



CHAPTER 6

Boston Region MPO Planning Studies and Technical Analysis

6.1 INTRODUCTION

As described in Chapter 1, each federal fiscal year (FFY), the Boston Region Metropolitan Planning Organization (MPO) receives federal transportation planning funds from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). Combined with the local Massachusetts Department of Transportation (MassDOT) matching amount, these funds form the budget that allows the MPO staff to accomplish the certification requirement activities

described in Chapter 5, the planning studies and technical analyses described in this chapter, and the administrative tasks and data management described in Chapter 8.

The work described in this chapter consists of the following:

- New transportation planning studies chosen for funding in this FFY through the committee and public outreach processes described in Chapter 1 (see Section 6.2, Planning Studies)
- Ongoing MPO work programs that provide technical assistance and transportation planning support to municipalities throughout the region (see Section 6.3, Technical Analyses)

Additionally, the MPO member agency, the Metropolitan Area Planning Council (MAPC), conducts planning studies and technical assistance throughout the region under four ongoing work programs each FFY (see Section 6.4, MAPC Planning Studies and Technical Analyses).

Table 6-1 summarizes the salary and overhead costs, status (percent complete by the end of FFY 2016), and completed and planned work products for planning studies started in a previous FFY and continued into FFY 2017. Table 6-2 summarizes the salary and overhead costs in FFY 2016 and FFY 2017, as well as the completed and planned work products for ongoing MPO technical assistance and transportation planning support work.

The project descriptions throughout this chapter describe new transportation planning studies chosen for funding in FFY 2017. They provide detailed updates for the FFY 2017 funding and work products for the MPO's and MAPC's ongoing programs.



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Table 6-1: Discrete Boston Region MPO Planning Studies and Technical Analyses Continued into FFY 2017

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	Status as of October 1, 2016	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
Planning Studies										
Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2016	13270	\$110,000	\$77,000	\$33,000	Study and report on Route 20 in Marlborough	95%	\$7,831	\$3,199	\$11,030	Final report and presentation to the MPO
Addressing Priority Corridors from the LRTP Needs Assessment: FFY 2016	13271	\$110,000	\$77,000	\$33,000	Study and report on Route 1A/Vinnin Square in Swampscott	95%	\$7,931	\$3,239	\$11,170	Final report and presentation to the MPO
Safety and Operations at Selected Intersections: FFY 2016	13272	\$65,000	\$45,500	\$19,500	Technical analysis of study intersections and draft memos for selected intersections: Broadway at Fourth and Fifth Streets in Chelsea and Route 114/Andover Street at Esquire Drive and Violet Road in Peabody	90%	\$5,666	\$2,314	\$7,980	Final memoranda for FFY 2016 Safety and Operations Analyses at Selected Intersections: Broadway at Fourth and Fifth Streets in Chelsea and Route 114/ Andover Street at Esquire Drive and Violet Road in Peabody
Pedestrian LOS Metric Development	13273	\$45,000	\$45,000	\$0	Memo documenting the existing pedestrian LOS	88%	\$5,740	\$0	\$5,740	Final memorandum: Pedestrian LOS Metric Development
Technical Analysis										
Systemwide Title VI/ EJ Assessment of TIP Projects	11356	\$75,000	\$52,500	\$22,500	Initiate the development of a method for examining the systemwide benefits and burdens associated with users of the roadway system, focusing on the locations for which TIP projects have been selected Initiate the development of a procedure for examining the impacts (benefits and burdens) on EJ populations living in areas adjacent to roadway projects	90%	\$4,480	\$1,830	\$6,310	Implement the method(s) developed in FFY 2016 by testing the procedure on a set of representative TIP projects to assess the systemwide benefits and burdens associated with those projects on EJ and non-EJ populations. Work will be summarized in a technical memo
Bicycle Network Gaps: Feasibility Evaluations	11250	\$55,000	\$55,000	\$0	Select three gaps for evaluation and recommendation. Hold meetings with the towns where each of the three gaps are located to determine the issues confronting each gap. Visit the three selected gaps to assess their condition. Begin to evaluate each gap to determine how to address the three missing segments of the Boston region bicycle network.	85%	\$8,000	\$0	\$8,000	Complete Central Square gap assessment and documentation. Central Square gap memorandum. Sudbury Aqueduct gap memorandum. Massachusetts Central Rail Trail memorandum
TOTAL		\$460,000	\$352,000	\$108,000			\$39,648	\$10,582	\$50,230	

Note: The Bicycle Network Gaps: Feasibility Evaluations project was originally programmed in the FFY 2015 UPWP. The total budget for the project was \$55,000.
 EJ = environmental justice. FFY = federal fiscal year. FHWA = Federal Highway Administration. FTA = Federal Transit Administration. LOS = level of service. LRTP = Long-Range Transportation Plan.
 MPO = Metropolitan Planning. PL = Federal Highway Administration transportation planning funds. TIP = Transportation Improvement Program.

Table 6-2: FFY 2016/FFY 2017 Ongoing Boston Region MPO Technical Analyses

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	Status as of October 1, 2016	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
CTPS Activities										
Community Transportation Technical Assistance	69275	\$48,420	\$33,894	\$14,526	Technical memoranda for Chelsea and Stow addressing traffic operations at intersection locations in these communities	Ongoing	\$49,798	\$21,342	\$71,140	Continued coordination with municipalities on traffic operations, safety, and mobility issues
Bicycle/Pedestrian Support Activities	13208	\$47,400	\$33,180	\$14,220	Continued support for bicycle and pedestrian activities. Continue developing bike and pedestrian count database and count program	Ongoing	\$45,388	\$19,452	\$64,840	Continued coordination and support for bicycle and pedestrian programs in municipalities. Other specific activities could include work related to closing gaps in the bicycle network and analyzing areas of safety concern
Regional Transit Service Planning Technical Support	14342	\$29,920	\$20,944	\$8,976	Provided technical assistance to regional transportation authorities, subregions, and municipalities to improve transit services	Ongoing	\$24,647	\$10,563	\$35,210	Continued assistance to improve transit services
Livable Community Workshop Program	13801	\$25,200	\$17,640	\$7,560	Memorandum for workshop conducted in Canton helping the community development of a bike/pedestrian committee and plan	This program is not being continued in FFY 2017. The type of work previously conducted under this program will be completed for municipalities as part of the Community Transportation Technical Assistance Program	\$0	\$0	\$0	N/A - this program is not being undertaken in FFY 2017
MAPC Activities										
Community Transportation Technical Assistance	MAPC8	\$22,180	\$15,526	\$6,654	Worked with various municipalities in the region to study transportation issues and develop appropriate solutions	Ongoing	\$31,500	\$13,500	\$45,000	Continue assistance to municipalities

(Table 6-2 cont.)

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	Status as of October 1, 2016	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
Corridor/Subarea Planning Studies	MAPC4	\$167,480	\$117,236	\$50,244	<p>Right Size Parking Report summarizing data collection and interim conclusions</p> <p>Transit-Oriented Development Opportunities and Impediments at Natick Center Commuter Rail Station</p> <p>Transit-Oriented Development Opportunities and Impediments at Dedham Corporate Center Commuter Rail Station</p> <p>Transit-Oriented Development Opportunities and Impediments at Braintree Red Line Station</p> <p>Wellesley Route 9 Enhancement Study and Plan - Phase 1</p> <p>Downtown Everett Parking Study</p>	Ongoing	\$117,236	\$50,244	\$167,480	<p>Downtown Ipswich Parking Analysis</p> <p>Winthrop Square Parking Analysis</p>
Alternative Mode Planning and Coordination	MAPC7	\$170,000	\$119,000	\$51,000	<p>Transportation Demand Management - Case Studies and Regulations</p> <p>Medford Complete Streets Prioritization Plan</p> <p>Acton Complete Streets Prioritization Plan</p> <p>Winchester Complete Streets Prioritization Plan</p> <p>Hybrid Electric Vehicle Retrofit Procurement</p> <p>North Suburban Planning Council Mobility Study</p> <p>Middleton Bicycle and Pedestrian Plan</p> <p>Salem Cycle-Track Pilot Study</p> <p>Development of LandLine Regional Greenway</p> <p>Autonomous Vehicles and Connected Cars research</p> <p>Hubway Coordination: worked with Boston, Cambridge, Somerville, and Brookline to support bicycle sharing program and conduct new procurement for system operator</p> <p>Worked with municipalities and DCR along the Mass Central Corridor to advance the rail trail</p>	Ongoing	\$127,921	\$54,823	\$182,744	<p>Continue to coordinate with municipalities on complete streets planning, bicycle and pedestrian planning, and other identified multimodal transportation needs</p>

(Table 6-2 cont.)

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	Status as of October 1, 2016	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
MetroFuture Implementation	MAPC6	\$90,000	\$63,000	\$27,000	Technical Memorandum: Documenting support to public engagement in transportation plans Technical Memorandum: Documenting the effectiveness of MAPC bicycle and pedestrian plans Made progress towards establishing a process to update MetroFuture Regional Plan	Ongoing	\$63,000	\$27,000	\$90,000	Continue to work on public engagement in the implementation of transportation plans. Write memos as necessary to document analysis and progress
Land Use Development Project Reviews	MAPC5	\$88,820	\$62,174	\$26,646	Developed comment letters analyzing major development projects across the region, including Wynn Casino Section 61 Findings, 1265 Main Street (former Polaroid site) in Waltham, Kendall Square Urban Renewal Amendment, Center 128 in Needham	Ongoing	\$62,174	\$26,646	\$88,820	Continue to analyze and provide expert comment on major developments in the region
Livable Community Workshop Program	MAPC9	\$15,000	\$10,500	\$4,500	Worked with municipalities in the region on livability, mobility, equity, and complete streets issues. Identify issues and develop potential solutions	This program is not being continued in FFY 2017. The type of work previously conducted under this program will be completed for municipalities as part of the Community Transportation Technical Assistance Program	\$0	\$0	\$0	N/A - this program is not being undertaken in FFY 2017
TOTAL		\$704,420	\$493,094	\$211,326			\$521,664	\$223,570	\$745,234	

CTPS = Central Transportation Planning Staff. DCR = Department of Conservation and Recreation. FFY = federal fiscal year. FHWA = Federal Highway Administration. FTA = Federal Transit Administration. MAPC = Metropolitan Area Planning Council. N/A = not applicable. PL = Federal Highway Administration transportation planning funds.

6.2 PLANNING STUDIES

The project descriptions in this section describe the new studies chosen by the MPO for funding in FFY 2017. As described in Chapter 1, each year as ideas for new studies are formed, MPO staff classifies the new studies 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.

SAFETY EFFECTIVENESS OF SAFE ROUTES TO SCHOOL PROGRAMS

Project ID Number	13280
Category	Active Transportation
FHWA 3C PL Funds	\$56,800
FTA Section 5303 Funds	\$23,200
FFY 2017 Total Budget	\$80,000

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

Purpose

This study will investigate the safety effectiveness of the Safe Routes to School (SRTS) program and the primary factors contributing to a program's effectiveness. Such factors could include reduced-speed school zones, infrastructure improvements, grade levels of students, the presence of school crossing guards, and others.

Approach

Main study tasks will include:

- Formation of a multiagency task force to guide the study.
- Review of the literature on the SRTS program in the Boston region as well as in other states to determine locations where school speed zones and other infrastructure improvements are encouraged, require further justification, or are discouraged.

- Review of the Metropolitan Area Planning Council's (MAPC's) spatial analysis and MySchoolCommute survey tools to assess the effectiveness of SRTS programs.
- Review of MassRIDES and WalkBoston joint assessments conducted for SRTS programs to provide valuable information for evaluating the safety effectiveness of the SRTS program.
- After review of the literature, MPO staff, working in conjunction with the task force, will select schools (approximately one school in each of the eight MAPC subregions) that have been participating in the SRTS program for study. Schools will be selected to represent a range of grade levels and ages (elementary, middle, and high schools); a wide geographical area that is representative of several communities in the MPO region; and additional factors to illustrate different conditions that could impact the effectiveness of a SRTS program such as environmental justice zones, high- and low-density communities, varied traffic characteristics on surrounding roads, and other factors to be determined from the literature review.
- Once the schools are selected, MPO staff will gather data on traffic volumes, pedestrian and bicycle volumes, crashes, roadway setting and characteristics, traffic control devices, modes of commute to school, school hours and after-school activities, and school policies.

FFY 2017 Anticipated Outcomes

After gathering data for analysis, MPO staff will evaluate the safety effectiveness of the SRTS program. The goal is to be able to conduct this study quantitatively through an analysis of before-and-after data on traffic and safety characteristics in the immediate vicinity of the selected schools and within a two-mile radius, both before and after implementation of the SRTS program and applicable infrastructure or policy changes. Schools that have been participating in the SRTS program with infrastructure projects funded by the Massachusetts Department of Transportation (MassDOT) or through the Transportation Improvement Program (TIP) process will be good candidates for before-and-after study. MPO staff will determine and evaluate any relationships among roadway setting, traffic characteristics, and traffic regulations contributing to the safety effectiveness of the SRTS program. Depending on the availability of data, some of the effectiveness evaluation and recommendations may be qualitative.

MPO staff will recommend improvements (safety, operations, policy), document the study, allow review of the study and comments, produce a final report, and present study results to the MPO.

STUDY OF PROMISING GHG-REDUCTION STRATEGIES

Project ID Number	13279
Category	Land Use, Environment, and Economy
FHWA 3C PL Funds	\$39,050
FTA Section 5303 Funds	\$15,950
FFY 2017 Total Budget	\$55,000

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

Purpose

This study will build on the greenhouse gas (GHG) Reduction Strategies Study that was completed in 2016. The purpose of this related study would be to take the national-level findings in the 2016 GHG Reduction Strategies Study and understand possible implementation approaches and impacts at the regional level. Because this study would focus on the regional level, the MPO would gain a detailed understanding of concrete approaches to reduce GHGs in the region and the cost-effectiveness of different GHG reduction tactics.

Approach

Based on recommendations from the 2016 GHG Reduction Strategies Study, MPO staff proposes to examine in further detail a subset of the 14 promising strategies identified in the 2016 report. These are all strategies that the MPO could fund or advocate for at the regional level. Examples of potential strategies to fund include transit expansion or service improvement, teleworking, and parking management.

FFY 2017 Anticipated Outcomes

This study would result in a report documenting a subset of strategies from the 2016 GHG Reduction Strategies Study to further understand the potential for their implementation at a regional level. The study would aim to evaluate the strategies' GHG reduction and cost-effectiveness potential at the regional level, as well as the equity, safety, and mobility impacts of the subset of GHG reduction strategies.

ADDRESSING PRIORITY CORRIDORS FROM THE LONG-RANGE TRANSPORTATION PLAN NEEDS ASSESSMENT

Project ID Number	13276
Category	Multi-modal Mobility
FHWA 3C PL Funds	\$78,100
FTA Section 5303 Funds	\$31,900
FFY 2017 Total Budget	\$110,000

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

Purpose

The purpose of these studies are 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 congestion¹ 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.

MPO staff would select locations for study with consideration of municipal, subregional, and other public feedback, and would then 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.

¹ 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).

FFY 2017 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.

ADDRESSING SAFETY, MOBILITY, AND ACCESS ON SUBREGIONAL PRIORITY ROADWAYS

Project ID Number	13274
Category	Multi-modal Mobility
FHWA 3C PL Funds	\$78,100
FTA Section 5303 Funds	\$31,900
FFY 2017 Total Budget	\$110,000

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, and 2016 Unified Planning Work Programs (UPWPs). In FFY 2016, MPO staff completed their recommendations for the Summer Street/Rockland Street/George Washington Boulevard corridor in Hingham and Hull.

FFY 2017 Anticipated Outcomes

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

LOW-COST IMPROVEMENTS TO EXPRESS-HIGHWAY BOTTLENECKS

Project ID Number	13275
Category	Multi-modal Mobility
FHWA 3C PL Funds	\$50,000
FTA Section 5303 Funds	\$-
FFY 2017 Total Budget	\$50,000

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

Purpose

This study would build off of the work conducted previously in two consecutive Unified Planning Work Program (UPWP) studies, Low-Cost Improvements to Express-Highway Bottlenecks Phase I and Phase II. These studies aim to address points in the highway system where traffic flow is restricted with operational and low-cost infrastructure solutions. The recommendations that stem from these studies are aimed at reducing congestion, increasing safety, and improving traffic operations throughout the Boston region.

Approach

According to the Federal Highway Administration (FHWA), “Much of recurring congestion is due to physical bottlenecks—potentially correctable points on the highway system where traffic flow is restricted. While many of the nation’s bottlenecks can only be addressed through costly major construction projects, there is a significant opportunity for the application of operational and low-cost infrastructure solutions to bring about relief at these chokepoints.”² In general, recurring bottlenecks, the subject of this study, are influenced by the design or operation present at the point where the bottleneck begins (e.g., merges, diverges, lane drops, traffic weaving, and abrupt changes in highway alignment). Low cost infrastructure solutions, as opposed to major construction projects, could involve changes in the design or operation of merges, traffic operations, or highway alignment. Examples of recommendations from previous phases of this study include creating an auxiliary lane for merging and diverging traffic and lengthening the deceleration lane at an exit.

² Federal Highway Administration, Recurring Traffic Bottlenecks: A Primer: Focus on Low-Cost Operations Improvements, US Department of Transportation, Federal Highway Administration, June 2009, p. 1.

The previous two studies of express-highway bottlenecks were very well received by the Massachusetts Department of Transportation (MassDOT) and the FHWA. Some of the recommendations from those studies already have been executed, and the FHWA has interviewed MPO staff about the successful implementation. The MPO has been conducting these studies to identify low-cost methods to reduce congestion, increase safety, and improve traffic operations in the Boston region.

FFY 2017 Anticipated Outcomes

This study would select additional express-highway bottleneck locations and produce reports documenting low-cost solutions to existing traffic congestion issues at the selected locations.

PLANNING FOR CONNECTED AND AUTONOMOUS VEHICLES

Project ID Number	13277
Category	Multi-modal Mobility
FHWA 3C PL Funds	\$35,500
FTA Section 5303 Funds	\$14,500
FFY 2017 Total Budget	\$50,000

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

Purpose

This project would involve research into the overarching issues that the Boston Region MPO needs to understand and plan for regarding autonomous vehicle and connected vehicle (AV/CV) technologies.

Approach

Some of the questions that could form the body of research include:

- What research exists already?
- How are other states, regions, and municipalities approaching preparation for these technologies?
- How might these technologies affect transportation and land use planning (i.e., the need for off-street parking) and modeling in the future?
- What is the current thinking around the potential penetration level of these new technologies?
- Could scenario planning provide a useful approach to understand how best to plan for these technologies?
- What does the region need to consider in its Long-Range Transportation Plan related to these new technologies?

FFY 2017 Anticipated Outcomes

This project would be an important first step to understanding the transportation planning consequences of AV/CV technologies and how the MPO and the region can be prepared for them. The next step would be to follow up on the recommendations. These could be related to model development, data resources, or planning studies.

USING GENERAL TRANSIT FEED SPECIFICATION DATA TO FIND SHARED BUS ROUTE SEGMENTS WITH EXCESSIVELY IRREGULAR HEADWAYS

Project ID Number	13278
Category	Transit
FHWA 3C PL Funds	\$-
FTA Section 5303 Funds	\$25,000
FFY 2017 Total Budget	\$25,000

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

Purpose

The goals of this study would be to use existing data to provide schedule improvements for the Massachusetts Bay Transportation Authority (MBTA) buses and to document reasons behind irregularities in the existing schedule.

Approach

By mining the MBTA's General Transit Feed Specification (GTFS) data, MPO staff can discover the distribution of headways at a stop over time. This would allow MPO staff to document segments that have excessively irregular headways or segments where multiple bus routes are scheduled to overlap.

FFY 2017 Anticipated Outcomes

In many cases, there may be a reason for the irregular combined headways. This project would document these reasons and, where appropriate, propose recommendations for improvement.

MPO STAFF-GENERATED RESEARCH TOPICS

Project ID Number	20901
Category	Other Technical Support
FHWA 3C PL Funds	\$18,632
FTA Section 5303 Funds	\$11,375
FFY 2017 Total Budget	\$30,000

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 Unified Planning Work Program (UPWP) or discrete project.

This program was funded for the first time in FFY 2016. The work being undertaken in FFY 2016 consists of investigating the possibility of using drivers license acquisition rates obtained through 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 2017 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.

6.3 TECHNICAL ANALYSES

The project descriptions in this section consist of ongoing MPO programs that provide technical planning assistance and analysis to cities and towns throughout the region. The major areas of technical analyses include bicycle and pedestrian support, transit service planning, and community-level transportation planning and technical assistance.

BICYCLE/PEDESTRIAN SUPPORT ACTIVITIES

Project ID Number	13208
FHWA 3C PL Funds	\$46,036
FTA Section 5303 Funds	\$18,804
FFY 2017 Total Budget	\$64,840

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

Purpose

MPO staff supports the MPO's and the region's needs for bicycle and pedestrian planning through the ongoing data collection, analysis, and technical assistance in this program.

Approach

In addition to the items listed below, during the federal fiscal year (FFY), other bicycle and pedestrian planning studies often are identified collaboratively by MPO members, communities, bicycle and pedestrian advisory groups, and the Central Transportation Planning Staff (CTPS). Through such studies, MPO staff provides support to communities in creating bicycle and pedestrian improvement projects that can be advanced through the Massachusetts Department of Transportation (MassDOT) Project Development process.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include technical assistance, data collection, analysis, review of materials, and attendance at state, regional, and local forums and committee meetings. Tasks not related directly to separate studies or activities may include the following:

- A review of potential bicycle and pedestrian improvements to ready project recommendations for compliance with the Healthy Transportation Directive.
- Coordinate with state agencies, the Metropolitan Area Planning Council (MAPC), other MPOs, the Safe Routes to School Program at MassRIDES, WalkBoston, MassBike, Livable Streets, municipalities, and other groups regarding bicycle and pedestrian planning for the region, and possibly including issues pertaining to bicycle/pedestrian law enforcement and education
- Collect data on bicycle and pedestrian volumes at selected on-road and off-road facilities
- Examine bicycle and pedestrian crash data at the intersection, corridor, and regional level to support the development of strategies to address bicycle and pedestrian safety problems
- Provide ongoing technical support on current tools and practices to communities on bicycle and pedestrian issues, with a particular focus on promoting safety
- Conduct technical analyses to quantify the impacts of proposed bicycle facilities, including air quality improvements, reductions in vehicle-miles traveled, and parking needs
- Conduct analyses to identify critical sidewalk gaps in the region, and possibly provide guidance to communities in accessing available Transportation Alternatives Program (TAP) funding to close gaps on federal-aided roadways
- Examine potential routes, both on-road and off-road, to increase the connectivity of the existing transportation system, including trails, on-road facilities, and public transit, emphasizing connections on the Bay State Greenway, where applicable
- Consider development of future possible strategic bicycle and pedestrian safety plans

REGIONAL TRANSIT SERVICE PLANNING TECHNICAL SUPPORT

Project ID Number	14342
FHWA 3C PL Funds	\$-
FTA Section 5303 Funds	\$35,210
FFY 2017 Total Budget	\$35,210

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

Purpose

Through this ongoing program, the MPO provides technical support to regional transit authorities (RTAs). This work is focused on helping subregions expand transit service and reduce single-occupant-vehicle (SOV) travel in the region.

Approach

The MPO's policy is to support transit services and reduce SOV travel in the region. As such, MPO staff provides technical support to regional transit authorities (RTAs) to promote best practices and address issues of ridership, cost-effectiveness, route planning, first- and last-mile strategies, and other service characteristics. The MPO also extends support to Transportation Management Associations (TMAs), Metropolitan Area Planning Council (MAPC) subregions, and municipalities seeking to improve the transit services that they operate or fund.

FFY 2017 Anticipated Outcomes

MPO staff will provide technical assistance to RTAs, TMAs, MAPC subregions, and municipalities as described above.

COMMUNITY TRANSPORTATION TECHNICAL ASSISTANCE PROGRAM

Project ID Number	69275 MAPC8
FHWA 3C PL Funds	(CTPS) \$50,509 (MAPC) \$25,000
FTA Section 5303 Funds	(CTPS) \$20,631 (MAPC) \$20,000
FFY 2017 Total Budget	\$116,140

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

Purpose

Through this ongoing program, MPO staff and the Metropolitan Area Planning Council (MAPC) provide technical advice to municipalities throughout the region about identified transportation issues of concern.

Approach

Community officials often identify transportation issues of concern about which they would like to have technical advice. In this program, a team of Central Transportation Planning Staff (CTPS) and MAPC engineers and planners will meet with community officials to learn more about specific problems and provide advice on next steps concerning issues that the community may have identified, such as those related to parking, traffic calming, walking, bicycling, and bus stops. In many cases, there will be a site visit to better understand the potential problem, review existing data, and make suggestions for additional data that may be needed. General types of solutions, along with appropriate follow-up and contact information, might be recommended. Descriptions of the various planning processes at the Massachusetts Department of Transportation (MassDOT), the Massachusetts Bay Transportation Authority (MBTA), the MPO, and MAPC, as well as guidance on how communities can get involved, might also be provided. Technical assistance activities might produce conceptual designs for some project locations. This program is a mechanism for providing quick-response advice to communities for resolving the issues they have identified.

This work will advance the MPO's goals for system preservation, modernization, and efficiency; mobility; and land use and economic development. It will be consistent with the MPO's Congestion Management Process (CMP) and other staff-identified needs. It also will include a safety component in which staff will respond to community requests to conduct analyses at crash locations and recommend possible mitigation strategies.

FFY 2017 Anticipated Outcomes

In early FFY 2017 staff will solicit town technical assistance requests. The number of technical assistance cases will depend on the funding amount, and MAPC and CTPS will coordinate and collaborate on a case-by-case basis. Depending on the complexity of the specific technical assistance requests from municipalities, typically 3-4 projects are undertaken by CTPS and MAPC each FFY. MAPC and CTPS will field and prioritize each service request, and expect to spend three to four weeks working on community technical assistance requests that are selected for funding. Professional teams will be dispatched to client municipalities, and memoranda on the consultations will document the work, recommendations, and outcomes.

6.4 MAPC PLANNING STUDIES AND TECHNICAL ANALYSES

MAPC conducts transportation planning studies through four ongoing programs, including Corridor/Subarea Planning Studies, Alternative Mode Planning and Coordination, MetroFuture Implementation, and Land Use Development Project Reviews. Each FFY, some work that was started in previous FFYs is continued through these ongoing programs, and new work also is planned and undertaken.

CORRIDOR/SUBAREA PLANNING STUDIES

Project ID Number	MAPC4
FHWA 3C PL Funds	\$112,180
FTA Section 5303 Funds	\$55,300
FFY 2017 Total Budget	\$167,480

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

Purpose

This Unified Planning Work Program (UPWP) task includes funding to support the Metropolitan Area Planning Council's (MAPC's) work on several corridor and subarea studies in the region. Some of these projects will be funded jointly through the UPWP and the District Local Technical Assistance Program.

Approach

This area of work is accomplished through the following subtasks.

Opportunities for and Impediments to Creating Transit-Oriented Development (\$60,000):

MAPC will continue planning work that can support transit-oriented development (TOD). MAPC will use demographic data to identify two or three existing transit stations (subway or commuter rail) or high volume bus corridors that have the potential to support TOD. MAPC will analyze these sites and identify their development potential, along with impediments to development. Factors that may affect the potential for TOD include existing zoning, inadequate pedestrian connections, outdated parking requirements, existing levels of travel demand management (TDM) implementation, and infrastructure elements. MAPC will offer recommendations about

how to improve the sites' potential for TOD. Where applicable, MAPC will conduct a market analysis to determine whether the market can support additional development at the chosen station areas or corridors. Where appropriate, MAPC will work with the Massachusetts Bay Transportation Authority (MBTA), the Central Transportation Planning Staff (CTPS), the Massachusetts Department of Transportation (MassDOT), the Executive Office of Housing and Economic Development (EOHED), the Division of Capital Asset Management and Maintenance (DCAMM), land owners, and the municipalities in which the stations or corridors are located.

FFY 2017 Anticipated Outcomes Related to TOD

Anticipated outcomes include analysis to identify transit stations or bus corridors with the potential to support TOD, market analysis, mapping and visualization products, demographic and vehicle-miles-traveled data for chosen station areas or corridors, community engagement, recommendations to overcome impediments to TOD, and technical support to municipalities.

Right Size Parking Calculator (\$30,000):

MAPC will continue creating and refining an online parking calculator that would provide MassDOT, MBTA, municipalities, developers, nonprofit organizations, and the general public with information to better understand the parking supply and demand of multifamily housing developments in the region. This project could benefit air quality and reduce congestion by providing information that municipalities and developers can use when deciding whether to reduce the total number of parking spaces required as a component of a new development. In locations where parking requirements are reduced, the number of households with one or more vehicles could decline, resulting in higher percentages of walking, biking, and transit ridership.

Parking also has a direct impact on overall development costs, and can hinder developers looking to construct multifamily housing from investing in a particular area. A better understanding of parking supply and demand could help communities achieve a parking balance, and thereby assist in the state's goal of creating 10,000 new housing units each year.

MAPC has gathered data in Malden, Chelsea, Everett, and Revere. This body of work seeks to expand data collection to other community types and refine analysis of parking utilization relative to parking supply. As part of this work, MAPC will research how traffic circulation might be affected because of changes in parking availability across various community types. This research may involve coordination with CTPS. MAPC also will educate municipal decision makers, developers, and the public about the impact of parking locally and regionally.

FFY 2017 Anticipated Outcomes Related to Right Size Parking

Anticipated outcomes include coordinating with municipalities, identifying residential properties from which to collect data, collecting off-street residential parking utilization data, analyzing data, reporting findings, and building a web portal to

host reporting tools and an interactive calculator. This calculator would allow users to identify the amount of parking needed for new residential development by community type. Other outcomes include conducting parking-related educational activities for municipal decision makers, developers, and the public, as well as researching the relationship between parking availability and impacts on traffic circulation.

Local Parking Management Plans in Selected Communities (\$50,000):

MAPC will work with selected municipalities to develop local parking management plans to provide better parking availability to stimulate local economic prosperity, reduce congestion caused by circling vehicles, and help municipalities plan for greater land use density by decreasing parking ratios. The goal of this work program is to address the problems that municipalities face from not managing their parking supply in commercial and mixed-used areas. This work would benefit local air quality and congestion by managing parking supply and demand and creating places where people can park once and then walk to multiple destinations. In locations where parking requirements can be reduced, the number of households with one or more vehicles could decline, which could result in higher percentages of walking, biking, and transit ridership.

FFY 2017 Anticipated Outcomes Related to Local Parking Management Plans

Activities and expected work products include parking utilization data collection, analysis of data, and recommendations to municipalities in the form of a report with pricing and parking management solutions.

Corridor Level Transportation and Land Use Planning (\$27,480):

MAPC will work in one or two selected roadway corridors to coordinate transportation planning conducted by MassDOT, the Department of Conservation and Recreation (DCR), and/or municipalities with local land use planning to achieve livability and smart growth goals.

FFY 2017 Anticipated Outcomes Related to Corridor Level Transportation and Land Use Planning

Activities and expected work products include coordination between agencies and municipalities, recommendations for roadway improvements and coordinated land use planning, and solutions documented in reports or memoranda.

ALTERNATIVE-MODE PLANNING AND COORDINATION

Project ID Number	MAPC7
FHWA 3C PL Funds	\$111,835
FTA Section 5303 Funds	\$70,909
FFY 2017 Total Budget	\$182,744

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

Purpose

The Metropolitan Area Planning Council (MAPC) provides alternative-mode transportation-planning support to the Boston Region Metropolitan Planning Organization (MPO) and municipalities that focuses on non-single-occupant vehicle modes. This work benefits bicycle and pedestrian transportation, encourages transit in areas currently underserved by existing regional transit authorities (RTAs), and identifies and supports transportation demand management (TDM) strategies.

Approach

Autonomous Vehicles and Connected Cars (\$12,744)

MAPC will further the regional and municipal understanding of the potential future impacts of autonomous vehicle/connected vehicle (AV/CV) technologies. MAPC staff will work with the Central Transportation Planning Staff (CTPS) to identify how AV/CV technologies may influence future travel behaviors and how these findings can best be incorporated into travel demand and land use modeling as well as long-range transportation and land use plans. Staff will also continue to stay informed of how other states and municipalities are preparing for AV/CV technologies.

Suburban Mobility and Technology (\$25,000)

MAPC will work with selected municipalities to advance solutions that apply technology, dynamic ride dispatching, ride-sharing technologies, and public-private partnership funding models to first mile/last mile connections and other gaps in the transit system.

Bike Share Program Implementation (\$25,000)

MAPC will continue to work with the cities of Boston, Cambridge, and Somerville, and the town of Brookline to implement the regional Hubway Bike Share system, expanding the system within these municipalities and to neighboring cities and towns, including Watertown, Newton, Everett, and Winthrop. Seed funding for the program came from the MPO's Clean Air and Mobility Program, a separate Federal Transit Administration (FTA) Bus Livability award, and local support from the municipalities. In order to implement the system more fully, MAPC will continue to support the municipalities in their planning.

Local Bicycle and Pedestrian Plans and Technical Assistance in Selected Communities (\$50,000)

MAPC will continue to work with selected municipalities to develop local bicycle and pedestrian prioritization plans. MAPC will provide technical support to identify implementable steps that the municipalities, the Massachusetts Department of Transportation (MassDOT), the Massachusetts Department of Conservation and Recreation (DCR), and other entities could take to advance bicycle and pedestrian infrastructure in specific locations. MAPC will also provide small-scale technical assistance to municipalities that are seeking support. This work continues the implementation efforts of the MPO's 2007 Regional Bicycle Plan and the 2010 Regional Pedestrian Plan.

Regional Greenway Planning and Mapping (\$70,000)

MAPC will continue to work with MassDOT, CTPS, municipalities, and trail organizations to better develop and implement portions of a regional bicycle and pedestrian network of off-road and on-road connections (a greenway) that form a contiguous system around greater Boston. In 2015, MAPC—working with the above-cited partners—developed the branding of this system, called the LandLine. Trail development is increasingly frequent in most communities in the Boston region. The trails consist of shared-use paths along former railroad rights-of-way, hiking trails through conservation land, and historic corridors that connect points of interest. The binding theme of the proposed and completed corridors is creating attractive places to walk, bike, or otherwise travel through low-traffic or no-traffic green areas. These greenways often are local in nature; however, if all of these separate projects could be connected to form a regional system, a world-class regional network could be created.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include data collection, research and analysis to support completed bicycle and pedestrian plans in selected municipalities, technical support for bicycle and pedestrian improvements, support for regional trail and greenway development, implementation of the regional bike share program, research and recommendations to support suburban transit, and research to understand potential transportation and land use impacts of AV/CV technologies in long-range planning efforts.

METROFUTURE IMPLEMENTATION

Project ID Number	MAPC6
FHWA 3C PL Funds	\$59,400
FTA Section 5303 Funds	\$30,600
FFY 2017 Total Budget	\$90,000

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

Purpose

This Unified Planning Work Program (UPWP) study area will continue to support implementation of MetroFuture, the Boston Region's 30-year comprehensive plan (through the year 2030) for sustainable growth and development, by increasing community engagement in the Metropolitan Area Planning Council's (MAPC's) local planning work. Specifically, this task includes an emphasis on engaging diverse groups of stakeholders. It also will identify transportation and land use best practices by evaluating the different approaches and strategies used in MAPC's work, and through case studies of positive models from around the region.

Approach

Building Constituencies for Local Decisions that Enable Livable Communities and Sustainable Transportation

MAPC will continue to work with municipal officials and residents at the local level to seek changes in land use that will support livable communities and sustainable transportation. This will include engaging the public in planning and dialogue that enhances equitable transit-oriented development (ETOD) planning; supports engagement in MPO planning processes; and influences other decision-making to improve development outcomes, transportation opportunities, and the reduction of greenhouse gas emissions. Task outputs are expected to include engagement of at least 500 people in at least ten different events or activities.

Honing MAPC's Practice of Planning for Livable Communities and Sustainable Transportation

MAPC will evaluate the approaches, strategies, and implementation status of its transportation and land use planning work, with particular emphasis on ETOD plans. Implementation of these recommendations can take time and typically rely on local, municipal actions. MAPC will conduct interviews with municipal staff, advocates, and

other stakeholders to assess the progress on implementing the recommendations, identify any barriers that exist, and document successes across the region. Lessons learned will be documented in a fashion that will facilitate their application to future work of a similar nature. Task outputs are expected to include an assessment of at least three planning studies.

Research and Policy Development that Support Livable Communities and Sustainable Transportation

Best practices and state policy that support sustainable land use planning, which include local and state practices from across the country, provide both ideas and “proof of concept.” MAPC will identify such best practices and employ appropriate means to promote their use in the region. Activities may include researching transportation strategies addressing senior mobility that are successfully employed in other parts of the country to assess their applicability in Massachusetts. MAPC may also research strategies to improve transportation equity and access for low-income and minority residents.

Updating MetroFuture

As it nears its eighth anniversary, it is time to begin planning for an update to MetroFuture. Changing demographics and location preferences, planned investments in public transportation and complete streets, and emerging transportation technologies will have a profound impact on our region in the decades ahead. MAPC will research how other regional agencies have integrated emerging technologies and trends in transportation and assess these approaches for their applicability in the update of MetroFuture. As part of preparing for the update, MAPC will also assess progress towards the existing MetroFuture goals. An assessment of progress towards the transportation goals in Strategy 12— Expand Coordinated Transportation will also be developed.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include assessments of TOD plans, case studies identifying best practices, and research on integrating emerging transportation technologies and trends in the MetroFuture update.

LAND USE DEVELOPMENT PROJECT REVIEWS

Project ID Number	MAPC5
FHWA 3C PL Funds	\$59,400
FTA Section 5303 Funds	\$29,420
FFY 2017 Total Budget	\$88,820

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

Purpose

This Unified Planning Work Program (UPWP) task supports the Metropolitan Area Planning Council's (MAPC's) review of potential development projects in the region. In particular, projects will be reviewed for consistency with MetroFuture (the Boston Region's 30-year comprehensive plan for sustainable development), impacts on the transportation network and projects identified in the Transportation Improvement Program (TIP) and the Long-Range Transportation Plan (LRTP), and for consistency with the Metropolitan Planning Organization's (MPO's) livability goals and the Commonwealth's sustainable-development principles.

Approach

MAPC tracks all projects reviewed in the region under the Massachusetts Environmental Policy Act (MEPA), and provides a regional-planning analysis to the Secretary of Energy and Environmental Affairs for all developments considered to have significant impact. Special attention is given to local zoning ordinances and regulations that serve to reduce auto travel by encouraging carpooling, transit, and other travel demand management techniques. MAPC also will recommend appropriate mitigation measures. MAPC coordinates these reviews with the Massachusetts Department of Transportation (MassDOT), and works with MassDOT to identify updated requirements to be included in the transportation impact assessments that must be conducted by developers.

MAPC also reviews notices of offered railroad property from MassDOT, consults with municipalities as necessary, and provides appropriate input. Often, these notices involve rail trails, but they also may involve other types of proposed developments.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include analysis and write-up of MEPA reviews, development of mitigation recommendations, coordination with municipalities and transportation agencies, maintenance and updates of MAPC's development database, and input into the project evaluations for the TIP and LRTP. In addition, MAPC will continue to review and respond to notices of offered railroad property.