quality Analyses

CTPS will perform air quality analyses for each of the proposed scenarios. The air quality analyses, building on the model outputs from Tasks 2 and 3, will estimate mobile emissions from cars, trucks, and transit vehicles of carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and particulate matter (PM_{2.5} and PM₁₀).

Subtask 4.2 Perform an Environmental-Justice Analysis

CTPS will conduct an environmental-justice analysis for the 2030 no-build and build scenarios. 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.

Products of Task 4

- Tabular summaries of the results of the air quality analyses
- Tabular summaries of the results of the environmental-justice analysis

Task 5 Document the Methodology and Results

CTPS staff will produce a memorandum that will summarize the methodology and findings of the project. It is anticipated that this document will be completed by the end of the summer. This will allow the client an opportunity to review and comment on the work product and for those comments to be addressed.

Product of Task 5

Brief memorandum documenting the project's methodology and results

Estimated Schedule

It is estimated that this project will be completed 10 weeks after work commences. The proposed schedule, by task, is shown in Exhibit 1.

Estimated Cost

The total cost of this project is estimated to be \$18,000. This includes the cost of 7.9 person-weeks of staff time and overhead at the rate of 91.82 percent. A detailed breakdown of estimated costs is presented in Exhibit 2.

Exhibit 2
ESTIMATED COST
Go Boston 2030: Modeling Support

Direct Salary and Overhead							\$18,000
Task	Person-Weeks			Direct Salary	Overhead (91.82%)	Total Cost	
	M-1	P-3	Total				
1. Perform Base-Year Model Calibration	0.0	0.6	0.6	\$610	\$561	\$1,171	
2. Model the 2030 No-Build Scenario	0.0	1.0	1.0	\$1,102	\$1,012	\$2,114	
3. Develop and Model 2030 Build Scenario and Quantify Its Impact on the Transportation System	0.0	3.4	3.4	\$3,712	\$3,408	\$7,120	
4. Perform Air-Quality and Environmental-Justice Analyses	0.0	1.0	1.0	\$1,102	\$1,012	\$2,114	
5. Document the Methodology and Results	1.0	1.0	2.0	\$2,858	\$2,624	\$5,482	
Total	1.0	6.9	7.9	\$9,384	\$8,616	\$18,000	
Other Direct Costs							\$0
TOTAL COST							\$18,000

Funding
 Future City of Boston Contract