WORK PROGRAM

MBTA COMMUTER RAIL PASSENGER COUNTS

MARCH 1, 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) 2018 UPWP

Project Number 11412

Client

Massachusetts Bay Transportation Authority
Client Supervisor: John Ray

Project Supervisors

Principal: Katie Pincus
Manager: Thomas J. Humphrey

Funding Source

MassDOT Contract

Schedule and Budget

Schedule: 10 months from notice to proceed

Budget: $240,850

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 Massachusetts Bay Transportation Authority (MBTA) commuter rail passengers pay their fares either on a per-ride basis with tickets (paper tickets or the mTicket app), or with unlimited-use monthly passes (CharlieTicket or the mTicket app). There are no mechanical fare-collection devices either at commuter rail stations or on trains. All fare collection is done by conductors who pass through the trains after each station stop collecting single-ride tickets from passengers, punching multiple-ride tickets, inspecting passes and mTickets, and selling tickets to passengers who do not have either tickets or passes. Conductors are only required to report the number of tickets sold on board on a daily basis. Consequently, the commuter rail fare system does not produce information showing the number of riders who use the system on any given day.

Central Transportation Planning Staff (CTPS) last conducted a comprehensive count of commuter rail riders in 2012. Since that time, the only systematically collected data on commuter rail ridership was derived from passenger counts conducted by Keolis at the major stations; systemwide estimates were extrapolated from these data. For many planning purposes, it is important to have accurate ridership information for the MBTA commuter rail system. This project would provide such information through a series of one-day counts, as described below.

Objective

The objective of this project is to obtain passenger counts for each line and station of the MBTA commuter rail system by conducting full station counts and to create a composite for each line and station representing ridership on a typical weekday.

Work Description

The work required to accomplish the project objectives will be carried out in three tasks, as described below. The count strategy employed will determine boardings and alightings at every station in the system for inbound and outbound trains throughout the service day.

Task 1 Prepare Count Assignments

CTPS will determine the specific assignments that checkers must complete and prepare instructions and forms for recording the results of each assignment. CTPS will then upload the forms onto computer tablets for field data collection. Counts will not be scheduled on days when ridership is expected to be significantly below average, such as during summer months, school vacation weeks, or holidays. To the extent possible, counts will be conducted Tuesdays through Thursdays. If it becomes necessary to conduct counts on some Mondays and Fridays, counts will not be conducted before mid-morning on Mondays or after mid-afternoon on Fridays to minimize the influence of weekend travel patterns on the results.

Products of Task 1

Assignments, instructions, and forms required for the counts

Task 2 Hire and Train Temporary Staff, and Conduct Counts

To conduct the count assignments prepared under Task 1 expeditiously, CTPS will need to hire, train, and supervise approximately 30 additional temporary employees to augment the existing field staff, who may also work as checkers on this project in addition to their regular data-collection work. During peak morning and evening travel times, most counts will be conducted by checkers on platforms at stations outside of the downtown Boston area and at Back Bay Station in Boston. During mid-day and off-peak evening hours, counts will be conducted by checkers riding on trains.

The combined platform and onboard counts will account for all trains at every station except for peak-period trains at North Station and South Station in Boston. Experience from past CTPS count projects revealed the difficulty of obtaining accurate counts of passengers at North and South Stations during the AM and PM peak periods. Checkers at these two stations have difficulty assigning riders to particular trains because of the large number of passengers alighting in the morning and boarding in the evening on platforms that are shared by two tracks, while trains are often arriving or departing simultaneously.

Therefore, for each train terminating at North or South Station, CTPS will calculate inbound AM peak alightings as the difference between total inbound boardings and alightings at all other stations on route. Similarly, for each train originating from North or South Station, CTPS will calculate outbound PM peak boardings as the difference between outbound boardings and alightings at all other stations on route. The number of checkers assigned to each station platform or train will be based on the best available information on probable ridership levels and on station configurations.

As shown in Exhibit 1, CTPS has scheduled six months to conduct the counts over a possible span of ten months. The span of this effort can be affected by a number of uncertainties that CTPS can work to minimize but not totally eliminate. In addition to weather conditions and train cancellations, the length of time it will take to complete the counts depends on the following factors:

- *The number of temporary staff CTPS is able to employ as checkers, the ability of the checkers to meet the specific schedules for the count assignments, and the retention of checkers for the duration of the project*

  To reduce but not eliminate this uncertainty, CTPS will hire students from the Transportation/Communications Union (TCU/IAM) Job Corps Training Program as checkers to supplement our own hiring efforts. CTPS will coordinate with TCU/IAM to identify and hire 20 to 30 of its students who will

be available to conduct the counts; the precise ability of these students to fulfill a majority of the assignments for the duration of the counts is uncertain.

- *The availability of Keolis staff to provide the required safety training for the checkers*

  To reduce but not eliminate this uncertainty, CTPS will coordinate with Keolis through MBTA Railroad Operations.

- *The time required for the MBTA to process its required background checks for the new hires*

  To reduce but not eliminate this uncertainty, CTPS will coordinate with MBTA Railroad Operations to ensure that the background checks are completed expeditiously.

- *The ability to schedule and transport the appropriate number of checkers for conducting counts on the first and last trains on each line*

  To reduce but not eliminate this uncertainty, CTPS will coordinate with MBTA Railroad Operations to implement strategies to transport checkers when public transport is not available. Strategies could include transporting checkers to position them at station stops along each line for conducting counts on the first trains of the day and picking them up at the end of the line after conducting counts on the last trains of the day. In our own hiring efforts, CTPS will require checkers to have access to a personal automobile for the assignments.

- *Whether the project start date provides sufficient time to complete the counts before summer*

  If the counts cannot be completed before mid-June, the schedule would be extended two and one-half months to accommodate a summer break before the counts would be resumed in the fall.

- *The reliability of the tablets*

  CTPS will be purchasing tablets to conduct the counts with the intended benefit of shortening the time needed for data entry. The devices have not been previously tested, however, and the failure rate is unknown. In order to minimize the risk of a checker missing an assignment because a device fails, CTPS will provide each checker with paper count sheets as a backup in case the tablet fails.

CTPS will consult with MBTA staff to prioritize the commuter rail lines for counting.

Products of Task 2

Spreadsheets containing station boarding and alighting counts for each train and route in each direction, as completed for each line

Task 3 Download Counts, Analyze Data, and Document Results

CTPS staff will download the passenger counts from the tablets for analysis and summarize the results in various ways, such as by route, station, or train. The major findings will be summarized in an accompanying technical memorandum. Staff will compare the results of the counts with ridership information collected by Keolis and with the counts gathered by CTPS in 2012.

Product of Task 3

Technical memorandum summarizing the results of the counts and comparing them to those of past counts

Exhibit 1
ESTIMATED SCHEDULE
MBTA Commuter Rail Passenger Counts

Task	Month									
	1	2	3	4	5	6	7	8	9	10
1. Prepare Count Assignments										
2. Hire and Train Temporary Staff, and Conduct Counts										
3. Download Counts, Analyze Data, and Document Results										A

Products/Milestones

A: Technical Memorandum

Exhibit 2
ESTIMATED COST
MBTA Commuter Rail Passenger Counts

Direct Salary and Overhead									**$229,150**
Task	Person-Weeks						Direct Salary	Overhead (105.66%)	Total Cost
	M-1	P-5	P-1	SP-1	Temp	Total			
1. Prepare Count Assignments	1.0	6.0	0.0	0.0	0.0	7.0	$13,281	$14,032	$27,313
2. Hire and Train Temporary Staff, and Conduct Counts	1.0	4.0	12.0	72.0	18.0	107.0	$77,215	$81,586	$158,801
3. Download Counts, Analyze Data, and Document Results	2.7	8.4	0.0	0.0	0.0	11.1	$20,926	$22,110	$43,036
Total	4.7	18.4	12.0	72.0	18.0	125.1	$111,422	$117,728	$229,150

Other Direct Costs	**$11,700**
Travel	$5,000
General office equipment	$6,700

TOTAL COST	**$240,850**

Funding
MassDOT Contract