BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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

MEMORANDUM

DATE July 28, 2016

TO Boston Region Metropolitan Planning Organization

FROM Karl H. Quackenbush,
CTPS Executive Director

RE Revised Work Program for Shared-Use Mobility Services: Study of Their Impacts on the Region's Transportation System

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization, upon the recommendation of the Massachusetts Department of Transportation, vote to approve the revised work program for Shared-Use Mobility Services: Study of Their Impacts on the Region's Transportation System, presented in this memorandum

Project Identification

Unified Planning Work Program Classification

Technical Support/Operations Analysis: MassDOT Transit Planning Assistance

CTPS Project Number

11404

Client

Massachusetts Department of Transportation
Project Supervisor: Scott Hamwey

CTPS Project Supervisors

Principal: Annette Demchur
Manager: Michelle Scott

Funding

MassDOT §5303 Contract #88429
MassDOT §5303 Contract #94643

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 any work in the UPWP.

Background

New urban mobility options that serve as alternatives to private vehicles, public fixed-route transit, and traditional taxi services have become increasingly popular in the Boston region. These transportation modes include private point-to-point, or ride-sourcing, services, such as Uber and Lyft; start-up transit services, such as Bridj; and car- and bicycle-sharing services, such as Zipcar and Hubway, respectively.

These services offer users short-term access to transportation on an as-needed basis, often serving any origin-destination (OD) pair, and often through a mobile application. They offer on-call options using various modes; provide flexibility on an individual-trip level; and possibly affect longer-term mode-share and car-ownership decisions. It is important to understand the role of these non-traditional shared-use mobility options in the region's transportation system for short- and long-term transportation planning.

In the Boston region, in addition to supporting a mode shift away from single-occupant-vehicle (SOV) travel, these non-traditional transportation modes may:

- Serve as substitutes for traditional non-automobile travel modes (walking, using a privately owned bicycle, and using the Massachusetts Bay Transportation Authority fixed-route transit services)
- Complement the MBTA's fixed-route services by providing first- and last-mile connections; serving hard-to-reach OD pairs; or adding capacity to crowded segments of the MBTA's fixed-route system
- Decrease ridership on the MBTA's fixed-route transit system when they present a more attractive option
- Support a trend toward lower car-ownership rates, as they provide additional transportation choices that, as a whole, may increase the feasibility of a car-free lifestyle

Under the original work program for this study, staff reached out to shared-use mobility companies and municipalities to learn about available data; however, obtaining the datasets proved to be extremely difficult and time consuming, and much of the data sought was not forthcoming for a variety of reasons, including the competitive nature of the shared-use mobility marketplace. Staff expects to analyze data from only two sources—Hubway and Lyft.

The data already obtained includes Hubway trip data and member survey data. Currently, staff is negotiating with Lyft to obtain data about trip activity beginning or ending at rapid transit and commuter rail stations, and within and between ZIP code areas in Greater Boston. Lyft has requested that staff sign a non-disclosure agreement to obtain data, and as of July 19, 2016, the terms of this agreement are being negotiated.

This revised work program proposes an alternative set of tasks, schedule, and budget, based on the expected available data and the types of analysis activities that staff anticipates it can accomplish with this data. The sections below outline the objectives of the original project, accomplishments to date, and proposed analysis tasks using Hubway and Lyft data.

Objectives

The original objectives of the project were to obtain the data and perform the analysis required to answer the following questions:

1. What are the synergies between non-traditional transportation services and traditional modes? Where and when are trips using non-traditional modes complementing MBTA fixed-route transit trips?
2. Where and when are trips using these modes replacing private-vehicle and/or MBTA fixed-route transit trips? Where and when are these modes enabling new trips and new regional travel patterns?
3. What factors influence a person's decision to switch to non-traditional transportation modes, and how important is each factor?
4. How does the availability of these non-traditional modes allow people to live a less car-dependent lifestyle?

Under this revised scope, staff will work to accomplish these objectives to the degree possible with available data.

Work Description

Task 1 Review the Literature

Staff has completed the literature review described in Task 1 of the original work program and drafted a technical memorandum summarizing the major findings. The literature review, whose purpose was to understand the role of non-traditional transportation services in large urban transportation systems, focused on answering the following questions:

- How have car- and bicycle-sharing options, ride-sourcing services, and start-up transit services impacted mode shares, particularly for the fixed-route-transit and SOV modes?
- Do the non-traditional services complement or compete with the fixed-route transit system?
- Are there any indications that introduction of non-traditional transportation services has caused a decrease in car ownership?
- How have non-traditional services affected mobility?

Product of Task 1

A technical memorandum summarizing the major findings of Task 1 has been drafted.

New Task 2 Explore and Collect Data

In the original work program, under Task 2, staff planned to collect and analyze data about shared-use mobility trips and user characteristics. Staff also planned to collect and analyze comparable data about MBTA fixed-route services. Because obtaining the desired datasets was more difficult and time consuming than anticipated, only completing the data collection, and the additional time needed to do so, are included under the New Task 2.

Product of Task 2

Data for analysis in New Task 3

New Task 3 Analyze Data

Under the original Task 3, staff would have compared the travel patterns of shared-use mobility services with fixed-route transit service. Based on comparing travel patterns, staff would have evaluated factors that might influence a person's decision to switch to non-traditional travel modes. Because the structure and content of the Hubway and anticipated Lyft datasets differ from one another, this work program includes two separate data-analysis tasks: one specific to analyzing available bicycle-sharing data and one specific to analyzing expected ride-sourcing data.

Subtask 3.1 Analyze Bicycle-Sharing Data

This subtask includes three components:

- *Analyze Member Survey Data.* Staff has begun to examine data from Hubway's bicycle-sharing member survey to identify general trends in member characteristics and travel behavior. Staff will continue this analysis and will examine how identified trends compare to findings from the literature review. Staff also will investigate how Hubway

members may use bicycle sharing in concert with other modes, particularly automobiles and transit.

- *Analyze Trip Data.* Staff has begun, and will continue to analyze Hubway's trip data to identify patterns in trips by location and time of day, and to identify popular OD pairs for Hubway trips.

- *Analyze Relationship to Transit.* Staff will examine characteristics of popular bicycle-sharing OD pairs to determine whether these trips could have been completed using public transit. Staff also will analyze transit service characteristics, such as transfers, and trip time, to determine whether Hubway trips for a particular OD pair (during a particular time period) may be complimenting or competing with MBTA service. For some popular OD pairs, staff will determine whether bicycle sharing is enabling new travel patterns, or potentially extending the range of the transit system.

Subtask 3.2 Analyze Ride-sourcing (Lyft) Data

This subtask includes two components:

- *Analyze Ride-sourcing Activity at the ZIP Code Level.* Staff anticipates that Lyft will provide data about the percentages of Lyft trips that start or end in particular ZIP codes. Staff plans to analyze this data to learn when and where Lyft trips are occurring, and whether new travel patterns possibly are evolving. Using data from the MBTA, the U.S. Census, and other sources, staff also plans to analyze the demographic, socio-economic, transit-service, and vehicle-ownership characteristics of ZIP codes that have large shares of Lyft trip origins or destinations.

- *Analyze Ride-sourcing Activity at MBTA Stations.* Staff anticipates that Lyft will provide data about the percentages of trips that start or end at commuter rail or rapid transit stations. Staff plans to analyze Lyft activity at transit stations, including variations in activity by time of day. For stations that serve as an origin or destination for a particularly large share of Lyft trips, staff plans to examine detailed information about the shares of Lyft rides that begin or end at that station, and, if feasible, the ZIP codes where these rides are beginning or ending. Staff also plans to examine the frequency and characteristics of transit service at stations served by a large number of Lyft trips.

Product of Task 3

Analysis and supporting materials, to be included in the final document

New Task 4 Produce a Final Document

This task is the same as Task 4 in the original work program. In this task, staff will produce a final document based on the findings of Tasks 1 through 3. The final document will include results of the literature review and findings from the analyses.

Product of Task 4

Final document

Estimated Schedule

It is estimated that this project will be completed 12 months after work commenced. The proposed schedule, by task, is shown in Exhibit 1.

Estimated Cost

The total cost of this project is estimated to be $79,498. This includes the cost of 28.5 person-weeks of staff time and overhead at the rate of 102.7 percent. A detailed breakdown of estimated costs is presented in Exhibit 2.

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Exhibit 1
ESTIMATED SCHEDULE
Revised - Shared-Use Mobility Services: Study of Their Impacts on the Region's Transportation System

Task	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Review the Literature				A								
2. Explore and Collect Data												
3. Analyze Data												
4. Produce a Final Document												B

Products/Milestones

A: Literature review technical memorandum

B: Final document

Exhibit 2
ESTIMATED COST
Revised - Shared-Use Mobility Services: Study of Their Impacts on the Region's Transportation System

Direct Salary and Overhead	**$79,498**

Task	Person-Weeks						Direct Salary	Overhead (102.70%)	Total Cost
	M-1	P-5	P-4	P-3	Temp	Total			
1. Review the Literature	0.2	0.0	3.4	0.0	0.0	3.6	$4,892	$5,024	$9,917
2. Explore and Collect Data	0.5	0.0	5.3	0.3	0.0	6.0	$8,363	$8,589	$16,953
3. Analyze Data	0.4	0.3	4.5	3.4	1.7	10.4	$12,323	$12,656	$24,980
4. Produce a Final Document	4.5	0.0	4.0	0.0	0.0	8.6	$13,640	$14,009	$27,649
Total	5.6	0.3	17.2	3.7	1.7	28.5	$39,219	$40,278	$79,498

Other Direct Costs	**$0**

TOTAL COST	**$79,498**

Funding

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