



# BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

---

Gina Fiandaca, MassDOT Secretary and CEO and MPO Chair  
Tegin L. Teich, Executive Director, MPO Staff

## WORK PROGRAM FLEXIBLE FIXED-ROUTE BUS SERVICE

AUGUST 3, 2023

### Proposed Motion

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

### Project Identification

#### Unified Planning Work Program (UPWP) Classification

Boston Region MPO Planning Studies and Technical Analyses

**Project Number** 13804

#### Client

Boston Region MPO

#### Project Supervisors

*Principal:* Rose McCarron

*Manager:* Steven Andrews

#### Funding Source

MPO Planning and MPO §5303 Contract 13804

### Schedule and Budget

**Schedule:** 2 of months after work commences

**Budget:** \$19,750

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

### Relationship to MPO Goals

The Boston Region MPO elected to fund this study with its federally allocated metropolitan planning funds during federal fiscal year (FFY) 2023. The work completed through this study will address the following goal areas established in the MPO's Long-Range Transportation Plan: safety, capacity management and mobility, clean air and clean communities, and transportation equity.

## **Background**

Flexible bus routes are designed to better meet rider demand by providing service that deviates from defined stops and routes to pick up and drop off eligible customers who request trips within a defined area. In contrast, traditional fixed routes operate on pre-planned routes that make stops at predefined locations according to a published schedule. Flexible routes can be more efficient in low-density areas or when passenger demand is low, while fixed routes are typically more efficient in areas with higher demand density. Flexible transit services can also provide significant benefits for older adults, those with limited mobility, and people who cannot drive, particularly in lower density suburban areas where fixed-route transit services may not adequately meet their needs.

An ongoing challenge for transit providers is knowing which fixed routes would provide better service by operating as a flexible service. To help regional transit authorities (RTAs) make this determination, Central Transportation Planning Staff (CTPS) will design a methodology to determine the demand for transit in areas just outside the typical catchment areas of a traditional fixed-route bus service. The analysis will focus on demand in groups that would benefit most from having more accessible transit service.

CTPS will perform a GIS-based analysis exploring the spatiotemporal travel patterns of different groups that live in varying distances away from the catchment area of a RTA bus route in a lower-density area where flexible route transit services are more likely to succeed. This analysis would inform where there is latent demand for transit that could be met with flexible service.

CTPS will document experiences in performing the analysis and compile results as an example of the possible outcomes from the geospatial processing.

## **Objective**

Explore the demographics of people traveling outside the typical catchment area of transit in lower-density areas.

## Work Description

CTPS will undertake a multistep process to evaluate demand outside the core catchment area of a fixed-route bus route that might be a candidate for flexible route bus service. The first task involves selecting a transit corridor for analysis through collaboration with RTAs and reviewing ridership and schedule data. In the second task, CTPS will collect and prepare the data for input to the geospatial process. Finally, in the third task, CTPS will use the geospatial tools to perform an analysis of travel patterns of people living in different bands outside the traditional bus catchment area. The results of this process and a description of the process itself will be provided in the form of a memorandum.

### **Task 1 Select Transit Corridor for Analysis**

CTPS will select an RTA bus route for in-depth examination. Staff will contact the operator to obtain information about its services and its ridership patterns. Staff will review ridership, schedule data, and other service data as appropriate to select a route for further investigation. A suitable option will likely be a fixed-route corridor with low-to-moderate passenger demand, but with demand too high to consider demand-responsive service.

#### ***Products of Task 1***

Selection of an RTA bus route for analysis

### **Task 2 Develop Catchment Area Parameters**

CTPS will use information from available literature to develop parameters for the catchment area outside the traditional catchment area for a bus service. This information may be the size and shape of the region where flexible service would be provided and the periods during which the service would operate in a flexible manner.

#### ***Products of Task 2***

Parameters for a flexible service catchment area

### **Task 3 Perform Analysis and Document Process and Results**

Using available tools and datasets, such as census data and travel behavior data, CTPS will estimate the existing potential rider population within a traditional distance of the transit service and within the distance described in Task 2. The primary outcome of this project will be a description of the process used to develop the output and process results.

#### ***Products of Task 3***

A description of the process and the results of the analysis provided in the form of a technical memorandum

**Exhibit 1**  
**ESTIMATED SCHEDULE**  
**Flexible Fixed-Route Bus Service**

Task	Week							
	1	2	3	4	5	6	7	8
1. Select Transit Corridor for Analysis	█							
2. Develop Catchment Area Parameters	█							
3. Perform Analysis and Document Process and Results		█						A

Products/Milestones

A: Technical memorandum

**Exhibit 2**  
**ESTIMATED COST**  
**Flexible Fixed-Route Bus Service**

<b>Direct Salary and Overhead</b>										<b>\$19,750</b>
Task	Person-Weeks by Pay Grade						Direct Salary	Overhead (120.3%)	Total Cost	
	G-9	G-8	G-7	G-6	G-5	Total				
1. Select Transit Corridor for Analysis	0.0	0.5	0.5	0.0	0.0	1.0	\$1,992	\$2,397	\$4,389	
2. Develop Catchment Area Parameters	0.0	0.0	0.5	0.2	0.0	0.8	\$1,383	\$1,664	\$3,047	
3. Perform Analysis and Document Process and Results	0.2	0.5	1.4	0.3	0.5	3.0	\$5,590	\$6,724	\$12,314	
Total	0.2	1.0	2.4	0.5	0.5	4.7	\$8,965	\$10,785	\$19,750	
<b>Other Direct Costs</b>										<b>\$0</b>
<b>TOTAL COST</b>										<b>\$19,750</b>

**Funding**

MPO §5303 Planning Contract #13804

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](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](mailto: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>.