

UNIFIED PLANNING WORK PROGRAM
Federal Fiscal Year 2017

**BOSTON REGION
METROPOLITAN
PLANNING
ORGANIZATION**



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Unified Planning Work Program

Federal Fiscal Year 2017

Endorsed by the Boston Region Metropolitan Planning Organization

July 28, 2016

**Prepared by
Central Transportation Planning Staff
Staff to the Boston Region Metropolitan Planning Organization**

Directed by the Boston Region Metropolitan Planning Organization,
which is composed of the:

Massachusetts Department of Transportation

Metropolitan Area Planning Council

Massachusetts Bay Transportation Authority

MBTA Advisory Board

Massachusetts Port Authority

Regional Transportation Advisory Council

City of Boston

City of Beverly

City of Everett

City of Newton

City of Somerville

City of Woburn

Town of Arlington

Town of Bedford

Town of Braintree

Town of Framingham

Town of Lexington

Town of Medway

Town of Norwood

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Federal Transit Administration (nonvoting)

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To request additional copies of this document or to request it in an accessible format, please contact MPO staff using the methods described below. It is also possible to download the document by visiting www.bostonmpo.org.

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Certification of the Boston Region MPO Transportation Planning Process

The Boston Region Metropolitan Planning Organization (MPO) certifies that its conduct of the metropolitan transportation planning process complies with all applicable requirements, which are listed below, and that this process includes activities to support the development and implementation of the Regional Long-Range Transportation Plan and Air Quality Conformity Determination (LRTP), the Transportation Improvement Program and Air Quality Conformity Determination (TIP), and the Unified Planning Work Program (UPWP).

1. 23 USC 134, 49 USC 5303, and this subpart.
2. Sections 174 and 176 (c) and (d) of the Clean Air Act, as amended (42 USC 7504, 7506 (c) and (d) and 40 CFR Part 93.
3. Title VI of the Civil Rights Act of 1964, as amended (42 USC 2000d-1) and 49 CFR Part 21.
4. 49 USC 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity.
5. Section 1101(b) of the SAFETEA-LU (Pub. L. 109-59) and 49 CFR Part 26 regarding the involvement of disadvantaged business enterprises in U.S. DOT-funded projects.
6. The provisions of the Americans with Disabilities Act of 1990 (42 USC 12101 et seq.) and 49 CFR Parts 27, 37, and 38.
7. The Older Americans Act, as amended (42 USC 6101), prohibiting discrimination on the basis of age in programs or activities receiving federal financial assistance.
8. Section 324 of Title 23 USC regarding the prohibition of discrimination based on gender.
9. Section 504 of the Rehabilitation Act of 1973 (29 USC 794) and 49 CFR Part 27 regarding discrimination against individuals with disabilities.
10. Anti-lobbying restrictions found in 49 USC Part 20. No appropriated funds may be expended by a recipient to influence or attempt to influence an officer or employee of any agency, or a member of Congress, in connection with the awarding of any federal contract.

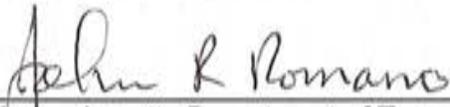
July 28, 2016

A handwritten signature in blue ink, appearing to read "Stephanie Pollack".

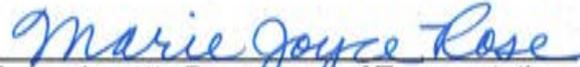
Stephanie Pollack, Secretary and Chief Executive Officer
Massachusetts Department of Transportation (MassDOT)
Chair, Boston Region MPO

The signatures of the other MPO members may be found on page 2.

Certification of the Boston Region MPO Transportation Planning Process, p. 2



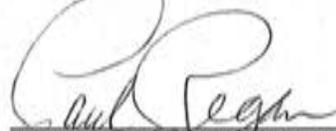
Massachusetts Department of Transportation,
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Massachusetts Department of Transportation



Metropolitan Area Planning Council

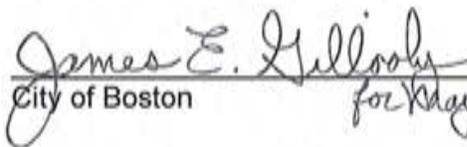


Advisory Board to the MBTA

Massachusetts Bay Transportation Authority


Massachusetts Port Authority

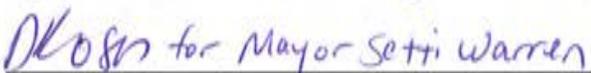

Regional Transportation Advisory Council

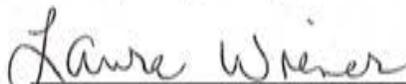

City of Boston

for Mayor Martin J. Walsh


City of Boston

At-Large City – City of Everett

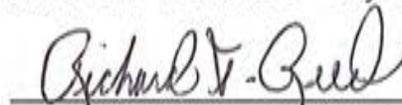

At-Large City – City of Newton


At-Large Town – Town of Arlington

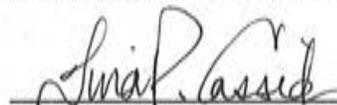

At-Large Town – Town of Lexington


Inner Core Committee – City of Somerville


MetroWest Regional Collaborative –
Town of Framingham


Minuteman Advisory Group on Interlocal
Coordination – Town of Bedford

North Shore Task Force – City of Beverly


North Suburban Planning Council –
City of Woburn

South Shore Coalition – Town of Braintree


SouthWest Advisory Planning Committee –
Town of Medway


Three Rivers Interlocal Council –
Town of Norwood



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Executive Summary

ES.1 WHAT IS THE UPWP?

The Unified Planning Work Program (UPWP) produced by the Boston Region Metropolitan Planning Organization (MPO) (see text box: What is an MPO?) explains how the Boston region's federal transportation planning funds will be spent in a given federal fiscal year (FFY). Specifically, the UPWP is a financial plan that is produced in order to comply with the federally mandated metropolitan transportation planning process (also called the 3C Planning Process; see text box: The "3C" Planning Process).

Of all the possible transportation planning studies and technical analyses that could be undertaken to benefit the region, the UPWP plays a critical role in prioritizing the studies that are conducted, defining their scopes and budgets, and ensuring that their outcomes help move us closer to achieving our transportation goals as a region.

Additionally, the UPWP serves as a source for the following information:

1. Information to government officials, local communities, and the general public about surface transportation planning projects and programs expected to be conducted in the Boston region
2. Budget information to federal and state officials about how the Boston Region MPO plans to spend federal metropolitan planning funds on studies and programs performed on behalf of the MPO

How is the Boston Region defined?

The Boston region encompasses an area of approximately 1,405 square miles and is made up of 101 cities and towns stretching from Boston to Ipswich in the north, Duxbury in the south, and west to Interstate 495. It is home to more than three million people and approximately two million jobs. The diverse communities in the MPO area range from relatively rural communities, such as Dover, to the urban centers of Boston and Cambridge. Therefore, transportation planning must take into account demographic, cultural, environmental, and mobility diversity.

What is an MPO?

MPO stands for Metropolitan Planning Organization.

In order to receive federal transportation funds, each urbanized area (with a population of 50,000 or more) must conduct an ongoing transportation planning process (a.k.a the 3C process) that engages state and local governments as well as other stakeholders.

MPOs are the entities tasked with carrying out this planning process. The Boston Region MPO is made up of a decision-making board that is supported by the Central Transportation Planning Staff, staff to the MPO.

How does the UPWP relate to the goals of the Boston Region MPO?

The Boston Region MPO plans for the transportation future of the Boston region. The MPO is guided by a 25-year vision for a modern, safe, equitable, sustainable, and technologically advanced transportation system for the region, which is described in the MPO's Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*. The transportation planning work funded through the UPWP is an integral part of achieving this regional vision.

The transportation goals of the Boston region (see Figure 1-2, in Chapter 1) include :

1. **Safety:** Transportation by all modes will be safe.
2. **System Preservation:** Maintain the transportation system.
3. **Clean air/Clean Communities:** Create an environmentally friendly transportation system.
4. **Capacity Management/Mobility:** Use existing facility capacity more efficiently and increase healthy transportation capacity.
5. **Transportation Equity:** Provide comparable transportation access and service quality among communities, regardless of income level or minority population.
6. **Economic Vitality:** Ensure our transportation network provides a strong foundation for economic vitality.

The “3C” Planning Process

The 3 Cs define an approach to meaningful transportation planning and are required by the federal government:

- **Continuing:**

Transportation planning should plan for the short- and long-range horizons, emphasizing the evolving progression from systems planning to project planning, programming, and implementation. It should be done with recognition of the necessity for continuously reevaluating data and plans.

- **Comprehensive:**

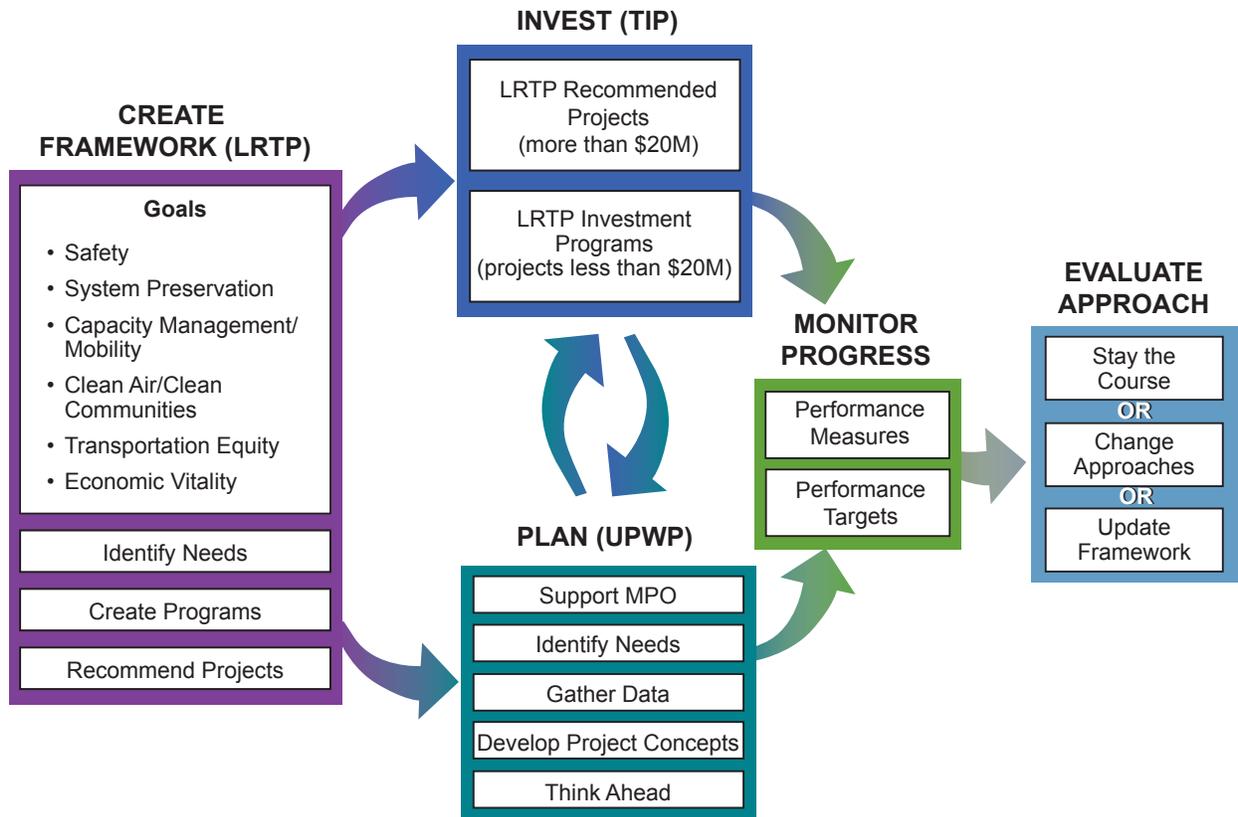
Transportation planning should integrate all of the stages and levels of the process and examine all modes to ensure a balanced planning and programming approach. The planning process should include analysis of related non-transportation elements such as land use, economics, environmental resources, and population.

- **Cooperative:**

Transportation planning should be a process designed to encourage involvement by all users of the system including businesses, community groups, environmental organizations, the traveling public, freight operators, and the general public.

In addition to the LRTP and the UPWP, the MPO also produces the Transportation Improvement Program (TIP) for the Boston region. As the near-term investment plan of the MPO, the TIP describes and prioritizes transportation construction projects that are expected to be implemented during a five-year period. Figure ES-1 illustrates the relationship between the LRTP goals and visions, the planning foundation of the MPO (the UPWP), the TIP, and the feedback loop for monitoring progress towards the region’s goals as well as continuously evaluating our approach to achieving them.

Figure ES-1: Links Between LRTP, TIP, and UPWP



What are “federal metropolitan planning funds”?

The federal government regulates the funding, planning, and operation of surface transportation through the federal transportation program (enacted into law through Titles 23 and 49 of the United States Code). The most recent reauthorization of the surface transportation law is called the Fixing America’s Surface Transportation (FAST) Act.

Federal funding that supports much of the work described in this UPWP comes from two main sources: the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). Federal funding is broken down as follows:

- **FHWA 3C Planning (PL)/MassDOT Local Match:** These are FHWA planning funds distributed to the Massachusetts Department of Transportation’s (MassDOT) Office of Transportation Planning (OTP), according to an allocation formula established by federal legislation, to carry out the 3C planning process. OTP distributes these funds to Massachusetts MPOs according to a formula that is primarily based on the region’s road mileage and population. The formula was developed by the Massachusetts Association of Regional Planning Agencies (MARPA) and is known as the “MARPA formula.” The FFY 2017 3C PL funding allocation for the Boston region is \$3,546,663, which includes \$709,332 in state matching funds.
- **FTA 3C Planning (\$5303)/MassDOT Local Match:** FTA provides 3C planning funds for transit projects to MPOs under Section 5303 of the Federal Transit Act. These funds require a local match, are distributed according to an allocation formula, and are administered by MassDOT. The FFY 2017 FTA allocation for the Boston region, including a total local match, is \$2,210,858. The total amount programmed in this UPWP for studies to be conducted by MPO staff, MassDOT, and the Metropolitan Area Planning Council (MAPC) on behalf of the MPO is \$1,892,936. Of the total FTA 3C funds allocated to the region, MassDOT, MAPC, and the MPO receive a portion, as described below:
 - o MPO FTA 3C Planning (\$5303)/MassDOT Local Match: The total amount of FTA funds, including a local match, programmed in this UPWP for work conducted by MPO staff is \$1,291,141.
 - o MassDOT FTA 3C Planning (\$5303)/MassDOT Local Match: The total amount of FTA funds, including a local match, allocated to MassDOT for FFY 2017 is \$270,167. MassDOT uses these funds to issue a contract to the MPO for transit planning assistance throughout the FFY (referred to as MassDOT Transit Planning Assistance).
 - o MAPC FTA 3C Planning (\$5303)/MassDOT Local Match: A portion of the Boston Region FTA allocation also goes to MAPC. MAPC uses these funds to conduct their transit-planning studies programmed through the UPWP. The total amount of FTA funds, including a local match, allocated to MAPC for FFY 2017 is \$331,629.

Are there other funding sources in the UPWP?

Yes! In addition to MPO-funded work, the Central Transportation Planning Staff (CTPS) performs planning analyses and studies funded by state transportation agencies, including MassDOT, the Massachusetts Bay Transportation Authority (MBTA), and the Massachusetts Port Authority (Massport). More detail about these agency-funded studies can be found in Chapter 7. For FFY 2017, the agency funding in this UPWP includes the following:

- **FHWA Statewide Planning and Research (SPR)/MassDOT Local Match:** As in the case of 3C PL funds, FHWA provides SPR funds to OTP according to a distribution formula. OTP uses these funds to carry out planning and research

projects throughout the state. This UPWP describes only the SPR studies that will be conducted in the Boston Region MPO area; however, OTP provides a complete listing of how these funds are distributed statewide in a document called the SPR Transportation-Planning Work Program. SPR funds in the amount of \$572,000 (including \$114,400 in state matching funds) are programmed in this UPWP for studies to be conducted by MPO staff.

- **MassDOT:** Funds in the amount of \$642,900 for MassDOT studies are included in this UPWP.
- **MBTA:** The MBTA provides \$1,061,819 in funding for this UPWP for transit studies to be conducted by CTPS.
- **Massport:** This UPWP also includes \$53,150 in funding provided by Massport for work being conducted by CTPS on its behalf.

ES.2 WHAT STUDIES AND ACTIVITIES ARE IN THIS FFY 2017 UPWP?

Throughout the following chapters, you will see detailed information on work programs, studies, support activities, and technical analyses that fall into the following categories:

- **Certification requirements and administrative activities:** The UPWP includes activities that the MPO must conduct in order to remain certified as an MPO by the federal government, to be eligible to receive and distribute federal transportation dollars, and to properly maintain its data resources and computer equipment. See Chapters 5 and 8 for more detail on these areas of work.

Objectives of the MPO

In carrying out the 3C transportation planning process, the MPO aims to achieve the following objectives:

- Identify transportation problems and develop possible solutions.
- Balance short- and long-range considerations.
- Represent both regional and local considerations, as well as both transportation and non-transportation objectives and impacts.
- Assist implementing agencies in effecting timely policy and project decisions while considering a broad range of impacts and allowing for input from all stakeholders.
- Help implementing agencies to prioritize transportation activities in a manner consistent with the region's needs and resources.
- Comply with all federal transportation, environmental justice, and equal rights legislation.

- **Ongoing/continuing work programs:** These are areas of work that support technical analyses and planning studies for cities and towns in the region. See Chapter 6 for more detail on these studies and technical analyses.
- **New studies:** Every year, a certain amount of funding is available for new studies to be undertaken by MPO staff. These efforts are conducted to enhance the knowledge of the practice, to enhance analytical methods, and to evaluate strategies for implementation. See Chapter 6 for more detail on these new studies.
- **Agency studies and technical analyses:** CTPS conducts planning analyses and studies funded by state transportation agencies, including MassDOT, the MBTA, and Massport. These agency-funded studies are described in more detail in Chapter 7.

ES.3 WHAT IS THE PROCESS FOR CREATING AND MONITORING THE UPWP EVERY FFY?

Developing the UPWP

The annual process of creating the UPWP includes both generating and evaluating ideas for new studies, as well as updating the scopes and anticipated deliverables for ongoing technical analysis activities, certification requirements, and administrative support activities.

Ideas for new studies come from a combination of:

- **Public input** gained through community meetings and meetings with the eight subregional groups (see text box: Metropolitan Area Planning Council Subregional Groups).
- **Regional Transportation Advisory Council input** gained from meetings in which MPO staff discussed study ideas and transportation priorities of the Advisory Council member organizations.
- **UPWP Committee input** gained from meetings held throughout the year between this committee of the MPO and MPO staff. The UPWP Committee oversees the entire document development for the UPWP.
- **Existing planning documents** such as the MPO's Congestion Management Process (CMP) and LRTP Needs Assessment; the MBTA's long-range capital plan; MetroFuture, MAPC's long-range plan for smart growth in the Boston region; and other recent studies.
- **Past guidance** issued by FHWA and FTA on studies that address the federal transportation planning emphasis areas (for more information on the federal emphasis areas, see Chapter 3 and Table 3-1).

- **Public comment letters and study proposals** that MPO staff receive during outreach events and during the public comment period on the UPWP and other CTPS-produced reports.
- **Consultations with MassDOT, the MBTA, and MAPC** that occur during document development and throughout the year as new ideas for transportation planning needs arise.
- **MPO staff-identified needs** that emerge from continual interactions between MPO staff, state and local agencies, organizations, and community groups.

Ideas for new studies are compiled into the Universe of New Studies, and each proposed study is evaluated and selected for funding based on the following criteria: how it helps the region accomplish the LRTP goals, the mode(s) it addresses, the scale of the study, the time frame and type of impact it is anticipated to result in, whether it furthers some body of existing work, and whether it has been funded in the past or is a completely new idea.

The MPO seeks to continually improve its process through inclusive and collaborative decision-making. For this reason, the MPO seeks to involve a broad and diverse range of stakeholders throughout the UPWP development process.

In the coming years, staff will seek to increase public input into the Universe of New Studies and then engage participants in discussing, evaluating, and eventually prioritizing studies for inclusion in the UPWP. We are working to expand our communication channels to include:

- An engaging **website**, which serves as a resource for those seeking to influence transportation planning in the Boston region
- A lively **Twitter** account, covering transportation planning news and events
- A **TRANSREPORT** blog publishing MPO research and data in an accessible, approachable format
- Targeted **external outreach** to advocacy and community groups, especially those representing populations that historically have been less involved in our processes
- **Tabling** at the public events of our transportation partners
- **CTPS “Office Hours”** for those seeking feedback and advice on TIP projects, UPWP proposals, or Community Transportation Technical Assistance applications
- **Launch parties** for document releases that are inclusive, informational, and fun

As described above, Chapters 5 through 8 provide detailed information about all of the transportation planning activities that will be undertaken by CTPS during FFY 2017. The new studies chosen for funding in FFY 2017 are summarized below in Table ES-1 and described in more detail in Chapter 6.

Table ES-1
FFY 2017 New Discrete Funded Studies

Universe ID	Category	Project Name	Estimated Cost	Page Number
A-7	Active transportation	Safety Effectiveness of Safe Routes to School Programs	\$80,000	6-2
B-7	Land use, environment, and economy	Study of Promising Greenhouse Gas Reduction Strategies	\$55,000	6-4
C-1	Multimodal mobility	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	\$110,000	6-7
C-3	Multimodal mobility	Low-Cost Improvements to Express-Highway Bottleneck Locations	\$50,000	6-9
C-4	Multimodal mobility	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	\$110,000	6-5
C-6	Multimodal mobility	Planning for Connected and Autonomous Vehicles	\$50,000	6-11
E-7	Transit	Using General Transit Feed Specification (GTFS) to Find Shared Segments with Excessively Irregular Headways	\$25,000	6-12
F-1	Other technical support	MPO Staff-Generated Research Topics	\$30,000	6-13
	Total		\$510,000	

What is the public review process?

As noted above, public outreach forms a major part of the input into the UPWP every FFY. Towards the end of the UPWP development process, the MPO votes to release a draft document for public review that describes ongoing and new UPWP studies and includes financial information. The Draft UPWP also summarizes the document's development to date and relevant transportation-planning studies in the Boston region that are being conducted by other organizations.

The MPO invites the public to comment on the Draft UPWP during the 30 days following its release. MPO staff posts the document for downloading, and publicizes its release via the MPO's website (www.bostonmpo.org), Twitter account, and MPOinfo email list. MPO Info is the MPO email distribution list. The list includes MPO Board

members, municipal TIP contacts, and all other interested public and stakeholders in the region. The email is used to keep all of these contacts informed about upcoming opportunities for public comment and involvement, and other current events of the MPO. Additionally, MPO staff solicits public input during CTPS Office Hours and at public events hosted by CTPS or our transportation partners, (e.g., MassDOT and the MBTA). MPO staff compiles all of the comments made during this period and presents them to the MPO.

Information about the public review process for the Draft FFY 2017 UPWP is provided in Appendix B.

How are progress and outcomes monitored?

The MPO monitors the progress of studies funded through the UPWP by approving detailed work programs and scopes, reviewing monthly progress reports, keeping track of UPWP study budgets and updates on actual spending, and approving the release of deliverables based on whether the objectives stated in the work program were met and whether the state deliverables were produced.

The FFY 2017 UPWP includes a new ongoing program, the development and maintenance of the UPWP Study Recommendation Tracking Database, which is described in detail in Chapter 8. This database will provide a new and important tool with which the MPO and MPO staff can track the status of recommendations advanced through UPWP studies, and understand details such as implementation status, project milestones, funding, and issues that affect the implementation progress. The ability to keep track of these things is a significant new way for the MPO to monitor the progress and implementation outcomes of recommended actions developed through its UPWP projects and programs.

ES.4 WHAT ELSE DOES THE MPO DO AND WHO ARE THE MEMBERS?

The transportation planning process

Title 23, Section 134 of the Federal-Aid Highway Act and Section 5303 of the Federal Transit Act, as amended, require that urbanized areas, in order to be eligible for federal funds, conduct a 3C transportation-planning process, resulting in plans and programs consistent with the planning objectives of the metropolitan area. In complying with this requirement, the Boston Region MPO established specific objectives that guide our 3C planning process (see text box: Objectives of the MPO).

As part of our 3C process, the Boston Region MPO annually produces the TIP and the UPWP. These documents, along with the quadrennial LRTP, are referred to as Certification Documents (described in Chapter 2, Section 2.1.2) and are required for the MPO's process of being certified to meet federal requirements; this certification is a prerequisite for receiving federal transportation funds. In addition to the requirement to produce the LRTP, the TIP, and the UPWP, the MPO must establish and conduct an inclusive public participation process, as well as maintain transportation models

and data resources to support air quality conformity determinations, transportation equity analyses, and long- and short-range planning work and initiatives.

The Boston Region MPO

The Boston Region MPO consists of a 22 voting member board that includes state agencies, regional organizations, and municipalities; its jurisdiction extends from Boston north to Ipswich, south to Duxbury, and west to Interstate 495. There are 101 cities and towns that make up this area (see Chapter 1, Figure 1-1).

The permanent MPO voting members are:

- MassDOT (3 seats)
- MAPC
- MBTA
- MBTA Advisory Board
- Massport
- City of Boston (2 seats)
- Regional Transportation Advisory Council (Advisory Council)

The elected MPO voting members are municipalities. A municipality from each of the eight MAPC subregions has a seat, and there are four at-large municipal seats, split between cities and towns. The current elected members are:

- City of Beverly – North Shore Task Force
- City of Braintree – South Shore Coalition
- City of Everett – At-Large City
- City of Newton – At-Large City
- City of Somerville – Inner Core Committee

Metropolitan Area Planning Council Subregional Groups

The Metropolitan Area Planning Council (MAPC) is the regional planning agency for the 101-municipality Boston region and is also a member agency of the MPO.

To enhance the regional planning process, the Boston region is divided into eight subregional groups that include municipal representatives. These groups are better able to focus on planning topics that are of particular importance to their subregion:

- South Shore Coalition
- Three Rivers Interlocal Council
- South West Advisory Planning Committee
- MetroWest Regional Collaborative
- Inner Core Committee
- Minuteman Advisory Group on Interlocal Coordination
- North Suburban Planning Council
- North Shore Task Force

- City of Woburn – North Suburban Planning Council
- Town of Arlington – At-Large Town
- Town of Bedford – Minuteman Advisory Group on Interlocal Coordination
- Town of Framingham – MetroWest Regional Collaborative
- Town of Lexington – At-Large Town
- Town of Medway – SouthWest Advisory Planning Committee
- Town of Norwood – Three Rivers Interlocal Council

In addition, the FHWA and the FTA participate in the MPO as advisory (nonvoting) members. Details about MPO voting members are provided in Chapter 2. Figure 2-1 shows MPO membership and organization of the CTPS, staff to the MPO.

ES.5 OVERVIEW OF THIS DOCUMENT

This UPWP document is structured as follows:

- **Chapter 1** provides more detailed background and information on the purpose of this document, how it helps the MPO achieve its regional transportation goals, and the funding for FFY 2017.
- **Chapter 2** provides background on the metropolitan transportation planning process and the Boston Region MPO member agencies.
- **Chapter 3** gives detailed information on the regulatory framework that guides the development of the UPWP and the studies and activities programmed for funding, as well as the overall regulations and guidance that the MPO considers in all of its work.
- **Chapter 4** presents summary tables of FFYs 2014-2016 UPWP studies that have been completed or are projected to be completed by the end of September 2016 in addition to work products, including reports and their resultant technical memoranda.
- **Chapter 5** includes descriptions of the certification requirement activities to be completed in FFY 2017 and the current budgets assigned to each.
- **Chapter 6** summarizes the Boston Region MPO planning studies and technical analyses that will be carried over from FFY 2016 to FFY 2017, provides descriptions of the eight new planning studies chosen for funding in FFY 2017, and includes updated descriptions of the ongoing technical analysis work that MPO staff conducts for municipalities and the region.
- **Chapter 7** includes descriptions of the agency-funded transportation planning studies and technical analyses that will be undertaken by CTPS in FFY 2017.

These include recurring contracts such as MassDOT’s Statewide Planning and Research grant; ongoing contracts such as the MassDOT Title VI Program and the MBTA’s state fiscal year 2018 National Transit Database: Data Collection and Analysis; and new contracts such as the MBTA’s Title VI Service Equity Analysis Methodology Development Phase II.

- **Chapter 8** provides detailed information and FFY 2017 budgets for the administration, resource management, and support activities conducted by MPO staff.
- **Chapter 9** includes budget summaries for the studies, technical analyses, and ongoing programs included in Chapters 5 through 8, and describes how federal metropolitan planning funds will be spent on studies and programs in this UPWP. This chapter provides federal and state officials with necessary information for approving the use of funds and for administering contracts.
- **Appendix A** presents project summaries for other non-MPO transportation-planning projects that will be conducted in the Boston region. These projects have separate review and approval processes outside of the MPO’s purview. They are included in the UPWP to provide a comprehensive picture of plans and studies that are expected to take place in the Boston region and to ensure that MPO planning efforts are coordinated with other ongoing work.
- **Appendix B** describes the public participation process used for developing the Draft UPWP and the workshops that were held during the public review period. It also includes a summary of written comments on the Draft UPWP that were received during the review period, as well as the MPO’s responses to these comments.
- **Appendix C** includes the FFY 2017 Universe of Proposed New Studies and describes the evaluation process that was used by the UPWP Committee and the MPO as a guide for selecting new studies.
- **Appendix D** contains an updated analysis of the geographic distribution of UPWP studies and funds programmed through the UPWP.
- **Appendix E** contains the glossary of acronyms.



CHAPTER 1

Coordinating Comprehensive Transportation Planning in the Region: What is the Unified Planning Work Program?

The Boston Region Metropolitan Planning Organization (MPO) plans for the transportation future of the Boston region (Figure 1-1). The MPO is guided by a 25-year vision for a modern, safe, equitable, sustainable, and technologically advanced transportation system for the region, which is described in the MPO's Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*.

An integral part of achieving this regional vision is the transportation planning work funded through the Unified Planning Work Program (UPWP).

The UPWP is a financial plan that the MPO produces annually in compliance with the federally mandated metropolitan planning process. This process requires transportation decision-making in urbanized areas based on a continuing, comprehensive, and cooperative planning process (the 3C process) that involves coordination of state and local governments as well as the public.

The UPWP documents the federal funding that will be spent on surface transportation studies and programs in the Boston region during a given federal fiscal year (FFY). This plan also serves as the basis for financing the ongoing work of the staff to the Boston Region MPO.

This chapter explains the UPWP, its connection to the overall regional vision developed in the LRTP, and how the planning work of the MPO is funded.

1.1 WHAT DOES THE UPWP DO?

As the basis for transportation planning at the Boston Region MPO, the UPWP prioritizes federal funding for transportation planning work that will be implemented in the 101-municipality area of the Boston region. This work is conducted by the Central Transportation Planning Staff (CTPS), staff to the MPO, or by the staff of the MPO member agency, the Metropolitan Area Planning Council (MAPC) and primarily consists of four parts:

1. **Certification requirements and other administration activities:** The UPWP includes activities that the MPO must conduct in order to remain certified as an MPO by the federal government, and to be eligible to receive and distribute federal transportation dollars. Work in this category includes preparing federally required financial plans, including the LRTP and the Transportation Improvement Program (TIP); the LRTP allocates funding for regionally significant transportation construction projects and programs over a 25-year period, while the TIP allocates funding for projects to be implemented in the near-term of the next five years. Air quality conformity and environmental justice-related compliance associated with the LRTP and TIP are also included in this category. Other administrative work funded through the UPWP includes data and computer resources management as well as maintenance of the MPO's regional travel demand model, which is used to forecast the potential impacts and changes the transportation system will have on traffic congestion and transit ridership. See Chapters 5 and 8 for more detail on these areas of work.
2. **Ongoing/continuing work programs:** These are areas of work that support technical analyses and planning studies for cities and towns in the region. Examples of these ongoing/continuing programs include Bicycle and Pedestrian Support Activities, Regional Transit Service Planning Technical Support, and Community Transportation Technical Assistance. See Chapter 6 for more detail on these studies and technical analyses.
3. **New studies:** Every year, a certain amount of funding is available for new studies to be undertaken by MPO staff. These efforts are conducted to enhance the knowledge of the practice, to enhance analytical methods, and to evaluate strategies. Examples of these studies in the FFY 2017 UPWP include Planning for Connected and Autonomous Vehicles, Study of Promising Greenhouse Gas Reduction Strategies, and Safety Effectiveness of Safe Routes to School Programs. See Chapter 6 for more detail on these new studies.
4. **Agency Studies and Technical Analyses:** CTPS conducts planning analyses and studies funded by state transportation agencies, including the Massachusetts Department of Transportation (MassDOT), the Massachusetts Bay Transportation Authority (MBTA), and the Massachusetts Port Authority (Massport). These agency-funded studies are described in more detail in Chapter 7.

1.2 HOW ARE FUNDING DECISIONS MADE?

The MPO's UPWP Committee works with the MPO staff to develop the UPWP for the upcoming FFY. Numerous sources of guidance are considered when compiling the UPWP and making decisions about the new and ongoing work that will be carried out. Additionally, as described in further detail in Section 1.3, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) provide funding each year for UPWP studies and programs in the upcoming FFY. The amount of available funding plays an important role in determining what work will be done in a given FFY.

1.2.1 The Guiding Vision of the LRTP

The chief framework that directs decisions about what to fund through the UPWP includes the goals and objectives of the LRTP, which guide the MPO in its overall decision-making. As described in more detail in Section 1.2.2, each new proposed study is evaluated based on how it helps the region achieve the goals and objective outlined in the LRTP.

Figure 1-2 shows the goals and objectives in the MPO's most recent LRTP, *Charting Progress to 2040*, endorsed by the MPO in July 2015.

Figure 1-2: LRTP Goals and Objectives

CENTRAL VISION STATEMENT	
<p>The Boston Region Metropolitan Planning Organization envisions a modern transportation system that is safe, uses new technologies, provides equitable access, excellent mobility, and varied transportation options—in support of a sustainable, healthy, livable, and economically vibrant region.</p>	
GOALS	OBJECTIVES
SAFETY	
<p>Transportation by all modes will be safe</p>	<ul style="list-style-type: none"> • Reduce number and severity of crashes, all modes • Reduce serious injuries and fatalities from transportation • Protect transportation customers and employees from safety and security threats <p>(Note: The MPO action will be to incorporate security investments into capital planning.)</p>
SYSTEM PRESERVATION	
<p>Maintain the transportation system</p>	<ul style="list-style-type: none"> • Improve condition of on- and off-system bridges • Improve pavement conditions on MassDOT-monitored roadway system • Maintain and modernize capital assets, including transit assets, throughout the system • Prioritize projects that support planned response capability to existing or future extreme conditions (sea level rise, flooding, and other natural and security-related man-made hazards) • Protect freight network elements, such as port facilities, that are vulnerable to climate-change impacts
CLEAN AIR/CLEAN COMMUNITIES	
<p>Create an environmentally friendly transportation system</p>	<ul style="list-style-type: none"> • Reduce greenhouse gases generated in the Boston region by all transportation modes as outlined in the Global Warming Solutions Act • Reduce other transportation-related pollutants • Minimize negative environmental impacts of the transportation system • Support land use policies consistent with smart and healthy growth

GOALS (cont.)	OBJECTIVES (cont.)
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<p>CAPACITY MANAGEMENT/ MOBILITY</p>	
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Use existing facility capacity more efficiently and increase healthy transportation capacity

- Improve reliability of transit
- Implement roadway management and operations strategies, constructing improvements to the bicycle and pedestrian network, and supporting community-based transportation
- Create connected network of bicycle and accessible sidewalk facilities (at both regional and neighborhood scale) by expanding existing facilities and closing gaps
- Increase automobile and bicycle parking capacity and usage at transit stations
- Increase percentage of population and places of employment within one-quarter mile of transit stations and stops
- Increase percentage of population and places of employment with access to bicycle facilities
- Improve access to and accessibility of transit and active modes
- Support community-based and private-initiative services and programs to meet last mile, reverse commute and other non-traditional transit/transportation needs, including those of the elderly and persons with disabilities
- Eliminate bottlenecks on the freight network
- Enhance intermodal connections
- Emphasize capacity management through low-cost investments; give priority to projects that focus on lower-cost O&M-type improvements such as intersection improvements and Complete Streets solutions

<p>TRANSPORTATION EQUITY</p>	
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Provide comparable transportation access and service quality among communities, regardless of income level or minority population

- Target investments to areas that benefit a high percentage of low-income and minority populations
- Minimize any burdens associated with MPO-funded projects in low-income and minority areas
- Break down barriers to participation in MPO-decision making

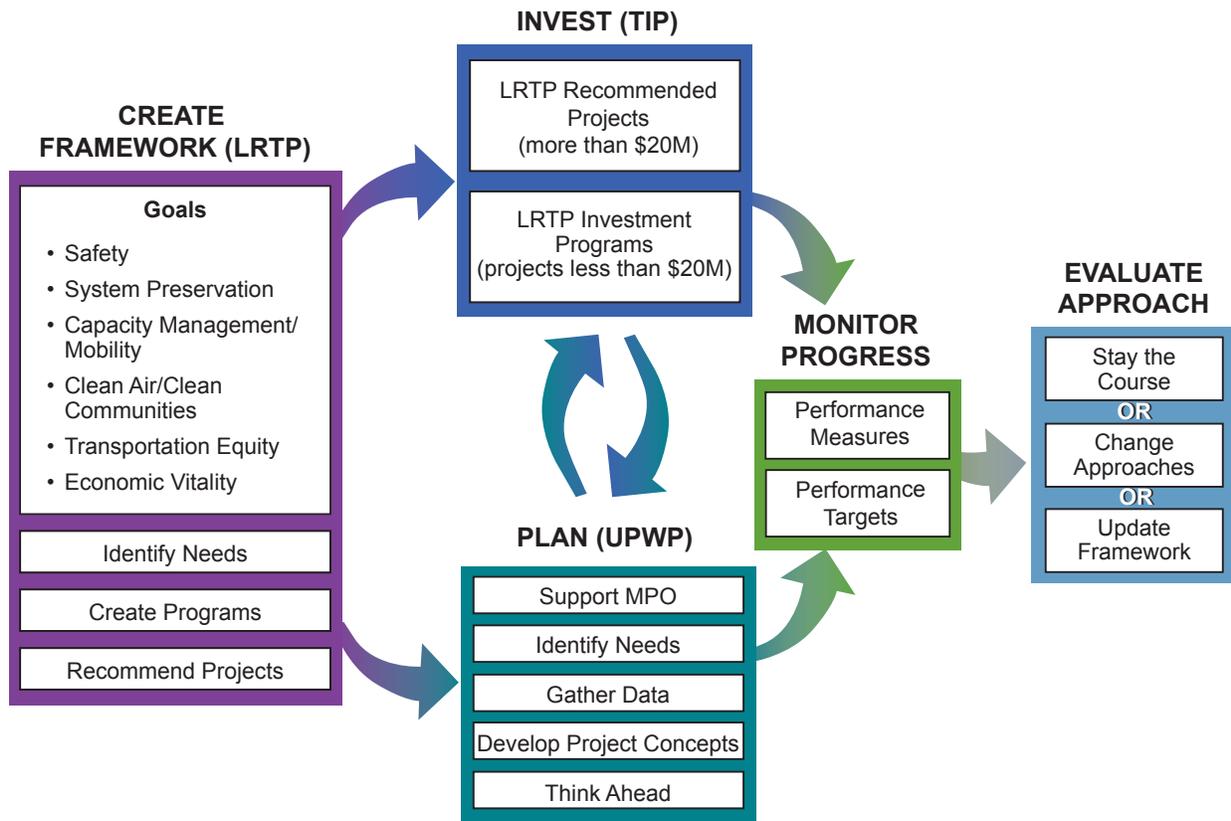
<p>ECONOMIC VITALITY</p>	
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Ensure our transportation network provides a strong foundation for economic vitality

- Respond to the mobility needs of the 25–34-year-old workforce
- Minimize the burden of housing and transportation costs for residents in the region
- Prioritize transportation investments that serve targeted development sites
- Prioritize transportation investments consistent with the compact-growth strategies of MetroFuture

Figure 1-3 depicts the relationship between the framework established in the LRTP, the planning foundation of the MPO (the UPWP), the near-term investment plan of the MPO (the TIP), and the feedback loop for monitoring progress towards the region’s goals as well as continuously evaluating our approach to achieving them.

Figure 1-3: Links Between LRTP, TIP, and UPWP



1.2.2 The Process of Creating and Monitoring the UPWP

Each year, the UPWP Committee considers new studies for funding. The UPWP documents these new studies (as well as studies that are continuing from previous UPWPs), and it provides updates on the MPO’s ongoing programs that fulfill the federally required 3C transportation-planning process.

The UPWP Committee met with the MPO staff five times in FFY 2016 to consider and provide guidance on the UPWP development process, including proposed budgets for ongoing and continuing activities, new study ideas, and the prioritization of these ideas. These meetings resulted in the Committee’s recommendation for the Draft FFY 2017 UPWP. The MPO approved the UPWP Committee’s recommendations for the public review of Draft FFY 2017 UPWP on May 19, 2016.

Below are more details about the process for selecting studies and programs for the FFY 2017 UPWP.

Developing the New Federal Fiscal Year UPWP

To develop new planning studies for the FFY 2017 UPWP, the MPO drew from the following sources to generate a universe of proposed new studies for evaluation by MPO staff and the MPO's UPWP Committee.

1. **Public outreach:** Meetings were held to gain input from subregional planning groups in the region. These groups, which are organized by an MPO member agency, MAPC, involve municipal representatives focused on regional planning topics (Figure 1-1). Two additional targeted TIP and UPWP public meetings were held in the region in December 2015 and January 2016.
2. **Regional Transportation Advisory Council (Advisory Council):** MPO staff met with the Advisory Council, an independent body that brings public viewpoints and advice on transportation planning to the MPO, to present preliminary drafts of the FFY 2017 Universe of New Studies and gain ideas and input on transportation planning priorities.
3. **UPWP Committee:** MPO staff met with the UPWP Committee of the MPO throughout the development of the UPWP. The committee oversaw the entire document development process and contributed to the generation and analysis of new study ideas.
4. **Existing planning documents:** Various plans and programs developed and conducted by the MPO and other state agencies document transportation issues that require further study. These include the Congestion Management Process (CMP), which monitors the transportation network to identify locations and sources of congestion; the Program for Mass Transportation (PMT), the MBTA's long-range capital plan; the MPO's long-range planning documents, including the former LRTP, *Paths to a Sustainable Region*, and the LRTP Needs Assessment for the current LRTP, *Charting Progress to 2040*; MetroFuture, a long-range plan for smart growth developed by the MAPC; and other recent studies.
5. **Past guidance:** The FHWA and FTA issue guidance on addressing the planning emphasis areas.
6. **FFY 2016 UPWP public comment letters and study proposals.**
7. **Consultations with MassDOT, the MBTA, and MAPC.**
8. **MPO staff-identified needs.**

In an effort to increase public input into the Universe of New Studies, the MPO has new and additional public involvement planned in coming years, including using more social media, holding outreach meetings with advocacy groups, conducting outreach at more convenient locations, and concentrating outreach on traditionally less-involved municipalities in the region.

Proposed planning studies are documented in the FFY 2017 UPWP Universe of Proposed New Studies (see Appendix C). Selected studies for FFY17 are summarized in Table 1-1 and described in detail in Chapter 6.

Evaluating and Selecting New Studies

Each new proposed study in the Universe of New Studies was evaluated based on the following criteria: how it helps the region accomplish the LRTP goals, the mode(s) it addresses, the scale of the study, the time frame and type of impact it is anticipated to result in, whether it furthers some body of existing work, and whether it has been funded in the past or is a completely new idea.

The evaluation process provides an important tool for the MPO and stakeholders to understand the amount of spending on studies across the following criteria:

- **Focus on LRTP goal areas:** whether a study addresses, either as a primary focus or a secondary focus, one of the six LRTP goal areas:
 - o Safety
 - o System Preservation
 - o Clean Air/Clean Communities
 - o Transportation Equity
 - o Capacity Management/Mobility
 - o Economic Vitality
- **Mode:** whether a study primarily addresses roadway, bicycle and pedestrian, or transit issues.
- **Study scale:** whether a study primarily impacts one or two specific communities in the region or the region as a whole.
- **Time frame and type of impact:** whether a study results in research and findings that enhance the state of the transportation planning practice in the Boston Region, low-cost/short-term implementation of improvements, or long-term implementation (for transportation studies leading to construction projects that have to go through the MassDOT design process).
- **Connection to existing work:** whether a study furthers analysis or conclusions developed from a previous study.
- **Continuing or new study:** whether a study has been conducted previously at a specific location/roadway and is being conducted again at a new location, or whether a study is a completely new idea that has never been undertaken by the MPO.

In addition to the study evaluation process, MPO staff defined general scopes and estimated costs for proposed planning studies and considered potential study feasibility issues. These various factors, along with the availability of funds for new studies, were considered as staff identified a recommended set of new proposed planning studies for review by the UPWP Committee. The FFY 2017 Universe of Proposed Studies, along with the estimated costs of each study, the evaluation results of how each supports the LRTP goals, and any supporting comments about each study are documented in the FFY 2017 UPWP Universe of Proposed New Studies in Appendix C.

Table 1-1 shows the studies in the FFY 2017 Universe that were chosen for funding in FFY 2017. These are described in more detail in Chapter 6.

Updates to Ongoing and Continuing Activities

In addition to the process of selecting new discrete transportation planning studies, the MPO reviews activities for ongoing programs and work. MPO staff identifies and develops budgets for these continuing programs that will be carried out in the upcoming FFY. If there are changes to the budget of any program as a result of revisions to planned activities, these changes are proposed.

Examples of ongoing and continuing activities include work that is required of the MPO, including certification requirements (see Chapter 5), administration and resource management activities (see Chapter 8), and ongoing technical assistance to municipalities (see Chapter 6).

Additionally, in FFY 2017, the MPO decided to include a new ongoing program in the UPWP. Described in detail in Chapter 8, the UPWP Study Recommendation Tracking Database will track the status of recommendations advanced through UPWP studies on an annual basis.

The annual study and program review and budget development process defines the amount of 3C funding (from federal grants that support the 3C process) that is available for new studies in the UPWP. After accounting for 3C-funded continuing and ongoing programs, the remaining funding is available for new studies.

Table 1-1
FFY 2017 New Discrete Funded Studies

Universe ID	Category	Project Name	Estimated Cost	Page Number
A-7	Active transportation	Safety Effectiveness of Safe Routes to School Programs	\$80,000	6-2
B-7	Land use, environment, and economy	Study of Promising Greenhouse Gas Reduction Strategies	\$55,000	6-4
C-1	Multimodal mobility	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	\$110,000	6-7
C-3	Multimodal mobility	Low-Cost Improvements to Express-Highway Bottleneck Locations	\$50,000	6-9
C-4	Multimodal mobility	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	\$110,000	6-5
C-6	Multimodal mobility	Planning for Connected and Autonomous Vehicles	\$50,000	6-11
E-7	Transit	Using General Transit Feed Specification (GTFS) to Find Shared Segments with Excessively Irregular Headways	\$25,000	6-12
F-1	Other technical support	MPO Staff-Generated Research Topics	\$30,000	6-13
	Total		\$510,000	

Public Review of the Draft UPWP

Descriptive and financial information about ongoing and new UPWP studies, along with information about the UPWP development process and other major transportation-planning studies occurring in the region, are incorporated into the draft UPWP. Once the MPO votes to release the draft for public review, MPO staff posts the document for downloading from the MPO website (www.bostonmpo.org) and provides notice of its availability through various media and MPO communication outlets.

As noted above, public outreach forms a major part of the input into the UPWP each FFY. After the draft UPWP is approved by the MPO, there is a 30-day public comment period. During this time, MPO staff members solicit public input through the MPO website, social media outlets, open houses, and public meetings held in conjunction

with MassDOT and the MBTA. All public comments received during this period are compiled and presented to the MPO. Information about the public review process for the Draft FFY 2017 UPWP is available in Appendix B.

Monitoring Progress of UPWP Studies

The following procedures for monitoring the studies in the FFY 2017 UPWP were approved by the MPO:

- Work programs supported by federal 3C planning funds must be approved by the MPO prior to expenditure.
- Work scopes supported by other funds (e.g., agency) for CTPS work must be approved by the MPO with the assurance that the new work will not impact the MPO-funded work by CTPS.
- Monthly progress reports on all active studies and work programs must be submitted to the respective funding agency (FHWA or FTA) by the agency conducting the work (CTPS and/or MAPC). The reports must include the following information for each study or work program:
 - o Brief narrative describing the work accomplished
 - o Key personnel attendance at meeting(s) held each week
 - o Objectives and planned activities for the next month
 - o Percent of work completed
 - o Some measure of actual resources (e.g., hours, funds, etc.) charged to the contract over the past month
 - o Comparison of actual cumulative resources expended compared to the contract budget
- CTPS presents a quarterly report comparing the UPWP study budgets with the actual spending.
- MPO approval for release of a 3C-funded study's work products is based on whether the objectives stated in the work program were met and whether the stated deliverables were produced.

Amendments and Administrative Modifications to the UPWP

If necessary, amendments and administrative modifications may be made to the UPWP throughout the year. All 3C documents (TIP, LRTP, UPWP, etc.) endorsed by MPOs must follow standardized procedures regarding amendments and/or administrative adjustments. If an amendment is under consideration, the Regional Transportation Advisory Council and other interested parties, including any affected communities, are notified. The MPO follows the procedures specified in the MPO's Public Participation Plan.

Below are general guidelines regarding the conditions that constitute an administrative adjustment or amendment to the UPWP.

**Table 1-2
UPWP Amendment and Administrative Adjustment Guidelines**

UPWP Administrative Adjustment	UPWP Amendment
Reallocation of budget funds	Addition or Removal of UPWP task(s)
Change in start/completion dates within the originally intended federal fiscal year(s)	Change in start/completion dates, outside of originally intended federal fiscal year(s)
Adjustment to project scope	Significant change in project scope, cost, and/or time allocation

All proposed administrative adjustments and amendments must be presented to the MPO for consultation prior to endorsement. Both adjustments and amendments must be voted on by the MPO members and amendments must be released for 30-day public comment period prior to endorsement. Members of the public may attend and present comments at UPWP Committee meetings and MPO meetings, at which amendments and administrative modifications are discussed. Administrative modifications may be made by the MPO a public review period, although this can be provided at the MPO's discretion.

When submitting the standard Budget Reallocation Request form to MassDOT OTP, all fields must be filled out with clear indication that the MPO was consulted prior to submission. Back up documentation must be submitted, including the UPWP description of the task(s) affected, original budget, revised budget, and justification for request.

A change to a project scope, budget, and/or project schedule is considered significant when it alters the original intent of the project or intended deliverables of the project.

Other Regionally-Significant Transportation Planning Studies

To provide a comprehensive perspective of transportation planning in the Boston region, the UPWP also includes a list of other major transportation planning activities in the region. This list includes projects that are not funded with the MPO's planning funds, but which are being funded and implemented by individual transportation agencies, municipalities, or academic institutions. Often, these efforts also use the expertise and tools CTPS is uniquely able to provide. These are described in Appendix A.

1.3 HOW IS THE WORK FUNDED?

The funding for the studies and programs included in this UPWP (presented in Chapters 5 through 8) comes from a variety of federal and state sources, as described below. The source of funds has important implications with regard to which agency or organization is responsible for programming them and for the MPO's vote to approve both the UPWP and the subsequent work programs for the studies. The chapters of this UPWP are organized based on funding source: MPO-funded (3C-funded) studies and agency/other client-funded studies.

- **FHWA 3C Planning (PL)/MassDOT Local Match:** These are FHWA planning funds distributed to MassDOT's Office of Transportation Planning (OTP), according to an allocation formula established by federal legislation, to carry out the 3C planning process. OTP distributes these funds to Massachusetts MPOs according to a formula based on population. The FFY 2017 3C PL funding allocation for the Boston Region is \$3,546,663, which includes \$709,332 in state matching funds.
- **FTA 3C Planning (§5303)/MassDOT Local Match:** FTA provides 3C planning funds for transit projects to MPOs under Section 5303 of the Federal Transit Act. These funds require a local match, are distributed according to an allocation formula, and are administered by MassDOT. The FFY 2017 FTA allocation for the Boston Region, including a total local match, is \$2,210,858. The total amount programmed in this UPWP for studies to be conducted by MPO staff, MassDOT, and MAPC on behalf of the MPO is \$1,892,936. Of the total FTA 3C funds allocated to the region, MassDOT, MAPC, and the MPO receive a portion, as described below:
 - o **MPO FTA 3C Planning (§5303)/MassDOT Local Match:** The total amount of FTA funds, including a local match, programmed in this UPWP for work conducted by MPO staff is \$1,291,141.
 - o **MassDOT FTA 3C Planning (§5303)/MassDOT Local Match:** The total amount of FTA funds, including a local match, allocated to MassDOT for FFY 2017 is \$270,167. MassDOT uses these funds to issue a contract to the MPO for transit planning assistance throughout the FFY (referred to as MassDOT Transit Planning Assistance).
 - o **MAPC FTA 3C Planning (§5303)/MassDOT Local Match:** A portion of the Boston Region FTA allocation also goes to MAPC. MAPC uses these funds to conduct their transit-planning studies programmed through the UPWP. The total amount of FTA funds, including a local match, allocated to MAPC for FFY 2017 is \$331,629.
- **FHWA Statewide Planning and Research (SPR)/MassDOT Local Match:** As in the case of 3C PL funds, FHWA provides SPR funds to OTP according to a distribution formula. OTP uses these funds to carry out planning and research projects throughout the state. This UPWP describes only the SPR studies that

will be conducted in the Boston Region MPO area; however, OTP provides a complete listing of how these funds are distributed statewide in a document called the SPR Transportation-Planning Work Program. SPR funds in the amount of \$572,000 (including \$114,400 in state matching funds) are programmed in this UPWP for studies to be conducted by MPO staff. The MPO's role in these studies is crucial to the 3C process because it provides an opportunity to coordinate studies with other related transportation work efforts that may be planned for the same area.

- **MassDOT:** Funds in the amount of \$642,900 for MassDOT studies are included in this UPWP.
- **MBTA:** The MBTA provides \$1,061,819 in funding for this UPWP for transit studies to be conducted by CTPS.
- **Massport:** This UPWP also includes \$53,150 in funding provided by Massport for work being conducted by CTPS on its behalf.



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Table 1-3: FFY 2017 Unified Planning Work Program Budget—Summary of FFY 2017 Budgets for CTPS

3C Studies & Programs by Budget Categories	FFY 2017 CTPS 3C PL Funds	FFY 2017 CTPS Section 5303 Funds	FFY 2017 CTPS Budget
Administration and Resource Management Projects	\$1,149,853	\$563,977	\$1,713,830
MPO Certification Requirements	\$1,069,369	\$430,872	\$1,500,241
MPO Funded Planning Studies and Technical Analyses	\$133,874	\$87,546	\$221,420
New Discrete Studies and Ongoing Program	\$370,382	\$159,625	\$530,000
Direct Support	\$155,000	\$71,500	\$226,500
Total for CTPS 3C Studies and Programs (including salary, overhead, direct support)	\$2,878,477	\$1,313,521	\$4,191,998

Agency Funded CTPS Work	Agency Funds	Direct Support	FFY 2017 CTPS Budget
MassDOT SPR Funds	\$559,500	\$12,500	\$572,000
MassDOT Section 5303 Funds	\$264,170	\$6,000	\$270,170
MassDOT Other Funds	\$642,400	\$500	\$642,900
MBTA Funds	\$1,052,089	\$20,230	\$1,072,319
Massport Funds	\$52,900	\$250	\$53,150
Total for Agency-Funded Project Work	\$2,571,059	\$39,480	\$2,610,539

CTPS Budget (3C + Agency)	\$6,802,537
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Table 1-4: FFY 2017 Unified Planning Work Program Budget—Summary of FFY 2017 Budgets for MAPC

3C Studies & Programs by MAPC Budget Categories	FFY 2017 MAPC PL Funds	FFY 2017 MAPC Section 5303 Funds	FFY 2017 MAPC Budget
MAPC Planning Studies and Technical Analyses	\$367,815	\$206,229	\$574,044
MAPC Administration, Resource Management, and Support Activities	\$306,051	\$125,400	\$431,451
MAPC Total FFY 2017 Funds Programmed	\$673,866	\$331,629	\$1,005,495

3C Budget (CTPS + MAPC)	\$5,197,493
TOTAL PROGRAMMED IN FFY 2017 (CTPS Budget + MAPC Budget)	\$7,808,032

3C = Continuing, Comprehensive, and Cooperative. CTPS = Central Transportation Planning Staff. FFY = federal fiscal year.
 MAPC = Metropolitan Area Planning Council. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority.
 MPO = Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. SPR = MassDOT Statewide Planning and Research Program.



CHAPTER 2

Transportation Planning and the Boston Region MPO

This chapter explains the transportation-planning process in the Boston Region Metropolitan Planning Organization (MPO) area and the composition of the Boston Region MPO.

Decisions about how to spend transportation funds in a metropolitan area are guided by information and ideas garnered from a broad group of people, including elected officials, municipal planners and engineers, transportation advocates, and other interested people. MPOs are the bodies responsible for providing a forum for this decision-making process. Each metropolitan

area in the United States with a population of 50,000 or more—also known as an urbanized area—has an MPO, which decides how to spend federal transportation funds for capital projects and planning studies for the area.

2.1 THE TRANSPORTATION PLANNING PROCESS

The federal government regulates the funding, planning, and operation of surface transportation through the federal transportation program (enacted into law through Titles 23 and 49 of United States Code). The most recent reauthorization of the surface transportation law is called the Fixing America's Surface Transportation (FAST) Act.

FAST Act legislation, as with previous federal transportation laws, sets policies related to metropolitan transportation planning. The law requires all MPOs to carry out a continuing, comprehensive, and cooperative (3C) transportation-planning process.

2.1.1 3C Transportation Planning

Title 23, Section 134 of the Federal-Aid Highway Act and Section 5303 of the Federal Transit Act, as amended, require that urbanized areas, in order to be eligible for federal funds, conduct a 3C transportation-planning process, resulting in plans and programs consistent with the planning objectives of the metropolitan area. The Boston Region MPO is responsible for carrying out the 3C planning process in the Boston region and has established the following objectives for the process:

- Identify transportation problems and develop possible solutions.
- Balance short- and long-range considerations so that beneficial incremental actions adequately reflect an understanding of probable future consequences and possible future options.
- Represent both regional and local considerations, as well as both transportation and non-transportation objectives and impacts, in the analysis of project issues.
- Assist implementing agencies in effecting timely policy and project decisions with adequate consideration of environmental, social, fiscal, and economic impacts, and with adequate opportunity for participation by other agencies, local governments, and the public.
- Help implementing agencies to prioritize transportation activities in a manner consistent with the region's needs and resources.
- Comply with the requirements of the FAST Act, the Americans with Disabilities Act of 1990 (ADA), the Clean Air Act (CAA), the Civil Rights Act of 1964, Executive Order 12898 (regarding environmental justice), Executive Order 13166 (regarding outreach to populations with limited English-language proficiency), and Executive Order 13330 (regarding the coordination of human-services transportation).

As part of its 3C process, the Boston Region MPO annually produces the Transportation Improvement Program (TIP) and the Unified Planning Work Program (UPWP). These documents, along with the quadrennial Long-Range Transportation Plan (LRTP), are referred to as Certification Documents (described in Section 2.1.2), and are required for the MPO's process to be certified as meeting federal requirements; this certification is a prerequisite for receiving federal transportation funds. In addition to the requirement to produce the LRTP, the TIP, and the UPWP, the MPO must establish and conduct an inclusive public participation process, as well as maintain transportation models and data resources to support air quality conformity determinations and long- and short-range planning work and initiatives.

2.1.2 Certification Documents

An essential aspect of maintaining an open and transparent 3C transportation planning and programming process in conformance with federal and state requirements and guidelines is the development of the MPO's certification documents.

- The **LRTP** guides investment in the transportation system of the Boston metropolitan region for the next 25 years. It defines an overarching vision of the future of transportation in the region, establishes goals and objectives that will lead to the achievement of that vision, and allocates projected revenue to transportation projects and programs consistent with established goals

and objectives. The Boston Region MPO produces an LRTP every four years. *Charting Progress to 2040*, the current LRTP, was endorsed by the MPO in 2015 and guided the development of this document.

- The **TIP** is a multiyear, multimodal program of transportation improvements that is consistent with the LRTP. It describes and prioritizes transportation projects that are expected to be implemented during a five-year period. The types of transportation projects funded include major highway reconstruction and maintenance, arterial and intersection improvements, public transit expansion and maintenance, bicycle paths and facilities, and improvements for pedestrians. The TIP contains a financial plan that shows the revenue source or sources, current or proposed, for each project. The TIP serves as the implementation arm of the MPO's LRTP, and the Boston Region MPO updates the TIP annually. An MPO-endorsed TIP is incorporated into the State Transportation Improvement Program (STIP) for its submission to the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Environmental Protection Agency for approval.
- The **UPWP** contains information about surface transportation planning studies that will be conducted by MPO staff. Generally, the work described throughout the following chapters has a scope defined by the current federal fiscal year (FFY) from October 1st through September 30th. The UPWP also describes all of the supportive planning activities undertaken by the MPO, including data resources management, preparation of the federally required certification documents, and ongoing regional transportation planning assistance. The UPWP is produced annually and the UPWP can be a good way for transportation projects and alternatives to be studied before they are advanced for further design, construction, and possible future programming through the TIP. As described throughout this document, the studies and work products programmed for funding through the UPWP are integrally related to other planning initiatives conducted by the Boston Region MPO as well as by the Massachusetts Department of Transportation (MassDOT), the Massachusetts Bay Transportation Authority (MBTA), the Massachusetts Port Authority (Massport), the Metropolitan Area Planning Council (MAPC), and the municipalities.

2.2 THE BOSTON REGION MPO

The Boston Region MPO consists of a 22 voting member board that includes state agencies, regional organizations, and municipalities; its jurisdiction extends from Boston north to Ipswich, south to Duxbury, and west to Interstate 495. There are 101 cities and towns that make up this area (see Chapter 1, Figure 1-1).

The permanent MPO voting members are:

- MassDOT
- MAPC
- MBTA

- MBTA Advisory Board
- Massport
- City of Boston
- Regional Transportation Advisory Council (Advisory Council)

The elected MPO voting members are municipalities. A municipality from each of the eight MAPC subregions has a seat, and there are four at-large municipal seats. The current elected members are:

- City of Beverly – North Shore Task Force
- City of Braintree – South Shore Coalition
- City of Everett – At-Large City
- City of Newton – At-Large City
- City of Somerville – Inner Core Committee
- City of Woburn – North Suburban Planning Council
- Town of Arlington – At-Large Town
- Town of Bedford – Minuteman Advisory Group on Interlocal Coordination
- Town of Framingham – MetroWest Regional Collaborative
- Town of Lexington – At-Large Town
- Town of Medway – SouthWest Advisory Planning Committee
- Town of Norwood – Three Rivers Interlocal Council

In addition, the FHWA and the FTA participate in the MPO as advisory (nonvoting) members. Figure 2-1 shows MPO membership and organization of the Central Transportation Planning Staff (CTPS), staff to the MPO. Details about MPO voting members are provided below.

MassDOT was established under Chapter 25 (“An Act Modernizing the Transportation Systems of the Commonwealth of Massachusetts”) of the Acts of 2009. It includes four divisions: Highway, Rail and Transit, Aeronautics, and Registry of Motor Vehicles. The MassDOT Board of Directors, comprised of 11 members appointed by the Governor, oversees all four divisions and MassDOT operations, including the MBTA. The MassDOT Board was expanded to 11 members by the legislature this year based on a recommendation by Governor Baker’s Special Panel, comprised of transportation leaders, which was assembled to review structural problems with the MBTA and deliver recommendations for improvements. MassDOT has three seats on the MPO including the Highway Division and the MBTA.

The Highway Division of MassDOT has jurisdiction over the roadways, bridges, and tunnels of the former Massachusetts Highway Department and the Massachusetts Turnpike Authority. The Highway Division also has jurisdiction over many bridges and parkways previously under the authority of the Department of Conservation and Recreation. The Highway Division is responsible for the design, construction, and maintenance of the Commonwealth's state highways and bridges. It is also responsible for overseeing traffic safety and engineering activities for the state highway system. These activities include operating the Highway Operations Control Center to ensure safe road and travel conditions.

The Rail and Transit Division oversees MassDOT's freight and passenger rail program, and provides oversight of Massachusetts's 15 regional transit authorities (RTAs), as well as intercity bus, MBTA paratransit (THE RIDE), and a statewide mobility-management effort.

The **MBTA**, created in 1964, is a body politic and corporate, and a political subdivision of the Commonwealth. Under the provisions of Chapter 161A of the Massachusetts General Laws (MGL), it has the statutory responsibility within its district of operating the public transportation system, preparing the engineering and architectural designs for transit development projects, and constructing and operating transit development projects. The MBTA district comprises 175 communities, including all of the 101 cities and towns of the Boston Region MPO area. In April 2015, as a result of a plan of action to improve the MBTA, a five-member Fiscal and Management Control Board (FMCB) was created. The FMCB will enforce new oversight and management support, and increase accountability over a three-to-five-year time frame. The goals will target governance, finance, and agency structure and operations through recommended executive and legislative actions that embrace transparency and develop stability in order to earn public trust. By statute, the MBTA FMCB consists of five members, one with experience in transportation finance, one with experience in mass transit operations and three who are also members of the MassDOT Board.

The **MBTA Advisory Board** was created by the Massachusetts Legislature in 1964 through the same legislation that created the MBTA. The Advisory Board consists of representatives of the 175 cities and towns that compose the MBTA district. Cities are represented by either the city manager or mayor, and towns are represented by the chairperson of the board of selectmen. Specific responsibilities of the Advisory Board include review of and comment on the MBTA's long-range plan, the Program for Mass Transportation (PMT), proposed fare increases, and the annual MBTA Capital Investment Program; review of the MBTA's documentation of net operating investment per passenger; and review of the MBTA's operating budget. The MBTA Advisory Board advocates for the transit needs of its member communities and the riding public.

Massport has the statutory responsibility under Chapter 465 of the Acts of 1956, as amended, for planning, constructing, owning, and operating such transportation and related facilities as may be necessary for the development and improvement of commerce in Boston and the surrounding metropolitan area. Massport owns and operates Boston Logan International Airport, the Port of Boston's Conley Terminal, Cruiseport Boston, Hanscom Field, Worcester Regional Airport, and various maritime/waterfront properties, including parks in East Boston, South Boston, and Charlestown.

The **MAPC** is the regional planning agency for the 101 cities and towns in the MAPC/MPO region. It is composed of the chief executive officer (or her/his designee) of each of the 101 cities and towns in the MAPC region, 21 gubernatorial appointees, and 12 ex-officio members. It has statutory responsibility for comprehensive regional planning in its region under Chapter 40B of the MGL. It is the Boston Metropolitan Clearinghouse under Section 204 of the Demonstration Cities and Metropolitan Development Act of 1966 and Title VI of the Intergovernmental Cooperation Act of 1968. Also, its region has been designated an economic development district under Title IV of the Public Works and Economic Development Act of 1965, as amended. MAPC's responsibilities for comprehensive planning include responsibilities in the areas of technical assistance to communities, transportation planning, and development of zoning, land use, demographic, and environmental studies. MAPC activities that are funded with federal metropolitan transportation planning dollars are included in this UPWP.

The **city of Boston, six elected cities (currently Beverly, Braintree, Everett, Newton, Somerville, and Woburn), and six elected towns (currently Arlington, Bedford, Framingham, Lexington, Medway, and Norwood)** represent the 101 municipalities in the Boston Region MPO area. The city of Boston is a permanent MPO member and has two seats. There is one elected municipal seat for each of the eight MAPC subregions and four seats for at-large elected municipalities (two cities and two towns). The elected at-large municipalities serve staggered three-year terms, as do the eight municipalities representing the MAPC subregions.

The **Regional Transportation Advisory Council**, the MPO's citizen advisory group, provides the opportunity for transportation-related organizations, non-MPO member agencies, and municipal representatives to become actively involved in the decision-making processes of the MPO as it develops plans and prioritizes the implementation of transportation projects in the region. The Advisory Council reviews, comments on, and makes recommendations regarding certification documents. It also serves as a forum for providing information on transportation topics in the region, identifying issues, advocating for ways to address the region's transportation needs, and generating interest among members of the general public in the work of the MPO.

Two members participate in the Boston Region MPO in an advisory (nonvoting) capacity, reviewing the LRTP, the TIP, the UPWP, and other facets of the MPO's planning process to ensure compliance with federal planning and programming requirements:

- The **FHWA and the FTA** oversee the highway and transit programs, respectively, of the U.S. Department of Transportation under pertinent legislation and the provisions of the FAST Act.

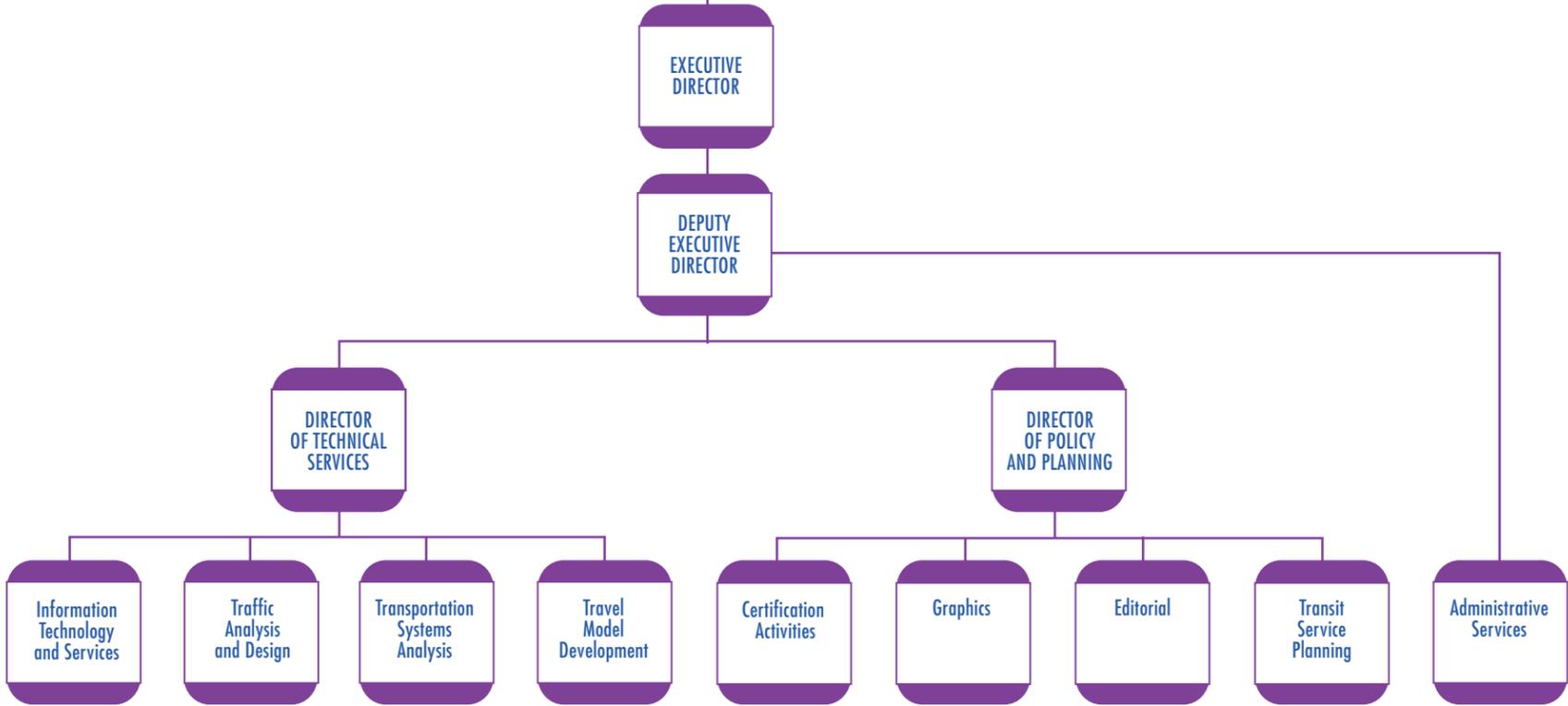


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MEMBERSHIP OF THE BOSTON REGION METROPOLITAN PLANNING ORGANIZATION



CENTRAL TRANSPORTATION PLANNING STAFF





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CHAPTER 3

Regulatory Framework

The Boston Region Metropolitan Planning Organization (MPO) plays a critical role in helping the region move closer to achieving federal, state, and regional transportation goals and policies. Therefore, a central step in producing the Unified Planning Work Program (UPWP) is ensuring that the MPO's planning activities align with federal and state regulatory guidance. This chapter describes all of the regulations taken into consideration by the MPO during the development of the federal fiscal year (FFY) 2017 UPWP.

3.1 FEDERAL REGULATIONS AND GUIDANCE

3.1.1 Fixing America's Surface Transportation (FAST) Act: National Goals

The purpose of the national transportation goals (23 United States Code [USC] 150) is to increase the accountability and transparency of the Federal-Aid Highway Program as well as to improve decision-making through performance-based planning and programming. The national transportation goals include:

1. **Safety:** Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
2. **Infrastructure condition:** Maintain the highway infrastructure asset system in a state of good repair.
3. **Congestion reduction:** Achieve a significant reduction in congestion on the National Highway System.
4. **System reliability:** Improve the efficiency of the surface transportation system.
5. **Freight movement and economic vitality:** Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
6. **Environmental sustainability:** Enhance the performance of the transportation system while protecting and enhancing the natural environment.

7. **Reduced project delivery delays:** Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion by eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

3.1.2 FAST Act: Planning Factors

Because transportation planning studies are programmed for funding in the UPWP, specific consideration is given to the federal planning factors (23 USC 134). The FAST Act added two new planning factors to the eight factors established in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) transportation legislation. In accordance with the legislation, studies and strategies undertaken by the MPO shall

1. support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. increase the safety of the transportation system for all motorized and nonmotorized users.
3. increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and nonmotorized users.
4. increase accessibility and mobility of people and freight.
5. protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
6. enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
7. promote efficient system management and operation.
8. emphasize the preservation of the existing transportation system.
9. improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.
10. enhance travel and tourism.

Table 3-1 illustrates how studies and ongoing work conducted by the MPO and funded through federal formula grant programs address the federal planning factors.

TABLE 3-1: 3C-funded UPWP Studies and Programs: Relationship to Federal Planning Factors

Federal Planning Factor	Certification Activities								Technical Analyses					Planning Studies								Administration, Resource Management, and Transportation Data Collection											
	3C Planning and MPO Support	L RTP	TIP	Unified Planning Work Program (CTPS and MAPC)	Air Quality Conformity and Support Activities	Boston Region MPO Title VI Reporting	Congestion Management Process	Freight Planning Support	Transportation Equity/Environmental Justice Support	Bicyclist/Pedestrian Support Activities	Community Transportation Technical Assistance	Regional Transit Service Planning Technical Support	Land Use Development Project Reviews	Using GTFS to Find Shared Segments with Excessively Irregular Headways	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	Low Cost Improvements to Express-Highway Bottleneck Locations	Safety Effectiveness of Safe Routes to School Programs	Planning for Connected and Autonomous Vehicles	Study of Promising GHG Reduction Strategies	MPO Staff-Generated Research Topics	Alternative Mode Planning and Coordination (MAPC)	MetroFuture Implementation (MAPC)	Corridor/Subarea Planning Studies (MAPC)	Access Advisory Committee Support	Provision of Materials in Accessible Formats	Regional Model Enhancement	Transit Data Support	Traffic Data Support	Roadway Safety Audits	MPO/MAPC Liaison Activities	Land Use Data for Transportation Modeling	Subregional Support Activities
1 Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.	X	X	X	X			X	X						X	X	X		X					X										X
2 Increase the safety of the transportation system for all motorized and nonmotorized users.	X	X	X	X			X	X		X	X			X	X	X	X	X				X						X	X	X			
3 Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and nonmotorized users.	X	X	X	X			X								X	X	X	X												X			
4 Increase accessibility and mobility of people and freight.	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
5 Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X		X	X	X
6 Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X			X	X					X	X	X				X
7 Promote efficient system management and operation.	X	X	X	X			X	X			X	X	X	X	X	X	X	X	X		X						X	X	X				
8 Emphasize the preservation of the existing transportation system.	X	X	X	X				X							X	X	X	X	X									X	X				X
9 Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.	X	X	X	X	X					X			X	X	X						X	X	X	X									
10 Enhance travel and tourism.	X	X	X	X						X	X	X	X	X	X	X		X			X	X	X	X				X	X				

3C = continuing, comprehensive, and cooperative transportation-planning process. CTPS = Central Transportation Planning Staff. GHG = greenhouse gas. GTFS = General Transit Feed Specification. L RTP = Long-Range Transportation Plan. MAPC = Metropolitan Area Planning Council. MPO = Metropolitan Planning Organization. TIP = Transportation Improvement Program. UPWP = Unified Planning Work Program. X = applicable.



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3.1.3 Federal Planning Emphasis Areas

Each year, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issue guidance for MPOs to consider when preparing their UPWPs. For FFY 2017, FHWA and FTA guidance includes:

- **Responding to recommendations in the most recent federal certification review:** The FHWA and the FTA conducted a Transportation Planning Certification Review of the Boston Region MPO's transportation planning process in December 2014. In response to recommendations received at the review, the MPO considered specific new studies in the FFY 2017 Universe of Projects.
- **Ensuring that at least one-third of UPWP funds results in tangible products:** The MPO meets and exceeds federal guidelines for expenditure of metropolitan planning funds that result in tangible products. The MPO considers feasibility and potential for implementation of study recommendations when selecting studies to fund with continuing, comprehensive, and cooperative (3C) dollars and when selecting particular locations to study. Tangible products resulting from UPWP-funded studies are described in the summary tables at the beginning of Chapters 5 through 8.
- **Focusing on developing safe bicycle and pedestrian networks:** The MPO addresses the safety needs of users of active transportation modes (e.g., bicyclists and pedestrians) throughout its planning activities. Specific programs and studies that address bicycle and pedestrian needs are described in detail in Chapter 6: Boston Region MPO Planning Studies and Technical Analyses.
- **Creating a performance-based planning and programming system:** The MPO coordinates performance-based planning activities in the Long-Range Transportation Plan (LRTP) and in the Transportation Improvement Program (TIP), with work carried out through the MPO's Congestion Management Process. Performance-based planning is discussed in detail in Chapter 5: Certification Requirements.
- **Working towards regional models of collaboration:** In addition to the Boston Region MPO, MPOs in the Boston urbanized area (UZA) include the Merrimack Valley, Northern Middlesex, Old Colony, Southeastern Massachusetts, and others. The existing memorandum of understanding (MOU) is being updated, and will continue to describe areas of cooperation and coordination among MPOs in the Boston UZA, including sharing draft certification documents for review, notifications of meetings, and attending one another's MPO meetings.
- **Focusing on Ladders of Opportunity and providing access to essential services:** The MPO monitors and considers access to essential services (e.g., employment, health care, education, and recreation destinations) through a variety of activities. Chapter 5 discusses certification requirements that address

Ladders of Opportunity and include Boston Region MPO Title VI Reporting and Transportation Equity/Environmental Justice Support. Chapter 6 discusses planning studies and technical analyses, such as Addressing Safety, Mobility, and Access on Subregional Priority Roadways and Community Transportation Technical Assistance. These studies focus on enhancing access to essential services throughout the region. Additionally, Chapter 7 discusses Agency and Other Client Funded Transportation Planning Studies, which focus on increasing access to transit and enhancing mobility for the region.

- **Tracking the geographic distribution of UPWP-funded studies and target TIP projects:** In January 2015, MPO staff analyzed the distribution of metropolitan planning funds and federal transportation improvement funds programmed across the 101 municipalities in the Boston Region MPO area for FFYs 2008 through 2013. This analysis was transmitted to the FHWA and the FTA, and MPO staff is currently updating this information to be current through projected investment through FFY 2021. For the TIP, this analysis is examined as a dollar value per municipality. For the UPWP, this analysis is examined as a number of studies completed for specific municipalities within the region. MPO staff will use this information to better target its FFY 2017 outreach towards municipalities that have been found to have low representation of UPWP studies and TIP projects.

3.1.4 1990 Clean Air Act Amendments

Air quality conformity determinations must be performed for capital improvement projects that receive federal funding and for those that are considered regionally significant, regardless of the funding source. These determinations must show that projects in the MPO's LRTP and TIP will not cause or contribute to any new air quality violations, will not increase the frequency or severity of any existing air quality violations in any area, and will not delay the timely attainment of the air quality standards in any area.

In the most recent LRTP, *Charting Progress to 2040*, the air quality conformity determination concluded that the emission levels from the Boston area carbon monoxide (CO) maintenance area, including emissions resulting from implementation of the LRTP, are in conformance with the State Implementation Plan (SIP) according to state and federal conformity criteria. Specifically, the CO emissions for the build scenarios of the MPO's regional travel demand model set are less than the projections for analysis for the years 2020 through 2040 for the nine cities in the Boston CO maintenance area. In accordance with Section 176(c)(4) of the Clean Air Act as amended in 1990, the Boston Region MPO has completed this review and hereby certifies that the LRTP, and its latest conformity determination, conditionally conforms with federal (40 CFR Part 93) and Massachusetts (310 CMR 60.03) regulations and is consistent with the air quality goals in the Massachusetts SIP.

Transportation control measures identified in the SIP for attaining air quality standards are federally enforceable and must be given first priority when using federal funds. Such projects include the parking-freeze program in Boston, the statewide rideshare program, rapid transit and commuter rail extension programs, park-and-ride facilities, residential parking-sticker programs, and the operation of high-occupancy-vehicle lanes. The United States Environmental Protection Agency 40 CFR Parts 51 and 93 Conformity Regulation established the policy, criteria, and procedures for demonstrating air quality conformity in the MPO region.

As of April 1, 2016, the Boston Region MPO has been classified as attainment for CO. Therefore, the MPO is in attainment for all of the criteria pollutants (ozone and CO) and is not required to perform air quality analyses for these pollutants as part of the LRTP and TIP. The MPO, however, is still required to report on the TCMs as part of air quality conformity determinations in these documents. In addition, the MPO is still required to perform air quality analyses for carbon dioxide as part of the state's Global Warming Solutions Act (see below).

3.1.5 Non-discrimination Mandates

The Boston Region MPO complies with Title VI of the Civil Rights Act of 1964, the American with Disabilities Act of 1990 (ADA), and other federal and state non-discrimination statutes and regulations in all programs and activities. The MPO, as well as its plans and programs, does not discriminate on the basis of race, color, national origin, English-language proficiency, income, religious creed, ancestry, disability, age, gender, sexual orientation, gender identity or expression, or military service. The major federal requirements are discussed below.

Title VI of the Civil Rights Act of 1964

This statute requires that no person be excluded from participation in, be denied the benefits of, or be subjected to discrimination on the basis of race, color, or national origin, under any program or activity provided by an agency receiving federal financial assistance.

Executive Order 13166, dated August 11, 2000, extends Title VI protections to persons who, as a result of national origin, have limited English-language proficiency (LEP). Specifically, it calls for improved access to federally conducted and federally assisted programs and activities, and requires MPOs to develop and implement a system by which LEP persons can meaningfully participate in the transportation-planning process.

MPO activities that meet these requirements are discussed in the Boston Region MPO Title VI Report, the Massachusetts Department of Transportation (MassDOT) Title VI Program, and the Massachusetts Bay Transportation Authority (MBTA) Title VI Program Monitoring. These projects are discussed in more detail in Chapters 5 and 7.

Environmental Justice Executive Orders

Executive Order 12898, dated February 11, 1994, further expands upon Title VI, requiring each federal agency to achieve environmental justice by identifying and addressing any disproportionately high adverse human health or environmental effects, including interrelated social and economic effects, of its programs, policies, and activities on minority or low-income populations.

On April 15, 1997, the U.S. Department of Transportation (DOT) issued its Final Order to Address Environmental Justice in Minority Populations and Low-Income Populations. Among other provisions, this order requires programming and planning activities to

- explicitly consider the effects of transportation decisions on minority and low-income populations.
- provide meaningful opportunities for public involvement by members of minority and low-income populations.
- gather (where relevant, appropriate, and practical) demographic information such as race, color, national origin, and income level of populations affected by transportation decisions.
- minimize or mitigate any adverse impact on minority or low-income populations.

The 1997 Final Order was updated in 2012 with DOT Order 5610.2(a) which provided clarification while maintaining the original framework and procedures.

The ADA

Title III of the ADA requires all transportation projects, plans, and programs to be accessible to people with disabilities. At the MPO level, this means that public meetings must be held in accessible buildings and be conducted in a manner that provides for accessibility. MPO materials must also be made available in accessible formats.

Executive Order 13330

Executive Order 13330, dated February 26, 2004, calls for the establishment of the Interagency Transportation Coordinating Council on Access and Mobility under the aegis of the US Secretary of Transportation. This executive order reinforces both environmental justice and ADA requirements by charging the council with developing policies and methods for improving access for persons with disabilities, low-income persons, and older adults.

3.2 STATE GUIDANCE AND TRANSPORTATION PRIORITIES

As described in Chapters 6 through 8, much of the work funded through the UPWP focuses on encouraging mode shift and diminishing GHG emissions through improving transit service, enhancing bicycle and pedestrian networks, and studying

emerging transportation technologies. All of this work helps the Boston Region contribute to statewide progress towards the priorities discussed throughout this section.

3.2.1 You Move Massachusetts and We Move Massachusetts

You Move Massachusetts, a statewide initiative designed as a bottom-up approach to transportation planning, developed ten core themes derived from a broad-based public participation process that articulated the expressed concerns, needs, and aspirations of Massachusetts residents that are related to their transportation network. These themes were considered in the development of this UPWP.

We Move Massachusetts (WMM) is MassDOT's statewide strategic multimodal plan. The initiative is a product of the transportation reform legislation of 2009, You Move Massachusetts civic engagement process, wider outreach to environmental justice and Title VI communities, and other outreach activities. In May 2014, MassDOT released We Move Massachusetts: Planning for Performance (WMM), the Commonwealth of Massachusetts' 2040 LRTP. WMM identifies high-level policy priorities, which were considered in the development of this UPWP. WMM also incorporates performance management into investment decision-making to calculate the differences in performance outcomes resulting from different funding levels available to MassDOT. In the future, MassDOT will use the scenario tool, described in WMM, to update and refine investment priorities.

3.2.2 Global Warming Solutions Act

The Global Warming Solutions Act (GWSA) makes Massachusetts a leader in setting aggressive and enforceable greenhouse gas (GHG) reduction targets and implementing policies and initiatives to achieve these targets. In keeping with this law, the Massachusetts Executive Office of Energy and Environmental Affairs, in consultation with other state agencies and the public, developed the Massachusetts Clean Energy and Climate Plan for 2020. This implementation plan, released on December 29, 2010, establishes the following targets for overall statewide GHG emissions:

- By 2020: 25 percent reduction below statewide 1990 GHG emission levels
- By 2050: 80 percent reduction below statewide 1990 GHG emission levels

3.2.3 GreenDOT

GreenDOT, an initiative that MassDOT launched in June 2010, is a comprehensive environmental responsibility and sustainability policy that has three primary objectives:

- reduce GHG emissions
- promote the healthy transportation options of walking, bicycling, and public transit

- support smart-growth development

GreenDOT applies to MassDOT divisions and contractors, as well as to Massachusetts's MPOs and regional transit authorities. It responds to several critical laws and policies, which include:

- The GWSA of 2008, which establishes legally enforceable requirements that Massachusetts significantly reduce its GHG emissions
- The Healthy Transportation Compact (HTC), which is discussed in section 3.2.5
- Executive Orders 484 (Leading by Example) and 515 (Environmental Purchasing Policy), which require state agencies to invest public resources in ways that support environmental sustainability by conserving energy and water, implementing efficiency measures, and producing or purchasing renewable energy

The GreenDOT Implementation Plan serves as the framework for incorporating the sustainability principles of GreenDOT into MassDOT's core business practices. The plan details 16 broad sustainability goals and related measurable tasks and performance indicators.

3.2.4 MassDOT's Statewide Mode-Shift Goal

MassDOT's statewide mode-shift goal aims to triple the current mode shares of bicycling, public transit, and walking by 2030. The statewide mode-shift goal is an important part of MassDOT's strategy for meeting the Commonwealth's commitments under the GWSA. In 2013, MassDOT built upon the mode shift goal by passing the Healthy Transportation Policy Directive to formalize its commitment to the implementation and maintenance of transportation networks that serve all modes. The directive will ensure that all MassDOT projects are designed and implemented in a way that provides all customers access to safe and comfortable walking, bicycling, and transit options.

3.2.5 Healthy Transportation Compact

The HTC is a key requirement of the Massachusetts landmark transportation reform legislation that took effect on November 1, 2009. It is an interagency initiative that will help ensure that the transportation decisions the Commonwealth makes balance the needs of all transportation users, expand mobility, improve public health, support a cleaner environment, and create stronger communities.

Participating agencies work together to achieve positive health outcomes through the coordination of land use, transportation, and public health policy. HTC membership is made up of the Secretary of Transportation or designee (co-chair), the Secretary of Health and Human Services or designee (co-chair), the Secretary of Energy and

Environmental Affairs or designee, the MassDOT Highway Administrator or designee, the MassDOT Transit Administrator or designee, the Commissioner of Public Health or designee, and the Secretary of Housing and Economic development or designee. The HTC will also promote improved coordination among the public sector, private sector, and advocacy groups, as well as among transportation, land use, and public health stakeholders.

3.3 REGIONAL GUIDANCE AND TRANSPORTATION PRIORITIES

3.3.1 The MBTA's Program for Mass Transportation (PMT)

The MBTA's latest PMT, Focus40, is under development. Focus40 is the 25-year strategic vision for MBTA investments. This process will engage customers— as well as elected officials, major employers and business leaders, academic institutions, the advocacy community, and other stakeholders— in developing a financially responsible, long-term investment strategy that positions the MBTA to better serve the region of today, as well as the Greater Boston region of 2040. Focus40 will be an open and frank conversation about a number of critical issues, including:

- necessary investments in the state of good repair, including actions that keep our system operating well and working safely
- the Commonwealth's financial capacity to expand the system's footprint
- the potential for transformative change on local streets through strong partnerships between the MBTA and municipalities
- the Boston region in 2040: shifting demographics, new technology, and climate change may all impact how the MBTA must operate in the years leading up to 2040

In the first phase of the development of Focus40, MassDOT released the State of the System series, which provides a clear picture of where the MBTA stands today in terms of asset inventory, condition, and service performance. The second phase of the Focus40 effort is centered on developing a better understanding of the world in which the MBTA will be operating in the years leading up to 2040. A variety of trends in demographics, technology, and climate may require that the MBTA function differently in the coming years than it does today. Finally, Focus40 will work with the public and stakeholders to develop and evaluate various investment strategies that will address current and future needs.

During development of the MPO's next LRTP, the MPO will consider the findings and recommendations for transit investments in Focus40. These will provide important input for future scenario planning and investment decisions in the LRTP.

3.3.2 MetroFuture

MetroFuture, which was developed by the Metropolitan Area Planning Council and adopted in 2008, is the long-range plan for land use, housing, economic development, and environmental preservation in the Boston region. It includes a vision for the region's future and a set of strategies for achieving that future, and is the foundation for land use projections used in the MPO's LRTP, *Charting Progress to 2040*. Work being done to support MetroFuture implementation and updates is detailed in the MetroFuture Implementation project description in Chapter 6. MetroFuture's goals, objectives, and strategies were considered in the development of this UPWP.

3.3.3 The MPO's Congestion Management Process (CMP)

The purpose of the CMP is to monitor and analyze the performance of facilities and services, develop strategies for the management of congestion based on the results of monitoring, and move those strategies into the implementation stage by providing decision-makers in the region with information and recommendations for the improvement of transportation system performance. The CMP monitors roadways and park-and-ride facilities in the MPO region for safety, congestion, and mobility, and identifies "problem" locations. Studies that help address problems identified in the most recent CMP monitoring were considered for inclusion in this UPWP, including Priority Corridors for LRTP Needs Assessment: FFY 2017. Work that is currently being performed in accordance with the FFY 2017 CMP is detailed in Chapter 5.



CHAPTER 4

Federal Fiscal Years 2014–2016 Completed Studies

4.1 TRACKING STUDY PROGRESS

In order to accurately plan each Unified Planning Work Program (UPWP), the Boston Region Metropolitan Planning Organization (MPO) must gain an understanding of the status of the previous year’s studies and work activities. For example, some studies that began in one federal fiscal year (FFY) may carry

over into the following FFY. The budgetary and staff requirements for these “carry-over” studies are factored into decision-making about the type and number of new studies that MPO staff can undertake in the upcoming FFY.

Similarly, the budgetary and staffing needs of ongoing programs, both those required to maintain certification as an MPO and support MPO functioning (such as the Congestion Management Process and Regional Model Enhancement), as well as the ongoing programs in which MPO staff conduct technical transportation planning work for communities (such as Bicycle and Pedestrian Support Activities), can fluctuate from one FFY to another. These changes are based, in part, on varying work levels for certification requirements (e.g., the Long-Range Transportation Plan [LRTP] is developed over the course of four years) as well as varying demands for work and assistance under the MPO’s ongoing technical programs.

In general, the MPO tracks three categories of study progress throughout the UPWP. These include:

- **Completed:** These studies are either already complete or expected to be completed by October 1, 2016, when the FFY 2017 UPWP document goes into effect. These studies, their funding sources and amounts, and their work products or activities are summarized in Table 4-1 (MPO-funded studies).
- **Ongoing:** These programs support the transportation-planning process from year to year, and often serve to provide technical assistance to communities or transportation agencies throughout the region. These programs include certification requirements (Chapter 5), transportation technical analyses

(Chapter 6), agency-funded ongoing contracts (Chapter 7), and Administration, Resource Management, and Support Activities (Chapter 8). Tables summarizing the funding and progress for these ongoing programs are included at the beginning of each chapter.

- **Continuing or Carry Over:** These studies were originally funded in FFY 2016 or earlier and are continuing into FFY 2017. However, unlike ongoing activities that take place each FFY, these projects have a specific, limited duration. These include defined-duration MPO-funded studies as well as defined-duration agency-funded studies. These studies were either originally planned with a schedule extending beyond one FFY or are continuing due to unforeseen delays. Tables summarizing these studies are included at the beginning of Chapters 6 and 7.

This chapter summarizes completed studies; the other study categories, as described above, are presented in their corresponding chapters.

4.2 PROJECT BUDGET TABLES AND WORK PRODUCTS

Table 4-1 summarizes the budgets, work products, and activities for studies that were funded in FFYs 2014 through 2016 and are expected to be complete by the end of FFY 2016. Each table includes the project name, the MPO project identification number, the funding amount from each of the federal formula grants (Federal Highway Administration continuing, cooperative, and comprehensive [3C] Planning [PL] funds and Federal Transit Administration/Massachusetts Department of Transportation 3C Planning [§ 5303] funds), total funding, and work products, including reports, technical memoranda, and other accomplishments during the study period.

Please note that some titles of these products and activities may change as they are finalized. All certification documents and many other work products are, or will be, available for download from the MPO website (www.bostonmpo.org). Work products not found on the MPO website may be requested by contacting the Central Transportation Planning Staff (CTPS) at 857-702-3700 (voice), 617-570-9193 (TTY), or ctps@ctps.org (email). Metropolitan Area Planning Council (MAPC) work products can be found at www.mapc.org.

Table 4-1
FFY 2014 to FFY 2016 Completed MPO-Funded
Transportation Planning Studies

Name	ID	FHWA PL Funds	FTA Section 5303 Funds	Total Budget	Work Products
FFY 2016 Studies					
Modeling Transit Capacity Constraints	11405	\$-	\$44,000	\$44,000	Report: Modeling Transit Capacity Constraints
Identifying Opportunities to Alleviate Bus Delay	11400	\$-	\$65,000	\$65,000	Report: Identifying Opportunities to Alleviate Bus Delay
First-Mile-and-Last-Mile Transit Connection Studies	11399	\$-	\$55,000	\$55,000	Various technical memoranda for selected project locations
Research Topics Generated by MPO Staff: FFY 2016	20900	\$21,000	\$9,000	\$30,000	Transit dependence scoring system and a technical memorandum: Use of Driver's License Data to Measure Transit Dependence
FFY 2015 Studies					
Title VI Service Equity Analyses: Methodology Topics	11396	\$-	\$55,000	\$55,000	Report: Title VI Service Equity Analysis: Methodology Development
Addressing Priority Corridors from the LRTP Needs Assessment: FFY 2015	13267	\$77,000	\$33,000	\$110,000	Report: Route 1A/Lynnway/Carroll Parkway Study in Lynn
Fairmount Line Station Access Analysis	11249	\$36,575	\$15,675	\$52,250	Report: Fairmount Line Station Access Analysis
Bicycle Network Gaps: Feasibility Evaluations	11250	\$55,000	\$-	\$55,000	Technical Memoranda evaluating: <ul style="list-style-type: none"> • Mass Central Rail Trail in Waltham, Weston, and Belmont • Sudbury Aqueduct Trail in Framingham • Central Square in Cambridge

(Table 4-1 cont.)

Name	ID	FHWA PL Funds	FTA Section 5303 Funds	Total Budget	Work Products
Household Survey Travel Profiles and Trends: Selected Policy Topics	11152	\$48,000	\$27,000	\$75,000	Exploring the 2011 Massachusetts Travel Survey: MPO Travel Profiles
Barriers and Opportunities Influencing Mode Shift	11148	\$47,641	\$20,417	\$68,058	Report: Exploring the 2011 Massachusetts Travel Survey: Barriers and Opportunities Influencing Mode Shift
Core Capacity Constraints	23326	\$50,000	\$70,000	\$120,000	Report containing summaries of stakeholder interviews and mitigation strategies, transit and roadway crowding analyses for current and future year scenarios, identification of large development projects to be included in the future year build scenario, and development of new crowding analysis methodology
FFY 2014 Studies					
Environmental Justice and Title VI Analysis Methodology Review	11389	\$36,000	\$24,260	\$60,260	Report: Environmental Justice and Title VI Analysis Methodology Review The purpose of this study which was approved in the 2014 UPWP was to produce recommendations to integrate, improve, and standardize the approaches taken to the separate and distinct Title VI and EJ analyses performed by MPO staff.
Transportation Investments for Economic Development	11149	\$39,900	\$10,100	\$50,000	Technical Memorandum: MPO Assessment of Economic Impact of Transportation Investments and Use of TREDIS Model
TOTAL		\$411,116	\$428,452	\$839,568	

Note: All budgets include both the federal portion and the MassDOT local match.

FFY = federal fiscal year. FHWA = Federal Highway Administration. FTA = Federal Transit Administration.

L RTP = Long-Range Transportation Plan. MPO = Metropolitan Planning Organization.

PL = Federal Highway Administration transportation planning funds.

TREDIS = Transportation Economic Development Impact System



CHAPTER 5

Certification Requirements

5.1 INTRODUCTION

The projects in this chapter are categorized as certification requirements because they include work that the Boston Region Metropolitan Planning Organization (MPO) must do to maintain its certification by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The projects also include activities that are necessary to comply with federal and state laws, such as the federal Clean Air Act Amendments and the Americans with Disabilities Act of 1990.

The budget tables for the individual projects in this chapter describe the salary and overhead costs associated with these projects. Any direct costs associated with the projects are included in the Direct Support budget table in Chapter 8, Administration, Resource Management, and Support Activities.

Table 5-1 summarizes the funding in FFY 2016 and FFY 2017 as well as the work progress and products for the ongoing programs conducted as part of the MPO's certification requirements. Although many of these programs generally comprise the same type of task from year to year, often there are variations in budgets that reflect greater or lesser emphasis in certain efforts. For example, MPO staff may undertake new or additional data collection and/or analysis under specific line items; the tasks undertaken as part of one line item in one year may be folded into an ongoing activity in a subsequent year; or, there simply may be fluctuations in staffing levels. Where appropriate, these differences are explained in the table.



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Table 5-1: FFY 2016/FFY 2017 Certification Requirements

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
CTPS Activities									
3C Planning and MPO Support	Varies by Task	\$578,400	\$404,880	\$173,520	<p>Prepared meeting and information materials—including agendas, minutes, notices, document translations, memoranda, reports, correspondence, summaries, and website postings, as well as maps, charts, illustrations, and other visual materials—as needed.</p> <p>Continued to support the meetings and activities of the MPO board, the MPO committees, and the Regional Transportation Advisory Council.</p> <p>Conducted communications with the public, including publishing TRANSREPORT.</p> <p>Conduct planning to support compliance with federal requirements and guidance.</p>	\$433,121	\$176,909	\$610,030	Activities generally remain the same from year to year.
Long-Range Transportation Plan	10101	\$318,200	\$222,740	\$95,460	<p>Updated details and analyses in the Needs Assessment to supply the most current information to the MPO and the public.</p> <p>Prepared amendments to Charting Progress to 2040, the MPO's LRTP.</p> <p>Expanded the MPO's scenario-planning capabilities by using the regional travel demand model and various planning tools such as TREDIS and CubeLand to support the performance-based planning and programming process.</p> <p>Produced summaries of results from the transportation scenario analyses for the MPO.</p> <p>Reviewed and updated performance measures and prepared targets for the MPO's goals and objectives.</p> <p>Prepared memoranda on performance-based planning topics such as performance targets and guidelines for the LRTP system performance report.</p> <p>Planned LRTP system performance reports for monitoring measures-of-interest trends and tracking the MPO's performance-meeting targets.</p> <p>Conducted public outreach on all LRTP topics, including the Needs Assessment updates, scenario planning, and further development of performance measures and targets; reported the results to the MPO for use in all of its planning and programming</p>	\$197,232	\$95,559	\$292,791	<p>Continue to develop the MPO's performance based planning data and analysis to comply with FHWA rulemaking. Incorporate Green Line Extension changes into the LRTP.</p> <p>Continue to make amendments to the LRTP as needed, based on TIP development and amendments.</p> <p>Produce summaries of results from transportation scenario analyses for the MPO. Prepare LRTP system performance reports monitoring measures-of-interest trends and tracking the MPO's performance-meeting targets.</p> <p>Conduct public outreach on all LRTP topics, including Needs Assessment updates, scenario planning, and further development of performance measures and targets; report results to the MPO for use in all of its planning and programming.</p>

(Table 5-1 cont.)

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
Transportation Improvement Program	10103	\$174,200	\$121,940	\$52,260	<p>Development of the FFY 2017 to FFY 2021 TIP.</p> <p>Outreach to municipalities in the region through TIP and UPWP workshops, MAPC subregional meetings, and correspondence with municipal TIP contacts and chief elected officials.</p> <p>Updates to the online TIP Interactive Database.</p> <p>Review of TIP project evaluation criteria.</p> <p>Preparation of TIP amendments and administrative modifications, as necessary.</p> <p>Analysis and reporting on performance measures and performance-based planning.</p>	\$117,036	\$47,804	\$164,840	Activities generally remain the same from year to year.
Unified Planning Work Program	10104	\$98,000	\$68,600	\$29,400	<p>Development of the FFY 2017 UPWP.</p> <p>Outreach to municipalities in the region through TIP and UPWP workshops and MAPC subregional meetings to develop study ideas for the UPWP.</p> <p>Outreach to the Regional Transportation Advisory Council to develop study ideas for the UPWP and to educate and inform the council about the UPWP products and process.</p>	\$87,472	\$35,728	\$123,200	Activities generally remain the same from year to year; however, in FFY 2017, MPO staff plans to make this position more involved in tracking the progress of studies conducted as part of the UPWP, and documenting in a database the implementation of recommendations that are made in studies.
Air Quality Conformity and Support Activities	10112	\$24,500	\$17,150	\$7,350	<p>Conducted air quality analyses, including greenhouse gas analyses, for projects to be considered for funding in the TIP, as well as for those to be considered for Congestion Management and Air Quality funding.</p> <p>Updated air quality emission factors using the latest emission factors software.</p> <p>Attended State Implementation Plan meetings for updates on state air quality legislation.</p> <p>Provided support to MassDOT on air-quality matters.</p>	\$20,547	\$8,393	\$28,940	Activities generally remain the same from year to year.
Boston Region MPO Title VI Reporting	11355	\$32,000	\$22,400	\$9,600	<p>Provided annual update to MassDOT.</p>	\$15,698	\$6,412	\$22,110	Activities vary from year to year, depending on MassDOT requirements.

(Table 5-1 cont.)

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
Congestion Management Process	11123	\$92,200	\$64,540	\$27,660	<p>Technical memorandum: "Congestion Scans for the Expressways and Select Arterials in the Boston MPO Region"</p> <p>Technical memorandum: "Create Regional Economic Costs of Congestion criteria"</p> <p>Technical memorandum: "Transit Bus Performance Monitoring"</p> <p>Online dashboards: The Express Highway Performance Dashboard was updated to include all expressways in the MPO Model Region. The Arterial Performance Dashboard was updated to include additional arterials in the Boston Proper area.</p>	\$70,915	\$28,965	\$99,880	<p>Possible MBTA Bicycle Parking/MBTA Park and Ride Lot Monitoring data collection and analysis.</p> <p>Possible analysis of travel-time datasets from companies such as INRIX or Google.</p> <p>Possible updates to the Express-Highway Performance Dashboard and Arterial Performance Dashboard.</p>
Freight Planning Support	11145	\$46,000	\$46,000	\$0	<p>Report: "Trucks in the South Boston Waterfront" (FFY 2015 Freight Plan)</p> <p>Technical memorandum: "Rest Locations for Long-Distance Truck Drivers;" also data development and stakeholder outreach.</p>	\$51,200	\$0	\$51,200	<p>Possible follow-up work on rest locations if requested by stakeholders. Study region could be expanded or specific sites could be investigated. Data development and stakeholder outreach will continue.</p>
Transportation Equity/ Environmental Justice Support	11132	\$100,900	\$70,630	\$30,270	<p>Developed work on redefining disadvantaged populations for use in future TIP and LRTP analysis. Continued work to revise the disparate impact and disproportionate burden policy.</p> <p>Engaged in transportation needs assessment outreach to organizations and agencies familiar with the needs of environmental justice areas, and developed memoranda to document outreach activity results.</p> <p>Updated the transportation equity and environmental justice contact database. Surveyed contacts in the environmental justice database and conducted various demographic and socioeconomic analyses.</p> <p>Updated information on available TMA and private carrier transportation services.</p>	\$76,148	\$31,103	\$107,251	<p>Based on feedback received during the most recent Federal Certification Review, this program is planned to be enhanced and expanded in FFY 2017.</p>
TOTAL		\$1,464,400	\$1,038,880	\$425,520		\$1,069,369	\$430,873	\$1,500,242	

3C = Continuing, Comprehensive, and Cooperative transportation planning process. CTPS = Central Transportation Planning Staff. FFY = federal fiscal year. FHWA = Federal Highway Administration. FTA = Federal Transit Administration. LRTP = Long-Range Transportation Plan. MAPC = Metropolitan Area Planning Council. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority. MPO = Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. TIP = Transportation Improvement Program. TMA = Transportation Management Association. TREDIS = Transportation Economic Development Impact System. UPWP = Unified Planning Work Program.



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5.2 CERTIFICATION REQUIREMENT ACTIVITIES

This section describes the certification requirement activities and plans that MPO staff conducts during the FFY.

3C PLANNING AND MPO SUPPORT

Project ID Number	See Individual Tasks Below
FHWA 3C PL Funds	\$433,121
FTA Section 5303 Funds	\$176,909
FFY 2017 Total Budget	\$610,030

Note: FTA and FHWA funds include the MassDOT local match

Purpose

The work described below consists of the 3C activities that support the federally mandated transportation-planning process that is continuing, comprehensive, and cooperative. This process creates numerous products and materials and furthers MPO operations and decision-making.

Approach

The activities included in this category of certification requirements are separated into the specific work areas detailed below.

SUPPORT TO THE MPO

Project ID 90011: Support to the MPO and Its Committees

Support to the MPO and its committees includes implementing MPO policies on planning and programming, planning and coordinating delivery of information for MPO decision-making, and supporting the work and operation of the MPO and its committees. It involves providing support for MPO meeting management and planning, delivering MPO communications, and implementing the MPO's public participation program. Some tasks related to MPO meetings, MPO committee meetings, Regional Transportation Advisory Council (Advisory Council) meetings, and other MPO-sponsored meetings include:

- Developing meeting agendas
- Preparing and distributing informational materials, including document postings on the MPO's website and via email
- Conducting meeting site selection and logistics planning
- Setting up audio/visual equipment for meetings
- Attending and recording meetings
- Completing meeting follow-up activities, such as maintaining the information flow for members of the MPO and the public, processing approved work scopes, preparing audio-recording files, and documenting meeting minutes

Technical and process support is provided to the MPO's Unified Planning Work Program (UPWP) Committee, Administration and Finance (A&F) Committee, Congestion Management Process (CMP) Committee, and other ad hoc committees that are formed as needed.

- The CMP Committee meets as needed throughout the year to discuss the federally required CMP. Activities include developing and reviewing its Transportation Improvement Program (TIP) Intersection Improvement Program and making recommendations to the MPO.
- The A&F Committee meets periodically to make recommendations to the MPO on the staff's operating budget, legal matters, and other administrative functions.
- The UPWP Committee meets as needed throughout the year to develop a UPWP for the upcoming federal fiscal year (FFY) and to monitor expenditures and the progress of studies and programs in the current fiscal year.
- The Advisory Council is the MPO's citizens' advisory committee. MPO staff provides operations support to this body and its subcommittees.

This work program also includes consultation with other entities and agencies involved with or interested in 3C planning activities, collaboration with other Massachusetts MPOs (with more detailed coordination with those in the Boston Region urbanized area), and communication with Metropolitan Area Planning Council (MAPC) subregional groups.

MPO support also includes conducting metropolitan transportation planning and implementing planning activities for the MPO. The goal of this work is to ensure compliance with federal regulations and requirements and to provide excellence in transportation planning processes, techniques, and outcomes. The work involves researching, analyzing, and reporting information on 3C planning topics, including those identified in federal reauthorization legislation, and issues related to other federal policies, regulations, and guidance. It also involves responding to federal recommendations or requirements for certification documents or MPO

certification, and incorporating new requirements into the MPO's 3C program. MPO staff will continue to implement Fixing America's Surface Transportation (FAST) Act requirements (see Chapter 2 and Chapter 3) as guidance from this federal legislation is communicated to the MPO, and staff will also be prepared to implement future legislation.

Other activities include the day-to-day oversight of 3C-program-related activities, reports on the progress of projects listed in the UPWP, collection and fielding of day to day comments and inquiries, and responses to requests for information and support.

Project ID 90021: Regional Transportation Advisory Council Support

The Advisory Council is the MPO's citizens' advisory committee. MPO staff provides operations support to this body and its subcommittees. This includes planning programs and meetings, scheduling speakers, and preparing and distributing agendas, meeting notices, informational packets, and meeting minutes. It also includes helping to conduct meetings; attending and making presentations at meetings; organizing and conducting field trips; soliciting new members; implementing and updating the bylaws; coordinating other activities, such as Advisory Council elections; and maintaining contact lists. MPO staff provides information, updates, and briefings on MPO activities, studies, and reports; requests and coordinates comments on MPO documents; and works with the Advisory Council and its committees as they conduct their programs, planning, and reviews.

Project ID 90025: TRANSREPORT

The MPO's newsletter, TRANSREPORT, is an important part of the MPO's public involvement program. MPO staff is responsible for soliciting, researching, and writing articles about MPO studies and activities. This work includes managing all aspects of the newsletter's production: writing and editing, layout, graphics, proofreading, and distribution via email and U.S. mail. MPO staff coordinates the development of articles by staff, MPO members, and other interested organizations.

MPO staff is responsible for the newsletter's distribution in an accessible format on the MPO website, electronic-transfer formats for email subscribers, and hard-copy format for the few recipients who request it. Once posted on the website, the newsletter can be translated into the languages (besides English) most frequently spoken in the region, using the website's Google Translate tool.

MPO staff stays current on newsletter software and styles with an eye to making improvements in the newsletter's visual appeal and ability to communicate.

Project ID 90026: Public Participation Process

MPO staff implements the MPO's Public Participation Program and coordinates and conducts MPO public outreach activities. These activities are opportunities to involve all members of the public, including:

- Local, regional, state, and federal officials and agencies
- Transportation, environmental, and social-service advocacy groups
- Senior citizens, minorities, people with low incomes, people with disabilities, people with limited English-language proficiency, youth, veterans, and people living in zero vehicle households
- Freight operators
- Transit service providers
- Other interested parties and other members of the general public

This program provides information to these parties and collects input from them for the MPO to use in its planning, decision-making, and development of certification documents, including programming the region's transportation funding. The program supplements the involvement of the Regional Transportation Advisory Council.

Communication is ongoing and conducted through a variety of means.

- The **MPO's website** is an important tool that provides and gathers information for MPO planning and programming. Highly visible and frequently updated News Flashes (in the form of Twitter tweets) are published on the MPO home page. These quickly read items promote news about MPO activities and information on how the public can be involved in MPO planning. Material on all MPO plans and programs is posted on the website. The MPO also hosts a public-information email address and comment tool on its website so that members of the public may request information and provide input. MPO staff monitors input from this address to coordinate responses and refer received comments to the appropriate recipient. The MPO also solicits input through web-based surveys.
- **Public meetings** are important in this process, and several types of meetings are planned and conducted each year. The MPO holds public information sessions three to four times a year, and conducts TIP-development and UPWP-development workshops in December and January. The MPO also holds workshops and special-issue forums throughout the year to gather input on MPO activities and on draft certification documents and other plans. MPO staff and MAPC collaborate on public involvement activities whenever possible. MPO and MAPC staffs hold timely and constructive discussions of MPO issues at MAPC subregional group meetings. Other types of collaboration involve hosting and cosponsoring special events. For example, MAPC dedicated its 2015 Winter Council Meeting to interactive activities related to the LRTP, and cosponsored the MPO's Transportation Equity Forum in 2014. This collaboration was very fruitful and will continue.

- **Subregional Outreach:** MPO staff members attend MAPC subregional group meetings to listen to and learn about community issues in the region and to answer questions about the MPO and its activities. This helps staff incorporate subregional issues and concerns into the development of MPO documents.

The MPO recently adopted an updated Public Participation Plan reflecting an improved Public Participation Program, and has been implementing improvements discussed in this plan. In FFY 2017, the MPO will continue refining this process, implementing tactics designed to break down barriers to participation for groups currently underrepresented in the planning process:

- Maintain frequent e-based communications, including press releases, public notices, and refreshed website newsflashes/Twitter tweets regarding ongoing planning products and MPO milestones and events
- Team with other entities to conduct joint programs and outreach
- Integrate the Title-VI-related Four Factor Analysis for guidance on providing materials in languages other than English
- Expand the MPO program to involve people in the region with limited English-language proficiency by translating critical documents (e.g., the Title VI Complaint Process and Form and notices of MPO-sponsored public-participation meetings) into the MPO languages of policy, including Spanish, Portuguese, and Chinese. If information is needed in another language, Boston Region stakeholders are encouraged to contact the MPO's Title VI Specialist.
- When planning meetings, take additional steps to understand the language and cultural needs of those who might attend
- Make it a standard practice to solicit comments on the Public Participation Program from meeting participants, and conduct periodic assessments of the effectiveness of public involvement activities
- Encourage public libraries to make MPO information publicly available
- Increase the MPO's use of graphic materials to provide information
- Offer more web-based surveys at timely points in the planning process
- Continue the quest for tools and practices to make outreach activities as interactive, engaging, and easily accessible as feasible
- Expand the use of Twitter and participation in the MPO website's Rich Site Summary (RSS) feed to enhance communication

Maintaining contact with members of the public requires continuous updates to the MPO's contact database and email lists. A significant part of the MPO's Public Participation Program involves keeping contact information current and

identifying and including new contacts, particularly those in or representing minority communities; persons with disabilities, low incomes, or limited English-language proficiency; the elderly; veterans; and youth.

The MPO's Public Participation Program also involves consultations as specified in federal guidance; arranging, upon request, for the provision of American Sign Language (ASL) and other language-interpretation services at meetings; and providing public participation support to MPO member entities.

OTHER 3C PLANNING SUPPORT ACTIVITIES

Project ID 90012: Professional Development

MPO staff maintains its technical expertise in part by participating in courses, programs, and workshops offered by the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Transportation Research Board (TRB), the Association of Metropolitan Planning Organizations (AMPO), the Institute of Transportation Engineers (ITE), and other public and private organizations. Previous professional development endeavors have related to topics such as performance-based planning, traffic engineering issues and applications, regional modeling, bicycle/pedestrian issues, transit planning, public involvement, environmental justice, air quality, computer operations and maintenance, database applications, and other areas related to the provision of technical support services.

Project ID 90090: General Graphics

Graphics support will be provided to MPO staff and MPO agencies. This includes designing and producing maps, charts, illustrations, report covers, brochures, slides, and photographs; applying other visualization techniques; and creating other products that improve communication.

FFY 2017 Anticipated Outcomes

Staff will prepare materials—including agendas, minutes, notices, document translations, memoranda, reports, correspondence, summaries, and website postings, as well as maps, charts, illustrations and other visual materials—as needed; continue to support the MPO and its committees and the Regional Transportation Advisory Council; conduct communications with the public, including publishing TRANSREPORT; conduct planning to support compliance with federal requirements and guidance; engage in professional-development activities; and remain prepared for unforeseen issues as they arise.

Note: The above activities support all other projects in this UPWP in compliance with the 3C planning process. They foster the implementation of MPO policies, federal planning factors and guidance, and all applicable orders and requirements, including Executive Order 13166 (governing outreach to persons with limited English-language proficiency). These activities are supported by the Provision of Materials in Accessible Formats project.

LONG-RANGE TRANSPORTATION PLAN

Project ID Number	10101
FHWA 3C PL Funds	\$197,232
FTA Section 5303 Funds	\$95,559
FFY 2017 Total Budget	\$292,791

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

Purpose

Under the current federal transportation funding legislation, Fixing America’s Surface Transportation Act (FAST Act), a new Long-Range Transportation Plan (LRTP) must be produced every four years.

The LRTP guides transportation system investments for the Boston metropolitan region for at least the next 20 years. The MPO adopted its most recent LRTP, *Charting Progress to 2040*, in August 2015. This LRTP serves as the Boston Region MPO’s guiding document. It establishes regional goals and objectives that the MPO will use for future decision-making.

While the quadrennial LRTP document was endorsed in FFY 2015, the MPO’s continuing, comprehensive, and cooperative planning process—including its long-range planning activities—is ongoing. The MPO’s robust LRTP development program helps meet Moving Ahead for Progress in the 21st Century Act (MAP21) requirements, which include measuring and tracking performance of the region’s transportation system and the effectiveness of MPO programming in meeting regional goals. This program also supports scenario planning to generate data for decision-making.

Approach

LRTP Needs Assessment

The Needs Assessment has become a foundational resource for the MPO’s transportation planning work. Staff developed a Needs Assessment as part of *Charting Progress to 2040*; it is available to the public via the Needs Assessment application on the MPO’s website. In FFY 2017, staff will continue to update the Needs Assessment with new information as it becomes available. Staff also will perform additional analyses to keep the Needs Assessment current, and will use this information for future studies, reports, and deliberations. The updated information will be made available to

the public via the website. Data from the Needs Assessment will support two of the MPO's initiatives: its scenario planning activities and its performance-based planning practice.

In FFY 2017, staff will use output from the Needs Assessment to develop and analyze land use and transportation options and scenarios. This information also will be used to review performance measures, continue to set MPO performance targets, evaluate progress toward them, and track other indicators of interest.

The LRTP and Performance-Based Planning

The MPO adopted its goals, objectives, and an initial set of performance measures in FFY 2015 as part of developing *Charting Progress to 2040*, which were used for scenario planning and evaluating LRTP projects and programs. In FFY 2015, the MPO also initiated the development of performance targets, which are specific levels of performance the MPO desires to achieve within a certain time frame. The Transportation Improvement Program (TIP) and LRTP programs work together to support the MPO's performance-based planning program.

In FFY 2017, the MPO will expand its performance-based planning practice as components of the LRTP and TIP programs. Staff will review the MPO's performance measures developed in FFYs 2015 and 2016 under the LRTP program. This review may result in fine-tuning of the existing set of performance measures. Additional updates or measures may be made based on Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) guidance, new Massachusetts Department of Transportation (MassDOT) measures, or emerging data sources. Staff will use the MPO goals, objectives, and performance measures to continue to develop a set of targets for the MPO's performance-based planning. The MPO will use the performance measures to track how well TIP-implemented projects and programs are helping to meet the region's targets and goals.

In the Boston Region MPO, the LRTP and the TIP will each include a performance report that describes progress towards targets and the trends of non-target indicators of interest. The LRTP will report progress at the systems and project levels, as applicable, and will include a full assessment of progress made toward the region's goals. The TIP will report on project-level performance and the results of system-level analysis, as applicable. Each LRTP will provide an opportunity to review and document progress in meeting performance goals and, if needed, make adjustments to the LRTP to meet those goals.

In the future, the MPO will review and possibly revise the performance measures and further develop the targets. LRTP program work will include pre-planning for data needs to support performance-based planning. Staff will continue to coordinate internally and externally, as needed, to understand data availability, determine future data needs, and set a plan for meeting those needs.

The LRTP and Scenario Planning

In 2015, the MPO began the ongoing practice of using model-based planning tools and off-model processes to generate forecasts and information about regional conditions and future needs as part of *Charting Progress to 2040* and continued it in 2016. These tools assess the effects of potential options for changes to the transportation network. The MPO plans to use this information to make policy and capital-investment decisions. Throughout the year, staff will build on its previous work and identify one or more opportunities to explore options and compare various alternative scenarios to better understand impacts on transportation, air quality, climate change, mode shift, the economy, and land use. Using these tools will provide additional and more substantive answers to various planning questions.

Some of this work also may explore policy-related implications. In this way, the LRTP program serves as an ongoing resource for current information, insights, and analysis for all those involved in managing and improving the regional transportation network.

Laying the Groundwork for the Next LRTP

Prior to the next LRTP endorsement year, staff will research, plan, coordinate with interested parties, and review priorities. Through ongoing performance based planning and scenario planning, MPO staff will generate information that will help guide the investment strategies for the next LRTP.

The LRTP program plays an important role in keeping the MPO abreast of current state-of-the-practice methods of communication and planning tools and approaches.

In collaboration with the Metropolitan Area Planning Council (MAPC), the MPO will explore effective ways to gather information, understand the region's needs, and analyze transportation and land-use options. As part of FFY 2017 activity, staff will research best practices in metropolitan transportation planning and other facets of planning.

LRTP Amendments

If any changes are made to regionally significant projects in the FFY 2017 TIP, an amendment to the LRTP might be required. Staff will prepare the informational materials for MPO decision-making and follow MPO procedures for informing and involving the public.

FFY 2017 Anticipated Outcomes

- Update details and analyses in the current Needs Assessment to supply the most current information to the MPO and the public.
- Prepare amendments to *Charting Progress to 2040*, as needed.
- Expand the MPO's scenario-planning capabilities by using the regional travel demand model set and various planning tools such as TREDIS and CubeLand to support the performance-based planning and programming process.

- Produce summaries of results from transportation scenario analyses for the MPO.
- Continue to update performance measures and prepare targets for the MPO's goals and objectives.
- Prepare memoranda on performance based planning topics such as performance targets and guidelines for the LRTP system performance report.
- Prepare LRTP system performance reports monitoring measures-of-interest trends and tracking the MPO's performance-meeting targets.
- Conduct public outreach on all LRTP topics, including Needs Assessment updates, scenario planning, and further development of performance measures and targets; report results to the MPO for use in all of its planning and programming.
- Address comments or changes from the FHWA and the FTA or changes to the State Implementation Plan (SIP).

TRANSPORTATION IMPROVEMENT PROGRAM

Project ID Number	10103
FHWA 3C PL Funds	\$117,036
FTA Section 5303 Funds	\$47,804
FFY 2017 Total Budget	\$164,840

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

Purpose

The Boston Region MPO's Transportation Improvement Program (TIP) presents a multiyear, financially constrained program of planned investments in the metropolitan area's transportation system. Although federal regulations require the TIP to be updated every four years, Massachusetts and its MPOs are committed to producing annual updates.

Approach

Development of the FFYs 2018–2022 TIP

MPO staff coordinates the collection of TIP project-funding requests, evaluates the requests, proposes programming of current and new projects based on anticipated funding levels, supports the MPO in its decision-making about programming and in developing a draft document, and facilitates public review of the draft document before the MPO endorses the final TIP.

Outreach and Compilation of the Universe of Projects

MPO staff communicates with the 101 cities and towns in the region through TIP and Unified Planning Work Program (UPWP) workshops, Metropolitan Area Planning Council (MAPC) subregional meetings, and correspondence with municipal TIP contacts and chief elected officials to gather existing and new TIP funding requests. MPO staff compiles the projects into a Universe of Projects list for the MPO.

Based on the list of project-funding requests, MPO staff will compile and update information on each project for the TIP Interactive Database. Data inputs and updates will consist of mapping the project boundaries, inventorying pavement condition, documenting the extent of bicycle and pedestrian accommodations, computing crash rates, documenting traffic volumes and the severity of congestion,

calculating greenhouse gas (GHG) impacts, and compiling information on Title VI/ non-discrimination populations. The TIP Interactive Database integrates frequently updated information from the MPO, the Massachusetts Department of Transportation (MassDOT) divisions, municipal TIP contacts, members of the general public, and MPO staff in order to inform TIP evaluations.

Project Evaluation

The MPO uses TIP project evaluation criteria to identify projects that will help the region attain the vision, goals, and objectives established by the LRTP. The MPO's evaluation criteria enhance decision-making for transportation projects in the region by establishing a transparent, inclusive, and data-driven process. The evaluation results are posted on the MPO website to allow project proponents to review the ratings and provide feedback.

MPO staff seeks to review the project evaluation criteria annually. In FFY 2016, the MPO updated the evaluation criteria based on the new goals and objectives of the LRTP, *Charting Progress to 2040*. These updates helped align the MPO's goals, objectives, and performance measures with TIP investment decisions.

Staff Recommendation

Staff develops a recommendation that proposes how to prioritize the MPO's Regional Target funding. MPO staff prepares a First-Tier List of Projects using the results of the evaluation ratings and project-readiness information. Staff then develops recommendations, giving strong consideration to the First Tier List of Projects while also balancing equity of investments across the region and accounting for cost (to comply with the fiscal-constraint requirement).

In addition to preparing a recommendation, MPO staff also prepares and presents the Statewide Infrastructure Items and Bridge Programs and the capital programs for the Massachusetts Bay Transportation Authority (MBTA), the Cape Ann Transportation Authority (CATA), and the MetroWest Regional Transit Authority (MWRTA) for the MPO's consideration.

TIP Document Preparation and Endorsement

Staff prepares a draft TIP that maintains compliance with federal regulations and requirements for a 30day public review and comment period. During the public comment period, MPO staff compiles and summarizes comments on the draft TIP and relays the comments to the MPO for consideration before endorsing the final TIP document.

Amendments and Administrative Modifications

In a typical year, various projects experience cost or schedule changes that require an amendment or administrative modification to the TIP. MPO staff manages all public review processes regarding TIP amendments and administrative modifications, including posting TIP materials on the website.

For these actions, MPO staff collects information on the project(s) involved, the change(s) needed, and the reason(s) for the change(s). Staff prepares draft TIP tables that reflect the proposed changes and indicate their rationale. Staff briefs the MPO on the proposed changes to the TIP. The MPO reviews, discusses, and takes appropriate action regarding public review of the proposed changes. Staff also compiles and summarizes comments on the proposed amendment. MPO staff relays public comments to the MPO for its consideration prior to endorsement of the TIP amendment. Staff estimates that there will be as many as six amendments and/or administrative modifications to the FFYs 2017–2021 TIP during FFY 2017.

For more information on the TIP development process the administrative modifications and amendments procedures, refer to Chapter 2 of the TIP, available online here: <http://bosmpo.ctps.org/tip>.

Implementing Performance-Based Planning

The FFYs 2018–2022 TIP will continue to report on the MPO’s implementation of its performance-based planning program and the results of tracking trends in the region. Chapter 4 of the TIP document reports on the progress of performance-based planning. This chapter tracks trends for safety and system preservation measures and establishes baselines for measures of other goal areas, such as capacity management and mobility. It also demonstrates that the MPO investments through the TIP are making progress toward these goals and also to Clean Air/Clean Communities, Transportation Equity, and Economic Vitality. The FFYs 2018–2022 TIP will seek to further develop the performance-based planning process by establishing baselines, monitoring trends, and setting targets.

FFY 2017 Anticipated Outcomes

The FFYs 2018–2022 TIP, as well as amendments and administrative modifications to the FFYs 2017–2021 TIP, will be prepared as described above. The interactive TIP database for tracking projects will be maintained and enhanced to support the development and tracking of performance measures. The performance-based planning process will expand the tracking of performance measures and initiate the discussion of setting targets.

UNIFIED PLANNING WORK PROGRAM

Project ID Number	10104
FHWA 3C PL Funds	\$87,472
FTA Section 5303 Funds	\$35,728
FFY 2017 Total Budget	\$123,200

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

Purpose

The Unified Planning Work Program (UPWP), a 3C (continuing, cooperative, and comprehensive) transportation-planning process, prioritizes federal funding for transportation planning work that will be implemented in the 101-municipality area of the Boston region.

The UPWP has two main purposes:

- Provide budget information to federal and state officials about the expenditure of federal funds for transportation-planning projects being carried out by the Boston Region MPO
- Provide information to government officials, local communities, and the general public about surface-transportation-planning projects expected to take place in the Boston Region MPO area

The UPWP document includes descriptions and budgets for work that MPO staff will conduct during the upcoming federal fiscal year, including both 3C-funded work for the MPO and work that is funded by state agencies or other entities. The UPWP also provides supplementary information about other transportation-planning activities in the region that are not funded by the MPO or conducted by MPO staff. The federal government requires that the UPWP comply with federal regulations and address the focus areas recommended by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA).

Work on the UPWP is ongoing and is under way year-round. This work program element focuses the development of the federal fiscal year (FFY) 2018 UPWP and support for the MPO and its UPWP Committee in monitoring FFY 2017 UPWP implementation and in considering adjustments and amendments.

An integral part of developing the UPWP is engaging the public throughout the process. Some of the public outreach process for the UPWP is covered as part of the 3C Planning and MPO Support program.

The Metropolitan Area Planning Council (MAPC) also provides content for the UPWP, which details MAPC's 3C-funded projects. MAPC's participation is funded through its allocation of federal transportation-planning funding.

Approach

MPO staff prepares materials for and coordinates all phases of this work, including soliciting, evaluating, and recommending ideas for planning studies and technical assistance programs; conducting background research; preparing budgets and project descriptions; coordinating document development with the MPO's UPWP Committee; responding to federal guidance; and preparing draft and final documents.

MPO staff members are responsible for coordinating public participation in the UPWP process, distributing the draft UPWP, preparing the final UPWP, and making administrative modifications and amendments as needed. MPO staff also prepares quarterly reports on the implementation of the UPWP.

FFY 2017 Anticipated Outcomes

- Amendments and administrative modifications to the FFY 2017 UPWP, as necessary, see Chapter 1, Table 1-2, for details on the process and requirements for amendments and administrative modifications to the UPWP
- Development of, and public outreach for, the FFY 2018 UPWP, with details related to certification requirements and other administration activities, ongoing/continuing work programs, and new studies
- Planning for relevant meetings, including the MPO's subcommittee
- Quarterly implementation reports for the FFY 2017 UPWP
- Other information materials as needed

AIR QUALITY CONFORMITY AND SUPPORT ACTIVITIES

Project ID Number	10112
FHWA 3C PL Funds	\$20,547
FTA Section 5303 Funds	\$8,393
FFY 2017 Total Budget	\$28,940

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

Purpose

1. To ensure that the MPO's plans, programs, and projects comply with the Clean Air Act Amendments (CAAA) of 1990 and to secure federal funding for the Boston Region MPO's transportation system
2. To provide ongoing support services for the MPO regarding air-quality matters and maintain technical expertise in air-quality and climate-change matters, including conformance with federal air-quality requirements and the state's climate-change policies

Approach

Air-Quality Conformity Determinations

Under the CAAA, states must monitor emissions from transportation vehicles and other sources to determine whether ambient emissions levels exceed health-based allowable levels of air pollutants. Areas in which the emissions exceed the allowable levels are designated as nonattainment areas. For these, the state must develop a State Implementation Plan (SIP) that establishes emissions budgets and shows how the plan would reduce emissions in the area sufficiently to comply with national ambient air-quality standards. MPOs with nonattainment areas must complete air-quality conformity determinations to demonstrate the conformity of transportation plans, programs, and projects with the Massachusetts SIP. Typically, a conformity determination is performed annually for the Transportation Improvement Program (TIP) and every four years for a new Long-Range Transportation Plan (LRTP). However, a conformity determination may be required if an LRTP amendment is undertaken during the year. This program covers the tasks needed to demonstrate that an MPO's federally funded transportation programs meet conformity requirements.

The Boston Region MPO area had previously been classified as a nonattainment area for ozone, but it was reclassified as an attainment area under the new 2008 ozone standard. Because the reclassification resulted from a new standard, a maintenance plan was not required, and the area was not classified as a maintenance area. A maintenance area is an area that had been reclassified from nonattainment to attainment; it is an area for which a maintenance plan has been approved as part of the Massachusetts SIP. As an attainment area, the MPO is not required to demonstrate that the LRTP and TIP conform to national standards for the two pollutants that form ozone: volatile organic compounds (VOCs) and nitrogen oxides (NOx). A new ozone standard was recently proposed and released for public comment by the United States Environmental Protection Agency (EPA), and the Boston Region MPO area might again be classified as a nonattainment area if this standard is approved; however, this might not occur within the 2017 UPWP year. If the MPO area is reclassified as a nonattainment area, conformity determinations for ozone will be required.

The city of Boston and surrounding cities and towns were classified as a maintenance area for carbon monoxide (CO). However, as of April 1, 2016, the twenty-year maintenance period expired and conformity is not required for this area. The city of Waltham, however is classified as attainment with a limited maintenance plan in place and projects in this city still must comply with certain requirements. The MPO must still show that, it is complying with transportation control measure requirements outlined in the Massachusetts SIP.

Other Air-Quality Support

This ongoing Air-Quality Conformity and Support Activities program supports the MPO's expertise in air-quality and climate-change matters, as well as the MPO's response to changing requirements for planning, analysis, and reporting. This includes initiatives known today, as well as the ability to participate in issues that might emerge during the year. This program also supports implementation of air-quality-related transportation programs and projects, and it includes consultation, research, and coordination between the MPO and federal, state, local, and private entities.

FFY 2017 Anticipated Outcomes

Conformity Determinations

These determinations will be performed and presented as noted below. They include a detailed analysis of air-quality impacts (CO and carbon dioxide [CO₂]) of the projects in the FFYs 2018–2022.

TIP, any changes to the LRTP, and any work required for implementing GreenDOT (the state's comprehensive environmental responsibility and sustainability policy). MPO staff will also complete analysis of VOCs and NOx emissions.

- A systemwide conformity determination will be prepared if there are changes to regionally significant projects in the LRTP and the TIP.

- A detailed project-level analysis will be conducted for each project to receive Congestion Mitigation and Air Quality Program funding in the TIP and for any projects that will help meet the GreenDOT initiative.

Support to the Massachusetts Department of Transportation (MassDOT) (including the Highway Division, the Office of Transportation Planning, and the Massachusetts Bay Transportation Authority [MBTA]) and Massport

Activities will include analysis of transportation-control measures (TCMs), park-and-ride facilities, and proposed high-occupancy-vehicle (HOV) projects throughout the Boston Region MPO area, as well as evaluation of emerging and innovative highway and transit clean-air activities.

Support for Climate-Change Initiatives

Activities will include integrating concerns about climate change and opportunities for emissions reduction into the MPO's planning process relative to the regional travel-demand model set, the TIP, project specific work products, the LRTP, the Congestion Management Process, the Unified Planning Work Program (UPWP), and performance measures. Staff will work with MassDOT to implement its GreenDOT policy and comply with the Department of Environmental Protection (DEP)'s Global Warming Solutions Act Requirements for the Transportation Sector and MassDOT. Staff will also confer with agencies and organizations concerned about climate-change issues to inform actions in the MPO region.

Mobile-Source Element of the SIP

The Massachusetts DEP is required to submit a SIP to the EPA documenting strategies and actions to bring Massachusetts into compliance with air-quality standards. Central Transportation Planning Staff (CTPS) support will include:

- Support for amendments or revisions to the Memorandum of Understanding between the MPO and the DEP
- Support to regional, local, and private entities, and to the agencies involved in monitoring, updating, and revising the mobile-source section of the SIP
- Data collection and analysis to measure regional air-quality conditions, support development of MOVES2014 emission factors, validate emissions inventories and budgets, and evaluate the air-quality impacts of policies regarding long-term growth, transportation, and land use
- Coordination with the DEP to develop statewide regulations and programs concerning transportation and air quality
- Support to regional, local, and private entities
- Providing data and recommendations to MPO agencies regarding funding and the implementation of transportation programs and projects with air-quality benefits

BOSTON REGION MPO TITLE VI REPORTING

Project ID Number	11355
FHWA 3C PL Funds	\$15,698
FTA Section 5303 Funds	\$6,412
FFY 2017 Total Budget	\$22,110

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

Purpose

This program's objective is to develop a report documenting Title VI-related activities undertaken by the MPO during the past year. The report will show the MPO's full compliance with the requirements of both the Federal Transit Administration (FTA) Title VI Circular C 4702.1B and the Federal Highway Administration (FHWA) Title VI/Nondiscrimination Program.

Approach

Title VI of the federal Civil Rights Act prohibits discrimination based on race, color, and national origin, including individuals with limited English-language proficiency (LEP), in programs and activities that receive federal financial assistance. The FTA and the FHWA require the MPO to develop programs that ensure compliance with Title VI. This is accomplished by reaching out to protected populations and involving them in MPO planning and decision-making, which includes development of the Unified Planning Work Program (UPWP), the Transportation Improvement Program (TIP), and the Long-Range Transportation Plan (LRTP). In addition to the populations given protection under Title VI, FHWA's Title VI/Nondiscrimination Program prohibits discrimination based on a person's sex, age, disability/handicap, and income status.

FFY 2017 Anticipated Outcomes

The MPO will comply with FTA and FHWA Title VI requirements by preparing and submitting reports on the implementation of its nondiscrimination programs, as required. The MPO will provide updates on Title VI-related activities to determine the equity of TIP spending, as required by the Massachusetts Department of Transportation (MassDOT). The MPO also will continue consulting and coordinating with the MassDOT Office of Diversity and Civil Rights (ODCR) to achieve best practices in this area.

CONGESTION MANAGEMENT PROCESS

Project ID Number	11123
FHWA 3C PL Funds	\$70,915
FTA Section 5303 Funds	\$28,965
FFY 2017 Total Budget	\$99,880

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

Purpose

The MPO's Congestion Management Process (CMP) is a federally mandated requirement that seeks to monitor congestion, mobility, and safety needs; it also recommends appropriate strategies for reducing congestion. The CMP is developed in an integrated manner along with the MPO's certification documents—the Long-Range Transportation Plan (LRTP), the Transportation Improvement Program (TIP), and the Unified Planning work Program (UPWP)—to ensure cohesive strategy evaluation and implementation.

Approach

In the Boston Region MPO area, the CMP follows federal guidelines and recommendations from the MPO's CMP Committee to fulfill the following activities:

- Set goals, objectives, and performance measures
- Identify congested locations
- Determine the causes of congestion
- Develop alternative strategies to mitigate congestion
- Evaluate the strategies' potential for efficacy
- Recommend the strategies that best address the causes and impacts of congestion
- Coordinate with and support development of the LRTP, TIP, and UPWP
- Create needs priorities for planning studies

Depending upon CMP Committee recommendations, monitoring and analysis will continue for highways, arterial roads, park-and-ride lots, freight movements, and bicycle and pedestrian facilities. CMP activities will include using electronic travel-time and speed data to monitor roadways, identifying existing conditions, and recommending appropriate improvements in accordance with federal guidelines.

FFY 2017 Anticipated Outcomes

CMP activities will include monitoring, assessing needs, and recommending strategies for multimodal facilities and services, including:

- Using electronic travel-time and speed data to monitor MPO arterials and freeways
- Mapping and tabulating electronic data for analysis and performance evaluation
- Coordinating with the MPO's certification activities (LRTP, TIP, and UPWP)
- Supporting the CMP Committee of the MPO

FREIGHT-PLANNING SUPPORT: FFY 2017

Project ID Number	11145
FHWA 3C PL Funds	\$51,200
FTA Section 5303 Funds	\$-
FFY 2017 Total Budget	\$51,200

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

Purpose

As part of its FFY 2014 UPWP, the Boston Region MPO established a formal freight-planning program. The goals for MPO freight planning are to:

- Fulfill the Boston Region MPO's freight-planning needs
- Complement state and other official planning efforts
- Study specific freight-related issues
- Fulfill new analysis requirements of the current federal surface transportation legislation
- Address the lack of freight data for the MPO region, including developing enhanced technical capabilities for MPO staff to use in estimating freight demand

Approach

The freight analysis within the framework of this program will be ongoing and conducted on a multiyear basis. In September 2013, MPO staff proposed a Freight Planning Action Plan, which presented possible studies for one or more of the MPO's freight-planning goals.¹

The MPO's FFY 2016 freight-planning activities included analyzing the adequacy of rest locations for long-distance truck drivers in Massachusetts, and collecting freight data to support MPO model development. The MPO will look to the Freight Planning Action Plan to determine future activities for the MPO's freight-planning program. In its freight-planning activities, MPO staff will incorporate input from stakeholders who represent the freight-shipping community in the Boston region to learn about obstacles and transportation needs for freight movement.

¹ Proposed Freight Planning Action Plan for the Boston Region MPO: Meeting the Goals and Addressing the Issues, memorandum, Boston Region MPO, September 12, 2013.

FFY 2017 Anticipated Outcomes

Potential issues to study are documented in the FFY 2013 Freight Planning Action Plan. MPO staff will collect data, conduct analysis, and develop recommendations and documentation as appropriate for the study topics.

TRANSPORTATION EQUITY/ENVIRONMENTAL JUSTICE SUPPORT

Project ID Number	11132
FHWA 3C PL Funds	\$76,148
FTA Section 5303 Funds	\$31,103
FFY 2017 Total Budget	\$107,250

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

Purpose

The purpose of this program is to foster awareness and consideration of transportation equity and the transportation needs of environmental justice (EJ) populations in MPO planning and programming. This program is instrumental in maintaining compliance with federal and state requirements and guidelines regarding civil rights. It also seeks to stimulate participation of low-income, minority, elderly, and limited English-language proficient (LEP) populations in the MPO's planning process.

Approach

Gathering Input and Supporting Participation in Transportation Planning

Gathering input and generating participation in transportation planning from low income, minority, elderly, and LEP populations will be accomplished in several ways.

One approach is through continued outreach to these populations, primarily by attending regularly scheduled meetings held by the state's newly formed Regional Coordinating Councils (RCCs), which work in areas that include MPO EJ populations. (The mission of the RCCs is to identify and address paratransit, human services, and community transportation service gaps at the multi-municipality level.)

RCCs have been formed, under the direction of the Massachusetts Department of Transportation (MassDOT), in response to recommendations made in the Executive Order 530: Community, Social Service, and Paratransit Transportation Commission Report to Governor Deval Patrick. RCCs are voluntary advisory bodies that provide a forum for open discussion, information exchange, and decision-making about regional transportation priorities. Their capture areas range from two communities to as many as several dozen communities.

In FFY 2017, MPO staff will continue to gather information on transportation gaps and needs in each RCC area through the RCC coordination process. Staff also will inform the RCCs about MPO activities and provide technical support, if feasible. Attending the RCC meetings will give staff an opportunity to foster working relationships with community advocates and promote direct participation in the Regional Transportation Advisory Council and other MPO planning and programming activities.

Staff will speak to individuals living in EJ areas and community organizations serving EJ areas to identify transportation needs and solicit ideas for transportation and program improvements. Information gathered through these initiatives (targeting low-income, minority, LEP, and elderly populations, as well as persons with disabilities and zero-vehicle households) will be analyzed and presented to the MPO, which will use the information to plan activities.

Staff will work with the Metropolitan Area Planning Council (MAPC) to develop joint outreach activities to reach EJ and Title VI populations.

Staff will use results of the MPO's Title VI four factor analysis process to guide decisions on materials to translate and to make other recommendations regarding MPO outreach (for more information on the Boston MPO's Title VI work, see the Boston Region MPO Title VI Reporting project description).

Supporting the Transportation Improvement Program (TIP) and the Long-Range Transportation Plan (LRTP) Development

Staff will support TIP and LRTP development by adopting EJ definitions for the TIP and LRTP, evaluating projects, and conducting LRTP analysis of benefits and burdens. Staff also will support the LRTP Needs Assessment on an ongoing basis.

Supporting and Coordinating with Other Agencies

Staff will continue to support Federal Transit Administration (FTA) programs that target minority and low-income populations, elderly individuals, and people with disabilities in the region. For example, MPO staff will continue to help MassDOT publicize its Community Transit Grant Program solicitation, and will evaluate that program's grant applications. MPO staff will continue to coordinate with MassDOT's Office of Diversity and Civil Rights (ODCR) to ensure consistency of MPO Title VI-related processes, procedures, and activities.

Conducting Special Studies

As budget permits, staff will conduct special studies and analyses during the year and report results to the MPO via technical memoranda. This year, staff plans to study emergency evacuation and transportation infrastructure vulnerabilities of Transportation Equity Program households. As budget allows, staff will review and inventory current community planning initiatives for the transportation needs of vulnerable populations. This process will help staff understand which agencies or organizations are addressing this topic. Staff will summarize plans that are in place or

under development and identify geographic or programmatic planning gaps. Another possible study would involve analyzing the transportation options available to elderly MPO-area residents.

FFY 2017 Anticipated Outcomes

- Continue MPO outreach to minority, low-income, and LEP communities by attending monthly RCC meetings, conducting surveys, and holding an MPO sponsored meeting
- Prepare a summary of issues, gaps in service, and transportation priorities obtained from RCCs for use in planning and programming discussions
- Monitor developments at the U.S. Department of Transportation regarding civil rights, Title VI, and EJ; participate in workshops, conferences, and seminars, as appropriate; and use this knowledge to inform MPO activities
- Prepare meeting summaries and other updates for the MPO
- Support the Community Transit Grant Program solicitation for projects, and help to evaluate applicant proposals
- Complete EJ analyses as needed
- Produce additional maps, tables, and technical memoranda



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

(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.



CHAPTER 7

Agency and Other Client Transportation Planning Studies and Technical Analyses

7.1 INTRODUCTION

The transportation studies and technical analysis work described in this chapter will be undertaken to support the work of various transportation agencies in the Boston Region Metropolitan Planning Organization (MPO) area.

Some of the contracts described in the pages that follow are issued to the Central Transportation Planning Staff (CTPS) every year and generally coincide with either the federal fiscal year (FFY) or the state fiscal year (SFY). Examples include the Massachusetts Department of Transportation (MassDOT) Section 5303 and MassDOT Statewide Planning and Research (SPR) contracts. Other contracts are issued for tasks and technical support to be conducted over a multiyear period, and they might be renewed with the agencies after several years. A third contract type covers the work for discrete studies or technical analyses intended to be completed within one FFY. These may either be one-time contracts in which CTPS conducts analysis or technical support to further a specific agency project, such as the Massachusetts Bay Transportation Authority's (MBTA's) Plan for Accessible Infrastructure (PATI), or they can be contracts in which CTPS provides technical support to an agency for data collection and analysis that is undertaken annually, such as the MBTA's National Transit Database (NTD): Data Collection and Analysis contract.

The work conducted on behalf of the agencies includes data collection and analyses on a broad range of topics, including travel-demand modeling, air quality, traffic engineering, and environmental justice. The products of this work are vital to support compliance with federal and state regulations such as the Massachusetts Environmental Policy Act (MEPA) and Title VI of the Civil Rights Act of 1964. CTPS also enhances regional understanding of critical transportation issues through the preparation of graphics, maps, and other materials for agency studies and presentations. The work described in this chapter is organized by agency, and includes studies and technical analyses for MassDOT, the Massachusetts Port Authority (Massport), and the MBTA.

7.2 MASSDOT

The contracts and technical analyses in this section are being undertaken for MassDOT.

MASSDOT HIGHWAY DIVISION ON-CALL MODELING SUPPORT

Project ID Number	73220
Funding Source	MassDOT
Total Contract	\$400,000
FFY 2017 Total Budget	\$140,100

Purpose

The purpose of this on-call contract is to provide the Massachusetts Department of Transportation (MassDOT) Highway Division with travel demand modeling and planning assistance throughout federal fiscal year (FFY) 2017.

Approach

For the past few years, the MassDOT Highway Division has employed the Central Transportation Planning Staff (CTPS) to provide travel demand modeling support and planning assistance for a number of its projects, each of which has necessitated creating either a new contract or a contract amendment. In an effort to streamline the process, MassDOT's Highway Division will create a general on-call contract to engage CTPS's services for three years to provide necessary assistance to MassDOT Highway Division projects.

FFY 2017 Anticipated Outcomes

CTPS will support MassDOT and its study teams in planning work associated with its bridge project management and other projects, producing necessary memoranda and data upon request.

MASSDOT STATEWIDE PLANNING AND RESEARCH PROGRAM SUPPORT

Project ID Number	Varies
Funding Source	MassDOT SPR
Total Contract	\$649,000
FFY 2017 Total Budget	\$559,500

Note: FFY 2017 Total Budget does not include Direct Support. This additional amount is noted in Chapter 8 under the description of Direct Support.

Purpose

The Central Transportation Planning Staff (CTPS) provides support to the Massachusetts Department of Transportation's (MassDOT's) Statewide Planning and Research (SPR) Program as requested. This contract will include multiple individual projects or tasks throughout the federal fiscal year (FFY).

Approach

This work includes studies, analyses, and technical assistance. Projects that are either underway or expected to begin in FFY 2017 are listed below. (Other projects may be added throughout FFY 2017.)

- 2016–2017 I93 North and Southeast Expressway High-Occupancy-Vehicle (HOV) Lane Monitoring
- Diversity Posters
- Everett Transit Study
- Foxborough Station Study
- Kendall Square Mobility Task Force
- Miscellaneous Graphics
- Program for Mass Transportation (PMT) Assistance and Support
- Road Inventory and Related Support Maintenance
- Statewide Travel Model Assistance

FFY 2017 Anticipated Outcomes

Activities and work products will depend on tasks requested by MassDOT's Office of Transportation Planning. Projects of appropriate scope will be submitted to the MPO before proceeding.

MASSDOT TITLE VI PROGRAM

Project ID Number	13154
Funding Source	MassDOT
Total Contract	\$169,900
FFY 2017 Total Budget	\$37,500

Purpose

Under this contract, the Central Transportation Planning Staff (CTPS) will continue to provide technical support to the Massachusetts Department of Transportation (MassDOT) in the implementation of its Title VI Program for both the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA).

Approach

MassDOT, as a recipient of federal funds from both the FHWA and the FTA, is required to comply with Title VI of the Civil Rights Act of 1964 and with protections enacted through several additional laws and executive orders that prohibit discrimination on the basis of gender, age, income, and disability. Through this technical support work, CTPS will assist MassDOT in complying with these equal protection laws.

FFY 2017 Anticipated Outcomes

Staff will assist MassDOT in updating its Title VI/Nondiscrimination Program for FHWA, and will provide technical support to MassDOT as described above.

MASSDOT TRANSIT PLANNING ASSISTANCE

Project ID Number	Varies
Funding Source	MassDOT Section 5303
Total Contract	\$270,170
FFY 2017 Total Budget	\$264,170

Note: FFY 2017 Total Budget does not include Direct Support. This additional amount is noted in Chapter 8 under the description of Direct Support.

Purpose

The Central Transportation Planning Staff (CTPS) provides transit-planning assistance to the Massachusetts Department of Transportation (MassDOT) and the Massachusetts Bay Transportation Authority (MBTA) by conducting various studies under MassDOT's Federal Transit Administration (FTA)-funded Section 5303 Program. This contract will include multiple individual projects or tasks throughout the federal fiscal year (FFY).

Approach

This assistance may include:

- Short-term and ongoing analysis of projects and proposals, including travel demand modeling, impact analyses, air quality analyses, traffic engineering analyses, and other types of quick-response analyses
- Preparation of supporting data, graphics, maps, and other materials for MassDOT studies and presentations
- Support of environmental document preparation for projects under development
- Other studies and activities requested by MassDOT

FFY 2017 Anticipated Outcomes

Activities and work products will depend on tasks requested by MassDOT's Office of Transportation Planning. Projects of appropriate scope will be submitted to the MPO before proceeding.

SECTION 405C TRAFFIC RECORDS IMPROVEMENT

Project ID Number	11158
Funding Source	MassDOT
Total Contract	\$97,000
FFY 2017 Total Budget	\$69,100

Purpose

The purpose of this program is to test the template developed by Vanasse Hangen Brustlin, Inc. (VHB), an engineering, planning, and design consulting firm, for collecting Model Inventory Road Element (MIRE) Fundamental Data Elements (FDEs) for intersections on a subset of Massachusetts intersections.

Approach

The template application developed by VHB will be used to collect MIRE FDEs at approximately 5,500 intersections in Massachusetts. Feedback on the template will be provided to VHB (via the Massachusetts Department of Transportation [MassDOT] Traffic Safety and Engineering group); if necessary, the template can be modified before it is used to collect MIRE FDEs on the more than 250,000 intersections in the Commonwealth of Massachusetts.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include collecting MIRE FDEs for approximately 5,500 intersections in Massachusetts. Written reports will be provided regarding the VHB data collection template. The project work is expected to take approximately one year to complete. It is possible that the work may not be completed in federal fiscal year (FFY) 2017; it may extend into FFY 2018, depending on when the grant funds are released and when the Central Transportation Planning Staff (CTPS) receives a notice to proceed (NTP) with the work.

NORTH-SOUTH RAIL LINK

Project ID Number	11157
Funding Source	MassDOT
Total Contract	\$200,000
FFY 2017 Total Budget	\$149,700

Purpose

The purpose of this work is to update the previously completed analysis of the proposed North-South Rail Link project that would connect Boston's North Station and South Station by rail.

Approach

This project would provide more transit connectivity to the region. It would connect transit markets that now require two or more transfers, and provide passengers with a one-seat ride. In the coming years, train-set capacity at South Station is expected to be a major limitation that would inhibit expansion of the commuter rail network south of Boston. This project would add capacity to the commuter rail system, while at the same time obviate the need to conduct a costly expansion project at South Station.

Because the North-South Rail Link project was studied in detail over a decade ago, an updated analysis is required.

FFY 2017 Anticipated Outcomes

This study will examine the local and regional demand for a north-south link connection, and also address the air quality and economic impacts associated with the project. After collecting and analyzing data, the Central Transportation Planning Staff (CTPS) will produce draft and final reports for the Massachusetts Department of Transportation (MassDOT).

LOWER MYSTIC RIVER WORKING GROUP SUPPORT

Project ID Number	22209
Funding Source	MassDOT
Total Contract	\$489,300
FFY 2017 Total Budget	\$246,000

Purpose

This study and support work stem from the proposed Wynn Casino development in Everett and the findings in the Massachusetts Environmental Protection Act (MEPA) Certificate issued by the Executive Office of Energy and Environmental Affairs (EOEEA) in August 2015. The certificate states that although the project complied with MEPA, there could be broader regional transportation impacts associated with other large scale development proposals in the area near the Wynn Casino north of Boston. In order to understand the extent of these broader impacts, the EOEEA Certificate required the establishment of a Regional Working Group.

Approach

MPO staff will take the lead in transportation modeling and analyses. Additionally, MPO staff and staff of the MPO member agency, the Metropolitan Area Planning Council (MAPC), will work in partnership with the working group to achieve the following main objectives:

- Assess existing conditions, planned improvements, and reviewed and permitted development
- Identify planning development and potential build-out
- Identify critical existing and proposed infrastructure and study alternatives
- Consider funding resources and equitable allocation of project costs

FFY 2017 Anticipated Outcomes

MPO and MAPC staff support is anticipated to include the following main tasks in federal fiscal year (FFY) 2017:

- Assistance with stakeholder engagement: Staff will plan public meetings, attend working group meetings, and assist the Massachusetts Department of Transportation (MassDOT) in answering questions and presenting information.

- Verification of existing land uses and identification of future developments: Staff will review current and proposed developments in the study area, verify existing data, and collect new data. This will be based, in part, on feedback from stakeholders. Staff will produce a database of existing and proposed demographics in the study area.
- Examination of existing and proposed transportation infrastructure: Staff will coordinate with MassDOT, affected municipalities, and other key stakeholders to verify existing and proposed transportation infrastructure by the forecast years (2030 and 2040). This will result in a database of existing and proposed transportation infrastructure in the study area.
- Review of current and recent transportation studies: Staff will review the analysis and conclusions of several transportation studies conducted in the study area during the past 15 years.
- Development and examination of a model of existing transportation conditions: Staff will use a model that reflects existing land use and transportation infrastructure in eastern Massachusetts and will produce analysis of existing transportation conditions.
- Development and examination of baseline scenarios for both forecast years: Staff will produce a model and analysis of baseline transportation conditions for 2030 and 2040.
- Identification of mitigation strategies and land use alternatives for both forecast years (2030 and 2040): Staff will identify potential issues associated with transportation operations within the study area and will work with the Regional Working Group to recommend a series of mitigation strategies to help address the negative transportation impacts identified in this study.
- Development and examination of alternative scenarios for both forecast years (2030 and 2040): Staff will model scenarios based on different assumptions about land use, transportation networks and operations, traveler behavior, and other inputs. The analysis of these multiple alternatives will help test the impacts of mitigation strategies.
- Examination of funding options: Staff will work with the Regional Working Group, MassDOT, and other stakeholders to estimate the cost of mitigation and infrastructure improvements identified through this project and will develop a list of funding strategies.
- Development of recommendations and creation of a blueprint and schedule for implementation: Staff will develop a recommended set of policies, programs, and infrastructure investments, which will include a blueprint and schedule for implementation.
- Production of draft and final reports: Staff will produce a draft report that will be presented to the working group. Staff will then produce a final report that will be posted on the MassDOT, MAPC, and MPO websites.

7.3 MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (MBTA)

The contracts and technical analyses in this section are being undertaken for the Massachusetts Bay Transportation Authority (MBTA).

MBTA NATIONAL TRANSIT DATABASE: DATA COLLECTION AND ANALYSIS

Project ID Number	(SFY 2016) 14345 (SFY 2017) 14351 (SFY 2018) 14353
Funding Source	MBTA
Total Contract*	(SFY 2016) \$128,480 (SFY 2017) \$141,398 (SFY 2018) \$130,000
FFY 2017 Total Budget	(SFY 2016) \$1,200 (SFY 2017) \$125,198 (SFY 2018) \$10,700

* Several different contract years are included in this work.

SFY = state fiscal year

Note: FFY 2017 Total Budget does not include Direct Support. This additional amount is noted in Chapter 8 under the description of Direct Support.

Purpose

For many years, in support of the Massachusetts Bay Transportation Authority's (MBTA's) National Transit Database (NTD) submittals to the Federal Transit Administration (FTA), the Central Transportation Planning Staff (CTPS) has produced estimates of passenger miles and boardings for MBTA services. This project will develop these estimates for

1. Directly operated MBTA transportation modes (including motor bus, trackless trolley, heavy and light rail, and bus rapid transit)
2. Purchased-service bus routes (that is, local routes for which the MBTA contracts with a private carrier)

CTPS will also verify MBTA estimates of average passenger trip length on its commuter rail mode.

Approach

The data underlying these estimates will be collected in a variety of ways:

- Full-route ridechecks on buses used in contracted MBTA local bus service and trackless trolleys¹
- MBTA automatic passenger counter (APC) data
- Passenger counts on APC-equipped buses
- Electronic passenger fare-mix counts from automated-fare-collection (AFC) faregates at heavy and light rail subway stations and fareboxes on motor bus and trackless trolley routes
- Origin-destination information inferred from AFC data
- Commuter rail ridership data from passenger counts conducted by the MBTA or its contractors, or from the MBTA's mobile ticketing vendor
- Fare-mix counts from AFC faregates at stations and from fareboxes on vehicles
- Passenger surveys on the heavy rail, light rail, and gated portions of the bus rapid-transit systems to collect origin and destination information

The MBTA will submit its state fiscal year (SFY) 2016 NTD estimates of passenger boardings and passenger miles for various transit modes to the FTA with the aid of CTPS during FFY 2017. In addition, the MBTA will submit its SFY 2017 NTD estimates of passenger boardings and passenger miles for various transit modes to the FTA with the aid of CTPS during FFY 2018. The final technical memorandum for the 2017 NTD will be completed in FFY 2018.

FFY 2017 Anticipated Outcomes

In SFY 2017, CTPS will complete the final technical memorandum for SFY 2016 NTD reporting and will continue data collection begun in SFY 2016 for SFY 2017.

- Ridechecks¹ will be conducted for the trackless trolley and contracted local bus service portions of the SFY 2017 NTD reporting. Ridecheck data that will be collected for bus routes will include boardings and alightings by stop, farebox readings, trip-level travel times, departure and arrival times, and arrival times at intermediate stops.
- For heavy and light rail lines, origin-destination surveys will be conducted, and fare-mix data will be obtained.

¹ Ridechecks refer to a method of collecting sample data with one or more persons observing and recording passenger activities while riding in a transit vehicle.

MBTA SYSTEMWIDE PASSENGER SURVEY

Project ID Number	14346
Funding Source	MBTA
Total Contract	\$1,180,000
FFY 2017 Total Budget	\$424,500

Note: FFY 2017 Total Budget does not include Direct Support. This additional amount is noted in Chapter 8 under the description of Direct Support.

Purpose

Through this contract, initiated in federal fiscal year (FFY) 2015, the Central Transportation Planning Staff (CTPS) will conduct a systemwide passenger survey to assist the Massachusetts Bay Transportation Authority (MBTA) in its Title VI analysis.

Approach

The Federal Transit Administration (FTA) requires that the MBTA collect information on its riders for use in Title VI analyses; this survey must be conducted within a five-year time frame. The required information will include race, color, national origin, English-language proficiency, language spoken at home, household income, fare usage by fare type, and travel patterns. In this project, CTPS will conduct a systemwide survey, administered as paper forms as well as online surveys, of the passengers who use rapid transit, bus, bus rapid transit (BRT), commuter rail, and water transportation services. The survey results also will provide the MBTA, other state and federal agencies, consultants, and the public with more up-to-date data to support transportation-planning activities.

FFY 2017 Anticipated Outcomes

CTPS will complete the systemwide passenger survey for each transportation mode, and staff will process the survey results.

MBTA TITLE VI PROGRAM MONITORING

Project ID Number	(SFY 2016) 11395 (SFY 2017) 11408
Funding Source	MBTA
Total Contract	(SFY 2016) \$63,140 (SFY 2017) \$161,511
FFY 2017 Total Budget	(SFY 2016) \$1,200 (SFY 2017) 100,000

SFY = state fiscal year

Note: FFY 2017 Total Budget does not include Direct Support. This additional amount is noted in Chapter 8 under the description of Direct Support.

Purpose

Under this contract, the Central Transportation Planning Staff (CTPS) provides the Massachusetts Bay Transportation Authority (MBTA) with technical assistance in collecting data on and conducting assessments of the level of service (LOS) provided in minority communities compared to nonminority areas to support the MBTA's compliance with Title VI requirements.

Approach

Data will be collected on service indicators such as

- Service coverage
- Vehicle load
- Vehicle headway
- On-time performance
- Station conditions and amenities
- Distribution and operability of automated-fare-collection (AFC) faregates and fare vending machines

- Distribution of AFC retail sales terminals
- Station elevator and escalator locations and operability
- Vehicle age and condition

This data collection will help fulfill the monitoring required as part of the MBTA's ongoing Title VI Program. The results of the analyses will be reported internally at the MBTA and will be folded into future triennial Federal Transit Administration (FTA) reporting.

FFY 2017 Anticipated Outcomes

CTPS will provide documentation about selected LOS evaluations for state fiscal year (SFY) 2016 MBTA revenue service and amenities, and staff will prepare the 2017 triennial MBTA Title VI Program Report.

TITLE VI SERVICE EQUITY ANALYSIS: METHODOLOGY DEVELOPMENT: PHASE II

Project ID Number	11409
Funding Source	MBTA
Total Contract	\$125,000
FFY 2017 Total Budget	\$94,300

Purpose

In a federal fiscal year (FFY) 2015 Boston Region MPO study (Title VI Service Equity Analysis: Methodology Development), the Central Transportation Planning Staff (CTPS) developed an improved methodology for conducting Title VI service equity analyses, and conducted a proof of concept to demonstrate its application. The developed methodology utilizes the Modified Transit Opportunity Index (MTOI) to measure the amount of transit opportunity provided to a census tract as a function of the transit system network. In this FFY 2017 project, staff will develop a full-scale model of the Massachusetts Bay Transportation Authority (MBTA) bus and rapid transit system to provide a platform for conducting comprehensive assessments of the MTOI for each census tract within the MBTA bus and rapid transit network.

Approach

Outputs from the MTOI model will be used as a comprehensive tool for conducting Title VI service equity analyses, enabling CTPS, the MBTA, and the Massachusetts Department of Transportation (MassDOT) Office of Diversity and Civil Rights staff to conduct future Title VI service equity analyses of MBTA major service changes. By completing this work, the MPO will continue to adhere to its commitment to conduct industry-leading Title VI and other transportation-equity-related work.

FFY 2017 Anticipated Outcomes

- Development of a full-scale MBTA bus and rapid transit system model for calculating the MTOI from existing transit services and proposed major service changes
- A memorandum documenting the development and framework of the MTOI model, and a user manual for its use as a tool for conducting Title VI service equity analysis of proposed major service changes
- Technical assistance to the MBTA and MassDOT Office of Diversity and Civil Rights

MBTA BUS SERVICE DATA COLLECTION

Project ID Number	11406
Funding Source	MBTA
Total Contract	\$540,000
FFY 2017 Total Budget	\$179,970

Note: FFY 2017 Total Budget does not include Direct Support. This additional amount is noted in Chapter 8 under the description of Direct Support.

Purpose

The work conducted under this contract will help the Massachusetts Bay Transportation Authority (MBTA) assess bus service changes included in the biennial MBTA service plans.

Approach

In order to assess bus service changes that are included in the biennial MBTA service plans, the MBTA requires ongoing data collection regarding its bus system.

The data collected by the Central Transportation Planning Staff (CTPS) as part of this project also support future MBTA service plans, through which bus routes undergo comparative evaluations for cost-effectiveness, crowding, schedule adherence, and other indicators. Work may also include support for improving the ridecheck database so that it will be compatible with new software and data sources. CTPS also may provide analytical assistance to the MBTA as requested.

FFY 2017 Anticipated Outcomes

- Point checks on bus routes and other data collection as requested by the MBTA for planning purposes. (Point checks are observations of the arrival times, departure times, and passenger loads of a transit service at a single location.)
- Improvements to the ridecheck database.
- Analytical assistance as requested.

MBTA REVIEW OF FARE STRUCTURE, TARIFFS, AND POLICY

Project ID Number	(2014 Contract) 11378 (2017 Contract) 11393
Funding Source	MBTA
Total Contract	(2014 Contract) \$141,000 (2017 Contract) \$159,240
FFY 2017 Total Budget	(2014 Contract) \$5,400 (2017 Contract) \$8,300

Purpose

Through this contract, the Central Transportation Planning Staff (CTPS) assists the Massachusetts Bay Transportation Authority (MBTA) in analyzing the potential impacts of changes in fare structure and tariffs.

Approach

CTPS has provided technical assistance to the MBTA in forecasting potential ridership, revenue, air quality, and socioeconomic impacts of proposed changes in the MBTA's fare structure and tariffs for all fare increases since 1991. In federal fiscal year (FFY) 2017, CTPS will analyze the potential impacts of any proposed changes in fare structure and tariffs. CTPS will also conduct the Federal Transit Administration (FTA)-required fare equity analysis.

FFY 2017 Anticipated Outcomes

Analyses will be conducted as requested. CTPS will participate in meetings, provide technical support, and develop documentation and other communication materials as requested. Staff will also prepare final reports of findings from each fare change analysis and each associated fare equity analysis.

MBTA RIDER OVERSIGHT COMMITTEE SUPPORT

Project ID Number	14339
Funding Source	MBTA
Total Contract	\$24,500
FFY 2017 Total Budget	\$2,600

Purpose

The Massachusetts Bay Transportation Authority (MBTA) established a Rider Oversight Committee (ROC) in 2004 to provide ongoing public input on a number of different issues, including strategies for increasing ridership, developing new fare structures, and prioritizing capital improvements. Through this contract, the Central Transportation Planning Staff (CTPS) supports the MBTA by providing technical assistance to the ROC on an ongoing basis.

Approach

Over the past several years, the assistance provided by CTPS has included analyzing the revenue and ridership impacts of potential fare and service changes, providing the MBTA ridership statistics, offering insights into the MBTA's planning processes, providing data analysis, and attending committee meetings at which staff may respond directly to ROC members' questions.

FFY 2017 Anticipated Outcomes

CTPS will continue to provide technical assistance to the MBTA Rider Oversight Committee and attend committee and subcommittee meetings.

MBTA PLAN FOR ACCESSIBLE TRANSIT INFRASTRUCTURE SUPPORT

Project ID Number	14349
Funding Source	MBTA
Total Contract	\$18,370
FFY 2017 Total Budget	\$4,200

Purpose

The Central Transportation Planning Staff (CTPS) will provide technical support to the Massachusetts Bay Transportation Authority (MBTA) as the Department of System-Wide Accessibility (SWA) develops a Plan for Accessible Transit Infrastructure (PATI).

Approach

The MBTA's Department of SWA is developing PATI—a long-term strategic barrier-removal plan that will prioritize accessibility improvements in the context of limited resources. Through this initiative, the MBTA will catalog barriers to access at each rapid transit, bus rapid transit, and commuter rail station or stop, and at every bus stop. Concurrently with this survey effort, a working group (the PATI Engagement Committee), which is composed of MBTA officials and disability-accessibility stakeholders, will develop a method for prioritizing the removal of the barriers in a manner that is sustainable, while maximizing the positive impact on accessibility. CTPS will provide the technical support required for the MBTA to develop criteria for determining which accessibility improvements would have the greatest positive impacts on seniors, people with disabilities, and others who rely on accessible infrastructure, while taking into account funding constraints. CTPS will also develop an algorithm for prioritizing accessibility improvements that will incorporate selected criteria.

FFY 2017 Anticipated Outcomes

- Participation in the PATI Engagement Committee
- Technical support and analyses required for reviewing the proposed criteria for evaluating accessibility improvements
- Development of an algorithm for prioritizing accessibility improvements

OFFICE OF PERFORMANCE MANAGEMENT AND INNOVATION ON-CALL CONTRACT

Project ID Number	11159
Funding Source	MBTA
Total Contract	\$200,000
FFY 2017 Total Budget	\$100,000

Purpose

Through this contract, the Central Transportation Planning Staff (CTPS) will support the Massachusetts Department of Transportation's (MassDOT's) Office of Performance Management and Innovation (OPMI).

Approach

This is a one-year contract for state fiscal year (SFY) 2017, and specific task orders and technical support will be determined by CTPS and OPMI.

FFY 2017 Anticipated Outcomes

This MassDOT contract will result in various analytical studies and technical reports for the Massachusetts Bay Transportation Authority (MBTA).

7.4 MASSACHUSETTS PORT AUTHORITY (MASSPORT)

The contracts and technical analysis in this section are being undertaken for the Massachusetts Port Authority (Massport).

MASSPORT TECHNICAL ASSISTANCE

Project ID Number	22127
Funding Source	Massport
Total Contract	\$171,000
FFY 2017 Total Budget	\$52,900

Note: FFY 2017 Total Budget does not include Direct Support. This additional amount is noted in Chapter 8 under the description of Direct Support.

Purpose

The Central Transportation Planning Staff (CTPS) will provide technical assistance to the Massachusetts Port Authority's (Massport's) Department of Economic Planning and Development, which will support Massport in its desire to examine and improve ground-access options.

Approach

Activities may include support for Logan International Airport ground-access planning, ground-access model development, and related data collection and analysis; analysis related to Logan Airport; air-quality analysis; and support for additional to-be-determined transportation-planning activities. This work may be redirected or modified in response to emerging issues.

FFY 2017 Anticipated Outcomes

This contract will include multiple individual projects or tasks, and specific work activities and products will be determined by Massport.



CHAPTER 8

Administration, Resource Management, and Support Activities

8.1 INTRODUCTION

In addition to the certification requirements described in Chapter 5, Metropolitan Planning Organization (MPO) staff conducts various ongoing administrative, data resource, and other support activities on an annual basis in order to maintain the critical functions of the MPO.

The activities described in this chapter are all funded with federal 3C planning funds and fall into the following categories:

- **Activities that support the ongoing functioning of the MPO:** These include ongoing work to provide materials in accessible formats and provide computer resource management, among other activities.
- **Activities that provide assistance to the MPO and its subcommittees:** These include ongoing work involved in supporting the Access Advisory Committee and MPO agenda setting, as well as coordination and participation in statewide and regional planning committees.
- **Activities that provide data resources support to municipalities in the region:** These include work conducted through the ongoing roadway safety audit, traffic data support, and transit data support tasks.

Each activity in this chapter includes a description of the purpose of the work, a general description of how the work is accomplished, and a summary of the anticipated FFY 2017 work products. The budget tables at the beginning of each project description describe the salary and overhead costs associated with these projects. Any direct costs associated with the projects are included in the Direct Support budget table in this chapter.

Table 8-1 summarizes the funding assigned to each of the activities in this chapter that were also in the previous FFY, a summary of the work products and/or progress made in the previous FFY, the funding proposed for each activity in the coming FFY, and the anticipated work products and/or progress in the coming FFY.

Although many of the activities in this chapter generally comprise the same type of tasks from year to year, often there are variations in budgets that reflect greater or lesser emphasis in certain efforts. For example, MPO staff may undertake new or additional data collection and/or analysis under specific line items; the tasks undertaken as part of one line item in one year may be folded into an ongoing activity in a subsequent year; or, there simply may be fluctuations in staffing levels. Where appropriate, these differences are explained in the table.

Table 8-1: FFY 2016/FFY 2017 Ongoing Administration, Resource Management, and Support Activities

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
CTPS Activities									
Computer Resources Management	Varies by Task	\$478,300	\$334,810	\$143,490	Provided maintenance and enhancements to CTPS's desktop and server computer systems; computer network back-up system; and peripheral devices, such as printers, plotters, and mass storage devices.	\$328,524	\$134,186	\$462,710	Tasks and work products generally remain the same from year to year. Changes in staff from FFY 2016 to FFY 2017 led to a reduction in the overall budget for these tasks.
Data Resources Management	Varies by Task	\$323,300	\$226,310	\$96,990	Provided maintenance and enhanced CTPS's database of standard reference GIS layers and GIS layers required to carry out particular projects. Updated databases with new versions of standard reference GIS layers released by MassGIS, the MassDOT Office of Transportation Planning, and other agencies. Created GIS maps, computer map files, tables of socioeconomic and travel-related data, and databases. Analyzed data.	\$206,241	\$84,239	\$290,480	Tasks and work products generally remain the same from year to year.
Access Advisory Committee Support	90024	\$85,900	\$60,130	\$25,770	Support AACT meetings, AACT Chair, and AACT Executive Board of Directors; distribute monthly reports on system-wide accessibility, MBTA The Ride service, and other materials; provide guidance on the AACT Memorandum of Understanding, AACT bylaws, and disability issues in general; coordinate AACT elections and other committee activities; support AACT membership; maintain AACT databases; coordinate briefings on MPO activities; produce meeting materials in accessible formats; coordinate forums on transit accessibility; and update AACT brochure.	\$-	\$89,130	\$89,130	Tasks and work products generally remain the same from year to year.
Provision of Materials in Accessible Formats	90028	\$68,400	\$47,880	\$20,520	Support the MPO and CTPS in the production of accessible materials in PDF and HTML formats for posting on the Boston MPO website, including meeting minutes, work scopes, memoranda, reports, and other public materials. Review accessibility requirements, current CTPS standards and processes, and work on implementing standards within memoranda and report templates.	\$61,564	\$25,146	\$86,710	Tasks and work products generally remain the same from year to year; however, the level of effort varies based on the specific work products and reports that the MPO produces each year that need to be made accessible.
Regional Model Enhancement	11244	\$740,400	\$518,280	\$222,120	Update regional model databases and computer programs that implement modeling procedures.	\$533,040	\$217,720	\$750,760	Continuation of model update activities and furtherance of advanced practice techniques.
Roadway Safety Audits	11150	\$13,800	\$9,660	\$4,140	Continue providing support to MassDOT for safety audits conducted in the Boston Region MPO.	\$14,520	\$-	\$14,520	Tasks and work products generally remain the same from year to year.

(Table 8-1 cont.)

Name	ID	FFY 2016 Total Funding	FFY 2016 FHWA PL Funds	FFY 2016 FTA Section 5303 Funds	FFY 2016 Work Progress and Products	FFY 2017 FHWA PL Funds	FFY 2017 FTA Section 5303 Funds	FFY 2017 Total Funding	FFY 2017 Planned Work Progress and Products
Traffic Data Support	90080	\$7,900	\$5,530	\$2,370	Continue to respond to data request needs.	\$5,964	\$2,436	\$8,400	Continue to respond to data request needs.
Transit Data Support	90040	\$10,800	\$7,560	\$3,240	Continue to respond to data request needs.	\$-	\$11,120	\$11,120	Continue to respond to data request needs.
UPWP Study Recommendation Tracking Database	20902	\$-	\$-	\$-	This activity is new in FFY 2017.	\$14,200	\$5,800	\$20,000	Develop approach for creating and maintaining the UPWP Study Recommendation Tracking Database. Start to produce initial reports for the MPO detailing the status and effectiveness of UPWP planning studies and tracking the recommendations from completed studies.
MAPC Activities									
MPO/MAPC Liaison and Support Activities	MAPC1	\$157,000	\$109,900.0	\$47,100	Interagency coordination, development of work scopes and agendas, and participation in advisory and corridor committees. Assistance to the MPO for MPO elections and support on public participation, TIP project evaluations, and attendance at relevant meetings.	\$109,900	\$47,100	\$157,000	Tasks and work products generally remain the same from year to year.
Unified Planning Work Program Support	MAPC3	\$10,000	\$7,000.0	\$3,000	Support in the UPWP development process and attendance at relevant meetings.	\$7,000	\$3,000	\$10,000	Tasks and work products generally remain the same from year to year.
Subregional Support Activities	MAPC2	\$157,000	\$109,900.0	\$47,100	Coordination and support of subregional groups including preparation of agendas, coordination with transportation agencies, review of transportation studies in subregions, and assistance in setting subregional transportation priorities.	\$130,900	\$56,100	\$187,000	Tasks and work products generally remain the same from year to year.
Land Use Data to Support Transportation Modeling	MAPC10	\$80,000	\$56,000.0	\$24,000	Continued work in support of the operational land use allocation model including data development and analysis, documentation, and mapping products to support advanced transportation modeling.	\$54,216	\$23,235	\$77,451	Continue work in support of the operational land use model.
TOTAL		\$2,132,800	\$1,492,960	\$639,840		\$1,466,069	\$699,212	\$2,165,281	

AACT = Access Advisory Committee to the MBTA. CTPS = Central Transportation Planning Staff. FFY = federal fiscal year. FHWA = Federal Highway Administration. FTA = Federal Transit Administration. GIS = Geographic Information System. MAPC = Metropolitan Area Planning Council. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority. MPO = Metropolitan Planning Organization. PL = FHWA transportation planning funds. TIP = Transportation Improvement Program. UPWP = Unified Planning Work Program.

8.2 CTPS ACTIVITIES

This section provides details on the administration, resource management, and support activities undertaken by CTPS every FFY.

COMPUTER RESOURCE MANAGEMENT

Project ID Number	See Individual Tasks Below
FHWA 3C PL Funds	\$328,524
FTA Section 5303 Funds	\$134,186
FFY 2017 Total Budget	\$462,710

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

Purpose

In order to carry out its functions, the MPO staff (the Central Transportation Planning Staff [CTPS]), maintains state-of-the-practice computer resources.

Approach

The following subtasks are undertaken as part of computer resource management:

60405 System Administration and Computer Room Management

Manage and maintain hardware and software for all CTPS computer systems to ensure that staff has maximum access to the computing resources required for its work, including an intranet site. Increased emphasis will be given to the security and integrity of all hardware, software, and data resources. Plan, monitor, and maintain CTPS's server room and computing facilities.

60406 Boston Region MPO Website

Develop and maintain a website that provides information regarding the MPO's activities and reports, studies produced by MPO staff, a data catalogue, and several interactive mapping applications. Continue to improve the site's design, information provided, and accessibility of this communication tool to those who are visually impaired. The website plays a critical role in the MPO's public-participation program by

providing information and eliciting public comment. All announcements for MPO and Regional Transportation Advisory Council meetings and committee meetings, as well as their related materials, are posted on the website.

60430 Software Development

Develop computer software to support CTPS's analytical, administrative, and documentation requirements. Maintain and enhance software developed by CTPS and/or others when program maintenance is no longer available from the original vendor.

60465 Staff Assistance and Training

Assist staff in using computer resources; organize and distribute vendor-supplied documentation, and, where appropriate, provide written and online user guides for particular resources.

60470 Liaison with Other Agencies

Work with other public agencies, including the Metropolitan Area Planning Council (MAPC) and the Commonwealth's Office of Geographic Information (MassGIS), to encourage sharing of computer and data resources and techniques.

60475 Computing Resource Purchasing and Maintenance

Purchase and maintain CTPS's computing resources. These include in-house assets such as servers, desktop and laptop computers, tablet and handheld computers, mass-storage devices, networking and communications hardware, printers and plotters, system and application software, and consumable supplies. These also include out-of-house resources, such as software purchased as a service, cloud-based storage, and other cloud-based computing resources.

60492 Computer Resource Planning

Update the CTPS Five-Year Plan for Computer Resource Development in conjunction with developing the next CTPS budget.

FFY 2017 Anticipated Outcomes

Work on these tasks will continue as described above.

DATA RESOURCES MANAGEMENT

Project ID Number	See Individual Tasks Below
FHWA 3C PL Funds	\$206,241
FTA Section 5303 Funds	\$84,239
FFY 2017 Total Budget	\$290,480

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

Purpose

The Central Transportation Planning Staff (CTPS) provides travel data and analyses at regional, corridor, and site-specific levels to support transportation planning and decision-making.

Approach

The categories below comprise the variety of tasks encompassed by this work:

60130 Socioeconomic Data

CTPS's database of statistics from the US Census Bureau's decennial census and American Community Survey, and products derived from these sources, will be maintained and kept current.

60201, 60202 Response to Data Requests

Data will be processed or analyzed upon request to meet the needs of local, state, and federal agencies, as well as private institutions and firms. The 60201 project number is used for data requests handled by CTPS's Information Technology and Systems (IT&S) group; the 60202 number is used for data requests handled by all other groups.

60600 Geographic Information System/Database Management System (GIS/DBMS)

CTPS will continue to develop and enhance its GIS database. CTPS will coordinate data development and distribution with the Massachusetts Department of Transportation (MassDOT) and MassGIS in order to prevent duplication of effort, ensure data quality, and reduce costs. CTPS's GIS database will be made available to staff through ArcSDE, ArcMap layer files, Web services, and Web applications.

FFY 2017 Anticipated Outcomes

Databases of standard reference GIS data, socioeconomic data, Registry of Motor Vehicles (RMV) data, and travel data; GIS processing tools; tabular and spatial data analyses; Web service and Web applications; responses to data requests.

DIRECT SUPPORT

Project ID Number	90000
FHWA 3C PL Funds	\$155,000
FTA Section 5303 Funds	\$71,500
SPR Funds	\$12,500
MassDOT Section 5303 Funds	\$6,000
MBTA Funds	\$20,230
Massport Funds	\$250
FFY 2017 Total Budget	\$39,480

Note: FTA and FHWA funds include the MassDOT local match.
SPR = State Planning and Research Contract with MassDOT.

Purpose

Through this activity, the Central Transportation Planning Staff (CTPS) provides integral direct support for all CTPS projects and functions.

Approach

Computer Equipment

CTPS computer needs are programmed in the CTPS Five Year Plan for Computer Resource Development, as amended.

Consultants

Consultants are hired periodically to perform specialized, time-specific tasks as project work demands.

Printing

Project-specific printing costs, such as those for surveys, maps, reports, presentation boards, and other informational materials, are included in this budget.

Travel

Periodically, the US Department of Transportation and other organizations sponsor courses and seminars that enhance staff's ability to do project work; the costs of registration, travel, and lodging associated with attending such programs are direct-support expenditures. Mileage, tolls, and parking expenses associated with project work also are charged as direct-support expenditures. Additional project work, such as high-occupancy-vehicle (HOV) lane monitoring, is funded through this budget to cover rental vehicles and fuel costs.

Other

Various other expenditures may become necessary during the term of this Unified Planning Work Program (UPWP). Costs associated with postage for return mail, services for preparing and processing data for specific projects, and translations of MPO materials into other languages are direct-support expenditures. Other nonrecurring costs, such as software for specific project work, video-camera equipment for license-plate surveys, or traffic-counting equipment, also may be funded through this line item.

FFY 2017 Anticipated Outcomes

Direct costs include computer and general office equipment, professional consulting services, in-state project-related travel, out-of-state travel associated with staff attendance at professional and training conferences, and other costs deemed appropriate.

ACCESS ADVISORY COMMITTEE SUPPORT

Project ID Number	90024
FHWA 3C PL Funds	\$-
FTA Section 5303 Funds	\$89,130
FFY 2017 Total Budget	\$89,130

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

Purpose

MPO staff supports the Massachusetts Bay Transportation Authority (MBTA) in meeting Americans with Disabilities Act of 1990 (ADA) requirements by providing ongoing support to the Access Advisory Committee to the MBTA (AACT), a user group representing people with disabilities. AACT advises the MBTA on all accessibility matters relating to the use of the MBTA's systemwide fixed-route services and THE RIDE paratransit service for people with disabilities. It also ensures that users' ideas concerning accessible transportation are heard.

Approach

AACT is a member of the MPO's Regional Transportation Advisory Council, and MPO staff solicits input from AACT regarding the transportation-planning process. Staff provides a variety of support services (detailed below).

FFY 2017 Anticipated Outcomes

- Support regularly scheduled AACT Membership, AACT Executive Board, and other related meetings at which attendees advise and comment on projects being planned or implemented throughout the system for fixed route services, commuter rail, rapid transit, surface transit, and paratransit service
- Distribute monthly reports on system-wide accessibility, THE RIDE's service statistics, and other materials pertinent to AACT meeting agenda items
- Support the AACT Chairperson by attending special consultations and other meetings
- Support the activities of the AACT Executive Board of Directors
- Maintain awareness of and provide guidance on the AACT Memorandum of Understanding, AACT bylaws, and disability issues in general

- Coordinate AACT elections and other committee activities, as needed
- Prepare and distribute AACT meeting agendas and minutes, meeting announcements, correspondence, meeting calendars to post in THE RIDE vans, and updated AACT informational materials
- Produce and distribute orientation packets for new AACT members
- Track follow-up for members' requests for information
- Maintain AACT databases for mailings, attendance log, membership standing, AACT archives, supplies, and accessible-formatting equipment
- Coordinate briefings on MPO activities
- Produce meeting materials in accessible formats for AACT members and members of the public upon request
- Coordinate forums on transit accessibility
- Update the AACT brochure

PROVISION OF MATERIALS IN ACCESSIBLE FORMATS

Project ID Number	90028
FHWA 3C PL Funds	\$61,564
FTA Section 5303 Funds	\$25,146
FFY 2017 Total Budget	\$86,710

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

Purpose

The purpose of this program is to comply with the Americans with Disabilities Act of 1990 (ADA), Section 508 of the Rehabilitation Act as amended in 1998, and other policies and regulations governing accessibility standards. When the MPO ensures compliance with these policies and regulations, public outreach and engagement is enhanced because more stakeholders in the region can access our informational materials and reports.

Approach

As mentioned above, the MPO conducts its transportation-planning activities and public outreach process in accordance with the ADA, Section 508 of the Rehabilitation Act as amended in 1998, and other policies and regulations governing accessibility standards. In support of these standards, the MPO produces written and electronic materials in accessible formats. In addition to producing these materials, the MPO will continue to maintain a library of templates that incorporate accessibility guidelines and standards.

FFY 2017 Anticipated Outcomes

- Production of materials in accessible formats for public meetings and website postings, as requested
- Ongoing maintenance of accessible document templates
- Development of accessibility guidelines and standards for MPO products

REGIONAL MODEL ENHANCEMENT

Project ID Number	11244
FHWA 3C PL Funds	\$533,040
FTA Section 5303 Funds	\$217,720
FFY 2017 Total Budget	\$750,760

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

Purpose

Through this work program, the Central Transportation Planning Staff (CTPS) builds and maintains a state-of-the-practice regional travel-demand model to help assess the area's transportation needs and evaluate alternatives to improve the transportation system. The model is principally a simulation of travel behavior that emulates the millions of travel-behavior decisions that ultimately produce more than 16 million daily person-trips across the 164 municipalities in the modeled area. Metrics produced by the model are designed to aid in both policy planning and technical analysis, as well as in meeting federal reporting requirements. The model is also used by MPO member transportation agencies because it is an extremely robust tool that incorporates data from all the region's transportation agencies (public transportation) and transportation service providers (private transportation) that are within the Boston Region MPO area.

Approach

During federal fiscal year (FFY) 2015, CTPS and the Metropolitan Area Planning Council (MAPC) jointly developed a Cube Land software model implementation that covers all 101 communities in the MPO region, as well as 63 additional border communities. Cube Land is a land-use allocation model that allows users to project future land use patterns. MPO staff will use Cube Land to forecast land use allocation.

Also in FFY 2015, CTPS (under contract to the Massachusetts Department of Transportation [MassDOT]) refreshed the statewide travel model. This refresh included better linkage between the MPO's model and the statewide model.

The MPO's regional modeling software was converted to TransCAD version 7 in FFY 2015. This new version has improved analysis capabilities that will benefit CTPS. These capabilities include better methods for computing accessibility indexes, improved dynamic traffic assignments, the inclusion of traffic signal delays in the path-building and highway assignments, and improved transit assignments and transit capacity analysis.

FFY 2017 Anticipated Outcomes

MPO staff plan to pursue the following activities associated with the Boston Region MPO's travel demand model, the Cube Land land-use allocation model, and the statewide model:

- Continue to use the 2011 Massachusetts Travel Survey, the most recent Massachusetts Bay Transportation Authority (MBTA) user surveys, the most recent traffic counts, and the latest MBTA counts to maintain, update, and calibrate the model set.
- Continue to refine the in-house scenario-management program within the regional modeling software, TransCAD, which will make it easier for MPO staff to evaluate multiple scenarios.
- Use the linkage between the statewide and CTPS model sets to improve the CTPS model with a better way to estimate external-external travel through the region. This linkage will also allow for improvements in the forecasting of external transit usage (basically, commuter rail trips that begin outside of the MPO's 101 communities, but end within the 101 communities, or more specifically, downtown Boston).
- Use the statewide model linkage to enhance the CTPS model by improving the ability to predict and analyze traffic flow with bordering planning agencies, including the Central Massachusetts Regional Planning Commission and the Southeast Regional Planning and Economic Development District.
- Work toward the development of an activity-based model (ABM). TransCAD version 7 has several new capabilities for ABM development, including a population synthesizer tool and the ability to create trip tables from survey-based activity logs.
- Work toward the development of a parking choice model for the Boston core.
- Develop adequate model documentation.
- Provide technical support and training to model users.
- Build better linkage between the regional model set and the Environmental Protection Agency's (EPA's) Motor Vehicle Emissions Simulator (MOVES) software, which calculates vehicle emissions.
- Continue to test dynamic traffic assignment methods for use in the MPO model set. Current practice suggests that dynamic traffic assignment (DTA) helps planners understand traffic flows at a finer temporal and spatial resolution than other assignment methods.

The activities listed above support projects in this Unified Planning Work Program (UPWP) that rely on the regional model for travel forecasting and analysis, particularly analysis that supports the Long-Range Transportation Plan (LRTP) and the Transportation Improvement Program (TIP).

Additional regional model enhancement activities may include the following:

- Continue to improve the linkage between the regional travel demand model set and Cube Land, and examine the potential for using Cube Land for project level land use forecasting. MPO staff will coordinate with MAPC and consult with peers and colleagues—including those in other regions—to learn more about best practices and lessons learned based on their experiences with alternative modeling approaches.
- The Logan International Airport ground access model has been recently updated for the Massachusetts Port Authority (Massport). This revised model will be integrated into the regional model set.
- The truck model is in need of an update. During the current work program, methods for updating the model will be examined. The update will likely be a two-step process. Step one will be to use the matrix estimation process and a set of new vehicle classification counts to update the truck trip tables. Step two will be a more comprehensive examination of the truck trip generation and distribution process.
- Continue to work on the park-and-ride station choice model.

TRANSIT DATA SUPPORT: FFY 2017

Project ID Number	90040
FHWA 3C PL Funds	\$-
FTA Section 5303 Funds	\$11,120
FFY 2017 Total Budget	\$11,120

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

Purpose

The purpose of this program is to provide transit data and small-scale analyses of available data to interested parties, upon request.

Approach

By performing various planning studies for the Massachusetts Bay Transportation Authority (MBTA) and other entities, the Central Transportation Planning Staff (CTPS) has accumulated a large amount of transit ridership, revenue, and service data. This program allows CTPS to provide this data to interested parties throughout the federal fiscal year.

FFY 2017 Anticipated Outcomes

CTPS will respond to requests for data and small-scale studies from agencies, municipalities, members of the public, academic institutions, and other interested parties.

TRAFFIC DATA SUPPORT: FFY 2017

Project ID Number	90080
FHWA 3C PL Funds	\$5,964
FTA Section 5303 Funds	\$2,436
FFY 2017 Total Budget	\$8,400

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

Purpose

The purpose of this program is to perform various quick-response data gathering or data analysis tasks for public and private institutions throughout the federal fiscal year.

Approach

In the vast majority of requests for transportation planning and traffic engineering analysis, the amount of effort is significant; therefore, a specific scope of work is developed for these projects. Occasionally, public and private institutions and their consultants ask the Central Transportation Planning Staff (CTPS) to perform various quick-response analyses or to provide data. Accounting for these requests, which are expected to require less than two person-days each, is done under this general project description.

FFY 2017 Anticipated Outcomes

Work products will depend on the tasks requested by the MPO agencies, the general public, consultants, or other parties.

ROADWAY SAFETY AUDITS

Project ID Number	11150
FHWA 3C PL Funds	\$14,520
FTA Section 5303 Funds	\$-
FFY 2017 Total Budget	\$14,520

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

Purpose

This program supports Central Transportation Planning Staff (CTPS) participation in Roadway Safety Audits (RSAs).

Approach

An RSA, as defined by the Federal Highway Administration (FHWA), is a formal safety performance examination of an existing or future road or intersection by an independent audit team. The Massachusetts Department of Transportation (MassDOT) guidelines require an RSA to be conducted where Highway Safety Improvement Program (HSIP)-eligible crash clusters are present. The RSA examines the location to develop both short- and long-term recommendations to improve safety for vehicles, pedestrians, and bicyclists. These recommendations help communities identify safety improvements that can be implemented in the short-term, and determine if more substantial improvements also are needed as part of a larger, long-term improvement process.

Audit teams include MassDOT headquarters and district office staff, MassDOT consultants, and CTPS personnel, as requested. In the RSA process, the audit team: 1) reviews available crash data; 2) meets and communicates with local officials, planners, engineers, and other stakeholders; 3) visits the site to observe traffic operations and identify safety issues; and 4) develops and documents recommendations.

FFY 2017 Anticipated Outcomes

The anticipated outcome is participation in audit teams as requested by the MassDOT.

UPWP STUDY RECOMMENDATION TRACKING DATABASE

Project ID Number	20902
FHWA 3C PL Funds	\$14,200
FTA Section 5303 Funds	\$5,800
FFY 2017 Total Budget	\$20,000

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

Purpose

Annually track status of recommendations advanced through Unified Planning Work Program (UPWP) studies

Approach

Each year, the Central Transportation Planning Staff (CTPS) (staff to the Boston Region Metropolitan Planning Organization [MPO]) conducts planning studies that are programmed for funding through the UPWP. These studies address roadway, transit, pedestrian, and bicycle needs throughout the Boston Region MPO area. Ideas for the studies come from numerous sources, including:

- Public outreach
- Outreach to Metropolitan Area Planning Council subregions
- Meetings with the Regional Transportation Advisory Council (Advisory Council)
- Meetings with the UPWP Committee
- Meetings with the MPO
- Needs identified in the Long-Range Transportation Plan
- Needs that CTPS identifies throughout the region

CTPS performs these studies to further the goals and objectives of the MPO, which include increasing roadway safety, increasing the quality and quantity of pedestrian and bicycle infrastructure, increasing transit mode share, reducing congestion, and modernizing roadways to accommodate all users. Through these studies, MPO staff recommend short-, medium-, and long-term improvements.

Historically, the MPO board has requested updates on the status of these planning studies to determine their effectiveness—for example, to see if the Massachusetts Department of Transportation (MassDOT) and the municipalities are implementing recommendations from the studies or advancing them via projects that would lead to implementation.

Tracking recommendations from completed studies to identify their status in the MassDOT project development process would require resources to reference the MassDOT Highway Division project information database, to call municipalities to obtain project information, and to use Google Maps and/or site visits to identify recent improvements.

FFY 2017 Anticipated Outcome

We propose creating a database of previous UPWP planning studies that would house details of project contacts, proposed improvements, implementation status, milestones, funding, and issues affecting implementation progress. MPO staff would use the database to produce reports for the MPO board detailing topics such as the percentage of planning studies that have advanced to the MassDOT project information system or are in preliminary design. By updating the database every year, CTPS will have a timely and efficient way to inform the MPO about the status of recommendations from its planning studies.

8.3 MAPC ACTIVITIES

This section provides details on the administration, resource management, and support activities undertaken by MAPC every FFY.

MPO/MAPC LIAISON AND SUPPORT ACTIVITIES

Project ID Number	MAPC1
FHWA 3C PL Funds	\$109,000
FTA Section 5303 Funds	\$48,000
FFY 2017 Total Budget	\$157,000

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

Purpose

This project includes working with MPO members and staff to establish work priorities and meeting agendas. It also includes reporting to the Metropolitan Area Planning Council (MAPC) Executive Committee, MAPC Council members, MAPC subregions, and MAPC staff on MPO activities to ensure strong coordination of land use and transportation planning across the region.

Approach

Statewide and Regional Planning Committees

MAPC actively participates in statewide and regional planning committees and task forces to represent the interests of the region, with a particular focus on the critical links between land use and transportation. These committees include the Massachusetts Association of Regional Planning Agencies (MARPA) and Regional

Coordination Councils, as well as various Massachusetts Department of Transportation (MassDOT), Massachusetts Bay Transportation Authority (MBTA), or municipally led transportation planning groups, such as Go Boston 2030. MAPC will also be actively involved in regional transportation plans and programs related to land use and transportation. Advisory committees may change from year to year as studies are begun or completed, but participating in various advisory committees is an ongoing task.

Support of the Public Participation Process for Metropolitan Planning Documents

MAPC provides education and outreach on a wide variety of transportation-related and land-use-related topics in the region, with emphasis on outreach through the subregions to municipal officials. MAPC also supports the Central Transportation Planning Staff (CTPS) in its outreach to environmental justice and senior populations and to people with disabilities.

MPO Elections

Working with the MBTA Advisory Board, MAPC will coordinate and implement annual elections for municipal representatives in the MPO.

Transportation Improvement Program (TIP) Evaluation and Criteria

MAPC will advise CTPS about the land-use and economic-development aspects of the TIP evaluations. MAPC will provide updated TIP criteria and help to implement the comprehensive regional growth plan, MetroFuture. MAPC will research TIP projects and work with municipalities to advance TIP projects.

MPO Agenda Setting and Coordination

MAPC will work with CTPS and MassDOT to develop MPO meeting agendas and presentations.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include interagency coordination; work scopes and agendas; participation in advisory and corridor committees; public participation and outreach; reports to the MAPC Executive Committee, MAPC Council members, MAPC subregions, and MAPC staff; MPO elections; TIP criteria update and project evaluations; and attendance at relevant meetings.

UNIFIED PLANNING WORK PROGRAM SUPPORT (MAPC)

Project ID Number	MAPC3
FHWA 3C PL Funds	\$7,000
FTA Section 5303 Funds	\$3,000
FFY 2017 Total Budget	\$10,000

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) management and oversight of UPWP-funded planning studies, projects, and programs, which includes preparing updates and budget information in monthly reports to the Massachusetts Department of Transportation (MassDOT).

Approach

MAPC assists with the annual development of the UPWP and supports, in coordination with MassDOT and the Central Transportation Planning Staff (CTPS), the development of UPWP project ideas and specific work scopes. Through community liaison and subregional support activities, MAPC staff also helps communities identify and develop studies to be included in the UPWP.

FFY 2017 Anticipated Outcomes

MAPC staff will prepare UPWP project listings and monthly reports on UPWP activities. MAPC will provide assistance with the annual development of the UPWP and support for the development of specific project proposals and work scopes. Staff will also provide assistance to communities in identifying and developing studies to be included in the UPWP through community liaison and subregional support activities.

LAND USE DATA FOR TRANSPORTATION MODELING (MAPC)

Project ID Number	MAPC10
FHWA 3C PL Funds	\$51,051
FTA Section 5303 Funds	\$26,400
FFY 2017 Total Budget	\$77,451

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

Purpose

This program allows the Metropolitan Area Planning Council (MAPC) to support the MPO’s planning and decision-making by helping the Central Transportation Planning Staff (CTPS) develop and implement the land-use allocation model and to conduct analysis supporting transportation modeling and project evaluation.

Approach

Land-Use Allocation Model Development: MAPC will continue to participate in integrating a land-use allocation model with the regional transportation demand model, working closely with CTPS and the Massachusetts Department of Transportation (MassDOT).

Development Database: MAPC will continue to monitor development projects that are being planned across the region and update and/or add to the development database as necessary.

Population, Household, and Employment Projections: MAPC will continue development of an updated set of regional socioeconomic projections based on updated information about migration patterns, household formation, economic activity, and development patterns, with the intention of releasing a new set of regional forecasts in calendar year 2017.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include an improved land-use allocation model, updated population and household projections, data development and analysis, documentation, and mapping products to support advanced transportation modeling.

SUBREGIONAL SUPPORT ACTIVITIES (MAPC)

Project ID Number	MAPC2
FHWA 3C PL Funds	\$139,000
FTA Section 5303 Funds	\$48,000
FFY 2017 Total Budget	\$187,000

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

Purpose

The Metropolitan Area Planning Council (MAPC) region consists of 101 cities and towns. The region is subdivided into eight geographic areas that are represented by subregional councils comprising municipal officials, business leaders, community based organizations, and other local participants. MAPC staff planners are assigned as coordinators to each of the subregional groups to assist members in developing an understanding of subregional and regional transportation and land-use issues.

Approach

Subregions are encouraged to recommend subregional projects and priorities for the Transportation Improvement Program (TIP), the Long-Range Transportation Plan (LRTP), and the Unified Planning Work Program (UPWP). Subregional coordinators and MAPC transportation staff report back to the MPO through formal and informal communications. MAPC subregional groups will continue to participate in local corridor advisory committees whenever these committees are appropriate vehicles for working on projects in their areas. The subregions will continue to advance Priority Development Area and Priority Preservation Area planning and mapping activities.

MAPC staff ensures timely discussions of transportation-related issues by placing the topics on meeting agendas, by leading and participating in the discussions, and by distributing appropriate documents and notices relating to region-wide and statewide transportation meetings.

FFY 2017 Anticipated Outcomes

Anticipated outcomes include preparation of monthly meeting agendas for transportation topics at subregional meetings, coordination with transportation agencies, reviews of transportation studies in subregions, support for subregional and corridor advisory committee meetings, and assistance in setting subregional transportation priorities. This project supports community involvement in the development of transportation-planning documents.



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CHAPTER 9

Boston Region MPO Budget and Operating Summaries

This chapter contains overall budget information by recipient agency and funding source for the projects listed in Chapters 5 through 8. The information is presented according to the same Unified Planning Work Program (UPWP) categories used in those chapters.

UPWP Work Areas	Total Budget
Certification Requirements	\$1,510,241
MPO Planning Studies and Technical Analyses	\$1,317,464
Agency and Other Client Planning Studies	\$2,545,940
Administration, Resource Management, and Support Activities	\$2,400,761
Total	\$7,774,406



The funding for the projects listed in Chapters 5 through 8 comes from the following sources, which are described in Chapter 1:

Funding Source	Total Funds
FHWA 3C Planning (PL)/MassDOT Local Match	\$3,546,660
MPO FTA 3C Planning (Section 5303)/MassDOT Local Match	\$1,311,200
MassDOT FTA 3C Planning (Section 5303)/MassDOT Local Match	\$270,167
MAPC FTA 3C Planning (Section 5303)/MassDOT Local Match	\$331,629
FHWA Statewide Planning and Research (SPR)/MassDOT Local Match	\$572,000
MassDOT	\$642,900
MBTA	\$1,046,700
Other	\$53,150
Total	\$7,774,406

On the following pages, the funding information presented in the preceding chapters is summarized in 11 tables: one for each UPWP category of work conducted by the Central Transportation Planning Staff (CTPS), one for each UPWP category of work conducted by the Metropolitan Area Planning Council (MAPC), and two summary tables. These tables are followed by another table that shows the federally designated elements and tasks for projects utilizing Section 5303 funding. The purpose of these summaries is to assist federal and state contract administrators in reviewing each work program in detail.

Table 9-1: FFY 2017 Unified Planning Work Program Budget—Administration, Resource Management, and Support Activities

The budget tables reflect continuing, comprehensive, and cooperative (3C) transportation planning funds, consisting of Federal Highway Administration (FHWA) metropolitan planning (PL) funds and Federal Transit Administration (FTA) Section 5303 funds that the Central Transportation Planning Staff (CTPS) and the Metropolitan Area Planning Council (MAPC) expect to receive for federal fiscal year (FFY) 2017. CTPS has received its estimated FFY 2017 FHWA PL allocation of \$2,872,797. MAPC's FFY 2017 FHWA PL allocation is \$673,866. CTPS has received its estimated amount of FFY 2017 FTA Section 5303 allocation of \$1,291,141. MAPC's FFY 2017 FTA Section 5303 allocation is \$331,629. All of these federal allocations include a state match. This budget also reflects projects funded with State Planning and Research (SPR), FTA Section 5303, and other funds from the Massachusetts Department of Transportation (MassDOT); projects funded with Massachusetts Bay Transportation Authority (MBTA) funds; and projects funded from other sources.

Project status and financial data on this sheet are subject to change.

Project ID	Name	FFY 2016 CTPS UPWP Budget	Expected Project Status as of 10/1/2016	FFY 2017 CTPS PL Funds	FFY 2017 CTPS Section 5303 Funds	FFY 2017 CTPS Budget
60405	System Administration and Computer Room Management	\$151,400	Ongoing	\$87,018	\$35,542	\$122,560
60406	MPO Website	\$92,700	Ongoing	\$67,748	\$27,672	\$95,420
60430	Software Development	\$3,500	Ongoing	\$13,497	\$5,513	\$19,010
60465	Staff Assistance and Training	\$30,900	Ongoing	\$17,700	\$7,230	\$24,930
60470	Liaison with Other Agencies	\$5,200	Ongoing	\$3,799	\$1,552	\$5,350
60475	Computing Resource Purchasing and Maintenance	\$173,700	Ongoing	\$107,885	\$44,066	\$151,950
60492	Computer Resource Planning	\$20,900	Ongoing	\$30,878	\$12,612	\$43,490
Computer Resource Management Subtotal		\$478,300		\$328,524	\$134,186	\$462,710
60130	Socioeconomic Data	\$23,300	Ongoing	\$27,065	\$11,055	\$38,120
60201	Response to Data Requests (ITS Group)	\$10,000	Ongoing	\$16,550	\$6,760	\$23,310
60202	Response to Data Requests (Other Groups)	\$10,000	Ongoing	\$10,899	\$4,452	\$15,350
60600	GIS/DBMS	\$280,000	Ongoing	\$151,727	\$61,973	\$213,700
Data Resources Management Subtotal		\$323,300		\$206,241	\$84,239	\$290,480
90024	Access Advisory Committee Support	\$85,900	Ongoing	\$-	\$89,130	\$89,130
90028	Provision of Materials in Accessible Formats	\$68,400	Ongoing	\$61,564	\$25,146	\$86,710

(Table 9-1 cont.)

Project ID	Name	FFY 2016 CTPS UPWP Budget	Expected Project Status as of 10/1/2016	FFY 2017 CTPS PL Funds	FFY 2017 CTPS Section 5303 Funds	FFY 2017 CTPS Budget
11244	Regional Model Enhancement	\$740,400	Ongoing	\$533,040	\$217,720	\$750,760
11150	Roadway Safety Audits	\$13,800	Ongoing	\$14,520	\$-	\$14,520
90080	Traffic Data Support: FFY 2017	\$7,900	Ongoing	\$5,964	\$2,436	\$8,400
90040	Transit Data Support: FFY 2017	\$10,800	Ongoing	\$-	\$11,120	\$11,120
90000	Direct Support	\$72,500	Ongoing	\$155,000	\$71,500	\$226,500
Other Administration Subtotal		\$999,700		\$770,088	\$417,052	\$1,187,140
Administration, Resource Management, and Support Activities Subtotal		\$1,801,300		\$1,304,853	\$635,477	\$1,940,330

DBMS = Database Management System. GIS = Geographic Information System. ITS = Intelligent Transportation Systems. MPO = Metropolitan Planning Organization. UPWP = Unified Planning Work Program

Table 9-2: FFY 2017 Unified Planning Work Program Budget—Certification Requirements

Project ID	Name	FFY 2016 CTPS UPWP Budget	Expected Project Status as of 10/1/2016	FFY 2017 CTPS PL Funds	FFY 2017 CTPS Section 5303 Funds	FFY 2017 CTPS Budget
90011	Support to the MPO and its Committees	\$262,300	Ongoing	\$183,088	\$74,782	\$257,870
90021	Regional Transportation Advisory Council Support	\$74,800	Ongoing	\$66,009	\$26,961	\$92,970
90025	TRANSREPORT	\$31,400	Ongoing	\$24,772	\$10,118	\$34,890
90026	Public Participation Process	\$96,300	Ongoing	\$98,321	\$40,159	\$138,480
90090	General Graphics	\$90,600	Ongoing	\$60,932	\$24,888	\$85,820
90019	Subregional Outreach	\$4,800	No longer a separate task in FFY 2017	\$-	\$-	\$-
90014	Planning Topics	\$3,200	No longer a separate task in FFY 2017	\$-	\$-	\$-
90012	Professional Development	\$15,000	No longer a separate task in FFY 2017	\$-	\$-	\$-
3C Planning and MPO Support Subtotal		\$578,400		\$433,121	\$176,909	\$610,030
10101	Long-Range Transportation Plan	\$318,200	Ongoing	\$197,232	\$95,559	\$292,791
10103	Transportation Improvement Program	\$174,200	Ongoing	\$117,036	\$47,804	\$164,840
10104	Unified Planning Work Program	\$98,000	Ongoing	\$87,472	\$35,728	\$123,200
10112	Air Quality Conformity Determinations and Support	\$24,500	Ongoing	\$20,547	\$8,393	\$28,940
11355	Boston Region MPO Title VI Reporting	\$32,000	Ongoing	\$15,698	\$6,412	\$22,110
11123	Congestion Management Process	\$92,200	Ongoing	\$70,915	\$28,965	\$99,880
11145	Freight Planning Support	\$46,000	Ongoing	\$51,200	\$-	\$51,200
11132	Transportation Equity/Environmental Justice Support	\$100,900	Ongoing	\$76,148	\$31,103	\$107,250
Other Certification Requirements Activities Subtotal		\$886,000		\$636,248	\$253,963	\$890,211
Certification Requirements Subtotal		\$1,464,400		\$1,069,369	\$430,872	\$1,500,241

3C = Continuing, Comprehensive, and Cooperative. CTPS = Central Transportation Planning Staff. FFY = federal fiscal year. MPO = Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. UPWP = Unified Planning Work Program

Table 9-3: FFY 2017 Unified Planning Work Program Budget—Ongoing and Continuing MPO Planning Studies and Technical Analyses

Project ID	Name	FFY 2016 CTPS UPWP Budget	Expected Project Status as of 10/1/2016	FFY 2017 CTPS PL Funds	FFY 2017 CTPS Section 5303 Funds	FFY 2017 CTPS Budget
13270	Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2016	\$110,000	95%	\$7,831	\$3,199	\$11,030
13271	Addressing Priority Corridors from the LRTP Needs Assessment: FFY 2016	\$110,000	95%	\$7,931	\$3,239	\$11,170
13272	Safety and Operations at Selected Intersections: FFY 2016	\$65,000	90%	\$5,666	\$2,314	\$7,980
13273	Pedestrian LOS Metric Development	\$45,000	88%	\$5,740	\$-	\$5,740
Planning Studies Subtotal		\$330,000		\$27,168	\$8,752	\$35,920
11356	Systemwide Title VI/EJ Assessment of TIP Projects	\$75,000	90%	\$4,480	\$1,830	\$6,310
69275	Community Transportation Technical Assistance	\$40,600	Ongoing	\$50,509	\$20,631	\$71,140
13208	Bicycle and Pedestrian Support Activities	\$47,400	Ongoing	\$46,036	\$18,804	\$64,840
14342	Regional Transit Service Planning Technical Support	\$29,920	Ongoing	\$-	\$35,210	\$35,210
11250	Bicycle Network Gaps: Feasibility Evaluations ^a	\$55,000	85%	\$5,680	\$2,320	\$8,000
Technical Analyses Subtotal		\$247,920		\$106,706	\$78,794	\$185,500
MPO-Funded Planning Studies and Technical Analyses Subtotal		\$577,920		\$128,194	\$85,226	\$221,420

^a This work was originally funded in the FFY 2015 UPWP

CTPS = Central Transportation Planning Staff. EJ = Environmental Justice. FFY = federal fiscal year. LOS = level of service. LRTP = Long-Range Transportation Plan. MPO = Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. TIP = Transportation Improvement Program. UPWP = Unified Planning Work Program

Table 9-4: FFY 2017 Unified Planning Work Program Budget—MPO New Discrete Studies and New Ongoing Program

Project ID	Staff-recommended New Projects	FFY 2017 CTPS PL Funds	FFY 2017 CTPS Section 5303 Funds	FFY 2017 CTPS Budget
13280	Safety Effectiveness of Safe Routes to School Programs	\$56,800	\$23,200	\$80,000
13279	Study of Promising GHG Reduction Strategies	\$39,050	\$15,950	\$55,000
13274	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	\$78,100	\$31,900	\$110,000
13275	Low Cost Improvements to Express-Highway Bottleneck Locations	\$50,000	\$-	\$50,000
13276	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	\$78,100	\$31,900	\$110,000
13277	Planning for Connected and Autonomous Vehicles	\$35,500	\$14,500	\$50,000
13278	Using GTFS to Find Shared Segments with Excessively Irregular Headways	\$-	\$25,000	\$25,000
20901	Research Topics Generated by MPO Staff	\$18,632	\$11,375	\$30,000
20902	UPWP Study Recommendation Tracking Database	\$14,200	\$5,800	\$20,000
Total for Staff-recommended New Discrete and Ongoing Studies		\$370,382	\$159,625	\$530,000

CTPS = Central Transportation Planning Staff. FFY = federal fiscal year. GHG = greenhouse gases. GTFS = General Transit Feed Specification. MPO = Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. UPWP = Unified Planning Work Program

Table 9-5: FFY 2017 Unified Planning Work Program Budget - New and Continuing Agency Transportation Planning Studies and Technical Analyses

Project ID	Name	Total Contract ^a	FFY 2016 CTPS UPWP Budget	Expected Project Status as of 10/1/2016	Funding Source	FFY 2017 Agency Funds	Direct Support (90000)	FFY 2017 CTPS Budget
Varies by Specific Project	MassDOT SPR Program Support ^b	\$649,000	\$480,000	Contract issued every SFY	MassDOT SPR	\$559,500	\$12,500	\$572,000
73220	MassDOT Highway Division On-Call Modeling Support	\$400,000	\$138,000	35%	MassDOT	\$140,100		\$140,100
22209	Lower Mystic River Working Group Support	\$489,300	\$243,300	50%	MassDOT	\$246,000	\$500	\$246,500
13154	MassDOT Title VI Program	\$169,900	\$100,000	59%	MassDOT	\$37,500		\$37,500
11158	Section 405C Traffic Records Improvement	\$97,000	\$27,900	29%	MassDOT	\$69,100		\$69,100
11157	North/South Rail Link	\$200,000	\$50,300	25%	MassDOT	\$149,700		\$149,700
Varies by Specific Project	MassDOT Transit Planning Assistance ^c	\$270,170	\$266,870	Contract issued every year	MassDOT Section 5303	\$264,170	\$6,000	\$270,170
MassDOT Subtotal		\$2,275,370	\$1,306,370			\$1,466,070	\$19,000	\$1,485,070
22127	Massport Technical Assistance	\$171,000	\$49,900	Contract issued every 3 years	Massport	\$52,900	\$250	\$53,150
Massport Subtotal		\$171,000	\$49,900			\$52,900	\$250	\$53,150
11378	MBTA 2014 Review of Fare Structure, Tariffs, and Policy	\$141,000	\$42,000	95%	MBTA	\$5,400		\$5,400
11378	MBTA 2017 Review of Fare Structure, Tariffs, and Policy	\$159,240	\$110,000	69%	MBTA	\$8,300		\$8,300
11395	MBTA 2016 Title VI Program Monitoring	\$63,140	\$61,940	98%	MBTA	\$1,200		\$1,200
11406	MBTA Bus Service Data Collection IX	\$540,000	\$40,000	7%	MBTA	\$179,970	\$30	\$180,000
14339	MBTA Rider Oversight Committee Support	\$24,500	\$8,000	33%	MBTA	\$2,600		\$2,600
14346	Systemwide Passenger Survey	\$1,180,000	\$200,000	17%	MBTA	\$424,500	\$19,000	\$443,500
14345	MBTA SFY 2016 National Transit Database: Data Collection and Analysis	\$128,480	\$88,000	68%	MBTA	\$1,200		\$1,200

(Table 9-5 cont.)

Project ID	Name	Total Contract ^a	FFY 2016 CTPS UPWP Budget	Expected Project Status as of 10/1/2016	Funding Source	FFY 2017 Agency Funds	Direct Support (90000)	FFY 2017 CTPS Budget
14351	MBTA SFY 2017 National Transit Database: Data Collection and Analysis	\$141,398	\$15,000	11%	MBTA	\$125,198	\$500	\$125,698
11409	Title VI Service Equity Analysis Method Development II	\$125,000	\$30,700	25%	MBTA	\$94,300		\$94,300
11408	MBTA 2017 Title VI Program Monitoring	\$161,511	\$66,490	41%	MBTA	\$94,521	\$500	\$95,021
11159	OPMI Directed Work	\$200,000	\$50,000	25%	MBTA	\$100,000		\$100,000
14353	MBTA SFY 2018 National Transit Database: Data Collection and Analysis	\$130,000	NA	NA	MBTA	\$10,700	\$200	\$10,900
14349	MBTA Plan for Accessible Transit Infrastructure	\$18,370	NA	NA	MBTA	\$4,200		\$4,200
MBTA Subtotal		\$3,012,639	\$712,130			\$1,052,089	\$20,230	\$1,072,319
Agency and Other Client Funded Subtotal			\$2,068,400			\$2,571,059	\$39,480	\$2,610,539

^a The total contract amounts include direct costs. These are not included in the FFY budget amounts in the table and are shown separately in the Direct Costs budget table.

^b The term of the MassDOT SPR Contract is from April 1st through March 30th. Therefore, the total FFY budgets in the UPWP represent a combination of six months of funding from two different contract years. The total contract amount listed for the MassDOT SPR is the total contract amount for the 2016-2017 contract.

^c The MassDOT Transit Planning Assistance Contract (also called MassDOT Section 5303 Contract). The total FFY budgets in the UPWP represent 6 months of two different contracts (MassDOT Section 5303 Contracts are issued every SFY). The total contract amount listed for the MassDOT Transit Planning Assistance is the amount of one SFY contract.

NA = No FFY 2016 budget or status noted because this is a new study or contract, or because this study or contract was not active in FFY 2016.

The FFY 2016 budget for FFY 2017 Review of Fare Structure Study refers to the budget spent under the currently ongoing contract, MBTA 2014 Review of Fare Structure. The FFY 2017 budget represents what will be spent under the new contract in FFY 2017.

CTPS = Central Transportation Planning Staff. FFY = federal fiscal year. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority.

OPMI = MassDOT Office of Performance Management and Innovation. SFY = state fiscal year. SPR = MassDOT Statewide Planning and Research Program. TBD = to be determined.

Table 9-6: FFY 2017 Unified Planning Work Program Budget—MAPC Administration, Resource Management, and Support Activities

Project ID	Name	FFY 2016 MAPC UPWP Budget	FFY 2017 MAPC PL Funds	FFY 2017 MAPC Section 5303 Funds	FFY 2017 MAPC Budget
MAPC 1	MPO/MAPC Liaison and Support Activities	\$157,000	\$109,000	\$48,000	\$157,000
MAPC 2	Subregional Support Activities	\$157,000	\$139,000	\$48,000	\$187,000
MAPC 3	Unified Planning Work Program (MAPC)	\$10,000	\$7,000	\$3,000	\$10,000
MAPC 10	Land Use Data to Support Transportation Modeling	\$80,000	\$51,051	\$26,400	\$77,451
MAPC Technical Support / Operations Analysis Projects Subtotal		\$404,000	\$306,051	\$125,400	\$431,451

FFY = federal fiscal year. MAPC = Metropolitan Area Planning Council. Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. UPWP = Unified Planning Work Program

Table 9-7: FFY 2017 Unified Planning Work Program Budget—MAPC Planning Studies and Technical Analyses

Project ID	Name	FFY 2016 MAPC UPWP Budget	FFY 2017 MAPC PL Funds	FFY 2017 MAPC Section 5303 Funds	FFY 2017 MAPC Budget
MAPC 4	Corridor/Subarea Planning Studies	\$167,480	\$112,180	\$55,300	\$167,480
MAPC 5	Land Use Development Project Reviews	\$88,820	\$59,400	\$29,420	\$88,820
MAPC 6	MetroFuture Implementation	\$90,000	\$59,400	\$30,600	\$90,000
MAPC 7	Alternative Mode Planning and Coordination	\$170,000	\$111,835	\$70,909	\$182,744
MAPC 8	Community Transportation Technical Assistance Program ^a	\$30,000	\$25,000	\$20,000	\$45,000
MAPC 9	Livable Community Workshop Program ^{a,b}	\$15,000	\$-	\$-	\$-
MAPC Planning Studies and Technical Analyses Subtotal		\$561,300	\$367,815	\$206,229	\$574,044

^a This project also receives funding from CTPS; these additional funds are accounted for in the CTPS budget.

^b This program is not being continued in FFY 2017. The type of work accomplished under this program will be continued for communities under one of the other ongoing programs. FFY = federal fiscal year PL = Federal Highway Administration transportation planning funds. MAPC = Metropolitan Area Planning Council. MPO = Metropolitan Planning Organization. UPWP = Unified Planning Work Program

Table 9-8: FFY 2017 Unified Planning Work Program Budget—Summary of FFY 2017 Budgets for CTPS

3C Studies & Programs by Budget Categories	FFY 2017 CTPS 3C PL Funds	FFY 2017 CTPS Section 5303 Funds	FFY 2017 CTPS Budget
Administration and Resource Management Projects	\$1,149,853	\$563,977	\$1,713,830
MPO Certification Requirements	\$1,069,369	\$430,872	\$1,500,241
MPO Funded Planning Studies and Technical Analyses	\$133,874	\$87,546	\$221,420
New Discrete Studies and Ongoing Program	\$370,382	\$159,625	\$530,000
Direct Support	\$155,000	\$71,500	\$226,500
Total for CTPS 3C Studies and Programs (including salary, overhead, direct support)	\$2,878,477	\$1,313,521	\$4,191,998

Agency Funded CTPS Work	Agency Funds	Direct Support	FFY 2017 CTPS Budget
MassDOT SPR Funds	\$559,500	\$12,500	\$572,000
MassDOT Section 5303 Funds	\$264,170	\$6,000	\$270,170
MassDOT Other Funds	\$642,400	\$500	\$642,900
MBTA Funds	\$1,052,089	\$20,230	\$1,072,319
Massport Funds	\$52,900	\$250	\$53,150
Total for Agency-Funded Project Work	\$2,571,059	\$39,480	\$2,610,539

CTPS Budget (3C + Agency)	\$6,802,537
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Table 9-9: FFY 2017 Unified Planning Work Program Budget—Summary of FFY 2017 Budgets for MAPC

3C Studies & Programs by MAPC Budget Categories	FFY 2017 MAPC PL Funds	FFY 2017 MAPC Section 5303 Funds	FFY 2017 MAPC Budget
MAPC Planning Studies and Technical Analyses	\$367,815	\$206,229	\$574,044
MAPC Administration, Resource Management, and Support Activities	\$306,051	\$125,400	\$431,451
MAPC Total FFY 2017 Funds Programmed	\$673,866	\$331,629	\$1,005,495

3C Budget (CTPS + MAPC)	\$5,197,493
TOTAL PROGRAMMED IN FFY 2017 (CTPS Budget + MAPC Budget)	\$7,808,032

3C = Continuing, Comprehensive, and Cooperative. CTPS = Central Transportation Planning Staff. FFY = federal fiscal year.
 MAPC = Metropolitan Area Planning Council. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority.
 MPO = Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. SPR = MassDOT Statewide Planning and Research Program.

Table 9-10: Programmed FFY 2017 Federal Transit Administration Section 5303 Funding by Element and Task

Projects by Element and Task		FFY 2017 UPWP Project ID	FTA Funding by Agency with Local Match						
			FTA \$5303 Total Funds	CTPS		MAPC		MassDOT	
				Federal Funds	Local Funds	Federal Funds	Local Funds	Federal Funds	Local Funds
44.21.00	Program Support and Administration		\$634,960	\$407,968	\$101,992	\$95,200	\$23,800	\$4,800	\$1,200
	Unified Planning Work Program		\$35,728	\$28,582	\$7,146	\$-	\$-	\$-	\$-
	Unified Planning Work Program Support		\$3,000	\$-	\$-	\$2,400	\$600	\$-	\$-
	Access Advisory Committee Support		\$89,130	\$71,304	\$17,826	\$-	\$-	\$-	\$-
	Provision of Materials in Accessible Formats		\$25,146	\$20,117	\$5,029	\$-	\$-	\$-	\$-
	Direct Support		\$77,500	\$57,200	\$14,300			\$4,800	\$1,200
	Support to the MPO and its Committees		\$74,782	\$59,826	\$14,956	\$-	\$-	\$-	\$-
	Regional Transportation Advisory Council Support		\$26,961	\$21,569	\$5,392	\$-	\$-	\$-	\$-
	TRANSREPORT		\$10,118	\$8,094	\$2,024	\$-	\$-	\$-	\$-
	Public Participation Process		\$40,159	\$32,127	\$8,032	\$-	\$-	\$-	\$-
	General Graphics		\$24,888	\$19,910	\$4,978	\$-	\$-	\$-	\$-
	Transportation Equity/Environmental Justice Support		\$31,103	\$24,882	\$6,221	\$-	\$-	\$-	\$-
	Community Transportation Technical Assistance Program		\$40,631	\$16,505	\$4,126	\$16,000	\$4,000	\$-	\$-
	Bicycle and Pedestrian Support Activities		\$18,804	\$15,043	\$3,761	\$-	\$-	\$-	\$-
	Regional Transit Service Planning Technical Support		\$35,210	\$28,168	\$7,042	\$-	\$-	\$-	\$-
	UPWP Study Recommendation Tracking Database	20902	\$5,800	\$4,640	\$1,160	\$-	\$-	\$-	\$-
	MPO/MAPC Liaison and Support Activities		\$48,000	\$-	\$-	\$38,400	\$9,600	\$-	\$-
	Subregional Support Activities		\$48,000	\$-	\$-	\$38,400	\$9,600	\$-	\$-

(Table 9-10 cont.)

Projects by Element and Task	FFY 2017 UPWP Project ID	FTA Funding by Agency with Local Match							
		FTA \$5303 Total Funds	CTPS		MAPC		MassDOT		
			Federal Funds	Local Funds	Federal Funds	Local Funds	Federal Funds	Local Funds	
44.22.00	General Development and Comprehensive Planning	\$321,480	\$188,048	\$47,012	\$69,136	\$17,284	\$-	\$-	
	Computer Resource Management	\$134,186	\$107,349	\$26,837	\$-	\$-	\$-	\$-	
	Data Resource Management	\$84,239	\$67,391	\$16,848	\$-	\$-	\$-	\$-	
	Air Quality Conformity Determinations and Support	\$8,393	\$6,714	\$1,679	\$-	\$-	\$-	\$-	
	Boston Region MPO Title VI Reporting	\$6,412	\$5,130	\$1,282	\$-	\$-	\$-	\$-	
	Systemwide Title VI/EJ Assessment of TIP Projects	\$1,830	\$1,464	\$366	\$-	\$-	\$-	\$-	
	Land Use Development Project Reviews	\$29,420	\$-	\$-	\$23,536	\$5,884	\$-	\$-	
	Land Use Data to Support Transportation Modeling	\$26,400	\$-	\$-	\$21,120	\$5,280	\$-	\$-	
	MetroFuture Implementation	\$30,600	\$-	\$-	\$24,480	\$6,120	\$-	\$-	
44.23.00	Long-Range Transportation Planning	\$594,655	\$374,757	\$93,689	\$100,967	\$25,242	\$-	\$-	
23.01	Systems-Level Planning								
	Regional Model Enhancement	\$217,720	\$174,176	\$43,544	\$-	\$-	\$-	\$-	
	Long-Range Transportation Plan	\$95,559	\$76,447	\$19,112	\$-	\$-	\$-	\$-	
	Congestion Management Process	\$28,965	\$23,172	\$5,793	\$-	\$-	\$-	\$-	
	Study of Promising GHG Reduction Strategies	\$15,950	\$12,760	\$3,190	\$-	\$-	\$-	\$-	
	Planning for Connected and Autonomous Vehicles	\$14,500	\$11,600	\$2,900	\$-	\$-	\$-	\$-	

(Table 9-10 cont.)

Projects by Element and Task		FFY 2017 UPWP Project ID	FTA Funding by Agency with Local Match						
			FTA \$5303 Total Funds	CTPS		MAPC		MassDOT	
				Federal Funds	Local Funds	Federal Funds	Local Funds	Federal Funds	Local Funds
23.02 Project-Level Planning									
	Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2016		\$3,199	\$2,559	\$640	\$-	\$-	\$-	\$-
	Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2017	13274	\$31,900	\$25,520	\$6,380	\$-	\$-	\$-	\$-
	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment: FFY 2016	13276	\$3,239	\$2,591	\$648	\$-	\$-	\$-	\$-
	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment: FFY 2017		\$31,900	\$25,520	\$6,380	\$-	\$-	\$-	\$-
	Safety and Operations at Selected Intersections		\$2,314	\$1,851	\$463	\$-	\$-	\$-	\$-
	Safety Effectiveness of Safe Routes to School Programs	13280	\$23,200	\$18,560	\$4,640	\$-	\$-	\$-	\$-
	Corridor/Subarea Planning Studies		\$55,300	\$-	\$-	\$44,240	\$11,060	\$-	\$-
	Alternative Mode Planning and Coordination		\$70,909	\$-	\$-	\$56,727	\$14,182	\$-	\$-
44.24.00	Short-Range Transportation Planning		\$302,726	\$30,845	\$7,711	\$-	\$-	\$211,336	\$52,834
	Using GTFS to Find Shared Segments with Excessively Irregular Headways	13278	\$25,000	\$20,000	\$5,000	\$-	\$-	\$-	\$-
	MassDOT Transit Planning Assistance		\$264,170	\$-	\$-	\$-	\$-	\$211,336	\$52,834
	Traffic Data Support		\$2,436	\$1,949	\$487	\$-	\$-	\$-	\$-
	Transit Data Support		\$11,120	\$8,896	\$2,224	\$-	\$-	\$-	\$-

(Table 9-10 cont.)

Projects by Element and Task	FFY 2017 UPWP Project ID	FTA Funding by Agency with Local Match						
		FTA \$5303 Total Funds	CTPS		MAPC		MassDOT	
			Federal Funds	Local Funds	Federal Funds	Local Funds	Federal Funds	Local Funds
44.25.00 Transportation Improvement Program		\$47,804	\$38,243	\$9,561	\$-	\$-	\$-	\$-
44.27.00 Other Activities: Research Topics Generated by MPO Staff	20901	\$11,375	\$9,100	\$2,275	\$-	\$-	\$-	\$-
Total Boston Region MPO 5303 Funds Programmed		\$1,913,000	\$1,048,961	\$262,240	\$265,303	\$66,326	\$216,136	\$54,034

CTPS = Central Transportation Planning Staff. EJ = Environmental Justice. FFY = federal fiscal year. FTA = Federal Transit Administration. GHG = greenhouse gases.
 GTFS = General Transit Feed Specification. MAPC = Metropolitan Area Planning Council. MassDOT = Massachusetts Department of Transportation.
 MPO = Metropolitan Area Planning Council. TIP = Transportation Improvement Program. UPWP = Unified Planning Work Program.



APPENDIX A

Other Boston Region Transportation Planning Projects

This appendix consists of brief descriptions of planning studies that will be conducted in the Boston Region Metropolitan Planning Organization (MPO) area by individual agencies (Massachusetts Department of Transportation [MassDOT], Massachusetts Bay Transportation Authority [MBTA], etc.) and municipalities during federal fiscal year (FFY) 2017. MPO funding will not be used for these studies, although in certain instances an agency or one of its consultants may contract with MPO staff (Central Transportation Planning Staff [CTPS]) to provide support for the preparation of an environmental impact report or a large-scale study. CTPS support work is described in Chapters 5 through 8.

The projects in this appendix are not subject to the MPO's public participation process. Rather, they follow their own public processes, some of which may be required by the Massachusetts Environmental Policy Act (MEPA). They are included here to provide a more complete picture of all of the surface-transportation planning projects occurring in the Boston region.

OTHER BOSTON REGION TRANSPORTATION PLANNING PROJECTS

Allston I-90, Massachusetts Turnpike Interchange Improvement Project

Agency: MassDOT

The proposed project consists of an interchange improvement project to address the structural and geometric deficiencies of the I-90 Allston Interchange between Cambridge Street and Commonwealth Avenue in the city of Boston. Context-sensitive design alternatives will be discussed and will then be developed for further evaluation in an environmental document that will ensure that the reconstructed interchange and ramp configurations will continue to support the vehicular loading conditions and provide safe and reliable transportation access. The existing viaduct has severely deteriorated, and alternatives under consideration for its replacement will provide MassDOT the opportunity to reconfigure the Allston Interchange, which dates from the 1965 extension of the Massachusetts Turnpike to Downtown Boston. This project includes the provision of improving the alignment of I-90 between Cambridge Street and Commonwealth Avenue when all electronic tolling (AET) is implemented. Provisions for improved access through the project area for alternative modes of transportation will also be considered.

Arsenal Street Corridor Transportation Study

Agency: MassDOT

The Arsenal Street Corridor Transportation Study aims to evaluate existing and future multimodal transportation conditions along the Arsenal Street corridor in the town of Watertown and its surrounding communities in order to develop and analyze alternatives to improve transportation conditions. The study will have a primary focus on bus service along Arsenal Street and at locations where bus service ties into crossing bus routes, including but not limited to MBTA routes 57, 70/70A, 71, and 73. In

addition, the study will examine and evaluate alternatives in the context of vehicular, bicycle, and pedestrian use; land use; economic development; community effects; health effects; and cost. The impact on existing users of the transportation network will also be examined. The study will produce a final report that will include analytical findings, a recommended plan of future scheduled transportation improvements (short-term, medium-term, and long-term), preliminary cost estimates for these improvements, and a comprehensive implementation plan for the recommended improvements.

Cape Cod Canal Transportation Study

Agency: MassDOT

The purpose of the Cape Cod Canal Transportation Study is to identify improvements to the transportation system in the area surrounding the Cape Cod Canal in Bourne and Sandwich, Massachusetts, including the construction of new Cape Cod Canal crossings. This study will include the development and analysis of a full range of transportation alternatives to address the identified transportation needs. The alternatives considered will include new or replacement Cape Cod Canal crossings; highway, interchange, and non-highway improvements; and other options and design elements that improve access in all modes. The alternatives will be evaluated using criteria that relate to the study's goals and objectives. The study will result in the production of a final report that includes analytical findings, a recommended plan of future scheduled transportation improvements (short-term, medium-term, and long-term), preliminary cost estimates for these improvements, and a comprehensive implementation plan for the recommended improvements.

Climate Change Adaptation Plan: Phase I, Transportation Asset Vulnerability Assessment

Agency: MassDOT

MassDOT will be conducting a statewide transportation asset vulnerability assessment. The Office of Transportation Planning kicked off the first phase of the Climate Change Adaptation Plan: Transportation Asset Vulnerability Assessment in summer 2015. This will include developing future climate scenarios for the Commonwealth of Massachusetts as well as a detailed assessment of the risks posed to the full inventory of MassDOT assets from the climate and extreme weather predictions.

Everett Transit Study

Agency: MassDOT

Everett, a small densely populated urban city located across the Mystic River from Boston, is currently in the process of revitalizing its neighborhoods by attracting new or expanding existing industrial and business users, remediating brownfields, enhancing residential quality of life, and improving waterfront access. Many substantial future development and redevelopment projects have been identified by the city of Everett and MassDOT.

The massive change associated with such development presents the challenge of creating a balanced and integrated multimodal transportation system capable of serving the city for its long-term success. MassDOT will form a project team to create a transit-focused transportation plan given the future forecasts of major development.

I-93/I-95 Interchange Improvements Project

Agency: MassDOT

MassDOT intends to redesign and reconstruct the I-93/I-95 Interchange to improve traffic flow and safety. The I-93/I-95 Interchange lies at the center of a regional highway network serving Massachusetts and the rest of New England. It is also an important link for the local communities of Woburn, Reading, Stoneham, Wakefield, and other neighboring towns. This interchange experiences heavy traffic volumes during peak hours. Delays are common during peak commuting times, with traffic often dangerously backed up from the ramps onto the mainline highways.

An in-depth planning study of the I-93/I-95 Interchange, completed in 2007, analyzed and recommended several short-term and long-term improvement alternatives. As a part of the required National Environmental Policy Act (NEPA) and Massachusetts Environmental Policy Act (MEPA) processes, and to complete an Environmental Impact Statement (EIS) and Environmental Impact Report (EIR), MassDOT now desires to refine and develop variations of the alternative interchange configurations and to evaluate the potential for improvements that are expected to enhance mobility and safety for users.

Intelligent Transportation Systems: Development and Implementation

Agency: MassDOT

MassDOT is engaged in planning, developing, and implementing intelligent transportation systems (ITS) to more effectively operate the transportation system in Massachusetts. MassDOT's Office of Transportation Planning conducts ITS planning, as described in the State Planning and Research Program, Part I. Current planning activities include implementing a statewide ITS planning program, deploying a recently completed statewide ITS strategic plan, maintaining and updating the regional ITS architecture for metropolitan Boston and other regions within the state, increasing awareness of ITS within the transportation community and among related stakeholders, planning activities in support of the use of ITS as a tool for improving system performance and function, and providing assistance in planning for the use of ITS for all modes.

MassDOT's Highway Division established the ITS Programs Unit within the Statewide Operations Division to design, develop, implement, and maintain ITS systems for the state highway system. The ITS Programs Unit works with consultants and contractors on these rapidly evolving technologies. Current activities in the Boston region include operation of the Statewide Traffic Operations Center in South Boston, operation of the high-occupancy-vehicle (HOV) lanes on I-93 into Boston from the north and south,

expansion of the real time travel monitoring (RTTM) system deployment, operation of the Massachusetts Interagency Video Information System (MIVIS) and advanced traveler-information system, and development of an Advanced Transportation Management System.

Kendall Square Mobility Task Force

Agency: MassDOT

MassDOT's Kendall Square Mobility Task Force process will provide a holistic approach to mobility issues in the Kendall Square area of Cambridge. In recent years, the city of Cambridge, MassDOT, the MBTA, institutions, and private organizations have documented the need for improved mobility in Kendall Square through a series of studies and initiatives. The existing mobility issues and deficiencies identified through these processes, coupled with planned growth in Kendall Square and East Cambridge, has created a need to develop a transportation strategy to address local and regional mobility needs and to mitigate potential future impacts.

The Kendall Square Mobility Task Force will work to identify projects and policy initiatives in support of the continued success of the Kendall Square area. These projects and initiatives will be technically and financially achievable over the short-term, medium-term, and long-term horizons. The task force will consider the capacity of connections into and within the Kendall Square area.

CTPS will support the Kendall Square Mobility Task Force through the MassDOT Statewide Planning and Research Program Support work (see Chapter 7 for additional information).

MassDOT Greenhouse Gas Strategies Phase II— Energy and Emissions Reduction Policy Analysis Tool (EERPAT) Strategy Testing

Agency: MassDOT

MassDOT is working with the Executive Office of Energy and Environmental Affairs (EOEEA) to adapt the Federal Highway Administration's (FHWA's) Energy and Emissions Reduction Policy Analysis Tool (EERPAT), which will enable modeling of the effectiveness of various approaches to reducing transportation sector greenhouse gas (GHG) emissions. EERPAT will help MassDOT model the GHG impacts associated with capital investments and examine system adjustments for both transit and roadway operations. This tool also may allow modeling of the impacts of GHG education and encouragement policies designed to encourage mode shift, carpooling, and eco-driving. The results of this modeling and other analyses will be used to refine the transportation sector strategies included in EEOEA's Clean Energy and Climate Plan (CECP) for 2020.

MBTA Modal Plans

Agency: MassDOT

MassDOT's Office of Transportation Planning will be undertaking a series of mode-specific plans as part of the update of the Program for Mass Transportation. MassDOT will procure consultant support for the technical and civic engagement elements of the modal plans.

CTPS will support the development of MBTA Modal Plans through the MassDOT Statewide Planning and Research Program support work.

McCarthy Overpass on McGrath Highway (Route 28)

Agency: MassDOT

In 2011, MassDOT launched a planning process, generally known as Grounding McGrath, to determine the future of this section of the Route 28 corridor and particularly the McCarthy Overpass, which was determined to be in poor structural condition and in need of substantial repairs to both its substructure and superstructure. To follow up on the study Grounding McGrath: Determining the Future of the Route 28 Corridor, MassDOT will develop state and federal environmental review documents as part of the project development process for the preferred alternative for this project.

Northern New England Intercity Rail Initiative

Agency: MassDOT

The Commonwealth of Massachusetts, with the participation of the state of Vermont and the state of Connecticut, is conducting the Northern New England Intercity Rail Initiative (NNEIRI) Feasibility and Planning Study to identify upgrades and improvements along two major rail corridors known as the Inland Route and the Boston-to-Montreal Route that make up part of the federally designated Northern New England High-Speed Rail Corridor. The Inland Route rail corridor connects the cities of Boston, MA and New Haven, CT via the cities of Worcester, MA and Springfield, MA. Improvements to the Inland Route may facilitate initiation of passenger train service along a second route between Boston and New York at speeds comparable to the existing Amtrak regional trains that travel along the Northeast Corridor. The Boston-to-Montreal rail corridor connects the cities of Boston, MA and Montreal, Quebec via Springfield, MA and White River Junction, VT. Both corridors share common track on the route between the cities of Boston and Springfield. This study will result in a draft Service Development Plan for each passenger rail corridor and a Tier 1 Draft Environmental Impact Study, the first document necessary to comply with the National Environmental Policy Act (NEPA) for high-speed rail service along both the Inland Route and the Boston-to-Montreal rail corridor.

Route 107 Corridor Study

Agency: MassDOT

The purpose of this study is to evaluate operational and potential geometric improvements that would address the existing issues and mitigate the potential future impacts of new retail development along Route 107 in the cities of Lynn and Salem. The project extends from Wilson Street in Salem to Maple Street in Lynn. A plan for future transportation improvements (short-term, medium-term, and long-term), based on an alternatives analysis, will be the end product of this project.

South Station Expansion Project

Agency: MassDOT

The 13 tracks currently available at Boston's South Station significantly constrain current and future rail mobility, not only within Massachusetts but throughout New England and Amtrak's Northeast Corridor. South Station operates above its design capacity for efficient train operations and orderly passenger queuing, and lacks comfortable, modern facilities for passenger queuing, leaving riders standing in the elements as they wait to board their trains.

This project will complete all necessary analysis of alternatives, environmental review, and preliminary engineering (approximately the 30 percent design phase) required for the expansion of South Station and for the development of a new midday commuter rail layover facility. The project will include planning and designing an enhanced passenger environment at South Station through improved streetscape and pedestrian, bicycle, local transit, and vehicular facilities in and around South Station, including the reopening of Dorchester Avenue at the station for public use. The project will consider opportunities for joint public-private development above an expanded South Station, and will also include a plan for the relocation of the existing US Postal Service General Mail Facility, which must be moved to accommodate the station's expansion.

Plan for Accessible Transportation Infrastructure (PATI) Prioritization Criteria

Agency: MBTA

The MBTA will be cataloging access barriers at each subway station, commuter rail station, and bus stop. Stations and bus stops that are considered accessible today will be surveyed starting in spring 2016. Parallel to the survey effort, a working group comprised of MBTA officials and disability/accessibility stakeholders (PATI Engagement Committee) will develop a shared method for prioritizing the removal of the barriers in a manner that is sustainable and has the largest possible positive impact on access.

Downtown Beverly Parking Plan

Agency: City of Beverly

The city of Beverly will procure consulting services to conduct a comprehensive parking analysis and plan for the two core commercial districts located in downtown Beverly along Cabot and Rantoul Streets. Project scope will include analysis of the existing conditions, development of policy and management recommendations to maximize utilization of existing parking spaces, and, where necessary, make recommendations for additional parking capacity. The parking strategy will provide policy recommendations that will support continued redevelopment and success for downtown businesses and institutions while continuing to serve current and future downtown residents.

Dudley Square Complete Streets Design Project

Agency: City of Boston

The Dudley Square Complete Streets Design Project is a Boston Transportation Department (BTD)–led initiative and community-planning process that will develop roadway, intersection, and streetscape design plans for construction in Dudley Square. The initiative aims to modernize existing conditions and bolster the ongoing municipal and private investment projects in Dudley Square, including the Ferdinand Building and the former Area B-2 police station site. The project will consider a range of improvements for traffic, parking, buses, pedestrians, bicycles, accessibility, and the overall safety and aesthetics of the streets and sidewalks. Special emphasis will be given to developing plans that improve the multimodal environment of Dudley Square and build upon previous planning initiatives. The geographic limits of work are generally bounded by Dudley Street between Shawmut Avenue and Harrison Avenue, Washington Street between Shawmut Extension and Melnea Cass Boulevard, and Warren Street between Kearsarge Avenue and Washington Street.

Rutherford Avenue—Sullivan Square Design Project, Charlestown

Agency: City of Boston

The city of Boston is proceeding with the redesign of the Rutherford Avenue corridor in Charlestown, which extends about 1.5 miles from the North Washington Street Bridge to Sullivan Square and provides a critical connection between Everett, Somerville, other suburbs north and east of Boston, and Boston’s downtown business area. The corridor’s highway-like design is inconsistent with present day circumstances, and the function and design of the Sullivan Square rotary is problematic. Pedestrian mobility is limited, and bicycle travel is not compatible with the high-speed road. The corridor is 8 to 10 lanes wide (120 to 140 feet), which has created a significant barrier to areas on either side of the roadway, including Bunker Hill Community College, Paul Revere Park, the Hood Business Park employment area, and MBTA rapid transit stations.

There are significant transit-oriented development (TOD) opportunities along the corridor, and public investment in new infrastructure will provide support for the development of commercial and residential uses that otherwise would be unlikely

or unable to locate in the area. A number of major structural elements in the corridor were constructed more than 60 years ago; they are approaching the end of their life cycle and will need to be replaced. With the completion of the Central Artery/Tunnel (CA/T) project and more traffic on roadways such as I-93 and US Route 1, a dramatic reduction in traffic volumes along Rutherford Avenue presents a unique opportunity to transform the corridor's character from a 1950s automobile-oriented facility to a 21st-century multimodal urban boulevard corridor that will attract private developments.

Grand Junction Greenway

Agency: City of Cambridge

The vision of the Grand Junction corridor with a multi-use path alongside the existing tracks was first formally envisioned as a top priority by the 2000 Cambridge Green Ribbon Open Space Committee in its study of possible new parks and open space in the city. Since then, feasibility studies have been completed, and the Massachusetts Institute of Technology (MIT) provided \$500,000 in funds to the Cambridge Redevelopment Authority for construction of a segment of the path between Broadway and Main Street, which was completed in spring 2016. In fiscal year 2016, the city undertook a physical survey of the northern portion of the corridor to be used as the basis for a more detailed design of the path. In addition, deed and plan research provided better understanding for the need and impact of a zoning overlay to protect land for the path. In fiscal year 2017, the city will continue to explore the development of a concept for a multi-use path that works with future transit options from Massachusetts Avenue north to the Somerville line. Design review will be coordinated with MassDOT and the MBTA, which own and operate trains in the right of way.

Envision Cambridge

Agency: City of Cambridge

The city of Cambridge has embarked on Envision Cambridge, a comprehensive multi-year planning process, to create a shared vision for the community and to develop policy and design goals and actionable recommendations to guide future changes in the city. This work will integrate and build upon existing policies, programs, and initiatives through an inclusive, wide-reaching process that looks beyond traditional planning efforts to engage the public, analyze information, and craft solutions. Residents, business employers and employees, property owners and developers, institutions, nonprofit organizations, and many other stakeholders will be active participants in this process and a key component to ensuring that the citywide plan reflects the values of the entire community.

City staff are working with a community advisory committee and an interdisciplinary consultant team that will use a rigorous, data-driven process to complement and augment the capacity of the city staff. This process will result in a strategic framework that addresses a broad range of issues, including mobility, housing, land use, urban design, climate resiliency, social equity, economic development, and open space.

Newton in Motion

Agency: City of Newton

The city of Newton has launched Newton in Motion, a year-long initiative to focus on a transportation strategy for the city. The Newton-in-Motion project will produce a comprehensive guide towards a more equitable and economically and environmentally sustainable multimodal transportation system. This plan will create a nuanced and up-to-date strategy that carries the Newton Comprehensive Plan forward while also complementing the missions of the Housing Strategy and Sustainability Plan. This plan will also be a strategy that is adaptable to changing travel patterns within the city and region as well as to the rapid growth of transportation options. Produced from extensive community engagement and data analysis, the strategy will address the needs of all members of the Newton community and will provide a variety of real options that support a balance among all modes of transportation.

The Newton-in-Motion project will collect public input through online methods as well as through three series of public workshops: one focused on transportation visions and goal setting; one focused on preliminary transportation concepts, including some pilot demonstrations of ideas; and one presenting and collecting input on a draft strategy. Each meeting will have an associated online activity. The project will have a number of benchmark deliverables, including:

- A fact book on the state of today's transportation
- A vision document for the future of transportation
- An active transportation network plan, a transit plan, and a motor vehicle and parking plan
- An implementation plan to prioritize future actions and investments

Citywide Mobility Plan

Agency: City of Somerville

In 2015, the city of Somerville will launch a 12–18 month citywide strategic planning process focusing on mobility. Extensive data collection and analysis will be conducted, and deliverables will include customized multimodal level-of-service criteria for Somerville. Street typologies and design standards will be established. Capital and operating budgets will be evaluated, and related policies, programs, and projects will be studied and prioritized for consistency with the adopted SomerVision Comprehensive Plan.

Union Square Neighborhood Plan (includes Streetscape and Utilities Design and Engineering)

Agency: City of Somerville

In 2015, the city of Somerville will begin construction of the Union Square Early Action streetscape and utility improvements, which will return Prospect Street and Webster Avenue to their historic two-way configuration. Simultaneously, the Somerville by Design neighborhood plan for Union Square will be completed, which will include a longer-term streetscape improvement plan, as well as deep utility engineering, for the study area.

Fairmount Planning Initiatives

Agency: Various

State transportation agencies are partnering with federal agencies, the city of Boston, and neighborhood-based organizations on a number of planning initiatives designed to improve access to transit and promote sustainable development in the Fairmount Corridor. These initiatives, which are underway as the MBTA completes major infrastructure improvements and three of the four planned new stations on the Fairmount Line, include:

- **Fairmount Corridor Business Development and Transit Ridership Growth Strategy:** The Fairmount Community Development Corporation (CDC) Collaborative, with the MBTA, has received a Transportation, Community, and System Preservation grant to improve the transit service connection to job development in the Fairmount Corridor.
- **Fairmount Indigo Corridor Planning Initiative:** The Boston Redevelopment Authority is spearheading this planning process, which involves the participation of community and agency stakeholders. A vision for corridor land use and neighborhood change that is focused on enhanced transit is being developed, along with an action plan for targeted redevelopment and public infrastructure upgrades at station areas.

Ferry Compact

Agency: Various

The Ferry Compact's principal mission is to identify an overall vision for the ferry system in Massachusetts that improves the transportation of people, goods, and vehicles by water. The Compact's membership (including MassDOT, the MBTA, Massport, the Massachusetts General Court, the Steamship Authority, the Seaport Advisory Council, the Boston Harbor Association, and several Boston region municipalities) is a mix of state agencies, state and local elected officials, and other organizations that are dedicated to improving ferry transportation in the commonwealth. For more information, visit MassDOT's Ferry Compact website (<https://www.massdot.state.ma.us/planning/Main/StatewidePlans/FerryCompact.aspx>).

Go Boston 2030

Agency: Various

The goal of this multiyear planning process is to envision the city of Boston's long-term transportation future and recommend policies and projects that will support improved and equitable access to jobs, education, and health care. The focus of Go Boston 2030 will be to improve roadway safety, alleviate congestion, promote alternatives to cars, and build new transit connections. The plan will be linked to economic revitalization and ongoing climate change initiatives. The Boston Transportation Department will lead an interagency team for Go Boston 2030, which will be driven by a far-reaching public engagement process.

South Coast Rail Project

Agency: Various

The South Coast Rail project will restore passenger rail transportation from South Station in Boston to the South Coast of Massachusetts, including the cities of Taunton, New Bedford, and Fall River. The Final Environmental Impact Statement/Report (FEIS/R) was issued in September 2013, and the state was authorized to advance permitting in November 2013. The project will include 10 new stations, modifications at Canton Junction and Stoughton, and two layover facilities at the end of both the Fall River Secondary leg at the Weaver's Cove East site and the end of the New Bedford Mainline leg at the Wamsutta site.

Next steps for this project include advancing the preliminary engineering (including approximately the 15 percent design phase) and permitting processes, which will include a final Wetlands Mitigation Plan that must be approved by the US Army Corps of Engineers prior to issuing their Record of Decision (ROD). These activities will be led by the MBTA. In addition, the project team has been meeting with permitting agencies to develop a strategy and process for obtaining permits in the most expeditious and prudent manner possible. Preliminary engineering efforts were completed in the fall of 2015. As of the fall of 2015, the U.S. Army Corps permit was in process and the agency chose a preferred route. Additionally, the Section 106 historic resources permitting process was substantially completed. To further other permitting and environmental approval processes, the project team has coordinated with the U.S. Environmental Protection Agency, the Massachusetts Department of Environmental Protection, the Massachusetts Natural Heritage and Endangered Species Program, the Federal Highway Administration, the Federal Transit Administration, the Massachusetts Historic Commission, and the Massachusetts Division of Fish and Wildlife.

MassDOT and the MBTA also moved forward with several projects that have independent utility (separate, complete projects), including upgrading and/or replacing grade crossings and replacing several rail bridges (four bridges in Fall River and six bridges in New Bedford).

The Southeastern Regional Planning and Economic Development District (SRPEDD) directs the South Coast Rail Task Force, which is composed of appointed members from the 31 communities in the South Coast Rail Corridor, as well as regional transit authorities and environmental groups. Initially established as a result of the 2002 Secretary's Certificate, the focus of the task force is now limited to land use planning rather than route determination and vetting. Visit the South Coast Rail website for more information on this project and updates to the environmental, engineering, and construction schedules (<http://www.massdot.state.ma.us/southcoastrail/Home.aspx>).

NEC FUTURE

Agency: Federal Railroad Administration

NEC FUTURE is a comprehensive federal planning effort, launched by the Federal Railroad Administration (FRA) in February 2012, to define, evaluate, and prioritize future investments in the Northeast Corridor (NEC) from Washington, D.C. to Boston. The FRA has initiated a comprehensive planning process for future investment in the corridor through 2040. Through the NEC FUTURE program, the FRA will determine a long-term vision and investment program for the NEC and will provide a Tier 1 Environmental Impact Statement (EIS) and Service Development Plan (SDP) in 2016 in support of that vision. Technical work includes an analysis of market conditions in the corridor, the development of program alternatives, an evaluation of the environmental impacts of those alternatives, and a recommended approach that balances the needs of various users of the corridor (whether commuters, intercity passengers, or freight) in a manner that ensures safe, efficient travel throughout the Northeast. For more information, visit the NEC Future website (<http://www.necfuture.com/>).

New England University Transportation Center (Region One)

Agency: Colleges and Universities

The New England University Transportation Center (Region One) is a research consortium that includes the Massachusetts Institute of Technology (lead university), Harvard University, and the state universities of Massachusetts, Connecticut, and Maine. It is funded by the United States Department of Transportation's University Transportation Centers (UTC) Program. The New England UTC conducts multiyear research programs that seek to assess and make improvements to transportation safety, as well as to develop a systems-level understanding of livable communities. For further information, visit the New England University Transportation Center's website (<http://utc.mit.edu/>).



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APPENDIX B

Public Participation and Response to Public Comments

The staff of the Metropolitan Planning Organization (MPO) followed the procedures set forth in the MPO's adopted *Public Participation Plan for the Boston Region Metropolitan Planning Organization* when developing the federal fiscal year (FFY) 2017 Unified Planning Work Program (UPWP). These procedures are designed to ensure early and continued public involvement in the transportation-planning process.

The FFY 2017 UPWP development process began in September 2015. Staff solicited topics for study through outreach at Metropolitan Area Planning Council (MAPC) subregional group meetings. Staff also sought suggestions at Regional Transportation Advisory Council meetings and through public outreach at two development sessions for the Transportation Improvement Program (TIP) and the UPWP. Staff considered these suggestions and public input, as well as comments received during the FFY 2016 public review period and inputs from recent planning documents in the FFY 2017 UPWP draft development process. This process, described in Chapter 1, culminated in the MPO UPWP Committee's recommendation for the FFY 2017 UPWP budget. The committee also recommended a set of new studies for inclusion in the FFY 2017 UPWP draft for public review, which was subsequently approved by the MPO for public circulation on June 2, 2016. MPO staff also has presented information on the recommended new studies to the Regional Transportation Advisory Council.

Following the MPO's approval for circulating the FFY 2017 UPWP draft for public review, staff posted the document on the MPO's website (<http://bosmpo.ctps.org/upwp>). Staff also emailed the MPO's contact list (MPOinfo) notifying recipients of the document's availability and of the 30-day period for public review and comment. The email list includes Chief elected officials and planning directors of the region's 101 municipalities, the Regional Transportation Advisory Council, the MAPC subregional groups, participants in the MPO's transportation equity work, state legislators, public libraries in the region, and many other interested parties. In addition to the MPO's website, this information was also posted in the MPO's newsletter (*TRANSREPORT*). Additionally, a press release was sent to local and regional media outlets.

During the review period, the MPO held two public workshops (called "office hours") during which MPO staff made themselves available, either in person or over the phone, to stakeholders who wanted to discuss the FFY 2017 UPWP draft. These meetings were also used to gather input from the public about their planning priorities. All of these MPO meetings and public workshops, which were held to discuss the FFY 2017 UPWP draft, were accessible by transit service and to people with disabilities.

A summary of written comments on the FFY 2017 UPWP draft, as well as the MPO's responses to those comments, can be found in Table B 1.

Table B-1: Response to Public Comments on the FFY 2017 UPWP Draft

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
1	MassDOT	Written comment to MPO staff	Overall	Overall	Overall	MassDOT submitted several comments addressing editorial revisions and clarifying questions on budget amounts and work descriptions. These are not included separately as they do not require substantive revisions to the document.	All revisions will be made in response to MassDOT's editorial and clarifying comments.	Yes
2	MassDOT	Written comment to MPO staff	Overall	Overall	Overall	Provide a geographic distribution table of UPWP-funded studies by municipality, including the name of the beneficiary and the number of tasks per year, along with an accompanying narrative.	This is being developed and will be included with the final UPWP document.	Yes (The draft included a placeholder for this summary.)
3	MassDOT	Written comment to MPO staff	Chapter 3/ Regulatory Framework	3-8	3.2	Add discussion about how the UPWP ties into state guidance and transportation priorities.	Language will be added to the final UPWP to discuss how studies and ongoing work funded through the UPWP relate to state guidance and transportation priorities. Proposed addition under Section 3.2: As described in Chapters 6 through 8, much of the work funded through the UPWP focuses on encouraging mode shift and diminishing GHG emissions through improving transit service, enhancing bicycle and pedestrian networks, and studying emerging transportation technologies. All of this work helps the Boston region contribute to statewide progress towards the priorities discussed throughout this section.	Yes
4	MassDOT	Written comment to MPO staff	Chapter 4/Federal Fiscal Years 2014-2016 Completed UPWP Studies	4-3	Table 4-1	These are only federal funds and do not include match? Or do they? Specify	All budget numbers throughout the UPWP include the federal and local match amounts. A note will be added to the table to clarify this.	Yes

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	Revision to UPWP Text	
5	MassDOT	Written comment to MPO staff	Chapter 5/ Certification Requirements	5-3	Table 5-1	General comment on funding differences: If the activities are "generally the same," then why are we increasing/decreasing the costs (in some cases, significantly) on some of these tasks? Suggest providing a more detailed explanation in that regard.	<p>Text will be added preceding the table to explain reasons that there are differences between FFY 2016 and FFY 2017 budgets for various tasks and work areas.</p> <p>Proposed addition: The tables show some differences in the budgets for CTPS and MAPC tasks between FFY 2016 and FFY 2017. There are several reasons for these differences. In some years, MPO staff may plan to undertake new or additional data collection and analysis under specific line items; there may be greater emphasis placed on a task in a given year (e.g., the final year in an LRTP development cycle); there may be a determination that the tasks undertaken as part of one line item may be combined with an ongoing activity; and there may be staff fluctuations from year to year.</p> <p>Where possible, explanations will be added for line items in which the budget has changed significantly.</p>	Yes
6	MassDOT	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-9	Study of Promising Greenhouse Gas Reduction Strategies	Ensure this document and efforts therewith are not largely a rehashing of previous efforts. The approach appears to be focused on regional impacts, but care should be taken not to bog the study down with information staff has already researched and presented.	As described in the "Approach" section of this study, the objective of this work is to build off of the 2016 GHG Reduction Strategies Study. Specifically, this study funded in FFY 2017, would focus on a particular subset of the 14 strategies identified in the 2016 report to understand the potential for their implementation at a regional level.	No
7	MassDOT	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-9	Study of Promising Greenhouse Gas Reduction Strategies	Please coordinate with OTP's Sustainable Transportation Group on these efforts to avoid duplication with the Energy and Emissions Reduction Policy Analysis Tool (EERPAT) for evaluating transportation sector GHG reduction measures in Massachusetts, which was performed by Cambridge Systematics for MassDOT.	As the work scope for this study is developed, CTPS will coordinate with OTP's Sustainable Transportation Group.	No

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
8	MassDOT	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-10	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	What necessarily is considered a "high level of congestion"?	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). The text will be clarified to explain this.	Yes
9	MassDOT	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-14	Low-Cost Improvements to Express-Highway Bottlenecks	Define what low-cost infrastructure solutions mean, and provide examples from previous efforts.	Low-cost infrastructure solutions can be defined as design or operational infrastructure solutions as opposed to major construction projects. Low-cost solutions stay within existing right-of-ways and often involve things like re-striping lanes or utilizing existing highway shoulder areas for an additional lane. 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. Text will be added to the document to clarify this project description.	Yes
10	MassDOT	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-16	Planning for Connected and Autonomous Vehicles	Then what? We need to have a next step here. If the first step is research, we should have another step in mind.	Suggested addition: The next step would be to follow up on the recommendations. These could be related to model development, data resources, or planning studies.	Yes
11	MassDOT	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-18	MPO Staff-Generated Research Topics	Provide examples from the last two years. I believe MPO members expressed interest in knowing more about this as well.	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. Therefore, this research aims to develop a new measure of transit dependence that could be more accurate and meaningful.	Yes

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
12	Joan Meschino, Candidate for State Representative, Third Plymouth District	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-14	Low-Cost Improvements to Express-Highway Bottlenecks	The Braintree Split is a major interchange that is crippled daily by extreme congestion. Many South Shore residents are tied up daily at this bottleneck. They suffer extended travel times and unsafe roadway conditions. The Braintree Split is also one of the high-priority locations identified in the MPO's Long-Range Transportation Plan. I ask that the MPO fund this study and give attention to the Braintree Split.	The MPO completed a corridor study about the Braintree Split in 2006 (http://www.ctps.org/braintree_split). This corridor and the surrounding transportation network remains a high priority of the MPO, and the issues in this area will continue to be considered for cost-effective and multimodal solutions that can be implemented.	No
13	Joan Meschino, Candidate for State Representative, Third Plymouth District	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	Overall	Overall	I write to support several planning studies and ongoing programs that would be particularly helpful for South Shore towns (Hingham, Hull, Cohasset, and Scituate), as they work to address local transportation problems. These towns have varied and important transportation needs. In addition, I am advocating for proposed work in greenhouse gas reduction. For the FFY 2018 UPWP, I suggest planning for more commuter-boat service and for intra-community shuttle buses, including shuttle buses to commuter boats and/or the commuter rail.	The MPO appreciates Ms. Meschino's comments and will consider these points as work programmed in the FFY 2017 UPWP is planned in further detail and in the development of the FFY 2018 UPWP.	No
14	Joan Meschino, Candidate for State Representative, Third Plymouth District	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-12	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	Earlier versions of this study have focused on priority needs in MAPC's South Shore Coalition, and the Coalition and municipalities have greatly appreciated this work. These studies typically identify implementable, complete streets solutions that are well-received by municipalities. I support continuing this series of studies and hope that locations in the South Shore Coalition might be considered again as an area of focus.	The MPO appreciates Ms. Meschino's comments and will consider these points as work programmed in the FFY 2017 UPWP is planned in further detail and in the development of the FFY 2018 UPWP.	No
15	Joan Meschino, Candidate for State Representative, Third Plymouth District	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-10	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	This study could help address the serious traffic problems on the South Shore's heavily congested arterials: Route 3A, Route 228, Route 53, and Route 18. Please include it in the UPWP.	The MPO appreciates Ms. Meschino's comments and will consider these points as work programmed in the FFY 2017 UPWP is planned in further detail and in the development of the FFY 2018 UPWP.	No

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
16	Joan Meschino, Candidate for State Representative, Third Plymouth District	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-9	Study of Promising Greenhouse Gas Reduction Strategies	I heartily support the MPO's ongoing work to identify effective steps to reduce GHGs. The outcomes of this work are essential to having real impact in slowing the advance of climate change and related sea-level rise — a real threat to South Shore communities. This study can guide the MPO and the state to do our part to help minimize the devastating effects of inaction or ineffective action in reducing GHGs produced by transportation.	The MPO appreciates Ms. Meschino's comments and will consider these points as work programmed in the FFY 2017 UPWP is planned in further detail and in the development of the FFY 2018 UPWP.	No
17	Joan Meschino, Candidate for State Representative, Third Plymouth District	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-19 through 6-23	Bicycle/Pedestrian Support Activities; Regional Transit Service Planning Technical Support; Community Transportation Technical Assistance Program	I ask that the MPO fund the ongoing technical analysis programs: Bicycle/Pedestrian Support Activities; Regional Transit Service Planning Technical Support; and the Community Transportation Technical Assistance Program. These programs provide essential guidance and input to local officials in support of their initiatives to improve mobility through better bicycle and pedestrian facilities and new, locally operated bus transit. These programs are an effective way of sharing the MPO's expertise with local officials who are aiming to make improvements. I support this ongoing work and, if they are funded, will work to raise awareness about them within the South Shore.	The MPO appreciates Ms. Meschino's comments and will consider these points as work programmed in the FFY 2017 UPWP is planned in further detail and in the development of the FFY 2018 UPWP.	No
18	Terry Forrest	Phone call during public comment period outreach	Overall	Overall	Overall	Overall, Mr. Forrest wishes there would be greater discussion of accessibility issues in the TIP and UPWP. Specifically, Mr. Forrest wanted to make sure that the MPO considers accessibility issues into corridor and bicycle/pedestrian studies that are completed for municipalities.	<p>Accessibility is factored into the TIP project evaluation.</p> <p>In the UPWP, accessibility is addressed through the MPO's work with the Access Advisory Committee to the MBTA; our support of the MBTA's Plan for Accessible Transit Infrastructure; and other community technical assistance that focuses on improving pedestrian connections and safety. The MPO's work, specifically studies such as Safety Analysis at Selected Intersections; Addressing Safety, Mobility, and Access on Subregional Priority Roadways; and Addressing Priority Corridors from the LRTP Needs Assessment, considers accessibility requirements and improvements.</p>	No

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
19	Terry Forrest	Phone call during public comment period outreach	Overall	Overall	Overall	<p>Mr. Forrest had the following additional comments:</p> <ul style="list-style-type: none"> • Interest in an improved paratransit user registration system so that people registered and approved to use paratransit in one region were automatically approved to use it throughout the state. • Interest in a Google map type of system that shows paratransit or accessible routes and extends beyond the Boston region to show accessible directions to other regions in the state. • Interest in improved access and accommodations on Amtrak to secure wheelchairs into place. Sometimes, people in wheelchairs are forced to ride in the luggage areas of the trains. 	The MPO appreciates Mr. Forrest’s comments. MPO staff forwarded his questions and concerns to the appropriate parties at the MBTA and Amtrak. Additionally, the MPO will consider accessibility focused studies and analyses in the FFY 2018 UPWP.	No
20	Scott Zadakis, CrossTown Connection Transportation Management Association	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-7	Safety Effectiveness of Safe Routes to School Programs	As an organization that promotes walking and biking, CrossTown Connect supports project #13280 to improve the Safe Routes to School program. We believe bike/pedestrian to be very important, and we additionally support all other technical and planning assistance you can offer to Massachusetts communities as well as studies you conduct to better understand how to create a better, safer, and more connected network of bike/ pedestrian facilities.	The MPO appreciates the comments from CrossTown Connect TMA.	No

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
21	Scott Zadakis, CrossTown Connection Transportation Management Association	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-10 and 6-21	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment Regional Transit Service Planning Technical Support	<p>CrossTown Connect supports project #13276 addressing multimodal mobility, and we would urge CTPS to identify our region as a priority corridor. The broader 495 corridor is experiencing high levels of growth and traffic is increasingly becoming a problem, yet our towns are caught between MART, LRTA, and the MBTA. Consequently, our transit options are limited to the Fitchburg Line on the Commuter Rail and the LRTA #15 bus that comes from Lowell through Westford as far as IBM, just over the Littleton line. With a much improved reverse commute schedule on the Fitchburg Line of the Commuter Rail (three outbound trains before 9:00 AM), it will be even more important to address multimodal access and mobility in our region. If we were to be identified as a priority region, we would be very interested in addressing first and last mile connections to the Fitchburg Line with various solutions, including fixed-route shuttles, vanpools, and even ride-hailing services. It is critical as this region continues to grow that we develop a multimodal transportation system that can support it.</p> <p>Similarly, we strongly support programs and studies related to regional transit service planning whether carried out locally or for large organizations such as MassDOT or RTAs.</p>	<p>The MPO appreciates the comments from CrossTown Connect TMA. These comments will be considered as specific study locations are being chosen for FFY 2017 planning studies and technical assistance work.</p> <p>The study of priority corridors identified in the LRTP is geared towards corridors specifically identified throughout the region during the development of the LRTP. These expressway and arterial corridors were defined as congested locations based on speed index, travel time index, volume-to-capacity ratio, and crash history. For the list of these corridors, please see Chapter 4 of the Regionwide Needs Assessment (http://bosmpo.ctps.org/data/pdf/plans/LRTP/charting/Charting_Progress_2040_Chapter4_final.pdf). Interstate 495 was not specifically identified as a priority corridor; however, many intersection roadways were, including a portion of Route 2 in Acton and Concord.</p> <p>The TMA and other stakeholders will have the ability to weigh in on which locations are chosen for study in the fall and winter (October–January) as specific study locations are defined.</p> <p>First-mile-and-last-mile studies are being undertaken in FFY 2017 under the Regional Transit Service Planning Technical Assistance line item in the UPWP. The TMA and other stakeholders will have the ability to weigh in on which locations are chosen for study in the fall and winter (October - January), as specific study locations are defined. Please follow up with MPO staff in the fall and winter for more information.</p>	No

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
22	Scott Zadakis, CrossTown Connection Transportation Management Association	Written comment to MPO staff	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-22	Community Transportation Technical Assistance Program	As an organization that coordinates and provides community transportation, Crosstown Connect also supports CTPS's efforts to provide Community Transportation Technical Assistance to localities in need of your expertise. In fact CrossTown Connect recently took advantage of a DLTA grant to study potential shuttle routes connecting the Littleton Commuter Rail Station to area businesses and other locations where demand exists. This study mapped out potential routes and estimated costs for operating them. We believe that Community Transportation Technical Assistance is a powerful tool to help communities address wide-ranging issues from sidewalk facilities to high crash-rate intersections.	The MPO appreciates the comments from CrossTown Connect TMA.	No
23	Scott Zadakis, CrossTown Connection Transportation Management Association	Written comment to MPO staff	Chapter 7/Agency and Other Client Transportation Planning Studies and Technical Analyses	7-8	North-South Rail Link	As mentioned earlier, we are very pleased with the schedule enhancements on the Fitchburg Line that went into effect this past May. In order to capitalize on these enhancements further in the future, we support the updating of the analysis of the North-South Rail Link. Connecting North and South stations would increase the capacity of the system and negate the inconvenient need to transfer via two different subway lines (or another means such as a cab) when traveling through Boston by rail. It would also negate much of the South Station Expansion project by creating thru-capacity.	The MPO appreciates the comments from CrossTown Connect TMA. Please refer to Chapter 7, page 7-8 (in the public review draft of the UPWP) for a description of the North-South Rail Link work that CTPS is conducting as part of its agency-funded work.	No
24	Louise Baxter, T Riders Union	In-person comment during public comment period outreach	Overall	Overall	Overall	Ms. Baxter was interested in commenting on the draft UPWP and interested in the TRU being more involved in next development cycle.	<p>The MPO welcomes your comments on the UPWP and will consider them in the development of the FFY 2018 UPWP.</p> <p>In order for the TRU to become more involved in the upcoming UPWP and TIP development cycles, please follow-up with either Alexandra Kleyman, TIP and UPWP Manager at akleyman@ctps.org, or Jennifer Rowe, CTPS Public Participation Program Manager at jrowe@ctps.org. MPO staff would like to work with you and the rest of the TRU to help make sure you can be more involved in our transportation planning and programming processes.</p>	No

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
25	Karen Dumaine, Neponset Valley TMA and Alewife TMA	Phone call during public comment period outreach	Overall	Overall	Overall	<p>Ms. Dumaine made the following comments:</p> <ul style="list-style-type: none"> • Concern about traffic and safety at the rotary near Alewife, interest in technical assistance programs. • General interest in understanding what the MPO/CTPS does, how to be involved in the processes. • Interested in having MPO Staff come speak to TMAs 	<p>The MPO has studied traffic issues in and around the Alewife area in previous years. Data and analysis completed in 2008 and 2009 can be found on the MPO's website at http://www.ctps.org/alewife_phase_ii. If you have specific questions about addressing the transportation issues in this area, please contact Alexandra Kleyman, TIP and UPWP Manager, at akleyman@ctps.org.</p> <p>Jennifer Rowe, CTPS Public Participation Program Manager, will follow-up with you about further outreach to the TMA as we begin out fall public outreach.</p> <p>Feel free to be in touch with her at jrowe@ctps.org.</p>	No
26	Lenard Diggins, MBTA Rider Oversight Committee	In-person comment during public comment period outreach	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-16	Planning for Connected and Autonomous Vehicles	Mr. Diggins expressed interest in this study and is happy that the MPO is undertaking it.	The MPO appreciates your comments.	No
27	Lenard Diggins, MBTA Rider Oversight Committee	In-person comment during public comment period outreach	Overall	Overall	Overall	Mr. Diggins would like to understand the times during the MPO UPWP process that are most appropriate for public input.	<p>Jennifer Rowe, CTPS Public Participation Program Manager, will follow-up with you about further outreach to the MBTA Rider Oversight Committee as we begin our fall public outreach.</p> <p>Feel free to be in touch with her at jrowe@ctps.org.</p>	No
28	Andrea Downs, Newton Transportation Advisory Group	In-person comment during public comment period outreach	Overall	Overall	Overall	<p>Ms. Downs made the following comments:</p> <ul style="list-style-type: none"> • She supports a UPWP study on developing a level of service measure beyond vehicles. • She is interested in better bicycle and pedestrian data and counts in the region. • Other projects she supports include right-sized parking, closing safety gaps for cyclists, and safe routes to school. • She expressed frustration about transportation projects that do not provide safe accommodations for cyclists and pedestrians despite prioritization in MPO/DOT planning documents. There seems to be a gap from plan to execution. 	The MPO appreciates Ms. Downs's comments and will consider these points as work programmed in the FFY 2017 UPWP is planned in further detail and in the development of the FFY 2018 UPWP.	No

Table B-1(cont.)

Comment Number	Comment Origin	How was Comment Received?	Chapter	Page # in Public Review Draft	Section	Comment	MPO Response	Revision to UPWP Text
29	James Jay, member of the public	Email	Chapter 6/Boston Region MPO Planning Studies and Technical Analysis	6-27	Alternative-Mode Planning and Coordination	<p>It's great to see funds allocated for further implementation of the Hubway bike share program. I hope to see this in all future UPWPs, along with language surrounding:</p> <ul style="list-style-type: none"> • Hubway stations at all current T stations (where there is room) • All future T station redesigns should allocate space for Hubway stations • Encouraging Hubway as a last-mile option for T riders • Including Hubway stations on certain MBTA maps • The possibility of eventually linking Hubway passes with MBTA passes • Including the MBTA's bike policy on all spider maps (especially the time frame for which bikes are allowed) 	The MPO appreciates Mr. Jay's comments and will consider these points as work programmed in the FFY 2017 UPWP is planned in further detail and in the development of the FFY 2018 UPWP.	No
30	Senator Joan B. Lovely, Second Essex District	Letter	Overall	Overall	Overall	<p>Included in the UPWP are 2 projects in the 2nd Essex Senate District. I am pleased to see the Boston Region MPO has prioritized these studies to help achieve its transportation goals as a region. Specifically, I am thankful that the planning study and technical analysis of the Salem Cycle Track Pilot Project and at Route 114/Andover Street at Esquire Drive and Violet Road in Peabody are moving forward.</p>	<p>The MPO appreciates Senator Lovely's comments. A Bicycle Circulation Master Planning Study was completed in January 2010 by Fay, Spofford & Thorndike and the Salem Bike Path Committee. It can be accessed online here: http://www.salem.com/sites/salemma/files/uploads/circulation.pdf. If you have specific questions or ideas about bicycle planning in the region, please contact Casey-Marie Claude, CTPS Bicycle and Pedestrian Coordinator, at cclaude@ctps.org.</p> <p>Under its study of priority corridors from the Long-Range Transportation Plan, the MPO completed a corridor analysis of Route 114 between Interstate 95 and the Peabody city line in Danvers. This study was completed in November of 2012 and can be accessed online here: http://www.ctps.org/data/html/studies/highway/priority_corridors/Route_114.html. If you have specific questions about the UPWP process or any of the work programmed in the FFY 2017 UPWP, please contact Ali Kleyman, CTPS UPWP Manager, at akleyman@ctps.org.</p>	No

CTPS = Central Transportation Planning Staff. DLT A = District Local Technical Assistance Program. DOT = Department of Transportation. FFY = federal fiscal year. GHG = greenhouse gas. LRTA = Lowell Regional Transit Authority. LRTP = Long-Range Transportation Plan. MAPC = Metropolitan Area Planning Council. MART = Montachusett Regional Transit Authority. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority. MPO = Metropolitan Planning Organization. OTP = MassDOT's Office of Transportation Planning. RMV = Registry of Motor Vehicles. RTA = Regional Transit Agency. TIP = Transportation Improvement Program. TMA = Transportation Management Association. TRU = MBTA Riders' Union. UPWP = Unified Planning Work Program.



APPENDIX C

Federal Fiscal Year 2017 UPWP Universe of Proposed New Studies

This appendix includes the Universe of Proposed New Projects, which documents the proposed new discrete studies that the Boston Region Metropolitan Planning Organization (MPO) staff and the Metropolitan Area Planning Council (MAPC) staff collected or developed for the development of the federal fiscal year (FFY) 2017 Unified Planning Work Program (UPWP). Each entry includes a summary of the purpose of the proposed study and the anticipated outcomes.

Studies in the universe are organized into the following categories:

- Active Transportation
- Land Use, Environment, and Economy
- Multi-Modal Mobility
- Transit
- Other Technical Support

Within these categories, studies were considered based on origin:

- **Renew:** These studies have been funded in the past, and there is another phase that could be funded and studied.
- **Evolve:** These studies take the findings of a previously conducted study and bring them to the next level by advancing the ideas and recommendations made in the preceding study.
- **Another Chance:** These studies were considered in a previous FFY's Universe list and not chosen for funding. They are being reconsidered to evaluate whether the timing is better to fund them, or whether they can be modified to be more useful for advancing the goals of the MPO region.
- **New:** These are study ideas that have not been considered previously.

Each proposed study in the universe is also evaluated based on the following evaluation areas:

- **Primary and secondary Long-Range Transportation Plan (LRTP) goal areas:** whether a study addresses, either as a primary focus or secondary focus, one of the six LRTP goal areas:
 - o Safety
 - o System Preservation
 - o Clean Air/Clean Communities
 - o Transportation Equity
 - o Capacity Management/Mobility
 - o Economic Vitality

- **Mode:** whether a study primarily addresses roadway, bicycle, pedestrian, or transit modes of travel
- **Study scale:** whether a study primarily impacts one or two specific communities in the region, or the region as a whole
- **Time frame and type of impact:** whether a study results in research and findings that enhance the state of the transportation planning practice in the Boston Region, low-cost/short-term implementation of improvements, or, long-term implementation (for transportation studies leading to implementation by an agency or construction projects that must follow the Massachusetts Department of Transportation design process)
- **Connection to existing work:** whether a study furthers previously conducted analysis, or builds off or enhances existing MPO work
- **Continuing or new study:** whether a study has been conducted previously at a specific location/roadway and is being conducted again at a new location, or whether a study is a completely new idea that has never been undertaken by the MPO.

Evaluating the studies in this way will allow MPO staff to analyze how federal planning funds are being spent in the region over time and to compare the amount of spending across the various evaluation areas. Furthermore, tracking spending by LRTP goal area, mode, study scale, etc., will allow MPO staff, in coordination with the MPO and the public, to set goals for how federal transportation planning funds are spent by the MPO for the benefit of the region.

In addition to evaluating the proposed new studies in the Universe, MPO staff defines general scopes and estimated costs for the proposed studies and considers potential feasibility issues. These various factors, along with the availability of funds for new studies, were considered as staff identified a recommended set of new proposed planning studies for review by the UPWP Committee. For more information on the process of developing and evaluating the Universe, please see Chapter 1.



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FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other		
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study	New Study
ACTIVE TRANSPORTATION																				
Renew																				
A-1	Closing Gaps in the Boston Region Bicycle Network	\$55,000	<p>Purpose: This study would build off of the work of the Bicycle Network Gaps: Feasibility Evaluation study, which began by identifying the status of the eleven highest priority gaps that were highlighted in the 2014 Bicycle Network Evaluation. This project would follow up on that study by conducting more detailed feasibility evaluations of up to three identified high-priority gaps. The first phase of this project was conducted during FFY 2015.</p> <p>Anticipated Outcome: One or more memoranda documenting the results of the study and recommendations for selected locations. The identified recommendations could ultimately become projects that are funded by federal, state, local, or other sources.</p>	S		S		P	S			P		P			P	P		
Evolve																				
A-2	The Impact of a Connected, High Quality Bicycle Network on GHG Emissions and Mode Shift	\$40,000	<p>Purpose: This study comes out of the GHG Reduction Strategies Study completed in 2015. This project would estimate the impact of a connected, high-quality bicycle network on GHG emissions and mode shift, also looking at the safety, equity, mobility, and health benefits.</p> <p>Anticipated Outcome: Currently, the MPO funds bicycle improvements as part of individual projects and shorter segments of off-road bicycle paths. This study would look at bicycle networks in high-density areas at various levels of deployment, ranging from quarter-mile intervals to one-mile intervals in a grid system, which was initially defined in the bicycle improvements strategy from the GHG Reduction Strategies Study. Other variations of a comprehensive bicycle network strategy could be considered in this study as well.</p>	S		P	S	S	S			P		P	P			P	P	
A-3	Bicycle and Pedestrian Crash Clusters Analyses	\$40,000	<p>Purpose: This study would review bicycle and pedestrian crash clusters developed by the MassDOT Highway Division and the Boston Region MPO. Safety projects often focus on vehicle crash locations, so the specific focus on high-crash bicycle and pedestrian locations would make this project unique. Three locations that have not been addressed up to this point in time would be selected for study and development of recommendations for safety and mobility improvements to benefit bicycle and pedestrian travel.</p> <p>Anticipated Outcome: MPO staff would work with the municipalities and other stakeholders to propose cost-effective and low-cost improvements to increase safety for bicyclists and pedestrians at those locations.</p>	P	S	S		S	S			P		P			P	P	P	

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other		
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study	New Study
Another Chance																				
A-4	Municipal Pedestrian Network Studies	\$40,000	<p>Purpose: Through this project, MPO staff would provide support to several municipalities in the MPO region that are interested in exploring opportunities to improve their community-wide pedestrian network.</p> <p>Anticipated Outcome: Using municipal inventories of sidewalks and other data resources, MPO staff would work with communities to conduct an assessment of existing pedestrian transportation connections, including sidewalks, paths, and crosswalks, and would identify opportunities to improve these connections. These analyses would be coordinated with work done by the MAPC, MassRIDES (through the Massachusetts Safe Routes to School Program), and other stakeholders, when appropriate. The results of these assessments and recommendations could be used to support community-level Complete Streets improvement programs and projects, which could be funded with federal, state, local, or other funding.</p>	S	S	S		P	S		P		P				P	N		P
New																				
A-5	Low-Cost Tactical Urbanism Projects for Rapid Implementation with Community Engagement	\$55,000	<p>Purpose: This project would assist communities with the planning/design work as well as before and after data collection and analysis for low cost, temporary/interim Complete Streets pilot projects. This project would offer communities additional and new tools related to Complete Streets that are distinct from the state's Complete Streets Program. Specifically, this project would focus on implementing extremely low-cost (in the range of several hundred to one thousand dollars) projects that would be meant to be temporary. These low-cost, temporary projects can showcase improvements such as protected bicycle lanes, green bike lane paint through intersections, and curb extensions created with paint, spray chalk or paint, duct tape, planters, traffic cones, flexible posts, and signs. These pilots can also be integrated with events such as neighborhood festivals to maximize community engagement in addition to traditional community meetings for public outreach.</p> <p>The temporary nature of these projects is an important factor to allow communities to test/pilot Complete Streets approaches in different areas and learn from their implementation. The relatively fast timeline for implementation could allow for increased public involvement and public education of Complete Streets solutions as well as the ability for communities to conduct before and after studies to enhance understanding of how different Complete Streets approaches function and what could be improved for longer-term implementation.</p> <p>This project also has the potential to reach smaller communities without budgets to spend on Complete Streets and without the staff available to plan, design, and implement the projects.</p> <p>Anticipated Outcome: Increased implementation of low-cost Complete Streets pilot projects, increased understanding of the potential benefits of complete streets improvements, and community engagement opportunities facilitated by CTPS. Planning and design reports to accomplish low-cost complete streets projects.</p>	S	S	S	S	P	S		P		P		P			N		P

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other	
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study
A-6	Before and After Studies of Protected and Conventional Bicycle Lanes	\$55,000	<p>Purpose: This study would conduct detailed counts, analyze crash data, and survey people using the street and businesses to compare "before" and "after" conditions and public perceptions of new bicycle lanes. The effect of different types of bicycle lanes upon greenhouse gas emissions can be analyzed as well.</p> <p>Anticipated Outcome: Identify effects of the newly constructed bicycle lanes on bike counts, crashes, and mode split compared to existing conditions and relative to conditions on similar nearby streets that did not receive newly constructed bicycle facilities. Add to our understanding of to what degree the new bicycle facility attracts people who were not previously biking in the area and to what degree it attracts people who were already biking away from their former route to the new facility.</p>	P		S		S				P		P			P		P
A-7	Safety Effectiveness of Safe Routes to School Program	\$80,000	<p>Purpose: This study will investigate the safety and effectiveness of the Safe Routes to School (SRTS) program and the primary factors contributing to a program's effectiveness. Such factors could include such things as the presence of reduced speed school zones or infrastructure improvements, as well as the grade levels of students and the presence of school crossing guards.</p> <p>Anticipated Outcome: Through this study, a task force will be formed to guide the direction of the research. A literature review will be conducted on SRTS programs throughout the Boston region, as well as in other states, to determine the factors that contribute to various SRTS improvements either being encouraged, requiring further study, or being discouraged in specific locations.</p> <p>Schools selected for detailed study will be those that have been participating in the SRTS program and represent a broad range of communities throughout the Boston region (factors considered when choosing schools will include representing a range of grade levels, high- and low- density communities, varied traffic characteristics on surrounding roads, and environmental justice zones, among others). 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. The outcome will be an understanding of the traffic and safety characteristics before and after implementation of the SRTS program in both the immediate vicinity of the selected schools and within a two-mile radius. In cases where there is good before and after data, these findings will be quantitative.</p>	P	S	S	S	S				P		P					P
A-8	Bicycle Level-of-Service Metric	\$55,000	<p>Purpose: This project would help to understand the travel behaviors and comfort levels of cyclists within diverse environments and to be better able to accurately plan for transportation in the Boston region.</p> <p>Anticipated Outcome: Enhanced ability to calculate expected bicycle trips and to prioritize projects. This study would begin with a literature review of existing bicycle level-of-service (LOS) criteria to identify the data that CTPS staff should use when modeling cyclist trips within the Boston region. This process would be informed by communication with CTPS staff and entities at the local and state level in order to identify what data is currently available for calculating bicycle LOS in the Boston region. Depending on data availability, criteria for the LOS metric would be selected and used to evaluate bicycle LOS in the Boston region.</p>	S		S		P				P		P			P		P

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ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas					Mode			Study Scale		Impact			Other			
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study	New Study
A-9	Study of Possible Places and Times for Car-Free Days	\$35,000	<p>Purpose: This study would aim to understand and analyze the appropriateness of instituting car-free days or locations. CTPS staff would work with selected municipalities (up to three) to analyze streets, days, and times (including different times of year) that car-free days would benefit the community and multimodal transportation or recreation throughout the community. Aspects that could be analyzed to understand the possible costs and benefits of establishing a car-free street/day include: traffic and commuting patterns, air quality improvements, economic impact to businesses, and community support, among others.</p> <p>Anticipated Outcome: Memorandum(s) describing the recommended approach to implementing car-free days/streets and an analysis of the costs and benefits that could be realized.</p>			S		P	S		P			P					P	
LAND USE, ENVIRONMENT, AND ECONOMY																				
Another Chance																				
B-1	Methodologies and Tools for Understanding Transportation, Population, Housing, and Economic Displacement	\$85,000	<p>Purpose: Through this project, staff would work on developing methodologies or approaches that the MPO could use to better project economic displacement as a result of transportation projects.</p> <p>Anticipated Outcome: Through this project, staff would identify, through a literature review and other methods, techniques for accounting for displacement through the regional travel demand model, the land use model, or other approaches. These techniques could be tested on a project programmed in the Long-Range Transportation Plan (which would serve a hypothetical example). MPO staff could also attempt to do some before and after comparisons on a past large-scale transportation project to better understand displacement. Deliverables may include a memorandum documenting techniques and the results of sample analyses. Ultimately, these results could inform MPO project selection and performance-based planning.</p>				P		S				P	P				N		P
B-2	Transportation Mitigation of Major Developments: Review of Existing Strategies	\$60,000	<p>Purpose: This project would build off of the MPO's Core Capacity Constraints study (included in the FFY 2015 UPWP) that focused on examining strategies to mitigate the impacts new developments may have on the region's transportation system.</p> <p>Anticipated Outcome: Through this particular study, inspired by the discussion of transportation mitigation strategies at the January 8, 2015 MPO meeting, MPO staff would explore major land use developments that have occurred in the recent past (perhaps 15 years), along with transportation mitigation measures that were incorporated into the development process. These would include measures to address the impacts that the new development would have on the transportation system, such as the increased travel demand on nearby rapid transit or bus routes. MPO staff would then track the implementation of these measures and try to assess results. Through this process, MPO staff may be able to make recommendations for improvements to transportation mitigation-related processes and regulations and to the types of mitigation measures required by permitting agencies.</p>	P	S	S	S	S				P	P				P			P

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other	
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study
B-3	Energy and Electric Vehicle Use in the MPO Region	\$55,000	<p>Purpose: Through this project, MPO staff would gather information and develop a profile of energy use for transportation in the MPO region. MPO staff would focus in particular on energy-use trends that pertain to electric vehicles.</p> <p>Anticipated Outcome: This project would inventory the distribution and location characteristics of charging stations, examine the characteristics of the electric vehicle fleet in the Boston region (such as the proportions of electric vehicles that are owned by households as compared to institutions), and analyze trends in the availability and use of these vehicles. Other activities may include an analysis of levels of consumption for different fuel types. This information may be useful to the MPO in future plan development and performance-based planning activities.</p>			P					P		P			P		P	
New																			
B-4	Shopping Behavior by Mode of Arrival	\$55,000	<p>Purpose: This study aims to create a local understanding of the concept and previous research conducted in other states about shopping behavior by mode of arrival. The supply and availability of parking is an issue in planning and implementing priority bus lanes and bicycle/pedestrian facilities as well as when new development comes to an area. This study would select two or three specific locations in the Boston region to understand local shopping behavior by individuals arriving by various modes. One approach to choosing the locations of study would be to build off of a study that the MPO is currently conducting on priority bus lanes and choose several locations that are highlighted in that study. This could be an important step in gaining support for implementing the findings from that study.</p> <p>Anticipated Outcome: The findings from this study would be useful to transit agencies and advocates as well as municipalities. Previous research points to the fact that pedestrians, bicyclists, and transit riders spend just as much money at commercial locations as drivers. The local knowledge gained from this study could help municipalities adjust parking requirements for new developments and could be an important tool in gaining support for additional bicycle, pedestrian, and transit infrastructure.</p>	S	S			P	S			P		P			N		P
B-5	Electric Vehicle Technologies for Transit	\$55,000	<p>Purpose: This study would investigate the electric vehicle technologies available for transit vehicles. It could look at what technologies are being used successfully in other areas/states, as well as the economic and environmental costs and benefits of implementing these technologies in the Boston region.</p> <p>Anticipated Outcome: A report documenting the findings of research from around the country and an analysis of applicability to the Boston region.</p>			P		S	S			P		P			N		P
B-6	Impacts of SIP Commitments on Regional Air Quality	\$55,000	<p>Purpose: This study would investigate the air-quality impacts of transit projects included in the State Implementation Plan (SIP) as transportation control measures during the environmental review process for the Central Artery/Third Harbor Tunnel project.</p> <p>Anticipated Outcome: An understanding and approach to analysis of the impact of SIP commitments on regional air quality. The study would also shed light on the effectiveness of using legal commitments as a strategy for ensuring implementation of transportation projects and priorities for attaining and/or maintaining compliance with the National Ambient Air Quality Standards.</p>			P	S					P		P			N		P

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas					Mode			Study Scale		Impact			Other	
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work
B-7	Study of Promising GHG-Reduction Strategies	\$55,000	<p>Purpose: Based on recommendations from the 2016 study completed by staff that provided information about cost-effective GHG reduction strategies, staff is proposing to study a subset of the 14 promising strategies that the MPO can fund, study, or advocate for in order to understand implementation at the regional level and determine their GHG reduction and cost-effectiveness potential.</p> <p>Anticipated Outcome: Examples of potential strategies that the MPO can fund and which could be studied in more detail include transit expansion or service improvement, teleworking, and parking management. The study could also look at the equity, safety, and mobility impacts of these strategies.</p>			P		S	S				P			P		P
MULTIMODAL MOBILITY																		
Renew																		
C-1	Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2017	\$110,000	<p>Purpose: Identify priority arterial and bottleneck locations and recommend low-cost improvements.</p> <p>Anticipated Outcome: An enhanced understanding of approaches to improve safety and mobility for all modes. Communities can contact CTPS for roadways to be considered for study.</p>	P	S	S		S	S	P			P			P	N	P
C-2	Safety and Operations Analysis at Selected Intersections	\$65,000	<p>Purpose: The purpose of this project would be to examine mobility and safety issues at major intersections on the region's arterial highways, where, according to the MPO's crash database, many crashes occur. These locations are also congested during peak traffic periods. The resulting bottlenecks may occur only at single large intersections, but usually spill over to a few adjacent intersections along an arterial. These intersections may also accommodate multiple transportation modes, including buses, bicyclists, and pedestrians.</p> <p>Anticipated Outcome: This study would build directly on the results of the monitoring of delays and safety along arterial roadways that the Congestion Management Process (CMP) produces, and the resulting recommendations would be "management and operations" improvements. Municipalities in the region are very receptive to this type of study since these studies give them an opportunity to begin looking at the needs of these locations, starting at the conceptual level, before they commit funds for design. Eventually, if a project qualifies for federal funds, the study's documentation is also useful to MassDOT.</p>	P	S	S		S	S	P			P			P	N	P
C-3	Low-Cost Improvements to Express-Highway Bottleneck Locations	\$50,000	<p>Purpose: Build on previously conducted analysis of several express-highway bottleneck locations (Low-Cost Improvements to Bottlenecks Phase I and Phase II). These studies were very well received by the MassDOT and the FHWA. Some of the recommendations from these studies already have been executed, and the FHWA has interviewed MPO staff about the successful implementation.</p> <p>Anticipated Outcome: Identification of low-cost methods to reduce congestion, increase safety, and improve traffic operations in the Boston Region.</p>	S	S	S		P	S	P			P			P	N	P

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other		
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study	New Study
C-4	Priority Corridors from the Long-Range Transportation Plan Needs Assessment	\$110,000	<p>Purpose: These planning studies develop conceptual plans recommending improvements for specific arterial segments.</p> <p>Anticipated Outcome: Cities and towns are able 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, the study's documentation also may be useful to MassDOT and the municipalities.</p>	S	S	S		P	S	P				P			P	P		
Evolve																				
C-5	The Effects of Induced Demand upon Transportation System Efficiency	\$55,000	<p>Purpose: In this UPWP project, CTPS can explore the concept of induced demand and its ramifications upon transportation projects such as intersection improvements and capacity expansion. The effect of induced demand upon other types of transportation projects could be considered as well. Specifically, the project would include the following:</p> <ul style="list-style-type: none"> • Definition of induced travel/demand • Context of induced travel/demand in different planning contexts • Determination of when induced travel/demand should be included in transportation analyses • Determination of the magnitude of induced travel/demand for different types of transportation projects and land uses • Determination of how induced demand can be incorporated into the travel demand model <p>Anticipated Outcome: Better understanding of the ability of system efficiency improvements, such as capacity expansion and intersection improvements, to achieve long-term GHG emission reduction and congestion relief.</p>			P				P			P	P			P		P	
Another Chance																				
C-6	Planning for Connected and Autonomous Vehicles	\$50,000	<p>Purpose: This project would involve research into the overarching issues that the Boston Region MPO needs to understand and plan for around autonomous and connected vehicle technologies. Some of the questions that could form the body of research include:</p> <ul style="list-style-type: none"> • What research exists already? • How are other states, regions, and municipalities approaching being prepared for these technologies? • How might these technologies affect transportation 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 are the best next steps for the region in terms of being prepared for these technological changes? <p>Anticipated Outcome: This project would be an important first step to understanding the transportation planning consequences of AV/CV technologies and how the MPO and region can be prepared.</p>	S	S	S		P	S	P				P	P			N		P

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other	
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study
C-7	Safety Improvements at Express-Highway Interchanges	\$55,000	<p>Purpose: Continue to address the 2013 MassDOT Top 200 High-Crash Locations and Highway Safety Improvement Program (HSIP) crash clusters in the Boston Region MPO. Many of these are express-highway interchanges, and some of them do not need complete rebuilds (which are costly), but rather low-cost improvements that address safety and operations.</p> <p>Anticipated Outcome: The study would review the Top 200 Intersection Clusters and HSIP crash clusters to identify candidate locations. MPO staff would develop low-cost safety and operational improvements.</p>	P	S			S	S	P			P			P	N	P	
TRANSIT Evolve																			
E-1	MBTA Bicycle Parking/MBTA Park-and-Ride Lot Monitoring (including nearby private lots and on-street parking)	\$80,000	<p>Purpose: Two hundred and seventy-nine (279) MBTA stations would need to be surveyed for bicycle parking data. Additionally, the MBTA parking lots, which have not been surveyed since 2013, also would need to be updated. The parking lots for this iteration of the park-and-ride lot survey will include any parking near stations that commuters use, including MBTA lots, private lots, and on-street parking. Because it is less costly to make a single visit to stations that offer parking for both modes, this collection effort will combine the data for both bicycle and automobile parking. This task will also include talking to communities to see what the parking trends for each station are and to see if the communities have recommendations of their own.</p> <p>This study would also look at the pricing and management structure of all of the publicly and privately owned parking lots at and near MBTA stations.</p> <p>Anticipated Outcome: Update the demand and supply of parking at MBTA stations and catalog the institutional structure that shapes pricing for parking in the lots.</p>		S	S	S	P	S			P	P	P			P	P	
Another Chance																			
E-2	Potential Uses for Unused Land Underused ROW	\$55,000	<p>Purpose: Through this study, MPO staff would inventory and map the unused or underused rail right-of-way (ROW) in the region, and then suggest possible transportation uses for the ROW. Options for alternative uses could include the creation of bicycle and/or pedestrian routes, or routes for new transit service.</p> <p>Anticipated Outcome: The deliverable could be a memorandum describing the study process, recommendations for a few specific locations, and maps of the region describing the used and underused ROW.</p>		S	S		P	S		P		P		P		N		P
E-3	Non-Fixed Route Transportation Services: Lessons for Transit Agencies	\$90,000	<p>Purpose: In a past study, CTPS used taxi origin-destination data, along with other data sources, to determine where transit dollars might be best spent to improve the MBTA's early-morning service. This proposed study would go beyond the scope of the previous study and would include all-day taxi data and other non-fixed-route service origin-destination data to determine where the fixed-route transit system is inadequately serving potential riders and where improvements could be made. This study would focus on areas with concentrated taxi or other point-to-point service origins and destinations since these are the areas with the most potential for supporting fixed-route transit service. The study area for this project would include Boston and Cambridge.</p> <p>Anticipated Outcome: Understanding of improvements that could be made to the fixed-route transit service.</p>		S	S	S	P				P	P	P		P			P

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ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other	
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study
New																			
E-4	Collecting Better MBTA Survey Data	\$55,000	<p>Purpose: As technology advances, opportunities improve for gathering data of a better quality and in a greater quantity. The MBTA strives to serve the needs of its users and often relies on surveys to determine how the MBTA might improve its service. Current MBTA survey formats provide a great deal of information, but there may be additional avenues that the MBTA could pursue in order to compile robust user data. The MBTA application that allows users to purchase tickets on their smartphones could provide a quick and easy means by which the MBTA could gather data on a constant basis. After a user purchases a ticket, the application could prompt the user to provide the mode or modes by which he or she reached the station, the distance traveled to the station using each travel mode, and his or her demographic information. Additionally, as use of the ticket purchase application expands to other modes besides the commuter rail, this survey approach could be useful in reaching many more riders. This study could explore this approach as well as others to gather better user data. Other options would be determined in coordination with the MBTA's new data chief.</p> <p>Anticipated Outcome: The project would begin with a literature review of existing data collection methods. This would be followed by an assessment of the feasibility of using each approach for MBTA surveys. Finally, this project would recommend approaches that the MBTA should take when conducting surveys in the future.</p>				P				P	P		P		P			P
E-5	Strategies to Reduce Paratransit Trips in the Boston MPO Region: Reducing Barriers to Entry to Fixed-Route Transit Service	\$55,000	<p>Purpose: Throughout the MPO region, people use the MBTA's paratransit services such as THE RIDE. Some of their travel patterns may overlap with the existing fixed-route network, and other travel patterns might be accommodated through minor adjustments to existing transit service. In the past, the MBTA offered free CharlieCards to THE RIDE users to lower the barrier of entry to the fixed-route system for the trips they can make using the fixed-route system. Depending on the available data, knowing where the users of these special CharlieCards make trips on the fixed-route system and where they use THE RIDE may provide valuable insights to system improvements.</p> <p>Anticipated Outcome: Identify the travel patterns of THE RIDE users, quantify some service issues that prohibit people from fully using fixed-route services, and make recommendations to existing service that may improve access to the fixed-route system.</p>	S		P	S				P	P		P		N			P

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas						Mode			Study Scale		Impact			Other	
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study
E-6	IA Review of Interlining at the MBTA	\$55,000	<p>Purpose: This study's goal would be to review some of the issues with interlining and discover the conditions where interlining may and may not be operationally beneficial. It would include a review of the MBTA's practices for scheduling running time and using interlining compared with use of these practices at peer agencies.</p> <p>Anticipated Outcome: The results of this study would provide the MBTA with parameters they could use to fine-tune how they schedule their services—reaping the benefits of interlining when it makes sense, yet providing reliable and resilient service.</p>		S	S	S	P				P	P		P		N		P
E-7	Using GTFS to Find Shared Segments with Excessively Irregular Headways	\$25,000	<p>Purpose: The goals of this study are to use existing data to provide schedule improvements for MBTA buses and to document reasons behind irregularities in the existing schedule.</p> <p>Anticipated Outcome: By mining the MBTA's GTFS data, we can discover the distribution of headways at a stop over time, discovering segments that have excessively irregular headways or segments where multiple bus routes are scheduled to overlap.</p> <p>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.</p>		S	S	S	P				P	P		P		N		P
E-8	Low-Cost Improvements to Transit Service	\$35,000	<p>Purpose: This study would examine the transit system in the Boston Region MPO and identify several locations where inadequate service occurs as a result of inefficient passenger queuing, passenger loading, or wayfinding. Three to five locations where this "friction" occurs would be chosen for more in-depth study to identify low-cost solutions that could be implemented.</p> <p>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 describe the suggested processes for implementation of the solutions and could recommend an approach to study the after-condition at each location to determine how well the interventions are working. This study could include the MBTA commuter rail as well as locations within regional transit agency service areas that are in need of improvement.</p>		S	S	S	P				P	P		P		N		P

FFY 2017 Draft Universe and Study Evaluation

ID	Project Name	Estimated Cost	Project Purpose and Outcome	LRTP Goal Areas					Mode			Study Scale		Impact			Other			
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management/Mobility	Economic Vitality	Multi-Modal Roadway	Bicycle Pedestrian	Transit	Specific Community	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing Work	Continuing Study	New Study
OTHER TECHNICAL SUPPORT																				
Renew																				
F-1	MPO Staff-Generated Research Topics	\$30,000	<p>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. MPO staff members would complete an application, which would be reviewed by MPO managers and directors, for some MPO funding to do independent research on a topic of professional interest and potential use in the metropolitan transportation-planning program.</p> <p>Anticipated Outcome: This program could bring forth valuable information for the MPO's consideration and would support staff's professional development. The opportunities afforded to staff through this program could yield highly creative solutions to transportation-planning problems.</p>											P	P			P	P	
Another Chance																				
F-2	Future of Transportation Data Collection	\$55,000	<p>Purpose: This study would review the transportation data sources traditionally gathered using person time and would explore whether there are cost-effective ways to automate these processes. To complement this review, the study would also identify areas in the transportation field where human-based data collection is more beneficial than machine-based data collection and also where automated data collection methods cannot be used.</p> <p>Anticipated Outcome: Enhanced understanding of the most cost-effective and efficient ways to collect transportation data. Ability to adjust our approaches to data collection based on the findings.</p>											P	P			P		P

Notes: (1) Green highlighted rows are new studies that were chosen for funding in FFY 2017. These studies are described in further detail in Chapter 6.
 (2) Proposed studies F-1 and F-2 were not evaluated using the evaluation areas. F-1 dedicates an amount of funding for a yet-to-be-determined MPO staff research proposal, and F-2 is a data-collection research study with the potential to enhance staff's work; however, it does not directly relate to an LRTP goal area or the other evaluation areas.

AV/CV = autonomous vehicles/connected vehicles. CTPS = Central Transportation Planning Staff. FFY = federal fiscal year. FHWA = Federal Highway Administration. GHG = greenhouse gas. GTFS = general transit feed specification. LOS = level of service. LRTP = Long-Range Transportation Plan. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transit Authority. MPO = Metropolitan Planning Organization. P = primary. ROW = right-of-way. S = secondary. SIP = State Implementation Plan. SRTS = Safe Routes to School. UPWP = Unified Planning Work Program



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APPENDIX D

Geographic Distribution of UPWP Funded Studies

D.1 INTRODUCTION

This appendix summarizes the Metropolitan Planning Organization (MPO)-funded work products produced by MPO staff and the staff of the Metropolitan Area Planning Council (MAPC) during federal fiscal years (FFY) 2010 through 2015, as well as those expected to be completed by the end of FFY 2016. The narrative below describes the methodology used to compile this information, as well as some of the additional factors that could be used to further analyze and use this data to inform and guide public involvement and regional equity purposes.

D.2 PURPOSE AND METHODOLOGY

Purpose

The purpose of this data collection and analysis is to better understand the geographic spread of Unified Planning Work Program (UPWP) work products (i.e., reports and technical memoranda) throughout the region. In other words, this exercise serves to illuminate which communities and areas of our metropolitan region have been the subject of transportation studies and analyses (or recipients of technical support) conducted by the MPO staff with 3C (continuing, comprehensive, and cooperative) planning funds. The data presented below covers UPWP tasks completed from FFY 2010 through FFY 2016 and includes work that resulted in benefits to specific municipalities as well as studies that had a regional focus.

This is the first FFY in which this data has been compiled, and MPO staff intends to continue to compile this information each FFY. Maintaining a database to track the geographic distribution of UPWP studies (those benefiting specific communities as well as those benefiting a wider portion of the region) can serve as one important input into the UPWP funding decisions made each FFY. When considered in combination with other data, such as the presence and size of a municipal planning department or the percentage of minority residents, this data on geographic distribution of MPO-funded UPWP studies can help guide the MPO's public outreach to help ensure that, over time, we are meeting the needs of the region with the funds allocated through the UPWP.

Methodology

As noted above, this analysis examined FFYs 2010 through 2016. In order to generate information on the number of UPWP studies produced during these FFYs that benefited specific cities and towns in the Boston region, MPO staff performed the following main steps:

- Reviewed all work products listed as complete in UPWPs from FFYs 2011 through 2017
- Excluded all agency and other client-funded studies and technical analyses in order to focus the analysis on MPO-funded work only

- Excluded all work products that had a regional focus rather than benefiting specific municipalities
- Excluded all work related to certification requirements (Chapter 5) and administration, resource management, and support activities (Chapter 8)
- Compiled a count of all reports and technical memoranda completed specifically for one municipality, or reports and technical memoranda directly benefiting multiple municipalities. In the case where multiple municipalities directly benefit from a report or technical memoranda, the work product was counted once for each municipality that benefited. Examples of studies and reports that benefited multiple municipalities include the Massachusetts Bay Transportation Authority (MBTA) Bus Route 1 Transit Signal Priority Study (both Boston and Cambridge were beneficiaries of this study) and the Route 126 Corridor Study (both Bellingham and Medway were beneficiaries of this study)
- Reviewed and discussed the status and focus of studies, technical memoranda, and reports with project managers and technical staff

D.3 PLANNING STUDIES AND TECHNICAL ANALYSES BY COMMUNITY

Table D-1 shows the number of completed MPO-funded UPWP work products from FFY 2010 through FFY 2016 that are determined to provide benefits to specific municipalities. Studies and technical analyses are grouped by the year in which they were completed, rather than the year in which they were first programmed in the UPWP. Examples of the types of studies and work in the table include:

- Evaluating Transit-Oriented Development opportunities at specific MBTA Stations
- Technical assistance on Massachusetts Environmental Policy Act (MEPA) Environmental Impact Reports
- Complete streets analyses for specific municipalities
- Operations analyses and alternative conceptual design recommendations for specific intersections



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Table D-1: Number of UPWP Tasks by Federal Fiscal Year and Community, Grouped by Subregion

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Boston	3	4	5	2	4	4	3	25	617,594	327,282	\$50,684	778	Inner Core
Everett	2	1	2	2	3	3	2	15	41,667	19,351	\$49,737	57	Inner Core
Waltham	2	2	2	2	2	2	3	15	60,632	18,954	\$66,346	115	Inner Core
Somerville	4	3	2	2	1	1	1	14	75,754	23,395	\$61,731	88	Inner Core
Cambridge	2	2	2	1	1	1	4	13	105,162	39,903	\$64,865	120	Inner Core
Newton	1	2	3	2	2	2		12	85,146	17,345	\$107,696	276	Inner Core
Quincy	3	1	3	2	2			11	92,271	31,823	\$59,803	185	Inner Core
Chelsea	4	1	2	1	1	1		10	35,177	26,295	\$40,487	44	Inner Core
Malden	2	2	3	1	1	1		10	59,450	28,239	\$56,347	93	Inner Core
Lynn	3		1	3			1	8	90,329	47,360	\$43,200	153	Inner Core
Medford	2	1	1	1	1		1	7	56,173	13,384	\$70,102	92	Inner Core
Revere	1		2	2	2			7	51,755	19,456	\$49,759	85	Inner Core
Brookline		1	1	1	1	1	1	6	58,732	15,692	\$95,448	92	Inner Core
Melrose	1		1	2	1	1		6	26,983	2,822	\$82,482	71	Inner Core
Belmont	1	1			1		2	5	24,729	4,611	\$95,197	72	Inner Core
Arlington	2	1					1	4	42,844	7,040	\$82,771	101	Inner Core
Saugus	1		1	1				3	26,628	2,768	\$71,023	77	Inner Core
Winthrop	1		1					2	17,497	2,011	\$67,535	36	Inner Core
Watertown	1							1	31,915	5,850	\$74,081	72	Inner Core
Nahant								0	3,410	153	\$81,831	17	Inner Core
Inner Core Subtotals	36	22	32	25	23	17	17	172	1,603,848	653,734		2624	

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Lexington	2	1	3	1	1	2		10	31,394	8,256	\$130,637	117	MAGIC
Lincoln	1	1	3	2	1	1		9	6,362	1,096	\$121,104	51	MAGIC
Acton			2			4	1	7	21,924	5,369	\$105,523	103	MAGIC
Bedford	3		1		1	2		7	13,320	2,136	\$107,639	70	MAGIC
Hudson		2	2	1		2		7	19,063	2,118	\$74,983	83	MAGIC
Maynard			2	1		4		7	10,106	996	\$75,597	35	MAGIC
Sudbury	2	2	1	1		1		7	17,659	1,880	\$153,295	138	MAGIC
Concord			1	1	1	3	1	7	17,668	2,266	\$119,858	104	MAGIC
Littleton			2			3		5	8,924	685	\$103,616	62	MAGIC
Bolton	1	1	1			1		4	4,897	320	\$125,741	60	MAGIC
Boxborough			1			3		4	4,996	1,056	\$102,222	33	MAGIC
Stow			2	1		1		4	6,590	511	\$117,440	52	MAGIC
Carlisle			1			1		2	4,852	595	\$155,000	55	MAGIC
MAGIC Subtotals	9	7	22	8	4	28	1	79	167,755	27,284		963	
Weston	4	2	2	2	2	2	2	16	11,261	1,868	\$148,512	88	MetroWest
Framingham	3	3	3	2	2	1	1	15	68,318	23,693	\$64,061	219	MetroWest
Wellesley	3	1	2	2	1	2	1	12	27,982	4,921	\$139,784	109	MetroWest
Natick	3	2	2	2			1	10	33,006	4,817	\$87,568	123	MetroWest
Southborough	2	2	2	1		1		8	9,767	1,362	\$140,184	69	MetroWest
Marlborough	1	1	1	2	1			6	38,499	9,546	\$71,617	129	MetroWest
Holliston	2			1	1			4	13,547	902	\$103,600	86	MetroWest
Ashland	2			1				3	16,593	3,063	\$92,974	73	MetroWest

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Wayland	1	1		1				3	12,994	1,912	\$129,805	87	MetroWest
MetroWest Subtotals	21	12	12	14	7	6	5	77	231,967	52,084		983	
Burlington	3	2	2	2	1	1	1	12	24,498	5,106	\$90,341	94	NSPC
Reading	2		1	3	2	2	1	11	24,747	1,870	\$99,130	89	NSPC
Woburn	2		1	3		1	1	8	38,120	6,990	\$71,060	121	NSPC
Wilmington	1		1	3			1	6	22,325	1,725	\$94,900	95	NSPC
Winchester	1		1	2			2	6	21,374	3,065	\$121,572	73	NSPC
Lynnfield	1			1		2	1	5	11,596	758	\$87,590	66	NSPC
Stoneham	1			2		1	1	5	21,437	2,033	\$76,574	65	NSPC
Wakefield	1		1	1			1	4	24,932	1,751	\$89,246	85	NSPC
North Reading				1		1	1	3	14,892	901	\$96,016	76	NSPC
NSPC Subtotals	12	2	7	18	3	8	10	60	203,921	24,199		764	
Salem	2	3				2	1	8	41,340	9,963	\$56,979	88	NSTF
Danvers	1	2	2		1			6	26,493	1,654	\$75,310	104	NSTF
Beverly		2		1	1	1		5	39,502	3,397	\$66,671	125	NSTF
Peabody	2	2						4	51,251	6,317	\$65,515	159	NSTF
Rockport		2		1				3	6,952	286	\$70,625	33	NSTF
Swampscott	1		1	1				3	13,787	963	\$90,763	43	NSTF
Gloucester				1	1			2	28,789	1,689	\$60,506	88	NSTF
Marblehead	1			1				2	19,808	990	\$97,097	66	NSTF
Hamilton		1						1	7,764	676	\$99,732	45	NSTF
Ipswich		1						1	13,175	704	\$80,816	73	NSTF

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Middleton							1	1	8,987	1,142	\$87,728	46	NSTF
Wenham		1						1	4,875	268	\$132,697	27	NSTF
Essex								0	3,504	135	\$76,989	24	NSTF
Manchester								0	5,136	184	\$105,000	24	NSTF
Topsfield								0	6,085	283	\$115,015	50	NSTF
NSTF Subtotals	7	14	3	5	3	3	2	37	277,448	28,651		995	
Braintree	5		1	2		1	1	10	35,744	5,273	\$81,146	104	SSC
Weymouth	3			1	1	1		6	53,743	6,379	\$65,849	141	SSC
Cohasset				2		1		3	7,542	288	\$114,214	32	SSC
Holbrook	1			2				3	10,791	2,070	\$62,623	34	SSC
Scituate				2		1		3	18,133	856	\$86,723	101	SSC
Hingham	1			1				2	22,157	1,022	\$98,890	110	SSC
Marshfield			1	1				2	25,132	1,005	\$86,486	131	SSC
Norwell				2				2	10,506	495	\$108,944	69	SSC
Duxbury				1				1	15,059	560	\$114,565	103	SSC
Hanover				1				1	13,879	579	\$100,233	85	SSC
Hull				1				1	10,293	591	\$72,166	50	SSC
Pembroke				1				1	17,837	699	\$80,694	91	SSC
Rockland	1							1	17,489	1,610	\$64,512	48	SSC
SSC Subtotals	11	0	2	17	1	4	1	36	258,305	21,427		1099	
Milford	1			3	3	1		8	27,999	4,895	\$66,636	109	SWAP
Hopkinton	2	1		3		1		7	14,925	1,238	\$120,240	106	SWAP
Medway	1		1	2				4	12,752	828	\$102,002	70	SWAP

Table D-1(cont.)

Community	2010	2011	2012	2013	2014	2015	2016	Total	2010 Population	2010 Minority Population Count	2010 Median Household Income	2010 Roadway Miles	Subregion
Sherborn	1			3				4	4,119	274	\$145,250	56	SWAP
Bellingham	1			2				3	16,332	1,347	\$78,290	83	SWAP
Franklin				2	1			3	31,635	2,709	\$89,330	132	SWAP
Millis	1			2				3	7,891	576	\$85,472	52	SWAP
Wrentham	1			2				3	10,955	414	\$94,406	67	SWAP
Norfolk				2				2	11,227	1,734	\$113,266	70	SWAP
SWAP Subtotals	8	1	1	21	4	2	0	37	137,835	14,015		745	
Needham	2		1	2	1	1	1	8	28,886	3,156	\$114,365	119	TRIC
Dedham	1		1	2		1	1	6	24,729	3,682	\$80,865	82	TRIC
Westwood	1		1	2	1	1		6	14,618	1,237	\$114,250	80	TRIC
Foxborough				2	1	1		4	16,865	1,400	\$93,397	82	TRIC
Randolph	4							4	32,112	19,559	\$64,607	93	TRIC
Walpole	2			1		1		4	24,070	2,222	\$89,697	117	TRIC
Stoughton	1	1			1			3	26,962	5,822	\$67,175	108	TRIC
Canton	1				1			2	21,561	3,610	\$89,705	92	TRIC
Norwood	1			1				2	28,602	4,960	\$72,472	93	TRIC
Medfield						1		1	12,024	731	\$126,048	72	TRIC
Sharon								0	17,612	3,341	\$115,172	106	TRIC
Milton	2	3						5	27,003	6,514	\$97,421	94	TRIC/Inner Core
Dover	1			3				4	5,589	490	\$164,583	59	TRIC/SWAP
TRIC Subtotals	16	4	3	13	5	6	2	49	280,633	56,724		1197	
Grand Total	120	62	82	121	50	74	38	547	3,161,712	878,118		9370	

MAGIC = Minuteman Advisory Group on Interlocal Coordination. NSPC = North Suburban Planning Council. NSTF = North Shore Task Force. SSC = South Shore Coalition. SWAP = South West Advisory Planning Committee. TRIC = Three Rivers Interlocal Council.

D.4 REGIONWIDE PLANNING STUDIES AND TECHNICAL ANALYSES

In addition to work that benefits specific municipalities, many of the projects funded by the MPO through the UPWP have a regional focus. Table D-2 lists MPO-funded UPWP studies completed from 2010 through 2016 that were regional in focus.

More information on these studies and other work can be found on the MPO’s website (http://bosmpo.ctps.org/recent_studies) or by contacting Alexandra Kleyman, UPWP Manager, at akleyman@ctps.org.

Table D-2: Regionally-Focused MPO Funded UPWP Studies

FFY 2016	
Central Transportation Planning Staff	Metropolitan Area Planning Council
<ul style="list-style-type: none"> • Modeling Capacity Constraints • Identifying Opportunities to Alleviate Bus Delay • Research Topics Generated by MPO Staff (FFY 2016): Transit dependence scoring system using driver license data • Title VI Service Equity Analyses: Methodology Development • Exploring the 2011 Massachusetts Travel Survey: MPO Travel Profiles • Exploring the 2011 Massachusetts Travel Survey: Barriers and Opportunities Influencing Mode Shift • Core Capacity Constraints • EJ and Title VI Analysis Methodology Review • Transportation Investments for Economic Development 	<ul style="list-style-type: none"> • Right-Size Parking Report • Transportation Demand Management— Case Studies and Regulations • Hybrid Electric Vehicle Retrofit Procurement • Autonomous Vehicles and Connected Cars research • MetroFuture Implementation technical memorandums
FFY 2015	
Central Transportation Planning Staff	Metropolitan Area Planning Council
<ul style="list-style-type: none"> • Barriers and Opportunities Influencing Mode Shift • Bicycle Network Gaps: Feasibility Evaluations • Greenhouse Gas Reduction Strategy Alternatives: Cost-Effectiveness Analysis • Roadway Network for Emergency Needs • 2012 Inventory of Bicycle Parking Spaces and Number of Parked Bicycles at MBTA stations • 2012-2013 Inventory of Park-and-Ride Lots at MBTA Facilities • Title VI Service Equity Analyses: Methodology Development 	<ul style="list-style-type: none"> • Population and Housing Projections for Metro Boston • Regional Employment Projections for Metro Boston • Right-size parking calculator

FFY 2014	
Central Transportation Planning Staff	Metropolitan Area Planning Council
<ul style="list-style-type: none"> • Bicycle Network Evaluation • Household Survey-Based Travel Profiles and Trends • Exploring the 2011 Massachusetts Travel Survey: Focus on Journeys to Work • Methodology for Evaluating the Potential for Limited-Stop Service on Transit Routes 	<ul style="list-style-type: none"> • Transportation Demand Management Best Practices and Model Municipal Bylaw • Land Use Baseline for Bus Rapid Transit • MetroFuture community engagement
FFY 2013	
Central Transportation Planning Staff	Metropolitan Area Planning Council
<ul style="list-style-type: none"> • Regional HOV-Lane Systems Planning Study, Phase II • Roadway Network Inventory for Emergency Needs: A Pilot Study • Carbon Dioxide, Climate Change, and the Boston Region MPO: 2012 Update • Massachusetts Regional Bus Study • Boston Region MPO Freight Program 	<ul style="list-style-type: none"> • Regional Trail Network Map and Greenway Planning • MetroFuture engagement at the local level, updates to the Regional Indicators Reports, and Smart Growth Profiles
FFY 2012	
Central Transportation Planning Staff	Metropolitan Area Planning Council
<ul style="list-style-type: none"> • Analysis of JARC and New Freedom Projects • Safety and Security Planning • Emergency Mitigation and Hazard Mapping, Phase II • Impacts of Walking Radius, Transit Frequency, and Reliability • MBTA Systemwide Passenger Survey: Comparison of Results • Pavement Management System Development • Roundabout Installation Screening Tool • TIP Project Impacts Before/After Evaluation • Regional HOV System Planning Study • Freight Survey 	<ul style="list-style-type: none"> • Snow Removal Policy Toolkit • MetroFuture implementation strategies— updated implementation strategies including focus on equity indicators

FFY 2011	
Central Transportation Planning Staff	Metropolitan Area Planning Council
<ul style="list-style-type: none"> • Charlie Card Trip Paths Pilot Study • Early Morning Transit Service • Maintenance Cost of Municipally Controlled Roadways • Analysis of Responses to the MBTA Systemwide Onboard Passenger Survey by Respondents in Environmental-Justice Areas • MBTA Core Services Evaluation • MPO Freight Study, Phase I and Phase II • MPO Freight/Rail Study 	<ul style="list-style-type: none"> • MPO Pedestrian Plan • MPO Regional Bike Parking Program • Toolkit for Sustainable Mobility— focusing on local parking issues
FFY 2010	
Central Transportation Planning Staff	Metropolitan Area Planning Council
<ul style="list-style-type: none"> • An Assessment of Regional Equity Outreach 2008–2009 • Coordinated Human Services Transportation Plan Update • Greenbush Commuter Rail Before and After Study • Mobility Assistance Program and Section 5310 Review • Safety Evaluation of TIP Projects • Red Line-Blue Line Connector Study Support 	<ul style="list-style-type: none"> • Creation of a GIS coverage and related database of MAPC-reviewed projects and their mitigation commitments • Implementation of the regional and statewide bicycle and pedestrian plans, and work on bicycle/pedestrian-related issues, including coordination with relevant national, state, and regional organizations

EJ = environmental justice. FFY = federal fiscal year. GIS = geographic information systems. HOV = high-occupancy vehicle. JARC = job access reverse commute program. MAPC = Metropolitan Area Planning Council. MBTA = Massachusetts Bay Transportation Authority. MPO = Metropolitan Planning Organization. TIP = Transportation Improvement Program.

D.5 NEXT STEPS

As mentioned previously, this is the first year that this type of data has been comprehensively compiled for the MPO staff's work as programmed through the UPWP. Going forward, MPO staff intends to collect this data on an annual basis and to continue to use it as one input that can inform UPWP funding decisions. The data summarized in this appendix and future UPWP funding data that is added to it could be used in a number of different ways to help guide the spending decisions made in future UPWPs. Some analyses that the MPO could complete in the future include:

- Compare the number of tasks per community to the presence and size of a municipal planning department in each city and town
- Examine the use of different measures to understand the geographic distribution of benefits derived from funding programmed through the UPWP. For example, in addition to analyzing the number of tasks per community, the MPO could consider the number of dollars spent per community or the magnitude of benefits that could be derived from UPWP studies (e.g., congestion reduction, air quality improvement, etc.)
- Examine in more detail the geographic distribution of UPWP studies and technical analyses per subregion or per MAPC community type to understand the type of tasks being completed and how these compare to municipally identified needs
- Examine the number of tasks per community and compare the data to the number of road miles, the median household income, or the minority population in each community
- Compare the number of tasks directly benefiting each municipality with the geographic distribution of transportation needs identified in the Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*. The transportation needs of the region for the next 25 years are identified and organized in the LRTP according to the MPO's goal areas, which include safety, system preservation, capacity management and mobility, clean air and clean communities, transportation equity, and economic vitality.

Making these comparisons with the data will provide the MPO with a clearer understanding of the impacts of the work that is programmed through the UPWP. Additionally, the MPO will be able to make more informed decisions about how we choose to distribute funding for transportation studies and technical analyses throughout the region.



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APPENDIX E

MPO Glossary of Acronyms

Acronym	Definition
3C	continuous, comprehensive, cooperative [planning process]
A&F	administration and finance
AACT	Access Advisory Committee to the MBTA
ABP	Accelerated Bridge Program
ADA	Americans with Disabilities Act of 1990
ADT	average daily traffic
AFC	automated fare collection
AMPO	Association of Metropolitan Planning Organizations
APC	automatic passenger counter
APTA	American Public Transportation Association
ARAN	automatic road analyzer
ARRA	The American Recovery and Reinvestment Act of 2009
ASL	American sign language
ATR	automatic traffic recorder
AVL	automatic vehicle location
AWDT	average weekday daily traffic
BCIL	Boston Center for Independent Living
BRA	Boston Redevelopment Authority
BRT	bus rapid transit
BTD	Boston Transportation Department
CA/T	Central Artery/Tunnel [project]
CAA	Clean Air Act of 1970

Acronym	Definition
CAAA	Clean Air Act Amendments of 1990
CATA	Cape Ann Transportation Authority
CBD	central business district
CFR	Code of Federal Regulation
CHSTP	Coordinated Public Transit Human Services Transportation Plan
CIC	Community Innovation Challenge
CIP	Capital Investment Program
CMAQ	Congestion Mitigation and Air Quality
CMP	Congestion Management Process
CNG	compressed natural gas
CO	carbon monoxide
CO2	carbon dioxide
CTPS	Central Transportation Planning Staff [to the Boston Region MPO]
CTTAP	Community Transportation Technical Assistance Program
DBMS	Database Management System
DCAMM	Division of Capital Asset Management and Maintenance
DCR	Department of Conservation and Recreation
DEIR	draft environmental impact report [MA]
DEIS	draft environmental impact statement [federal]
DEP	Department of Environmental Protection [MA]
DMU	diesel multiple unit
DTA	dynamic traffic assignment

Acronym	Definition
EERPAT	Energy and Emissions Reduction Policy Analysis Tool
EIR	environmental impact report [MA]
EIS	environmental impact statement [federal]
EJ	environmental justice
EOEEA	Executive Office of Energy and Environmental Affairs [MA]
EOHED	Executive Office of Housing and Economic Development [MA]
EOHHS	Executive Office of Health and Human Services [MA]
EPA	Environmental Protection Agency [federal]
EPDO	equivalent property damage only [index]
ETC	electronic toll collection
FDR	functional design report
FEIR	final environmental impact report [MA]
FEIR	final environmental impact statement [federal]
FFGA	full funding grant agreement
FFY, FFYs	federal fiscal year, federal fiscal years
FHEA	Fair Housing Equity Assessment
FHWA	Federal Highway Administration
FONSI	finding of no significant impact
FTA	Federal Transit Administration
GANS	grant anticipation notes [municipal bond financing]
GHG	greenhouse gas [as in greenhouse gas emissions]
GIS	geographic information system

Acronym	Definition
GLX	Green Line Extension [Green Line Extension project]
GPS	global positioning system
GWI	global warming index
GWSA	Global Warming Solutions Act of 2008 [MA]
HOV	high-occupancy vehicle
HPP	high-priority projects
HSIP	Highway Safety Improvement Program
HTC	Healthy Transportation Compact
ICC	Inner Core Committee [MAPC subregion]
IMS	intermodal management system
INVEST	Infrastructure Voluntary Evaluation Sustainability Tool [FHWA]
IPCC	Intergovernmental Panel on Climate Change
ISTEA	Intermodal Surface Transportation Efficiency Act [federal]
IT&S	Information Technology and Systems [CTPS group]
ITDP	Institute for Transportation and Development Policy
ITE	Institute of Transportation Engineers
ITS	intelligent transportation systems
JARC	Job Access and Reverse Commute [program]
LAP	language access plan
LCW	Livable Community Workshop
LEP	limited English proficiency
LNG	liquefied natural gas

Acronym	Definition
LOS	level of service
LRTA	Lowell Regional Transit Authority
LRTP	Long-Range Transportation Plan
MAGIC	Minuteman Advisory Group on Interlocal Coordination
MAP-21	Moving Ahead for Progress in the 21st Century Act [federal]
MAPC	Metropolitan Area Planning Council
MARPA	Massachusetts Association of Regional Planning Agencies
MassDOT	Massachusetts Department of Transportation
MassGIS	Massachusetts Office of Geographic Information
Massport	Massachusetts Port Authority
MassRIDES	MassDOT's statewide travel options program
MBCR	Massachusetts Bay Commuter Railroad
MBTA	Massachusetts Bay Transportation Authority
MCAD	Massachusetts Commission Against Discrimination
MEMA	Massachusetts Emergency Management Agency
MEPA	Massachusetts Environmental Policy Act
MGL	Massachusetts general laws
MHS	metropolitan highway system
MAGIC	Minuteman Advisory Group on Interlocal Coordination [MAPC subregion]
MOU	memorandum of understanding
MOVES	Motor Vehicle Emissions Simulator [EPA]
MPO	metropolitan planning organization [Boston Region MPO]

Acronym	Definition
MPOinfo	Boston Region MPO's email contact list
MWGMC	MetroWest Growth Management Committee
MWRC	MetroWest Regional Collaborative [MAPC subregion]
MWRTA	MetroWest Regional Transit Authority
NAAQS	National Ambient Air Quality Standards
NBPD	National Bicycle and Pedestrian Documentation Project
NEPA	National Environmental Policy Act
NHPP	National Highway Performance Program
NMHC	non-methane hydrocarbons
NSTF	North Shore Task Force [MAPC subregion]
NSPC	North Suburban Planning Council [MAPC subregion]
NOx	nitrogen oxides
NTD	National Transit Database
NTP	notice to proceed
O&M	operations and management
ODCR	Office of Diversity and Civil Rights [MassDOT]
OE	operating expenses
OTA	Office for Transportation Access [MBTA]
OTP	Office of Transportation Planning [MassDOT]
P3 [1]	Public Participation Plan
P3 [2]	public private partnership
PBPP	performance-based planning and programming

Acronym	Definition
PDM	Pre-Disaster Mitigation Program [federal]
PEV	pedestrian environmental variable
PL	public law [PL] funds, or metropolitan planning funds [FHWA]
PM2.5	particulate matter smaller than 2.5 micrometers in size
PM10	particulate matter up to 10 micrometers in size
PMT	Program for Mass Transportation [MBTA]
ppm	parts per million
PSA	Project Selection Advisory Council
RCCs	Regional Coordinating Councils
RIF	roadway inventory file
RMV	Registry of Motor Vehicles
ROC	Rider Oversight Committee [MBTA]
ROW	right-of-way
RPA	regional planning agency
RSA	Roadway Safety Audit [FHWA]
RSS	rich site summary [Web, feed]
RTA	regional transit authority
RTAC	Regional Transportation Advisory Council [Advisory Council]
RTC	Regional Transportation Center
SAFE	service and fare equity [analysis]
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users
SCCCT	Statewide Coordinating Council on Community Transportation

Acronym	Definition
SCI	sustainable communities initiative
SDO	supplier diversity office
SFY	state fiscal year
SGR	state-of-good repair
SHRP	Strategic Highway Research Program
SHSP	Strategic Highway Safety Plan
SIP	State Implementation Plan
SNAC	special needs advisory committee
SNLA	Small Necessities Leave Act
SORE	statement of revenue and expenses
SOV	single-occupancy vehicle
SPR	Statewide Planning and Research
SRTS	Safe Routes to School
STB	State Transportation Building [Boston]
STIP	State Transportation Improvement Program
STP	Surface Transportation Program
SWAP	South West Advisory Committee [MAPC subregion]
TAM	transit asset management
TAP	Transportation Alternatives Program
TAZ	transportation analysis zone
TCMs	transportation control measures
TCRP	Transit Cooperative Research Program

Acronym	Definition
TDM	travel-demand management, or transportation-demand management
TE	transportation equity
TEAMS	Travel Efficiency Assessment Method
TEA-21	Transportation Equity Act for the 21st Century [federal]
TIGER	Transportation Investment Generating Economic Recovery [TIGER Discretionary Grant program, federal]
TIGGER	Transit Investments for Greenhouse Gas and Energy Reduction [FTA grant program]
TIP	Transportation Improvement Program [MPO]
Title VI	Title VI of the Civil Rights Act of 1964
TMA [1]	transportation management area [FTA, FHWA]
TMA [2]	Transportation Management Association
TMC	turning movement counts
TOD	transit-oriented development
TRB	Transportation Research Board
TREDIS	Transportation Economic Development Impact System [software]
TRIC	Three Rivers Interlocal Council [MAPC subregion]
TSIMS	Transportation Safety Information Management System
TSM	transportation systems management [FHWA]
UFP	ultrafine particles
UPWP	Unified Planning Work Program
US	The United States of America
USDOT	United States Department of Transportation

Acronym	Definition
USGS	US Geological Survey
UZA	urbanized area
V/C	volume-to-capacity ratio
VHT	vehicle-hours traveled
VMS	variable message signs
VMT	vehicle-miles traveled
VOCs	volatile organic compounds [pollutants]
VRH	vehicle revenue-hours
VRM	vehicle revenue-miles
WalkBoston	pedestrian advocacy group [Boston area]
WAT	walk-access transit
WMM	weMove Massachusetts [MassDOT long-range transportation plan]
WTS	Women in Transportation Seminar
YMM	youMove Massachusetts [MassDOT planning initiative]