

Table 9-4: FFY 2018 Unified Planning Work Program Budget - MPO New Discrete Studies and New Ongoing Program

Universe ID	Staff-recommended New Projects	CTPS PL Funds	CTPS Section 5303 Funds	Proposed FFY 2018 CTPS Budget
A-3	Bicycle Level-of-Service Metric	\$ 39,050	\$ 15,950	\$ 55,000
L-1	Transportation Mitigation of Major Developments: Review of Strategies	\$ 35,500	\$ 14,500	\$ 50,000
M-1	Safety and Operations Analysis at Selected Intersections	\$ 49,700	\$ 20,300	\$ 70,000
M-5	Potential Impacts of Connected and Autonomous Vehicles	\$ 35,500	\$ 14,500	\$ 50,000
M-7	Travel Alternatives to Regional Traffic Bottlenecks	\$ 49,700	\$ 20,300	\$ 70,000
M-9	Addressing Safety, Mobility, and Access on Subregional Priority Roadways 2018	\$ 85,200	\$ 34,800	\$ 120,000
M-10	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment 2018	\$ 85,200	\$ 34,800	\$ 120,000
T-3	Low-Cost Improvements to MBTA Rapid Transit Service	\$ 35,500	\$ 14,500	\$ 50,000
T-13	First- and last-mile shuttle-partnership models	\$ 24,850	\$ 10,150	\$ 35,000
T-14	Review of and Guide to Regional Transit Signal Priority	\$ 46,150	\$ 18,850	\$ 65,000
O-1	MPO Staff-Generated Research Topics	\$ 14,200	\$ 5,800	\$ 20,000
Total for Staff-recommended New Discrete and Ongoing Studies		\$ 500,550	\$ 204,450	\$ 705,000

NOTE: This information may be updated as the FFY 2018 UPWP budget continues to develop.

6.2 PLANNING STUDIES

The project descriptions in this section describe the new studies chosen by the MPO for funding in FFY 2018. As described in Chapter 1, each year as ideas for new studies are formed, MPO staff classifies them into the following categories: active transportation; land use, environment, and economy; multi-modal mobility; transit; safety and security; and other technical work. Each of the project descriptions on the following pages is preceded by a funding table that shows the project identification number, category, funding sources, and total budget.

Bicycle Level-of-Service Metric

Project ID Number	
Category	Land Use, Environment, and Economy
FHWA 3C PL Funds	\$39,050
FTA Section 5303 Funds	\$15,950
FFY 2018 Total Budget	\$55,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

Currently, there are several new metrics available for measuring the extent to which infrastructure supports bicycle travel and comfort, known as “bicycle level of service.” It has yet to be seen, however, if these metrics are applicable to the Boston region. In this project, MPO staff will formulate a plan for developing and implementing a bicycle level-of-service index. This index could consist of information collected from intersection surveys and bicycle counts, among other possible sources. This information could help transportation planners and government officials make decisions about bicycle programs, including prioritizing projects and allocating funding.

Approach

MPO staff would analyze the potential structure and needs of a bicycle level-of-service index for the region and would produce a white paper elaborating on the results. The steps for formulating a plan include:

1. Researching criteria that already exist and criteria that other entities have applied to specific projects
2. Interviewing local and state entities to determine what data are already available or could be readily obtained
3. Developing a plan to aggregate any data that can be obtained, and refining data collection processes that would be beneficial
4. Determining what criteria are best for evaluating bicycle facilities in the Boston Region MPO area

FFY 2018 Anticipated Outcomes

The anticipated result of this project would be a recommended bicycle level-of-service index that the MPO could implement as part of its planning and monitoring processes in the future. In the long term, MPO staff may seek to create an interactive tool based on this index that could analyze bicycle facilities in the region. This tool would be located in the applications section of the Boston Region MPO's website.

Transportation Mitigation of Major Developments: Review of Strategies

Project ID Number	TBD
Category	Land Use, Environment, and Economy
FHWA 3C PL Funds	\$35,500
FTA Section 5303 Funds	\$14,500
FFY 2018 Total Budget	\$50,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

This project will build on the research from the MPO's previous Core Capacity Constraints study. That effort included compiling processes used by the nine studied communities to review proposed developments and mitigate their transportation impacts; this also included documenting specific examples of these communities' experiences with transit mitigation strategies. This project would expand the study area to include the rest of the Boston Region MPO and investigate the other 92 MPO municipalities' experience with transportation mitigation strategies, focusing on what worked and what didn't from recently completed projects.

Approach

MPO staff proposes to identify recent and planned major developments in the MPO municipalities. Staff will meet with representatives from the communities of these selected developments and learn how each community negotiated mitigation measures and funding with each developer, and citing the resultant outcomes of the mitigation.

FFY 2018 Anticipated Outcomes

This project would expand the reach of the Core Capacity Constraints study to include the 92 MPO municipalities not studied in that effort. A report will document the experience and presence of development-related transportation mitigation practices.

Safety and Operations Analysis at Selected Intersections

Project ID Number	M-1
Category	Safety and Mobility
FHWA 3C PL Funds	\$49,700
FTA Section 5303 Funds	\$20,300
FFY 2018 Total Budget	\$70,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

This project will examine mobility and safety issues at major intersections on the region's arterial highways. According to the MPO's crash database, many crashes occur at these locations, which also are congested during peak traffic periods. While the resulting congestion may occur only at the intersections, it usually spills over to a few, adjacent intersections along an arterial. These intersections may also accommodate multiple transportation modes including buses, trucks, bicyclists, and pedestrians.

Approach

MPO staff will examine intersection locations based on a review of the MPO's crash database and the MPO Congestion Management Process's travel-time and delay information. MPO staff will recommend safety and operations improvements to enhance the intersections' operations for all transportation modes, including transit, bicycling, and walking, and to enhance the safety of drivers, bicyclists, pedestrians.

Municipalities are receptive to these studies, as they provide an opportunity to review the locations' needs, starting at the conceptual level, before municipalities commit funds for project design. If a project qualifies for federal funds, the study's documentation is also useful to MassDOT.

FFY 2018 Anticipated Outcomes

Selection of intersection locations for study, data collection, technical analysis, development of recommendations for improvements, and creation of presentations and memoranda.

Potential Impacts of Connected and Autonomous Vehicles

Project ID Number	
Category	Multimodal Mobility
FHWA 3C PL Funds	\$35,500
FTA Section 5303 Funds	\$14,500
FFY 2018 Total Budget	\$50,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

This project will build on the FY 2017 Planning for Connected and Autonomous Vehicles (CAV) project, which was an important first step to understanding the transportation planning consequences of CAV technologies, as well as the preparation needed by the MPO for their impacts. The rapid pace of changes associated with CAV technology and its accompanying regulatory issues necessitate continual study and attention; hence research is an ongoing effort. Many of the questions posed in the 2017 study remain to be answered, and many new ones will be raised as the Boston Region MPO begins to understand and plan for CAV technologies.

Approach

Based on recommendations and research from the 2017 study, MPO staff proposes to further examine CAV planning tools, such as travel demand modeling, as well as CAV issues related to MPO processes, such as LRTP planning and overall decision-making and evaluation. Staff will continue the ongoing coordination with key stakeholders identified in the previous study. Staff will also organize a workshop in which findings from CAV research will be shared with MPO member communities.

FFY 2018 Anticipated Outcomes

This project would further investigate the research and recommendations from the FY 2017 study. A workshop will be conducted for MPO member communities at which CAV research will be presented. This workshop will also serve as an

opportunity for staff to collect feedback from these stakeholders and understand their concerns regarding CAV issues.

Travel Alternatives to Regional Traffic Bottlenecks

Project ID Number	13278
Category	Capacity Management/Mobility
FHWA 3C PL Funds	\$49,700
FTA Section 5303 Funds	\$20,300
FFY 2018 Total Budget	\$70,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

This project will use vehicle probe data to develop an understanding of how regional traffic moves through cities and towns, and explore possible alternatives along key roadways where congestion recurs. This understanding of how regional traffic moves could help communities prioritize needs and potentially shift users to sustainable modes.

This study could also study traffic patterns that do not occur during peak periods or are non-recurring. This could include examining traffic patterns associated with:

- Sporting Events
- Concerts
- Festivals
- Construction
- Inclement Weather
- Holidays

Approach

MPO staff will examine Inrix or like data to determine locations and times of recurring and non-recurring congestion and develop an understanding of how traffic flows in the region after determining these locations, staff would calculate performance measures that can gauge the duration, extent and reliability of congestion at a location.

FFY 2018 Anticipated Outcomes

A study or handbook to provide communities with a way to reduce congestion caused by regional traffic, prioritize their transportation needs, and potentially to shift users to sustainable modes.

Addressing Safety, Mobility, and Access on Subregional Priority Roadways

Project ID Number	13274
Category	Multimodal Mobility
FHWA 3C PL Funds	\$85,200
FTA Section 5303 Funds	\$34,800
FFY 2018 Total Budget	\$120,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

During MPO outreach, Metropolitan Area Planning Council (MAPC) subregional groups identify transportation problems and issues that concern them, often those relating to bottlenecks or lack of safe access to transportation facilities in their areas. These issues can affect livability, quality of life, crash incidence, and air quality along an arterial roadway and its side streets. If problems are not addressed, mobility, access, safety, economic development, and air quality are compromised.

Approach

To address feedback from the MAPC subregional groups, MPO staff will identify priority arterial roadway segments in the MPO region, emphasizing issues identified by the relevant subregional groups, and will develop recommendations. Staff will concentrate on transit service, nonmotorized modes of transportation, and truck activity along these arterial segments. Staff will consider numerous strategies to improve arterials, including examining and evaluating any or all of the following factors:

- Traffic signals (equipment, retiming, redesign, and coordination)
- Bus stop locations
- Processing buses through traffic lights
- Location and management of pedestrian crossings and signals, including

- Americans with Disabilities Act of 1990 (ADA) requirements
- Travel-lane utilization by motorized and bicycle traffic
- Speed-limit assessment
- Access management

These improvements will provide a guide to designing and implementing a Complete Streets corridor, which could be recommended to implementing agencies and funded through various federal, state, and local sources, separately or in combination.

The Boston Region MPO has conducted Addressing Safety, Mobility, and Access on Subregional Priority Roadways studies as part of the FFY 2013, 2014, 2015, 2016, and 2017 Unified Planning Work Programs (UPWPs).

FFY 2018 Anticipated Outcomes

Anticipated outcomes include data collection, technical analysis, development of recommendations, and documentation for selected corridors.

Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment

Project ID Number	
Category	Multimodal Mobility
FHWA 3C PL Funds	\$85,200
FTA Section 5303 Funds	\$34,800
FFY 2018 Total Budget	\$120,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

The purpose of these studies is to develop conceptual design plans that address regional multimodal transportation needs along priority corridors identified in the Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*. These studies include recommendations that address multimodal transportation needs that are expected to arise from potential future developments in the study area.

Approach

The LRTP identified needs for all modes of transportation in the MPO region. These needs guide decision-making about which projects to include in current and future Transportation Improvement Programs (TIPs). Projects that address the region's current mobility needs are those that focus on maintaining and modernizing roadways with high levels of congestion² and safety problems, expanding the quantity and quality of walking and bicycling, and making transit service more efficient and modern. During the past several years, the MPO has conducted these planning studies, and municipalities have been receptive to them.

² Congestion is used as one of the selection criteria for potential study locations. Congested conditions are defined as a travel time index of at least 1.3 (this means that a trip takes 30 percent longer than it would under ideal conditions).

MPO staff would select locations for study with consideration of municipal, subregional, and other public feedback, then would collect data, conduct technical analyses, and develop recommendations for improvements. The recommendations would be forwarded to implementing agencies, which may choose to fund improvements through various federal, state, and local sources, either separately or in combination.

FFY 2018 Anticipated Outcomes

Through these studies, MPO staff would recommend conceptual improvements for one or more corridors, or several small sections within a corridor, that are identified by the Congestion Management Process and the LRTP as being part of the Needs Assessment process.

The studies would provide cities and towns with the opportunity to review the requirements of a specific arterial segment, starting at the conceptual level, before committing design and engineering funds to a project. If the project qualifies for federal funds for construction of the recommended upgrades, the study's documentation also might be useful to the Massachusetts Department of Transportation (MassDOT) and the municipalities.

Low-Cost Improvements to MBTA Service

Project ID Number	
Category	Transit
FHWA 3C PL Funds	\$35,500
FTA Section 5303 Funds	\$14,500
FFY 2018 Total Budget	\$50,000

Purpose

Identify low-cost solutions to specific problems/locations in the transit network.

Approach

Transit agencies experience operational problems that include poor queueing (which negatively affect boarding speeds and dwell times), inefficient loading within vehicles (which affect capacity of trains), and ineffective wayfinding. This study would explore some of these problems and propose possible low-cost solutions to help solve them. Staff will coordinate with the MBTA and MIT, which is conducting a similar effort, to ensure that there is no overlap in our work. We would identify between three-to-five locations where this “friction” occurs, identify low-cost solutions that could be implemented, and suggest processes for implementing the solutions. This study would primarily focus on the MBTA rapid transit system, but could also include the MBTA commuter rail as well as locations within regional transit agency service areas that are in need of improvement.

Anticipated Outcome: The first part of the study would involve a literature review to determine the range of low-cost solutions that exist and which ones would be most appropriate and efficacious to address identified service issues at the chosen locations. The resulting report would also and could recommend an approach to study the after-condition at each location to determine how well the interventions are working.

FFY 2018 Anticipated Outcome:

Identification of low-cost solutions to selected operational transit problems.

First- and Last-Mile Shuttle-Partnership Models

Project ID Number	
Category	Transit
FHWA 3C PL Funds	\$24,850
FTA Section 5303 Funds	\$10,150
FFY 2018 Total Budget	\$35,000

Purpose

The goal of this study is to identify the most promising financially sustainable partnership models for first- and last-mile transit services for the purpose of including these services in the Boston Region MPO's TIP.

Approach

In the current LRTP, the Boston Region MPO envisions first- and last-mile shuttles as a potential solution to some of the region's mobility needs. Future Transportation Improvement Programs will include a first- and last-mile shuttle component of the community transportation, parking, clean air and mobility priority area. In the past few years, the MPO has studied potential locations, routings, and scheduling of first- and last-mile shuttles as part of the Regional Transit Service Planning Assistance program. In previous years, the MPO also ran grant programs, partnering with municipalities and transportation management associations (TMAs), to initiate these types of first- and last-mile transit services. However, there were only a few applicants to those previous grant programs.

There has been little research at the MPO into financially sustainable partnership models for first- and last-mile transit shuttles. This study would investigate these potential partnership models and identify the most promising models to include in the Boston Region MPO's TIP.

FFY 2018 Anticipated Outcome:

Identification of promising partnership models for assessing first- and last-mile transit shuttle services for inclusion in the Boston Region MPO's TIP.

Review of and Guide for Implementing Transit Signal Priority in the MPO Region

Project ID Number	
Category	Transit
FHWA 3C PL Funds	\$46,150
FTA Section 5303 Funds	\$18,850
FFY 2018 Total Budget	\$65,000

Purpose

The goal of this study is to develop a guide for evaluating potential transit priority treatments in the MPO region in order to respond better to requests from municipalities and transit operators seeking analysis and planning assistance for transit priority treatments.

Approach

Municipalities and transit operators in the Boston Region MPO area have started to investigate transit signal priority (TSP) as a method of providing better travel times to public transit riders at individual intersections or along a route or corridor with multiple signalized intersections. There are many types of transit priority signal systems and technologies. In advance of any implementation of a transit signal priority system or technology, municipalities and other agencies that own traffic signal systems would need to coordinate with each other and public transit operators to choose a specific transit signal priority system or set of transit signal priority technologies.

The Central Transportation Planning Staff (CTPS) to the Boston Region MPO proposes to review transit signal priority technologies to understand the capabilities and limitations of current transit signal priority systems, their potential for integration with local traffic signal systems in the MPO region, and their potential for integration with local transit operator vehicle fleets. This study will also investigate the institutional issues for implementing transit signal priority in the region and develop guidance concerning interagency coordination between transit agencies and local transportation, traffic, and/or public works departments

during the planning, implementation, operation, and evaluation phases of a TSP system.

Based on the findings of this review, CTPS will develop a guide for evaluating potential transit priority treatments in the MPO region in order to respond better to requests from municipalities or transit operators seeking analysis and planning assistance for transit priority treatments.

FFY 2018 Anticipated Outcome:

A guide for evaluating and implementing transit signal priority in the MPO region.

MPO Staff-Generated Research Topics

Project ID Number	20901
Category	Other Technical Support
FHWA 3C PL Funds	\$14,200
FTA Section 5303 Funds	\$5,800
FFY 2018 Total Budget	\$20,000

Note: FTA and FHWA funds include the MassDOT local match.

Purpose

This program would support work by MPO staff members on topics that relate to the Boston Region MPO's metropolitan transportation-planning process, that staff members have expressed interest in, and that are not covered by an ongoing UPWP or discrete project.

This program was funded for the first time in FFY 2016, when the work undertaken consisted of investigating the possibility of using driver license acquisition rates obtained through Registry of Motor Vehicles (RMV) data as a possible measure of transit dependence. The thought is that current measures of transit dependence, such as vehicles per household, may not be an accurate measure given the availability of car-sharing services such as Zipcar. This research aims to develop a new measure of transit dependence that could be more accurate and meaningful.

Approach

Interested MPO staff members would complete an application for MPO funding to do independent research on a topic of professional interest and potential use in the metropolitan transportation-planning process. The application would be reviewed by MPO managers and directors.

FFY 2018 Anticipated Outcomes

This research program would produce valuable information for the MPO's consideration and would support staff members' professional development. It would yield highly creative solutions for transportation-planning problems.