



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Gina Fiandaca, MassDOT Secretary and CEO and MPO Chair
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WORK PROGRAM

MBTA FARE EQUITY ANALYSIS FOR LOW-INCOME FARES AND ANCILLARY CHANGES

APRIL 20, 2023

Proposed Motion

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

Project Identification

Unified Planning Work Program (UPWP) Classification

Not listed in federal fiscal year (FFY) 2023 UPWP

Project Number 11501

Client

MBTA

Client Supervisor: Steven Povich

Project Supervisors

Principal: Paul Christner

Manager: Emily Domanico

Funding Source

MBTA Contract

Schedule and Budget

Schedule: 12 months from notice to proceed

Budget: \$95,000

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

This budget was developed using a billing overhead rate of 119.34 percent as approved by the Boston Region MPO for state fiscal year (SFY) 2023. Beginning July 1, 2023, and each July 1 thereafter, the overhead rate will be adjusted to reflect the SFY rate approved by the MPO.

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 MBTA requested that Central Transportation Planning Staff (CTPS) analyze the equity impacts of potential changes in fare structure and tariffs, including a low-income fare program and other potential changes. CTPS has provided technical assistance to the MBTA related to fare structure and tariff changes for more than 25 years, most recently in SFYs 2021–23.

Objectives

This project will analyze equity impacts of a low-income fare program and other potential changes in the MBTA's fare structure and tariffs.

Work Description

Task 1 Participate in Meetings

CTPS will meet with representatives of the MBTA to receive direction on this project, including potential options for changing MBTA fares, and MBTA staff will give feedback to CTPS on the preliminary results of the CTPS analyses.

Upon the MBTA's request, CTPS will participate in meetings related to the MBTA's fare policy and meetings with members of the MBTA Board, the Massachusetts Department of Transportation Board of Directors, or other interested parties, as the budget for this task allows.

Products of Task 1

Meeting attendance and support, as needed.

Task 2 Update Inputs to the Agent-Based Model

CTPS developed an agent-based fare equity analysis methodology derived from (1) responses to the 2015–17 MBTA Systemwide Passenger Survey, (2) annual fare revenue collected by MBTA fare product, and (3) annual unlinked trips observed for each MBTA mode. In the agent-based ridership model, CTPS matches survey responses with annual MBTA ridership and revenue. The model estimates the number of passengers—or agents—each survey represents based on the trip-making patterns reported, fare products used, modes traveled on, and the reported trip frequency. CTPS uses the agent-based model to price travel under existing and proposed fare structures to project the impacts of the fare change on different populations. In this task, CTPS will update the inputs to its agent-based model in consultation with the MBTA. CTPS will assess how to incorporate new 2022

passenger survey data into the model. CTPS will also update the base-year fare revenue and ridership to the most recent available and appropriate year.

Products of Task 2

Updated agent-based model

Task 3 Model the Title VI and Environmental Justice Impacts of Potential Changes in Fare Structure, Tariffs, and Policy

In this task, CTPS will use the agent-based model to analyze the potential effects of changes in fare structure, tariffs, and policy on different socioeconomic groups in accordance with the requirements of Federal Transit Administration (FTA) Circular 4702.1B *Title VI Requirements and Guidelines for FTA Recipients* and the MBTA's Service and Fare Change Equity Policy. This work will be closely related to ongoing Title VI work at CTPS.

CTPS will prepare fare equity analysis summary results for the MBTA's low-income fare program and any other proposed fare changes using the results from the agent-based model. The analysis will include an evaluation of the effects of the proposed changes on minority and low-income populations.

Products of Task 3

Fare equity analysis summary results

Task 4 Produce Draft Memorandum on Fare Equity Analyses

For the MBTA low-income fare program and any other fare changes modeled in task 3, CTPS will compile the results of the fare equity analyses performed in the previous task into a draft memorandum that will also include descriptions of the methodologies for fare equity analyses. CTPS will also produce a one-page executive summary of the results of the Fare Equity Analysis.

Products of Task 4

A draft memorandum on the fare equity analysis for the MBTA's low-income fare program and any additional scenarios. A draft one-page executive summary of the Fare Equity Analysis Results.

Task 5 Perform Additional Analysis as Requested by the MBTA

The MBTA may ask CTPS to analyze additional ideas presented during the public process. CTPS will use its agent-based model to analyze the fare-equity impacts of different changes. CTPS will analyze changes that fit within the existing analysis framework and provide a new draft memorandum if needed.

Products of Task 5

Summary results of fare-equity impacts

Task 6 Prepare Final Memorandum on Fare Equity Analyses

After the MBTA selects a set of fare changes for implementation, staff will process any changes made to the draft analysis. Staff will then update and finalize the draft memorandum for the chosen scenario. Staff will incorporate the edits and revisions gathered from the review process into a final document.

Products of Task 6

Final memorandum on the fare equity analysis for the chosen changes. Final one-page executive summary of the Fare Equity Analysis Results.

Exhibit 1
ESTIMATED SCHEDULE
MBTA FARE EQUITY ANALYSIS FOR LOW-INCOME FARES AND ANCILLARY CHANGES

Task	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Participate in Meetings												
2. Update Inputs to the Agent-Based Model												
3. Model the Title VI and Environmental Justice Impacts of Potential Changes in Fare Structure, Tariffs, and Policy												
4. Produce Draft Memorandum on Fare Equity Analyses												
5. Perform Additional Analysis as Requested by the MBTA												
6. Prepare Final Memorandum on Fare Equity Analyses												

Products/Milestones

- A: Draft memorandum on the fare equity analysis
- B: Final memorandum on the fare equity analysis

Exhibit 2**ESTIMATED COST****MBTA FARE EQUITY ANALYSIS FOR LOW-INCOME FARES AND ANCILLARY CHANGES**

Direct Salary and Overhead	\$95,000
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Task	Person-Weeks				Direct Salary	Overhead (119.34%)	Total Cost
	M-1	P-5	P-2	Total			
1. Participate in Meetings	0.5	0.5	1.6	2.6	\$4,337	\$5,176	\$9,514
2. Update Inputs to the Agent-Based Model	0.5	0.5	3.5	4.5	\$6,645	\$7,930	\$14,576
3. Model the Title VI and Environmental Justice Impacts of Potential Changes in Fare Structure, Tariffs, and Policy	0.5	0.5	8.0	9.0	\$12,893	\$15,387	\$28,280
4. Produce Draft Memorandum on Fare Equity Analyses	1.5	0.5	2.6	4.6	\$7,549	\$9,009	\$16,558
5. Perform Additional Analysis as Requested by the MBTA	0.5	0.5	2.6	3.6	\$5,491	\$6,553	\$12,045
6. Prepare Final Memorandum on Fare Equity Analyses	1.5	0.5	1.7	3.7	\$6,395	\$7,632	\$14,027
Total	5.0	3.0	20.0	28.0	\$43,312	\$51,688	\$95,000

Other Direct Costs	\$0
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TOTAL COST	\$95,000
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Funding

MBTA 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. 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

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>.