



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Monica Tibbits-Nutt, MPO Chair | Secretary and CEO, Massachusetts Department of Transportation
Tegin Leigh Teich, Executive Director, MPO Staff

WORK PROGRAM

EXPLORATION OF BLUEBIKES TRANSIT CONNECTIONS

FEBRUARY 15, 2024

Proposed Motion

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

Project Identification

Unified Planning Work Program (UPWP) Classification

Agency and Other Client Transportation Planning Studies and Technical Analyses

Project Number 13818

Client

MBTA

Client Supervisor: Pete Robie

Project Supervisors

Principal: Rounaq Basu

Manager: Tanner Bonner

Funding Source

MassDOT-Directed PL Funds

Schedule and Budget

Schedule: 7 months after work commences

Budget: \$65,401

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

Bluebikes, the Boston region's public bikeshare system, has seen a dramatic increase in ridership in recent years. Total annual trips more than doubled between 2013 and 2020, alongside a roughly threefold increase in bike fleet size and docking stations. Bluebikes continues to expand and recently introduced electric bikes to the system. As Bluebikes serve an ever-increasing number of the region's trips, planners need to be equipped with robust data analyses to consider the differing purposes of travel and travel patterns of Bluebikes users.

Bikeshare programs have been widely recognized as an effective solution for providing first- and last-mile connections, increasing system connectivity, decreasing travel times, and encouraging mode shift from cars to transit. Despite readily available ridership and survey data, there has not yet been a thorough investigation of how Bluebikes can provide connections to public transit. Such an exploration, with an eye towards targeted expansions of Bluebikes with the goal of increasing connections to transit stops and stations, could lead to an increase in both Bluebikes and MBTA ridership by encouraging mode shift. Additionally, highlighting the potential expansion of stations that could serve as first- and last-mile connections could drive continued investments in bicycle and pedestrian infrastructure projects to improve system connectivity.

Central Transportation Planning Staff (CTPS) is conducting other work and programs related to this subject, including a Bluebikes fare equity analysis and demographic survey, development of a Baseline Equity Metrics dashboard, and the Boston Region MPO's Bicycle and Pedestrian program.

Objectives

This work will leverage available trip and survey data to identify existing Bluebikes trip flows of users making first- and last-mile connections. Additionally, CTPS will identify potential future Bluebikes locations that best serve first- and last-mile connections with an emphasis on impacts for environmental justice communities.

Work Description

This study will investigate the current use of Bluebikes for making first- and last-mile connections to transit. MPO staff will draw insights from Bluebikes trip data, the MBTA Systemwide Passenger Survey, and potentially the CTPS 2023 Bluebikes Demographic Survey. Additionally, this work will use demographic data and state-of-the-art analysis tools such as Conveyal to highlight where future Bluebikes investments could have the greatest potential to connect users to transit. This study will culminate in a technical memorandum describing analytical results, including a brief literature review and description of the methodology.

Task 1 Literature Review

CTPS will explore previous and existing efforts that have utilized bikeshare planning to serve first- and last-mile connections. CTPS will also investigate any published methodologies and analyses that leverage similar data to explore trip patterns between bikeshare and transit, and that estimate future demand for such trips upon system expansion.

Products of Task 1

A literature review to be included in the technical memorandum

Task 2 Trip and Survey Data Analysis

CTPS will synthesize available trip and survey data from Bluebikes and the MBTA to identify the prevalence of bike-trip patterns by users making first- and last-mile transit connections and investigate the characteristics of such trips.

Subtask 2.1 Prepare Data and Identify Limitations

CTPS will explore Bluebikes and MBTA data to identify information available for analysis and limitations that affect methodology choice. Data cleaning to support quality control will be conducted before performing the analysis.

Subtask 2.2 Develop Methodology

Informed by findings from the literature review and data preparation, CTPS will detail a methodology to explore existing first- and last-mile trip patterns and the characteristics of such trips. Methodology details will include assumptions of what constitutes a first- and last-mile trip pattern in the data, the conflation of Bluebikes data with MBTA survey data, the geographic extent of analysis, and a timeframe within the data to analyze.

Subtask 2.3 Conduct Analysis

CTPS will follow the formulated methodology to perform the analysis and synthesize results.

Products of Task 2

A robust methodology that analyzes first- and last-mile trip patterns

Initial results showing corridors and transit stations and stops where transit passengers are using Bluebikes for existing first- and last-mile trips to and from transit services (to be described in the technical memorandum)

Task 3 Accessibility Analysis

CTPS will conduct Conveyal access analyses to leverage insights from trip and survey data and explore the potential of future Bluebikes system expansions to serve first- and last-mile connections. These analyses will be synthesized with demographic data to emphasize potential impact on environmental justice communities.

Subtask 3.1 Develop Methodology

CTPS will decide on analysis parameters to run with Conveyal to model destination access via bikeshare (including both traditional bikes and electric bikes) and transit as an integrated mode of transportation. During this phase, staff will consult with the Conveyal support team to explore methodologies and obtain data pertaining to the level of traffic stress (LTS) across the transportation network as necessary. Staff will also decide on any destination types to include in the access analyses and candidate locations throughout the Boston region to model future bikeshare expansion.

Subtask 3.2 Conduct Analysis

Staff will follow the formulated methodology to perform the analysis and synthesize results.

Products of Task 3

A robust methodology that analyzes changes in destination access for demographic groups that would occur as a result of potential future Bluebikes expansion at candidate locations, and initial results to share with stakeholders

Task 4 Document and Communicate Results

Work performed during the study will culminate in a technical memorandum, including the literature review, methodology, and initial results from the analyses performed. The memorandum will describe previous and existing efforts nationwide that target bikeshare investment to serve first- and last-mile connections, existing trip patterns of first- and last-mile connections, and the potential impact to users' access to first- and last-mile connections from future bikeshare investment at candidate locations.

Products of Task 4

Internal technical documentation and a technical memorandum detailing the literature review, methodology, and initial results from the analyses performed

Exhibit 1
ESTIMATED SCHEDULE
Exploration of Bluebikes Transit Connections

Task	Month						
	1	2	3	4	5	6	7
1. Literature Review	A						
2. Trip and Survey Data Analysis							
3. Accessibility Analysis							
4. Document and Communicate Results	B						

Products/Milestones

A: Literature review

B: Technical memorandum

Exhibit 2
ESTIMATED COST
Exploration of Bluebikes Transit Connections

Direct Salary and Overhead	\$65,401
-----------------------------------	-----------------

Task	Person-Weeks by Pay Grade					Direct Salary	Overhead (120.3%)	Total Cost
	G-9	G-8	G-7	G-6	Total			
1. Literature Review	0.0	0.2	1.8	1.5	3.5	\$5,537	\$6,660	\$12,197
2. Trip and Survey Data Analysis	0.0	0.2	1.2	4.2	5.8	\$8,624	\$10,374	\$18,998
3. Accessibility Analysis	0.0	0.2	1.2	4.0	5.5	\$8,282	\$9,963	\$18,245
4. Document and Communicate Results	0.1	0.3	1.1	3.1	4.7	\$7,245	\$8,716	\$15,961
Total	0.1	1.1	5.3	12.8	19.4	\$29,687	\$35,713	\$65,401

Other Direct Costs	\$0
---------------------------	------------

TOTAL COST	\$65,401
-------------------	-----------------

Funding

MassDOT-Directed PL Funds

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>.