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Richard A. Davey
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and MPO Chairman

Karl H. Quackenbush
Executive Director, MPO Staff



# *MEMORANDUM*

**DATE** **December 1, 2011**

**TO** **Boston Region Metropolitan Planning Organization**

**FROM** **Karl H. Quackenbush**
**CTPS Executive Director**

**RE** **Work Program for: MBTA Commuter Rail Passenger Counts**

## ACTION REQUIRED

Review and approval

## PROPOSED MOTION

That the Boston Region Metropolitan Planning Organization vote to approve the work program for MBTA Commuter Rail Passenger Counts in the form of the draft dated December 1, 2011.

## PROJECT IDENTIFICATION

**Unified Planning Work Program Classification**
Technical Support/Operations Analysis Projects

**CTPS Project Number**
14324

**Client**
Massachusetts Department of Transportation
*Project Supervisor:* Matt Ciborowski

**CTPS Project Supervisors**
*Principal:* Elizabeth Moore
*Manager:* Thomas J. Humphrey

**Funding**
MassDOT §5303 Contract #67438, $68,081
MassDOT §5303 Contract #70174, $91,856

## 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 other work in the UPWP.

## BACKGROUND

MBTA commuter rail passengers pay their fares either on a per-ride basis with tickets, or with unlimited-use monthly passes. There are no mechanical fare-collection devices either at 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 who have them in advance, punching multiple-ride tickets, inspecting passes, and selling tickets to passengers who do not have either tickets or passes. Of these transactions, the only one that conductors are supposed to report on a daily basis is the number of tickets sold on board. Consequently, the commuter rail fare system does not produce information showing the number of riders using the system on any given day.

Conductors are required to file headcount reports showing the total number of passengers on each trip each day, but these are usually estimates rather than actual counts. A few times a year, the contract operator of the commuter rail system (currently Massachusetts Bay Commuter Railroad) prepares more-detailed ridership reports, called Train Audits. These are supposed to show the number of riders by fare-payment type boarding each inbound train at each station on one weekday, one Saturday, and one Sunday. Assuming that these are representative days, multiplying them respectively by the number of weekdays, Saturdays, and Sundays in the Audit month should provide monthly inbound ridership totals, and outbound totals would be expected to be similar. However, monthly figures projected from the Train Audits invariably indicate significantly greater ridership than can be accounted for by total ticket and pass sales figures for the same month. Likewise, spot-checks of boardings at individual outlying stations and of passenger alightings at the downtown Boston stations indicate that the Train Audit and headcount reports substantially overstate ridership.

For many planning purposes, it is important to have more 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.

## OBJECTIVES

The objectives of this project are to obtain composite one-day weekday passenger counts for each line of the MBTA commuter rail system through full station counts and to provide recommendations concerning the frequency of future counts.

## WORK DESCRIPTION

The work required to accomplish the project objectives will be carried out in four 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 checker assignments required to accomplish the passenger counts, and will prepare instructions and forms to be used to record the results of each assignment. Counts will not be scheduled on days when ridership is expected to be significantly below average, such as during summer months, during school vacation weeks, or on holidays. Counts will also not be done 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 Conduct Counts

The count assignments prepared under Task 1 will be carried out by a combination of CTPS permanent field staff and temporary hires. During peak morning and evening travel times, most counts will be done by checkers on platforms at stations outside downtown Boston. During mid-day and evening hours, counts will be done by checkers riding on trains. The number of checkers assigned to each station platform or train will be based on the best available information on probable ridership levels as well as on station configurations.

In order to complete this task, CTPS will need to hire, train, and supervise approximately 14 additional temporary employees to augment the existing temporary staff, who may also work on this project in addition to their regular data-collection work.

***Products of Task 2***

Station boarding and alighting counts for each train and route in each direction for one composite count day

### Task 3 Enter Count Results in a Database

The results of the passenger counts recorded in Task 2 will be transcribed into spreadsheets in which they can be arranged in various ways for purposes of analysis.

***Products of Task 3***

Spreadsheets containing count results

### Task 4 Analyze Results and Make Recommendations

The results of the passenger counts entered in the spreadsheets in Task 3 will be summarized in various ways, such as by route, station, or train. Major findings will be summarized in an accompanying technical memorandum. The results will be compared with ridership information collected by other methods such as conductors' headcount reports, Train Audits, and ticket and pass sales figures.

Based on the findings, CTPS will make recommendations concerning strategies for future counts of commuter rail passengers and intervals at which such counts should be conducted.

***Product of Task 4***

Technical memorandum summarizing the results of the counts, comparing them to those of past counts, and providing recommendations concerning future counts.

## ESTIMATED SCHEDULE

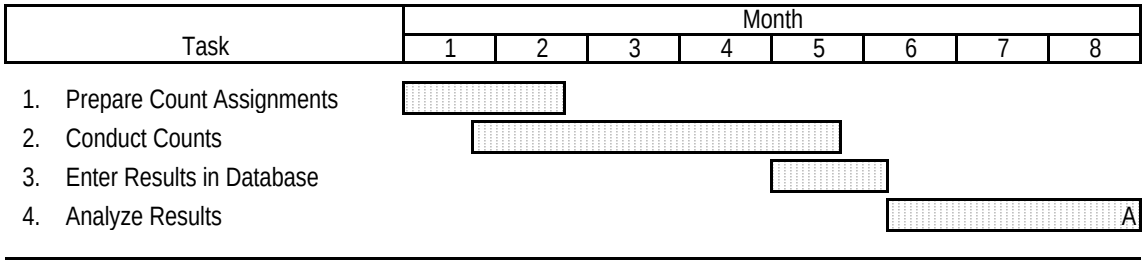
It is estimated that this project will be completed eight months after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 1.

## ESTIMATED COST

The total cost of this project is estimated to be $159,937. This includes the cost of 106.1 person-weeks of staff time, overhead at the rate of 94.57 percent, and travel. A detailed breakdown of estimated costs is presented in Exhibit 2.

KQ/TJH/tjh

Exhibit 1
ESTIMATED SCHEDULE
MBTA Commuter Rail Passenger Counts




Products/Milestones

A: Technical memorandum

Exhibit 2
ESTIMATED COST
MBTA Commuter Rail Passenger Counts

| Direct Salary and Overhead | $157,137 |
|---|---|

| Task | Person-Weeks M-1 | P-5 | SP-3 | SP-1 | Temp | Total | Direct Salary | Overhead (@ 94.57%) | Total Cost |
|---|---|---|---|---|---|---|---|---|---|
| 1. Prepare Count Assignments | 1.0 | 7.0 | 0.0 | 0.0 | 0.0 | 8.0 | $13,089 | $12,378 | $25,468 |
| 2. Conduct Counts | 3.0 | 1.0 | 7.0 | 10.2 | 60.0 | 81.2 | $47,391 | $44,818 | $92,209 |
| 3. Enter Results in Database | 0.0 | 0.0 | 1.8 | 1.8 | 3.5 | 7.1 | $4,224 | $3,994 | $8,218 |
| 4. Analyze Results | 2.6 | 7.2 | 0.0 | 0.0 | 0.0 | 9.8 | $16,057 | $15,185 | $31,242 |
| Total | 6.6 | 15.2 | 8.8 | 12.0 | 63.5 | 106.1 | $80,761 | $76,376 | $157,137 |

| Other Direct Costs | $2,800 |
|---|---|
| Travel | $2,800 |

| TOTAL COST | $159,937 |
|---|---|

*Funding*

*MassDOT §5303 Contract #67438 in the amount of $68,081*
*MassDOT §5303 Contract #70174 in the amount of $91,856*