

**Table 4-4  
UPWP Budget—MPO New Discrete Studies, FFY 2020**

<b>Project ID</b>	<b>Study or Program</b>	<b>CTPS PL Funds</b>	<b>CTPS §5303 Funds</b>	<b>Proposed FFY 2020 CTPS Budget</b>
13293	Locations with High Bicycle and Pedestrian Crash Rates in the Boston Region MPO Area	\$49,000	\$21,000	\$70,000
13420	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	\$80,500	\$34,500	\$115,000
13520	Addressing Priority Corridors from the LRTP Needs Assessment	\$84,000	\$36,000	\$120,000
13720	Safety and Operations Analysis at Selected Intersections	\$56,000	\$24,000	\$80,000
13294	TIP Before and After Studies	\$42,000	\$18,000	\$60,000
13295	Transit Mitigation for New Development Sites	\$42,000	\$18,000	\$60,000
13296	Operating a Successful Shuttle Program	\$35,000	\$15,000	\$50,000
13297	Further Development of the MPO's Community Transportation Program	\$14,000	\$6,000	\$20,000
13298	Disparate Impact Metrics Analysis	\$28,000	\$12,000	\$40,000
13299	Exploring Resilience in MPO-Funded Corridor and Intersection Studies	\$63,000	\$27,000	\$90,000
20904	MPO Staff-Generated Research and Technical Assistance	\$28,000	\$12,000	\$40,000
<b>Total for New Discrete and Ongoing Studies</b>		<b>\$521,500</b>	<b>\$223,500</b>	<b>\$745,000</b>

NOTE: This information may be updated as the FFY 2020 UPWP budget continues to develop.

CTPS = Central Transportation Planning Staff. FFY = Federal Fiscal Year. LRTP = Long-Range Transportation Plan. MPO = Metropolitan Planning Organization. PL = Planning. TIP = Transportation Improvement Program. UPWP = Unified Planning Work Program.

## PLANNING STUDIES

The project descriptions in this section describe the new studies chosen by the MPO for funding in FFY 2020. As described in Chapter 2 and Appendix B, CTPS gathers new study ideas each year and classifies them into the following categories: active transportation; land use, environment, and economy; multimodal mobility; transit; transportation equity; resilience; and other technical work. Each of the project descriptions on the following pages begins with a funding table that shows the project identification number, category, funding sources, and total budget.

### Locations with High Bicycle/Pedestrian Crash Rates in the Boston Region MPO Area

Project ID Number	13293
Category	Active Transportation
FHWA 3C PL Funds	\$49,000
FT Section 5303 Funds	\$21,000
FFY 2020 Total Budget	\$70,000

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

#### **Purpose**

The purpose of this task is to report intersections that have a high presence of pedestrian crashes and recommend improvements to these intersections. This task relates to the Congestion Management Process (CMP) because it includes collecting performance data and outlines strategies to alleviate congestion and improve safety. This is a follow up to a study conducted through the CMP in 2010 and again in 2012.

#### **Approach**

MPO staff will select a number of intersections identified through one Highway Safety Improvement Program process using Equivalent Property Damage Only (EPDO) to rank the clusters. MPO staff will select only those clusters with the highest EPDO based on crashes that involved pedestrians between 2005 and 2014 for this study.

Once selected, MPO staff will visit every intersection to evaluate the safety and traffic operations of the intersections. The pedestrian report card assessment tool will be applied to each intersection to determine what improvements are applicable to each intersection.

### ***FFY 2020 Anticipated Outcomes***

MPO staff will write a memorandum to document findings, including a description of each intersection, and recommended improvements. This memorandum will be shared with municipalities to promote awareness and encourage implementation.

## Addressing Safety, Mobility, and Access on Subregional Priority Roadways

Project ID Number	13420
Category	Multimodal Mobility
FHWA 3C PL Funds	\$80,500
FT Section 5303 Funds	\$34,500
FFY 2020 Total Budget	\$115,000

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

### Purpose

The Boston Region MPO has conducted Addressing Safety, Mobility, and Access on Subregional Priority Roadways studies as part of the UPWP in every FFY since 2013. During MPO outreach, 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. MPO staff will concentrate on transit service, nonmotorized modes of transportation, and truck activity along these arterial segments. MPO staff will consider numerous strategies to improve these 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
- Americans with Disabilities Act of 1990 requirements
- Travel-lane use by motorized and bicycle traffic
- Speed limit
- Access management

The improvement strategies 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.

***FFY 2020 Anticipated Outcomes***

The study will include data collection, technical analysis, development of recommendations, and documentation for selected corridors.

## Addressing Priority Corridors from the Long-Range Transportation Plan

Project ID Number	13520
Category	Multimodal Mobility
FHWA 3C PL Funds	\$84,000
FT Section 5303 Funds	\$36,000
FFY 2020 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 MPO's previous Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*, or the LRTP that takes effect in 2019, *Destination 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 (TIP). Projects that address the region's current mobility needs are those that focus on maintaining and modernizing roadways with high levels of congestion<sup>1</sup> 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 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.

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<sup>1</sup> 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 2020 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 CMP and the LRTP as 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 MassDOT and the municipalities.

## Safety and Operations Analysis at Selected Intersections

Project ID Number	13720
Category	Multimodal Mobility
FHWA 3C PL Funds	\$56,000
FT Section 5303 Funds	\$24,000
FFY 2020 Total Budget	\$80,000

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 travel 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 CMP'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, and 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 2020 Anticipated Outcomes**

MPO staff will select intersection locations for study and develop recommendations for improvements. The findings will be documented in memoranda and presented to the MPO.



## TIP Before and After Studies

Project ID Number	13294
Category	Multimodal Mobility
FHWA 3C PL Funds	\$42,000
FT Section 5303 Funds	\$18,000
FFY 2020 Total Budget	\$60,000

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

### **Purpose**

The purpose of this study is to identify the effectiveness of selected TIP projects and evaluate their anticipated improvements to safety, traffic flow, and other factors. Measuring project effectiveness is important in evaluating whether the employed strategies work well and are, therefore, suitable for application in similar situations.

### **Approach**

Locations for study could be selected from the UPWP Study Recommendations Tracking or TIP databases. Selected study locations will have been constructed and operational for several years to allow users at each project location to become familiar with the operations and for user demand to normalize in the area.

To evaluate the effectiveness of a TIP project, “before” data and relevant measures of effectiveness will be gathered from relevant functional design reports and traffic studies. The “after” data will be collected in the field. The types of “before” and “after” data that will be collected and the associated performance measures that will be calculated depend on the type of project and improvements that are being assessed and also on the primary objective of the TIP project. Typically, for intersection improvement projects, intersection operations and safety will be evaluated using turning-movement counts, operational performance measures, and crash data. MPO staff will compare the two sets of data and draw conclusions on changes in performance.

### **FFY 2020 Anticipated Outcomes**

This study will determine if certain improvement strategies work well and are, therefore, suitable to propose for other project locations in the Boston Region MPO area. The findings of the study will be documented in memoranda.

## Transit Mitigation for New Development Sites

Project ID Number	13295
Category	Transit
FHWA 3C PL Funds	\$42,000
FT Section 5303 Funds	\$18,000
FFY 2020 Total Budget	\$60,000

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

### **Purpose**

Developers are often required to provide mitigation for increased traffic that will occur as a result of their development. Similar mitigation for increased transit ridership is starting to be explored in the MPO region. This study will explore transit mitigation methodologies from other regions and develop recommendations for transit mitigation in the MPO region. This study follows up on the FFY 2018 UPWP study “Transportation Mitigation of Major Developments,” which was presented to the MPO in December 2018 and can be found at <https://www.ctps.org/comparing-transportation-mitigation>.

### **Approach**

MPO staff will work with MassDOT and the Massachusetts Bay Transportation Authority (MBTA) to understand the current transit mitigation methodology that they use and to identify areas for which staff research could be beneficial. MPO staff will review literature of transit mitigation methodologies in other regions, focusing on the topics identified as the most important and relevant to MassDOT and the MBTA. MPO staff may potentially study topics such as how to use transit mitigations to fund capital improvements, and how to assess the level of mitigation for capital improvements. MPO staff may also consider how to balance transit mitigation with the desire for development and growth around transit nodes.

### **FFY 2020 Anticipated Outcomes**

This study will produce a report highlighting current examples of transit mitigation methodologies. The study will also evaluate which strategies are most promising for the MPO region.

## Operating a Successful Shuttle Program

Project ID Number	13296
Category	Transit
FHWA 3C PL Funds	\$35,000
FT Section 5303 Funds	\$15,000
FFY 2020 Total Budget	\$50,000

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

### **Purpose**

MPO staff and other transportation planners have repeatedly heard significant feedback from stakeholders in the Boston region regarding ways to operate shuttle and other nontraditional transit programs successfully. There is demand for both first- and last-mile and workforce transportation solutions, but relatively few examples of programs available to meet that demand that have proven both successful and fiscally sustainable. The goal of this study is to develop a guide for operating a successful shuttle program in the MPO region that will inform agencies and organizations who are interested in starting such a program. The guide will also assist MPO staff in better responding to requests from agencies and organizations seeking analysis and planning assistance for shuttle programs.

### **Approach**

MPO staff will review existing, successful, sustainable, and well-regarded shuttle programs in the MPO region and elsewhere to understand their development, operations, and financing, and the factors behind their success. Based on the findings of this review, MPO staff will develop a guide for developing a successful shuttle program in the MPO region. MPO staff will design this guide to inform agencies and organizations who are interested in starting shuttle programs about best practices, and will cover areas including operations, strategies for obtaining financial support, and coordination with public transit systems and the region's transportation network as a whole.

### **FFY 2020 Anticipated Outcomes**

The product of this work will be a guide to assist agencies and organizations on how to develop, operate, and maintain a successful shuttle program in the MPO region.

## Furthur Development of the MPO's Community Transportation Program

Project ID Number	13297
Category	Transit
FHWA 3C PL Funds	\$14,000
FT Section 5303 Funds	\$6,000
FFY 2020 Total Budget	\$20,000

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

### **Purpose**

MPO staff anticipate further efforts in FFY 2020 to administer, review, and develop the MPO's Community Transportation Program. The Community Transportation Program was first described in *Charting Progress to 2040* and further clarified through the FFY 2018 UPWP study "Community Transportation Program Development" and in *Destination 2040*. This budget line would allow MPO staff to continue developing and refining the program after its pilot round in FFY 2019.

### **Approach**

MPO staff will administer the initial round of grants under the Community Transportation Program, to be awarded in FFY 2021; review the program structure and make modifications to the framework and evaluation criteria as necessary; attend outreach meetings and work with other agencies and stakeholders to learn needs and best practices; and deliver periodic progress reports to the MPO.

### **FFY 2020 Anticipated Outcomes**

MPO staff members anticipate the following outcomes:

- Review of the first Community Transportation funding round
- Attendance at outreach and coordination meetings
- Modifications to the program framework, as necessary
- Reports to the MPO Board

## Disparate Impact Metrics Analysis

Project ID Number	13298
Category	Transportation Equity
FHWA 3C PL Funds	\$28,000
FT Section 5303 Funds	\$12,000
FFY 2020 Total Budget	\$40,000

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

### Purpose

FTA and FHWA require MPOs to identify and address potential disproportionately high and adverse impacts on minority and low-income populations that may result from its investments, which are called disparate impacts and disproportionate burdens, respectively. This study would build off the work undertaken in the MPO's Transportation Equity program in FFY's 2018 and 2019 to develop a Disparate Impact and Disproportionate Burden (DI/DB) Policy for the LRTP program of projects. The policy determines whether implementation of the program of projects may cause potential future disparate impacts and disproportionate burdens.

In FFYs 2018 and 2019, MPO staff conducted the first phase of this work. This consisted of a public engagement process that included convening a stakeholder working group and a public workshop to get input on the content of the DI/DB Policy; quantifying the uncertainty in the MPO's travel demand modeling process that is used to identify potential disparate impacts and disproportionate burdens; and updating metrics that are part of the analysis. This work culminated in April 2019 with the completion of a draft DI/DB Policy that was used starting with *Destination 2040*, the MPO's next LRTP. This study will complete phase two of this effort by developing thresholds for each metric that indicate when an impact to a protected population would be significantly high and adverse. According to federal guidance, this is a critical component of a DI/DB policy. When this study is completed, the current draft DI/DB Policy will be updated to reflect the study's outcomes.

### Approach

The study will evaluate the metrics that the MPO currently uses to assess the LRTP program of projects for disparate impacts and disproportionate burdens, which broadly fall into three categories: accessibility to opportunities, mobility, and environmental. Staff will conduct a literature review of how other MPOs analyze these metrics for disparate impacts and

disproportionate burdens, as well as a broader investigation into how much of a change in one of these metrics (for example, carbon monoxide [CO]) would adversely affect a population at a macro scale (the size of the MPO region).

Using the findings of the literature review, as well as results of testing potential thresholds on past DI/DB analysis results, staff will then develop thresholds for each metric. The thresholds will be based on how much of a change in the projected impact of each metric (such as an increase in CO emissions or in minutes of travel time) would adversely affect a given population. Therefore, each threshold will be used to indicate when the minority or low-income population would be projected to be more adversely affected by the LRTP program of projects than the nonminority or non-low-income population. Finally, the staff will propose changes to the current draft DI/DB Policy that reflect the outcomes of this study. This will wrap up the MPO's development of the LRTP's DI/DB Policy.

### ***FFY 2020 Anticipated Outcomes***

Memo documenting the study process and resulting thresholds for each metric, as well as proposed updates to the MPO's LRTP DI/DB Policy.

## Exploring Resilience in MPO-Funded Corridor and Intersection Studies

Project ID Number	13299
Category	Resilience
FHWA 3C PL Funds	\$63,000
FT Section 5303 Funds	\$27,000
FFY 2020 Total Budget	\$90,000

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

### **Purpose**

Climate change and resiliency are a growing challenge and addressing these issues is a statewide priority that will become more important in the coming years. The goal of this study would be to increase MPO staff familiarity with this topic to provide assistance to municipalities seeking to combat extreme weather, flooding, and other climate-related challenges. This familiarity with resiliency relating to transportation infrastructure can then be incorporated into MPO discrete studies, recurring studies, and technical assistance.

### **Approach**

MPO staff will research resiliency practices that already exist and that other entities have applied to studies and projects. Part of this research may include interviewing other local and state entities to determine what practices are already available and implemented. MPO staff will then determine what resiliency practices are both useful and practical, and can be included in MPO studies.

### **FFY 2020 Anticipated Outcomes**

A study that will increase MPO staff familiarity of climate change and resiliency practices to enhance future MPO studies and projects.

## MPO Staff-Generated Research and Technical Assistance

Project ID Number	20904
Category	Other
FHWA 3C PL Funds	\$28,000
FT Section 5303 Funds	\$12,000
FFY 2020 Total Budget	\$40,000

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 data as a possible measure of transit dependence. In FFY 2017, MPO staff members completed research projects including an examination of crash rates in Environmental Justice communities; analysis of long-distance commuting in the Boston region and its implications for the MPO; and development of a new software tool for transit planning.

For FFY 2020, the scope of this program has been extended to allow MPO staff members to pursue small technical assistance projects for local communities. Individual MPO staff members would be able to identify small-scale needs in the diverse communities in which they live (within the MPO region), and a partner entity or entities to work with in making recommendations to solve the problem. This budget line would provide MPO staff with time to study the problem—involving their colleagues with specialty skills if resources and availability allow—and make recommendations to solve it.

### **Approach**

Interested MPO staff members would complete an application for MPO funding to conduct independent research on a topic of professional interest and potential use in the metropolitan transportation planning process, or pursue a local transportation-related technical assistance project. MPO managers and directors would review the applications and select the most promising topics for study.



### ***FFY 2020 Anticipated Outcomes***

The research element of this program would produce valuable information for the MPO's consideration and would support staff members' professional development. The technical assistance element would yield highly creative, yet flexible and lightweight, solutions for transportation planning problems. Both elements would allow staff to raise the profile of the MPO and publicize its ability to help local communities, whether by publishing compelling research or by reaching out to help solve local problems.