



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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

WORK PROGRAM

AFC 2.0 EQUITY ANALYSIS

DECEMBER 6, 2018

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) 2019 UPWP

Project Number 11415

Client

Massachusetts Bay Transportation Authority (MBTA)

Client Supervisor: Laurel Paget-Seekins

Project Supervisors

Principal: Katie Pincus Stetner

Manager: Steven Andrews

Funding Source

Future MBTA Contract

Schedule and Budget

Schedule: 5 months from notice to proceed¹

Budget: \$76,972

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

¹ This schedule is contingent upon the timeliness of receiving necessary information from the MBTA and of resolving the approaches to the equity analyses with the Federal Transit Administration.

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 is developing a new automated fare collection (AFC) system, known as AFC 2.0, to supplant its existing fare payment system. In late 2017, the contract for the design, integration, and implementation of AFC 2.0 was awarded to Cubic | John Laing. The MBTA expects to have the system available for riders to use in May 2020, and to retire the current AFC system a year later in May 2021. AFC 2.0 will enable new ways to pay for access to the transit system. Some of the expected benefits of the new fare payment system include the ability for customers to

- board and pay at any door on light rail vehicles and buses, which should decrease dwell times for all riders;
- board and pay on all modes using a unified fare payment system;
- pay with a contactless fare card or by tapping a contactless credit card or smartphone; and
- check the available balance, reload value, and replace lost cards via a website or phone.

This change in the MBTA's fare payment system will also lead to some changes that may have negative impacts on some riders. The MBTA has requested that Central Transportation Planning Staff (CTPS) analyze the equity of the impacts of the following three components of AFC 2.0:

- Elimination of cash on board

Once AFC 2.0 has been implemented, cash will no longer be accepted on board MBTA vehicles. While only 4.7 percent of trips on the buses, Green Line, and Mattapan Trolley are paid for with cash onboard and 3.7 percent of riders reload other fare products on these modes, elimination of this option may affect some groups of riders more severely than other groups. As part of the project the MBTA will be vastly increasing its retail network and installing fare vending machines at bus stops. The MBTA wants to ensure that access to locations where riders may purchase fares using cash is equitable.

- Fee for specific fare media

Unlike the MBTA's current system, passengers may need to purchase some types of fare media for a small fee. Accompanied by this change is the ability for passengers to 'go negative' in stored value to complete a single, complete one-way trip using that fare media. The MBTA wants to determine whether this fee presents a barrier for riders who are classified as low-income or minority riders.

Depending on the findings from the analysis, there may also be an evaluation of the effectiveness of any proposed mitigation from the MBTA.

- Potential changes in fare structure

The new system will also give the MBTA the opportunity to implement fare structure changes, such as allowing discounted transfers between modes that are not currently offered; changing the existing periods of validity for pass products; and eliminating the differential between fares paid using CharlieCards and fares paid using cash or CharlieTickets. The MBTA wants to evaluate whether any proposed fare structure changes would result in inequities.

Objectives

The objectives of this study are to evaluate the distribution of fare vending machines and other fare media sales locations, the equity impacts of charging for a fare card, and a package of various fare structure changes that may be implemented with AFC 2.0.

Work Description

Task 1 Participate in Meetings and Provide Technical Support

CTPS will meet with representatives of the MBTA to receive direction concerning this study, including consultations about data sources and analysis methodology. CTPS will participate in meetings and provide technical support as requested by the MBTA, keeping within the available budget.

Task 2 Analyze the Distribution of Fare Vending Machines and/or Sales Locations

Because riders will no longer be able to add value to their fare media using cash onboard a vehicle, riders who rely on cash may have to travel farther than they currently do to add value to their accounts at a fare vending machine or sales outlet. To mitigate this negative impact, the AFC 2.0 implementation will include an increase in the number of fare vending machines and sales locations throughout the MBTA service area. CTPS will gather relevant data and will analyze whether the distribution of fare vending machines and/or sales locations will serve to mitigate the impact of eliminating cash onboard payments. If the distribution plan does not prove equitable, CTPS may recommend strategies the MBTA could employ to remedy or mitigate the inequity. CTPS completed a task similar to this in previous projects related to AFC 2.0 and will use or adapt the existing methodology for this study.

Product of Task 2

Memorandum documenting the equity analysis of the distribution of fare vending machines and/or sales locations

Task 3 Analyze the Impacts of Charging for Fare Media

Charging riders a fee for MBTA-provided fare cards (virtual or physical) is not specifically a fare increase, but it may disproportionately affect riders classified as low-income or minority riders and could create a barrier to accessing transit. CTPS will research the methodology used by other transit agencies for similar analyses and develop a methodology for determining the equity impact of this fee. CTPS and the MBTA will then consult with the Federal Transit Administration (FTA) about the proposed modes of analysis. CTPS will gather relevant existing data and will determine the equity implications of the fee by using the FTA-approved methodology. These implications will be considered along with the presumed effects of allowing riders to complete a single, complete one-way trip when they do not have enough stored value in their account.

Product of Task 3

Memorandum documenting the equity analysis of the fare card fee

Task 4 Analyze Other Fare Structure Changes

AFC 2.0 brings with it a host of possible fare structure changes. The MBTA has expressed a desire for CTPS to analyze some of these changes, however the specific changes are still under consideration. Some of the changes the MBTA may request CTPS to analyze include more tightly integrating the MBTA's modes (that is, allowing discounted transfers between all of the MBTA's modes); making changes to the time periods of validity or modes available on pass products; and eliminating the price difference between the CharlieCard fare and the cash or CharlieTicket fare. Some of the fare structure changes enabled by AFC 2.0 may influence riders' travel patterns. The MBTA and CTPS will identify which of these changes are likely to have different impacts on protected populations of riders and gather relevant existing data.

If the MBTA proposes fare structure changes that require a significant amount of novel work or new data, CTPS may need to develop a methodology for conducting the equity analysis or a plan to collect the required data. CTPS will research appropriate methodologies, and then CTPS and the MBTA will consult with the FTA staff about their proposed modes of analysis. The types of analysis CTPS will conduct will depend on the available data related to each proposed change. CTPS will analyze the selected set of fare structure changes to determine their combined equity impacts.

This task has been budgeted based on a best estimate of the amount of work required, but the number and nature of the fare structure changes is currently unknown. The actual cost of performing the analysis will depend on the number and nature of the proposed changes to the fare structure. CTPS may need to develop multiple methodologies to analyze different components of the fare structure changes separately. If multiple methodologies are used, staff would also need to

develop a methodology to reconcile the various results in order to assess the impacts of the total package. CTPS will consult with the MBTA once the fare structure changes are known and determine whether the budget for this task is adequate.

Product of Task 4

Memorandum documenting the equity analysis of the set of proposed fare structure changes

Exhibit 1
ESTIMATED SCHEDULE
AFC 2.0 Equity Analysis

Task	Month				
	1	2	3	4	5
1. Participate in Meetings and Provide Technical Support					
2. Analyze the Distribution of Sales Locations					
3. Analyze the Impacts of Charging for Fare Media					
4. Analyze Other Fare Structure Changes					

Exhibit 2
ESTIMATED COST
AFC 2.0 Equity Analysis

Direct Salary and Overhead	\$76,972
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Task	Person-Weeks			Direct Salary	Overhead (99.00%)	Total Cost
	M-1	P-4	Total			
1. Participate in Meetings and Provide Technical Support	1.0	1.0	2.0	\$3,251	\$3,218	\$6,469
2. Analyze the Distribution of Sales Locations	1.2	4.0	5.2	\$7,848	\$7,770	\$15,618
3. Analyze the Impacts of Charging for Fare Media	1.0	4.0	5.0	\$7,480	\$7,405	\$14,885
4. Analyze Other Fare Structure Changes	3.0	10.3	13.3	\$20,100	\$19,899	\$40,000
Total	6.2	19.3	25.5	\$38,679	\$38,292	\$76,972

Other Direct Costs	\$0
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TOTAL COST	\$76,972
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Funding
 Future MBTA Contract