BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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

MEMORANDUM

DATE October 1, 2015

TO Boston Region Metropolitan Planning Organization

FROM Karl H. Quackenbush
CTPS Executive Director

RE 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 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

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 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 pair, through a mobile application. They offer on-call options using various non-single-occupant-vehicle modes, providing flexibility on an individual-trip level and possibly affecting longer-term mode shares and car ownership decisions. An understanding of the role of these nontraditional shared-use mobility options in the region's transportation system is important 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 nontraditional transportation modes may:

- Serve as substitutes for traditional non-automobile 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, by serving hard-to-reach origin-destination pairs, or by 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 for residents of the Boston region

The demographics of users of these nontraditional services, as well as their geographic and temporal usage patterns, will be analyzed to help determine whether these services are being used to complement the MBTA's fixed-route system and to determine their role in the overall regional transportation system.

Objectives

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

1. What are the synergies between nontraditional transportation services and more traditional modes? Where and when are trips using nontraditional 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? Alternatively, 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 nontraditional modes, and how important is each factor?
4. How does the availability of these modes allow people to live a less car-dependent lifestyle?

Work Description

Task 1 Review the Literature

Staff will conduct a literature review to understand the role of nontraditional transportation services in large urban transportation systems. The literature review will focus on answering the following questions:

- How have car- and bicycle-sharing options, private point-to-point services, and start-up transit services impacted mode shares, particularly for the fixed-route-transit and single-occupant-vehicle modes?
- Do the nontraditional services complement or compete with the fixed-route transit system?
- Are there any indications that the introduction of nontraditional transportation services has caused a decrease in car ownership?
- How have nontraditional services affected mobility?

Product of Task 1

Technical memorandum summarizing the major findings of Task 1

Task 2 Collect and Analyze Travel Data

To the extent possible, staff will collect data from providers of private point-to-point services, transit start-ups, and car- and bicycle-sharing companies regarding their customers' travel patterns. These data may include:

- Trip origins and destinations
- Trip lengths, in distance and/or time
- Trip time of day and day of week
- Vehicle occupancy rates
- Demographic information about their customers
- Travel modes previously used by their customers

Staff will analyze the data to identify major travel patterns and summarize trends. If demographic data are available, staff will also summarize the demographic characteristics of typical users of nontraditional transportation modes.

Staff will also collect and analyze comparable data for MBTA fixed-route services using sources such as the automatic-fare-collection system and passenger surveys.

Staff will also produce supporting materials needed for the analysis. These may include tables, graphs, and maps.

Products of Task 2

An analysis of the data collected in this task, including supporting materials, which will be included in the final document

Task 3 Compare the Travel Patterns of Nontraditional and Fixed-Route Services

Staff will analyze the findings about nontraditional and MBTA fixed-route services from Task 2 to evaluate how the two types of services interact with each other and the nature of the synergies between them. Staff will compare the travel patterns of the two types of services in order to identify the origin-destination pairs and times of day for which nontraditional services complement the MBTA's fixed-route system and for which the nontraditional services compete with the fixed-route system.

Staff will then identify the origin-destination pairs for which there is high demand for nontraditional services and for which the following conditions are present within the MBTA's fixed-route system:

- At or near capacity
- Low connectivity (multiple transfers and/or a very long trip time)
- Service disruption

These criteria indicate that nontraditional services are complementing the MBTA's fixed-route system.

Trips on nontraditional services that start or end at an MBTA station, particularly a station that is isolated (in other words, not in the heart of downtown Boston,

where there are other trip attractions), will also be identified as potential feeders to the fixed-route transit system.

High-demand origin-destination pairs on nontraditional services at times of day where there is adequate capacity and connectivity on the MBTA's fixed-route system will be identified as examples of such services competing with the MBTA's fixed-route system.

Staff will use the travel-pattern comparisons to evaluate factors that may influence a person's decision to switch to nontraditional modes.

Products of Task 3

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

Task 4 Produce a Final Document

Staff will produce a final document based on the findings of Tasks 1 through 3. The final document will include the results of the literature review (Task 1); a discussion of the existing travel patterns for nontraditional and MBTA fixed-route services and the demographics of users of shared-use mobility services (Task 2); and an analysis of complementary and competing travel modes (Task 3).

Product of Task 4

Final document

Estimated Schedule

It is estimated that this project will be completed 20 weeks after work commences. The proposed schedule, by task, is shown in Exhibit 1.

Estimated Cost

The total cost of this project is estimated to be $45,000. This includes the cost of 15.4 person-weeks of staff time and overhead at the rate of 98.88 percent. A detailed breakdown of estimated costs is presented in Exhibit 2.

KQ/KSP/ksp

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

Task	Week																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Review the Literature																				
2. Collect and Analyze Travel Data																				
3. Compare the Travel Patterns of Nontraditional and Fixed-Route Services																				
4. Produce a Final Document																				

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

Direct Salary and Overhead	**$45,000**

Task	Person-Weeks				Direct Salary	Overhead (98.88%)	Total Cost
	M-1	P-5	P-4	Total			
1. Review the Literature	1.0	0.0	2.0	3.0	$4,367	$4,318	$8,686
2. Collect and Analyze Travel Data	0.5	1.0	3.0	4.5	$6,671	$6,596	$13,266
3. Compare the Travel Patterns of Nontraditional and Fixed-Route Services	0.7	0.0	2.0	2.7	$3,853	$3,810	$7,663
4. Produce a Final Document	2.2	0.0	3.0	5.2	$7,735	$7,649	$15,384
Total	4.4	1.0	10.0	15.4	$22,627	$22,373	$45,000

Other Direct Costs	**$0**

TOTAL COST	**$45,000**

Funding

MassDOT §5303 Contract #88429