Unified Planning Work Program

Federal Fiscal Year 2018

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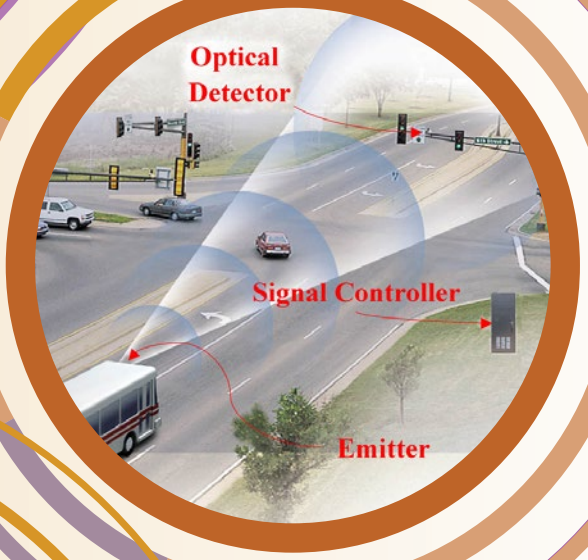

Boston Region Metropolitan Planning Organization

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Unified Planning Work Program

Federal Fiscal Year 2018 DRAFT

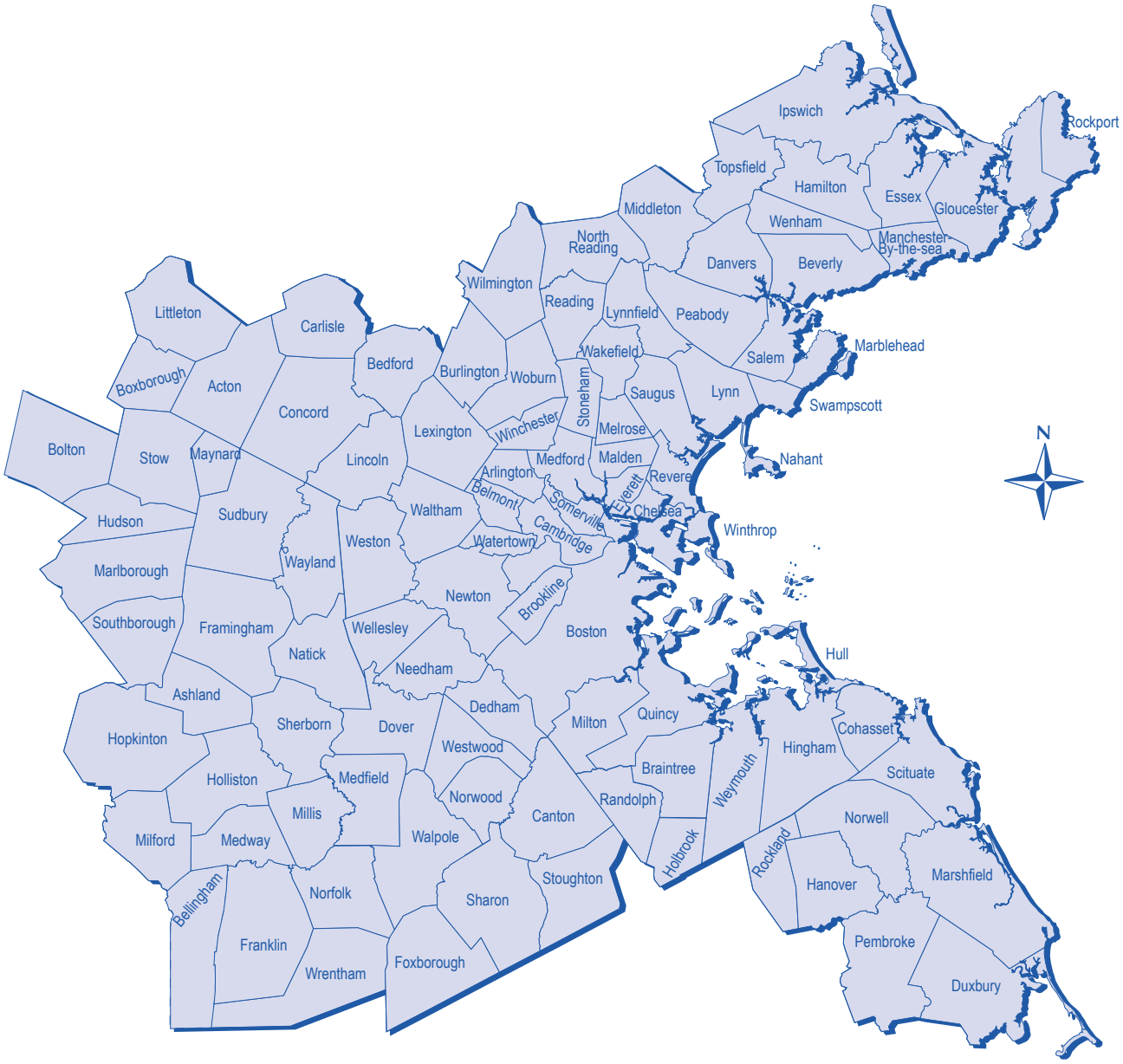
For Review by the Boston Region Metropolitan Planning Organization

May 4, 2017

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
Federal Highway Administration (nonvoting)
Federal Transit Administration (nonvoting)



Boston Region Metropolitan Planning Organization Municipalities

CONTACT INFORMATION

The Boston Region Metropolitan Planning Organization (MPO) complies with Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act (ADA), and other federal and state nondiscrimination statutes and regulations in all programs and activities. The MPO does not discriminate on the basis of race, color, national origin, English proficiency, income, religious creed, ancestry, disability, age, gender, sexual orientation, gender identity or expression, or military service. Any person who believes herself/himself or any specific class of persons to have been subjected to discrimination prohibited by Title VI, ADA, or other nondiscrimination statute or regulation may, herself/himself or via a representative, file a written complaint with the MPO. A complaint must be filed no later than 180 calendar days after the date on which the person believes the discrimination occurred. A complaint form and additional information may be obtained at www.bostonmpo.org or by contacting the MPO staff at 857-702-3700 (voice), 617-570-9193 (TTY), 617-570-9192 (fax), or publicinformation@ctps.org.

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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FOLLOWING MPO ENDORSEMENT OF THE FINAL FFY 2017 UPWP, THIS SECTION WILL INCLUDE THE MPO'S SELF-CERTIFICATION STATEMENT REGARDING THE FEDERAL REQUIREMENTS FOR THE METROPOLITAN TRANSPORTATION PLANNING PROCESS. THIS DOCUMENT WILL BE SIGNED BY MPO MEMBERS.

SIGNATURE PAGE 2 OF 2

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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

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 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.

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:**

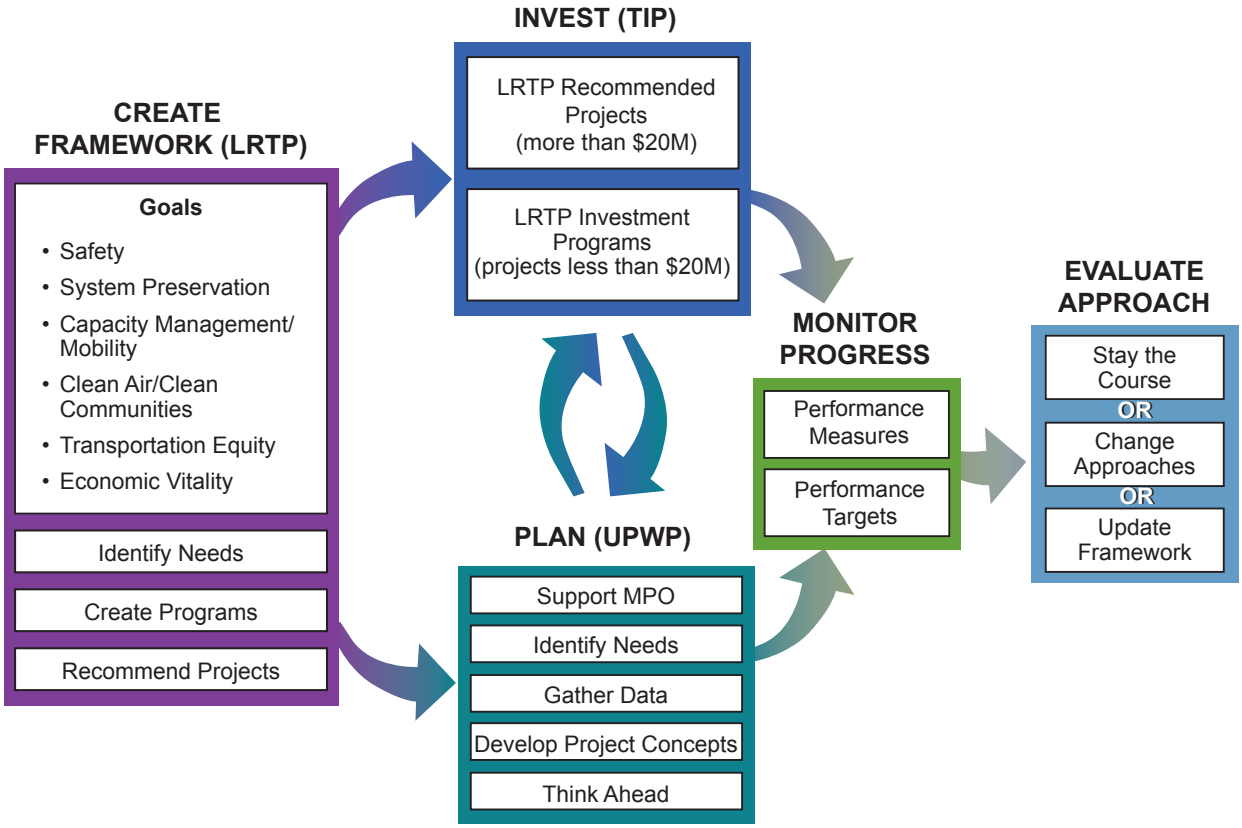
  Transportation planning should integrate all of the stages and levels of the process and examine all modes to ensure a balanced planning and programming approach. The planning process should include analysis of related non-transportation elements such as land use, economics, environmental resources, 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 2018 3C PL funding allocation for the Boston Region is $3,694,506, which includes $738,901 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 2018 FTA allocation for the Boston Region, including a total local match, is $2,181,986. The total amount programmed in this UPWP for studies to be conducted by MPO staff, MassDOT, and MAPC on behalf of the MPO is$1,868,216. Of the total FTA 3C funds allocated to the region, MassDOT, MAPC, and the MPO receive a portion, as described below:
    - **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 $1,274,278.
    - **MassDOT FTA 3C Planning (§5303)/MassDOT Local Match:** The total amount of FTA funds, including a local match, allocated to MassDOT for FFY 2018 is $266,639. 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).
    - **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 2018 is $327,297.

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 2018, the agency funding in this UPWP includes the following:

- **FHWA Statewide Planning and Research (SPR)/MassDOT Local Match:** As 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 $377,376 (including state matching funds) are programmed in this UPWP for studies to be conducted by MPO staff.
- **MassDOT:** Funds in the amount of $297,100 for MassDOT studies are included in this UPWP.
- **MBTA:** The MBTA provides $549,990 in funding for this UPWP for transit studies to be conducted by CTPS.
- **Massport:** This UPWP also includes $50,000 in funding provided by Massport for work being conducted by CTPS on its behalf.

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.

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 maintain its data resources and computer equipment properly. See Chapters 5 and 8 for more detail about these areas of work.

- **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.

Table ES-1 contains the budget allocated to reflect the MPO's continuing, comprehensive, and cooperative (3C) transportation planning activities. Funding for 3C planning consists of Federal Highway Administration (FHWA) metropolitan planning (PL) funds and Federal Transit Administration (FTA) Section 5303 funds, which the Central Transportation Planning Staff (CTPS) and the Metropolitan Area Planning Council (MAPC) expect to spend in federal fiscal year (FFY) 2018. The table also reflects the CTPS work funded by other transportation agencies.

Table ES-1: FFY 2018 Unified Planning Work Program Budget

3C Studies & Programs by CTPS Budget Categories	3C PL Funds	Section 5303 Funds	Proposed FFY 2018 Budget
Administration, Resource Management, and Support Activities	$ 1,103,628	$ 535,332	**$ 1,638,960**
MPO Certification Requirements	$ 1,203,722	$ 445,003	**$ 1,648,725**
Continuing MPO-Funded Planning Studies and Technical Analyses	$ 117,300	$ 88,630	**$ 205,930**
New MPO-Funded Discrete Studies	$ 507,900	$ 197,100	**$ 705,000**
Direct Support	$ 60,000	$ 23,000	**$ 83,000**
Total for CTPS 3C Studies and Programs	**$ 2,992,550**	**$ 1,289,065**	**$ 4,281,615**
Total for Agency-Funded CTPS Project Work			**$ 1,575,070**
Total CTPS Budget (3C + Agency Work)			**$ 5,856,685**

3C Studies & Programs by MAPC Budget Categories	3C PL Funds	Section 5303 Funds	Proposed FFY 2018 Budget
MAPC Planning Studies and Technical Analyses	$ 382,905	$ 201,897	**$ 584,802**
MAPC Administration, Resource Management, and Support Activities	$ 319,051	$ 125,400	**$ 444,451**
Total MAPC 3C Budget	**$ 701,956**	**$ 327,297**	**$ 1,029,253**

Total 3C Budget Subtotal by Funding Program	**$ 3,694,506**	**$ 1,616,362**	**$ 5,310,868**

(CTPS 3C Budget + MAPC 3C Budget)

TOTAL PROGRAMMED IN FFY 2018	**$ 6,885,938**

(CTPS 3C Budget + CTPS Agency-Funded Budget + MAPC 3C Budget)

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 continually seeks to 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 2018. The new studies chosen for funding in FFY 2018 are summarized below in Table ES-2 and described in more detail in Chapter 6.

Table ES-2
FFY 2017 New Discrete Funded Studies

Universe ID	Category	Project Name	Estimated Cost	Page Number
A-3	Active transportation	Bicycle Level-of-Service Metric	$55,000	6-5
L-1	Land use, environment, and economy	Transportation Mitigation of Major Developments: Review of Strategies	$50,000	6-7
M-1	Multimodal mobility	Safety and Operations Analysis at Selected Intersections	$70,000	6-8
M-5	Multimodal Mobility	Potential Impacts of Connected and Autonomous Vehicles	$50,000	6-9
M-7	Multimodal mobility	Travel Alternatives to Regional Traffic Bottlenecks	$70,000	6-10
M-9	Multimodal mobility	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	$120,000	6-12
M-10	Multimodal mobility	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	$120,000	6-14
T-13	Transit	Community Transportation Program Development	$85,000	6-16
T-14	Transit	Review of and Guide to Regional Transit Signal Priority	$65,000	6-18
O-1	Other technical support	MPO Staff-Generated Research Topics	$20,000	6-20
	Total		**$705,000**	

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 21 to 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. MPOinfo 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 2018 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 2018 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.

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

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
- 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 2018.
- **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 2015–2017 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 2018 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 2017 to FFY 2018, provides descriptions of the eight new planning studies chosen for funding in FFY 2018, 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 2018. 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 National Transit Database: Data Collection and Analysis; and new contracts.
- **Chapter 8** provides detailed information and FFY 2018 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 2018 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.

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CHAPTER 1

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

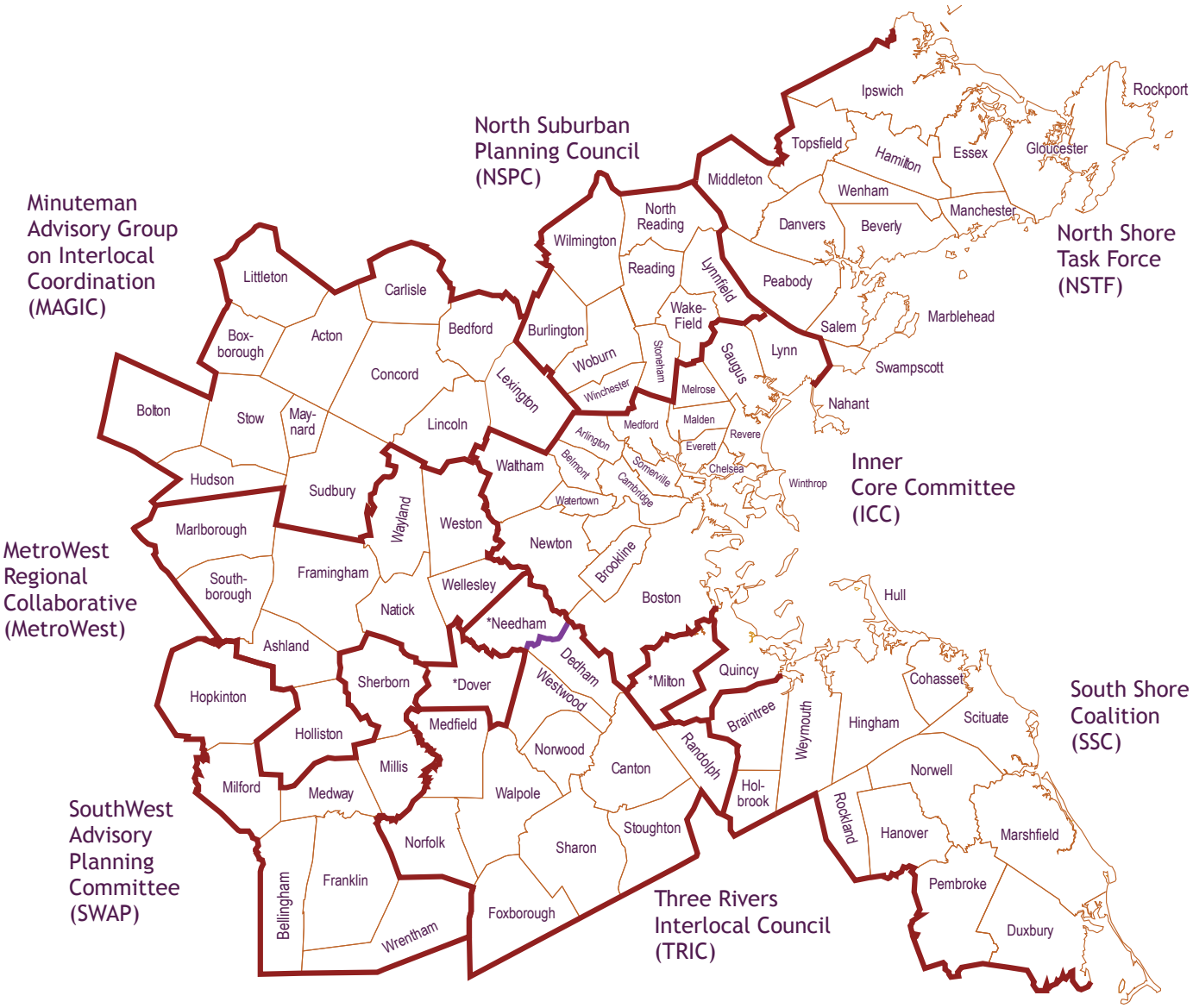
The Boston Region Metropolitan Planning Organization (MPO) plans for the transportation future of the Boston region (Figure 1-1). The MPO is guided by a 25-year vision for a modern, safe, equitable, sustainable, and technologically advanced transportation system for the region, which is described in 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.

Figure 1-1: Boston Region MPO Municipalities Map



*Several communities are represented by more than one subregional group. Dover is in TRIC and SWAP; Milton and

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, during 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 managing data and computer resources as well as maintaining the MPO's regional travel demand model, which is used to forecast the potential impacts and changes that 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 knowledge of the practice, augment analytical methods, and evaluate strategies. Examples of these studies in the FFY 2018 UPWP include Transportation Mitigation of Major Developments: Review of Strategies; Potential Impacts of Connected and Autonomous Vehicles; and Review of and Guide to Regional Transit Signal Priority. 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. 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 incorporates 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

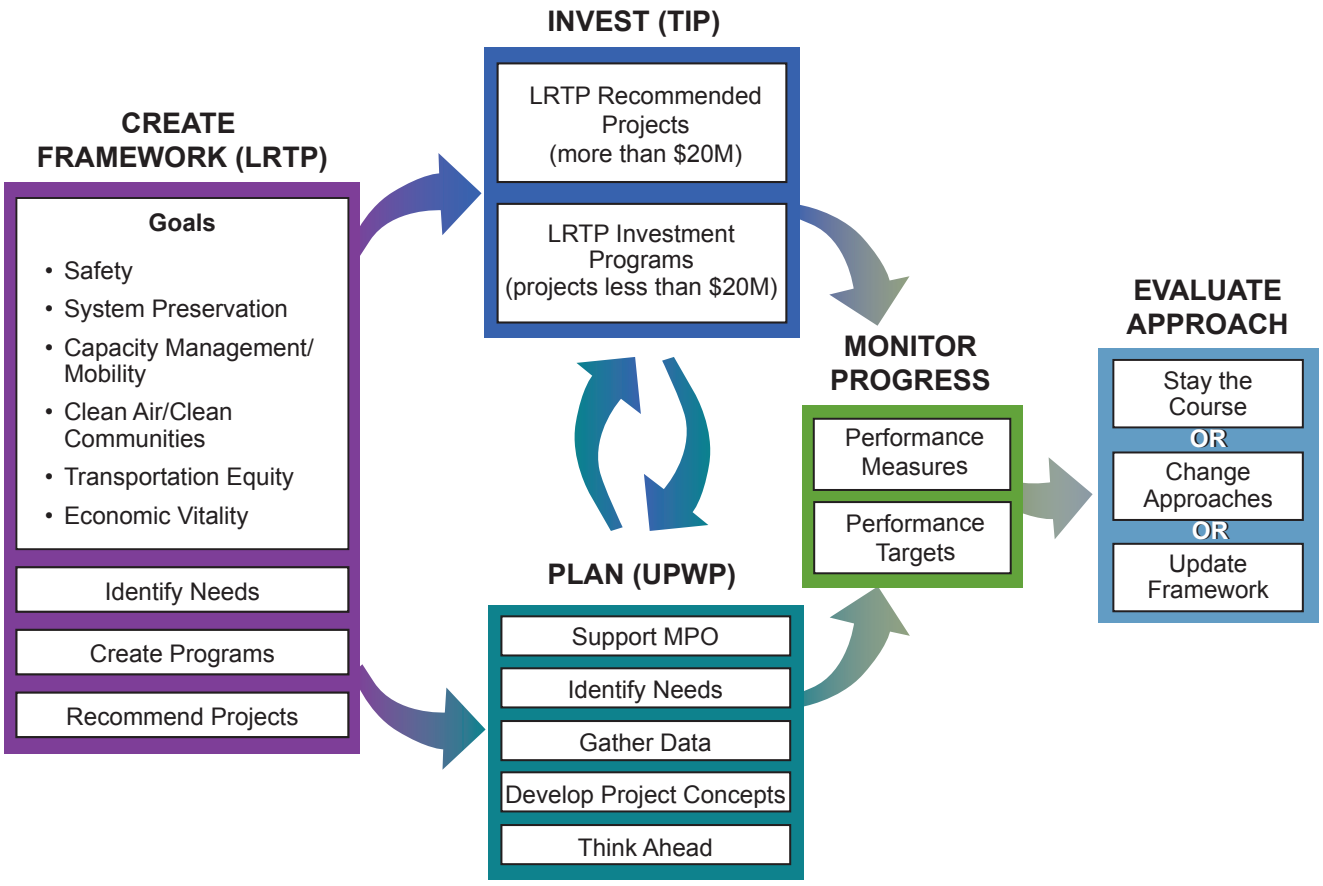
The Boston Region Metropolitan Planning Organization envisions a modern transportation system that is safe, uses new technologies, provides equitable access, excellent mobility, and varied transportation options—in support of a sustainable, healthy, livable, and economically vibrant region.

GOALS	OBJECTIVES
SAFETY	
Transportation by all modes will be safe	• 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 (Note: The MPO action will be to incorporate security investments into capital planning.)
SYSTEM PRESERVATION	
Maintain the transportation system	• 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	
Create an environmentally friendly transportation system	• 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.)
CAPACITY MANAGEMENT/ MOBILITY	
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
TRANSPORTATION EQUITY	
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
ECONOMIC VITALITY	
Ensure that 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 2017 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 2018 UPWP. The MPO approved the UPWP Committee's recommendations for public review of Draft FFY 2018 UPWP on May 4, 2017.

Below are more details about the process for selecting studies and programs for the FFY 2018 UPWP.

Developing the New Federal Fiscal Year UPWP

To develop new planning studies for the FFY 2018 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. These groups, which are organized by an MPO member agency, MAPC, involve municipal representatives who are focused on regional planning topics (Figure 1-1). Two additional targeted TIP and UPWP public meetings were held in the region in December 2016 and January 2017.

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 2018 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 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 MAPC; and other recent studies.

5. **Past guidance:** The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) issue guidance on addressing the planning emphasis areas.

6. FFY 2017 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 2018 UPWP Universe of Proposed New Studies (see Appendix C). Selected studies for FFY18 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:
    - Safety
    - System Preservation
    - Clean Air/Clean Communities
    - Transportation Equity
    - Capacity Management/Mobility
    - 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 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 need 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 2018 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 2018 UPWP Universe of Proposed New Studies in Appendix C.

Table 1-1 shows the studies in the FFY 2018 Universe that were chosen for funding in FFY 2018. 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).

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 2018 New Discrete Funded Studies

Universe ID	Category	Project Name	Estimated Cost	Page Number
A-3	Active transportation	Bicycle Level-of-Service Metric	$55,000	6-5
L-1	Land use, environment, and economy	Transportation Mitigation of Major Developments: Review of Strategies	$50,000	6-7
M-1	Multimodal mobility	Safety and Operations Analysis at Selected Intersections	$70,000	6-8
M-5	Multimodal Mobility	Potential Impacts of Connected and Autonomous Vehicles	$50,000	6-9
M-7	Multimodal mobility	Travel Alternatives to Regional Traffic Bottlenecks	$70,000	6-10
M-9	Multimodal mobility	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	$120,000	6-12
M-10	Multimodal mobility	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	$120,000	6-14
T-13	Transit	Community Transportation Program Development	$85,000	6-16
T-14	Transit	Review of and Guide to Regional Transit Signal Priority	$65,000	6-18
O-1	Other technical support	MPO Staff-Generated Research Topics	$20,000	6-20
	Total		**$705,000**	

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 2018 UPWP is available in Appendix B.

Monitoring Progress of UPWP Studies

The following procedures for monitoring the studies in the FFY 2018 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:
    - Brief narrative describing the work accomplished
    - Key personnel attendance at meeting(s) held each week
    - Objectives and planned activities for the next month
    - Percent of work completed
    - Some measure of actual resources (e.g., hours, funds, etc.) charged to the contract over the past month
    - 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 without a public review period, although this can be provided at the MPO's discretion. When submitting the standard Budget Reallocation Request form to MassDOT's Office of Transportation Planning (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 that 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 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 2018 3C PL funding allocation for the Boston Region is $3,694,506, which includes $738,901 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 2018 FTA allocation for the Boston Region, including a total local match, is $2,181,986. The total amount programmed in this UPWP for studies to be conducted by MPO staff, MassDOT, and MAPC on behalf of the MPO is $1,868,216. Of the total FTA 3C funds allocated to the region, MassDOT, MAPC, and the MPO receive a portion, as described below:

    - **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 $1,274,278.

    - **MassDOT FTA 3C Planning (§5303)/MassDOT Local Match:** The total amount of FTA funds, including a local match, allocated to MassDOT for FFY 2018 is $266,639. 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).

    - **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 2018 is $327,297.

- **FHWA Statewide Planning and Research (SPR)/MassDOT Local Match:** As in the case of 3C PL funds, FHWA provides State Planning and Research (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 $377,376 (including 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 $297,100 for MassDOT studies are included in this UPWP.
- **MBTA:** The MBTA provides $549,990 in funding for this UPWP for transit studies to be conducted by CTPS.
- **Massport:** This UPWP also includes $50,000 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 2018 Budgets for CTPS

3C Studies & Programs by Budget Categories	CTPS 3C PL Funds	CTPS Section 5303 Funds	Proposed FFY 2018 CTPS Budget
Administration and Resource Management Projects	$ 1,163,661	$ 475,298	$ 1,638,959
MPO Certification Requirements	$ 1,186,715	$ 462,007	$ 1,648,722
MPO Funded Planning Studies and Technical Analyses	$ 115,636	$ 90,297	$ 205,933
New Discrete Studies	$ 440,200	$ 264,800	$ 705,000
Direct Support	$ 60,000	$ 23,000	$ 83,000
Total for CTPS 3C Studies and Programs (including salary, overhead, direct support)	**$ 2,966,212**	**$ 1,315,402**	**$ 4,281,614**

Agency Funded CTPS Work	Agency Funds	Direct Support	Proposed FFY 2018 CTPS Budget
MassDOT SPR Funds	$ 364,876	$ 12,500	$ 377,376
MassDOT Section 5303 Funds	$ 195,104	$ 5,500	$ 200,604
MassDOT Other Funds	$ 297,100	$ -	$ 297,100
MBTA Funds	$ 549,140	$ 850	$ 549,990
Massport Funds	$ 49,500	$ 500	$ 50,000
Other	$ 100,000	$ -	$ 100,000
Total for Agency-Funded Project Work	**$ 1,555,720**	**$ 19,350**	**$ 1,575,070**

CTPS Budget (3C + Agency)	**$5,856,684**

Table 1-4: FFY 2017 Unified Planning Work Program Budget—Summary of FFY 2018 Budgets for MAPC

3C Studies & Programs by MAPC Budget Categories	MAPC PL Funds	MAPC Section 5303 Funds	Proposed FFY 2018 MAPC Budget
MAPC Planning Studies and Technical Analyses	$ 382,905	$ 201,897	$ 584,802
MAPC Administration, Resource Management, and Support Activities	$ 319,051	$ 125,400	$ 444,451
MAPC Total FFY 2018 Funds Programmed	**$ 701,956**	**$ 327,297**	**$ 1,029,253**

3C Budget (CTPS + MAPC)	**$5,310,867**
TOTAL PROGRAMMED IN FFY 2018 (CTPS Budget + MAPC Budget)	**$6,885,937**

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, TIP, and 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 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 achieving 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 submission to the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and Environmental Protection Agency for approval.

- The **UPWP** contains information about transportation planning studies that will be conducted by MPO staff. Generally, the work described throughout the following chapters has a scope defined by the federal fiscal year (FFY), October 1 through September 30. 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 it 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, 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 in 2015 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 that previously were under 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 developing and improving 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.

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 encompass 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, TIP, UPWP, and other facets of the MPO's planning process to ensure compliance with federal planning and programming requirements:

- **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

- FHWA *(nonvoting)*
- FTA *(nonvoting)*
- CITY OF BOSTON
- CITY OF BOSTON
- MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (MBTA)
- MBTA ADVISORY BOARD
- MASSDOT — Chair
- AT-LARGE CITY — Everett
- AT-LARGE CITY — Newton
- AT-LARGE TOWN — Arlington
- AT-LARGE TOWN — Lexington
- INNER CORE — Somerville
- MAGIC — Bedford
- MASSDOT
- MASSDOT — Highway Division
- MASSACHUSETTS PORT AUTHORITY
- METROPOLITAN AREA PLANNING COUNCIL
- REGIONAL TRANSPORTATION ADVISORY COUNCIL
- METROWEST — Framingham
- NORTH SHORE — Beverly
- NORTH SUBURBAN — Woburn
- SOUTH SHORE COALITION — Braintree
- SWAP — Medway
- TRIC — Norwood

CENTRAL TRANSPORTATION PLANNING STAFF

- EXECUTIVE DIRECTOR
  - DEPUTY EXECUTIVE DIRECTOR
    - DIRECTOR OF TECHNICAL SERVICES
      - Information Technology and Services
      - Traffic Analysis and Design
      - Transportation Systems Analysis
      - Travel Model Development
    - DIRECTOR OF POLICY AND PLANNING
      - Certification Activities
      - Graphics
      - Editorial
      - Transit Analysis and Planning
    - Finance and Operations

MAY 2017

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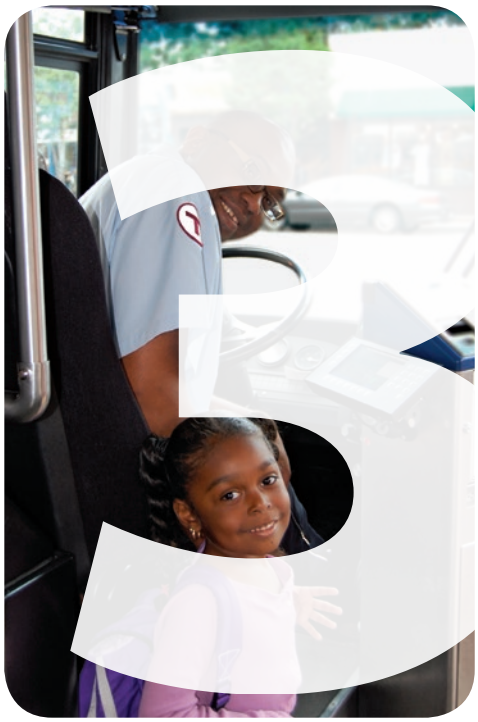

CHAPTER 3

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 development of the federal fiscal year (FFY) 2018 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 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 significant reduction in congestion on the National Highway System
4. **System reliability:** Improve efficiency of the surface transportation system
5. **Freight movement and economic vitality:** Improve national freight network, strengthen ability of rural communities to access national and international trade markets, and support regional economic development
6. **Environmental sustainability:** Enhance 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 movement of people and goods by accelerating project completion by eliminating delays in 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 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	3C-funded Certification Activties									3C-funded Technical Analyses				3C-funded Planning Studies												3-C-funded Administration, Resource Management, and Transportation Data Collection									
		3C Planning and MPO Support	Long Range Transportation Plan	Transportation Improvement Program	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	Environmental Equity/Environmental Justice Support	Bicycle/Pedestrian Support Activities	Community Transportation Technical Assistance	Regional Transit Service Planning Technical Assistance Program	Land Use Development Project Reviews	Bicycle Level-of-Service Metric	Transportation Mitigation of Major Development: Review of Strategies	Safety and Operations Analysis at Selected Intersections	Potential Impacts of Connected and Autonomous Vehicles	Travel Alternatives to Regional Traffic Bottlenecks	Addressing Safety, Mobility, and Access on Subregional Priority Roadways 2018	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment 2018	Community Transportation/Parking/Clean Air and Mobility Program Development	Review of and Guide To Regional Transit Signal Priority	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																	
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			
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			
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
5	Protect and enhance the environment, promote energy conservation, improve the 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
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
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				
8	Emphasize the preservation of the existing transportation system.	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																					
10	Enhance travel and tourism.	X	X	X	X						X	X	X				X	X	X	X	X	X											X	X				

3C = continuing, cooperative, and comprehensive transportation-planning process. X = Applicable.

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3.1.3 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 air quality standards in any area.

In the most recent LRTP, *Charting Progress to 2040*, the air quality conformity determination concluded that the emissions 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 (TCMs) 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).

3.1.4 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 (US 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 or low incomes, and the elderly.

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 greenhouse gas (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 in 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, the Commonwealth of Massachusetts' 2040 LRTP. WMM identifies high-level policy priorities that 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 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 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, including:

- 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 with 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 by coordinating 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)

In 2009, the MBTA adopted its current Program for Mass Transportation (PMT). The PMT was developed with extensive public involvement and was approved by the MBTA Advisory Board.

The next PMT, Focus40, is under development. Focus40 is the 25-year investment plan to position the MBTA to meet the needs of the greater Boston Region in 2040. The Focus40 process will create a long-term investment vision that recognizes current infrastructure challenges and shifting demographics, changing climate, and evolving technology that may alter the role that the MBTA will play in greater Boston in the future. Focus40 will 1) emphasize performance and reliability; 2) support economic

growth; 3) support inclusive growth; 4) support climate change mitigation and adaptation; and 5) provide a seamless multimodal experience.

In 2016, the Focus40 team examined the existing conditions and future context for the transit system, developed goals, collected feedback and ideas for improvements through an extensive public-engagement process. During 2017, the team will finalize Focus40's framework and objectives, propose programs and strategies that align with that framework, develop a recommended strategy, and finalize the plan. Recommendations from Focus40 will support MassDOT's capital investment plans. The Boston Region MPO continues to monitor development of Focus40 to inform its decision-making about transit capital investments.

3.3.2 MetroFuture

MetroFuture, which was developed by MAPC 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 vision, 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 developing this UPWP.

3.3.3 The MPO's Congestion Management Process (CMP)

The purpose of the CMP is to monitor and analyze performance of facilities and services, develop strategies for managing 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 improving the transportation system's 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 2018. Work that is currently being performed in accordance with the FFY 2018 CMP is detailed in Chapter 5.

CHAPTER 4

Federal Fiscal Years 2015–2017 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—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 (for example, 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, throughout the UPWP's development, the MPO tracks a study's progress according to the three categories cited below.

- **Completed:** *Completed* studies are either already complete or expected to be completed by October 1, 2017, when the FFY 2018 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:** *Ongoing* 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 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 several chapters.

- **Continuing or Carry Over:** *Continuing* studies were originally funded in FFY 2017 or earlier and are continuing into FFY 2018. 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 because of unforeseen delays. A table summarizing these studies is included at the beginning of Chapter 6.

This chapter summarizes completed studies only; 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 2015 through 2017 and are expected to be complete by the end of FFY 2017. 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 2015 to FFY 2017 Completed MPO-Funded Transportation-Planning Studies

Name	ID	FHWA PL Funds	FTA Section 5303 Funds	Total Budget	Work Products
FFY 2017 Studies					
Planning for Autonomous and Connected Vehicles	13277	$35,500	$14,500	$50,000	Presentation to MPO board of the most promising set of recommended practices, policies, and approaches to GHG reduction Final white paper/report summarizing the study findings
Study of Promising GHG-Reduction Strategies	13279	$39,050	$15,590	$55,000	Presentation of research to MPO board Final white paper/report summarizing the study findings
Using General Transit Feed Specification Data to Find Shared Bus Route Segments with Excessively Irregular Headways	13278	$0	$25,000	$25,000	White paper: Summary of Methodology and Results: Even Headways along the Trunk Sections of the MBTA Bus Network
Regional Transit Service Planning Technical Assistance	14342		$35,210	$35,210	Technical Memorandum: Travel Time Impacts to Bus Riders from Priority Treatments at Alewife MBTA Station
MPO Staff-Generated Research Topics	20901	$18,632	$11,375	$30,000	Technical Memoranda

(Table 4-1 cont.)

Name	ID	FHWA PL Funds	FTA Section 5303 Funds	Total Budget	Work Products
FFY 2016 Studies					
Pedestrian Level-of-Service Metric Development	13273	$45,000		$45,000	Pedestrian Level-of-Service - memorandum
Addressing Safety, Mobility, and Access on Subregional Priority Roadways FFY 2016	13270	$77,000	$33,000	$110,000	Route 20 East Corridor Study in Marlborough - Report
Priority Corridors for LRTP Needs Assessment: FFY 2016	13271	$77,000	$33,000	$110,000	Route 1A-Vinnin Square Priority Corridor Study in Marblehead, Salem, and Swampscott - Report
Safety and Operations Analysis at Selected Intersections: FFY 2016	13272	$45,500	$19,500	$65,000	Two memos - Chelsea and Peabody
Identifying Opportunities to Alleviate Bus Delay*	11400	blank	$65,000	$65,000	Report: Identifying Opportunities to Alleviate Bus Delay
FFY 2015 Studies					
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
Fairmount Line Station-Access Analysis*	11249	$36,575	$15,675	$52,250	Report: Fairmount Line Station-Access Analysis

(Table 4-1 cont.)

Name	ID	FHWA PL Funds	FTA Section 5303 Funds	Total Budget	Work Products
Bicycle Network Gap Study*	11250	$55,000	blank	$55,000	Technical Memoranda evaluating: • Mass Central Rail Trail in Waltham, Weston, and Belmont • Sudbury Aqueduct Trail in Framingham • Central Square in Cambridge
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
Household-Survey-Based Policy Topics: Travel Profiles/Trends*	11152	$48,000	$27,000	$75,000	Exploring the 2011 Massachusetts Travel Survey: MPO Travel Profiles
TOTAL		**$337,682**	**$151,965**	**$489,647**	

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. LRTP = Long-Range Transportation Plan. MPO = Metropolitan Planning Organization. PL = Federal Highway Administration transportation planning funds. TREDIS = Transportation Economic Development Impact System.

*This study was originally programmed for closeout during FFY 2017 in the FFY 2017 UPWP.

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CHAPTER 5

Certification Requirements

5.1 INTRODUCTION

The projects described 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 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, Title VI of the federal Civil Rights Act, 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 federal fiscal year (FFY) 2017 and FFY 2018 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 2017/FFY 2018 Certification Requirements

Project Name	ID	FFY 2017 PL Funding	FFY 2017 §5303 Funding	FFY 2017 Total Funding	FFY 2017 Work Progress and Products	FFY 2018 PL Funding	FFY 2018 §5303 Funding	FFY 2018 Total Funding	FFY 2018 Planned Work Progress and Products
CTPS Activities									
Support to the MPO and its Committees	9118	$183,088	$74,782	$257,870	Prepared meeting and information materials—including agendas, minutes, notices, document translations, memoranda, reports, correspondence, summaries, and website content, as well as maps, charts, illustrations, and other visual materials—as needed to support MPO discussion and actions. Meeting materials are posted in digital form on the MPO meeting calendar webpage and hard copies are provided at meetings. Continued to support the meetings and activities of the MPO board, the MPO committees, and the Regional Transportation Advisory Council. Conducted communications with the public, including use of email, Twitter, and publishing TRANSREPORT as a web blog. Hosted public meetings and attended additional outreach events, including support to subregional municipal groups. Language translations are provided for vital documents. Amended the Public Participation Plan. Conducted planning to support compliance with federal requirements and guidance, including coordination with neighboring MPOs and federal partners.	$165,294	$64,066	$229,360	Activities generally remain the same from year to year, with enhancements and improvements. Preparations for a certification review may begin in late FFY 2018.
Long Range Transportation Plan (LRTP)	8118	$207,882	$84,909	$292,791	• Updated details and analyses in the current Needs Assessment to supply the most current information to the MPO and the public. • Continued to expand the MPO's scenario planning capabilities using the regional travel demand model set and other tools. Continue to conduct and report the results of scenario analyses. • Worked with MassDOT, the MBTA, and other stakeholders to monitor performance-based planning and programming requirements, establish measures and baselines, and set targets. • Conducted outreach on LRTP-related activities, including scenario planning, Needs Assessment updates, and development of performance-measures and targets.	$267,854	$103,816	$371,670	• Continue to update details and analyses in the current Needs Assessment. • Continue to expand the MPO's scenario planning capabilities using the regional travel demand model set and other tools. Continue to conduct and report the results of scenario analyses. • Continue to monitor performance-based planning and programming requirements, establish measures and baselines, set targets, and collaborate with relevant stakeholders. • Conduct outreach on activities related to the LRTP and performance-based planning and progamming. • Process an amendment to the LRTP, if necessary.

(Table 5-1 cont.)

Project Name	ID	FFY 2017 PL Funding	FFY 2017 §5303 Funding	FFY 2017 Total Funding	FFY 2017 Work Progress and Products	FFY 2018 PL Funding	FFY 2018 §5303 Funding	FFY 2018 Total Funding	FFY 2018 Planned Work Progress and Products
Transportation Improvement Program (TIP)	8218	$117,036	$47,804	$164,840	Development of the FFY 2018 to FFY 2022 TIP. Preparation of TIP amendments and administrative modifications, including revised TIP tables and outreach materials. Outreach to municipalities in the region through open house events, MAPC subregional meetings, and correspondence with municipal TIP contacts and chief elected officials. Updates to the online TIP Interactive Database and project databases. Analysis and reporting on performance measures and performance-based planning.	$145,288	$56,312	$201,600	Activities generally remain the same from year to year, with enhancements and improvements.
Unified Planning Work Program (UPWP)	8318	$87,472	$35,728	$123,200	Development of the FFY 2018 UPWP. Outreach to municipalities in the region through open house events, MAPC subregional meetings, and conversations with agencies to develop study ideas for the UPWP. 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.	$81,098	$31,432	$112,530	Activities generally remain the same from year to year, with enhancements and improvements. Maintain the UPWP Study Recommendations database.
Air Quality Conformity and Support Activities	8418	$20,547	$8,393	$28,940	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 (CMAQ) funding. Updated air quality emission factors using the latest emission factors software. Attended State Implementation Plan (SIP) meetings for updates on state air quality legislation. Provided support to MassDOT on air-quality matters.	$26,953	$10,477	$37,400	Activities generally remain the same from year to year.
Transportation Equity Program (including MPO Title VI Reporting)	8518			$129,360	Provided annual update to MassDOT/FHWA. Provided triennial report to MassDOT/FTA.	$105,522	$40,898	$146,420	Formerly called the Transportation Equity/ Environmental Justice Program. Reporting activities may vary from year to year, depending on MassDOT requirements.

(Table 5-1 cont.)

Project Name	ID	FFY 2017 PL Funding	FFY 2017 §5303 Funding	FFY 2017 Total Funding	FFY 2017 Work Progress and Products	FFY 2018 PL Funding	FFY 2018 §5303 Funding	FFY 2018 Total Funding	FFY 2018 Planned Work Progress and Products
Congestion Management Process	2118	$70,915	$28,965	$99,880	Online Dashboards: New versions of the express highway performance dashboard and the arterial dashboards were created that represent 2015 INRIX data. A new feature was added to the express highway performance dashboard that showed the change in travel speeds between 2012 and 2015. MBTA Park and Ride/Bicycle parking monitoring has commenced. This data collection effort will continue through fall 2018. Technical memorandum: "Transit Bus Performance Monitoring"	$80,634	$31,261	$111,895	MBTA Bicycle Parking/MBTA Park and Ride Lot monitoring data collection will continue into FFY 2018. Additional analysis of 2015 INRIX dataset may be conducted in FFY 2018
Freight Planning Support	2218	$51,200		$51,200	Technical memorandum: "Proposed Critical Urban Freight Corridors" Technical memorandum: "Height and Weight Restrictions Impacting Truck Travel"	$55,600	$0	$55,600	Work with federal and state partners on clean diesel, rest locations, and freight data analysis. Continue stakeholder outreach and truck model improvement.
MAPC Activities									
UPWP		$7,000	$3,000	$10,000		$7,000	$3,000	$10,000	

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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	$440,773
FTA Section 5303 Funds	$170,837
FFY 2018 Total Budget	$611,610

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 9118: Support to the MPO and Its Committees

The work task *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 various aspects of 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 documents posted 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 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 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.

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 day-to-day oversight of 3Cprogram-related activities, reports on the progress of projects listed in the UPWP, collecting and fielding daytoday comments and inquiries, and responding to requests for information and support.

Project ID 9318: 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 regularly 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 9618.04: TRANSREPORT

The MPO's electronic newsletter (blog), 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 blog's production: writing and editing, creating graphics, proofreading, and distributing the newsletter via email (and US mail, upon request).

Project ID 9618: Public Participation Process

MPO staff implements the MPO's Public Participation Program according to the MPO's Public Participation Plan. The program includes coordinating and implementing the MPO's public outreach activities, which 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
- The elderly, minorities, people with low incomes, people with disabilities, people with limited English-language proficiency, youth, veterans, and people living in zerovehicle 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.

- Website
- Public meetings
- Municipal Outreach via Subregional Meetings

In FFY 2018, the MPO will continue to refine its Public Participation Process, implementing tactics designed to break down barriers to participation for groups currently underrepresented in the planning process. Activities may include:

- 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
- 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.
- Integrate the Title-VI-related Four Factor Analysis for guidance on providing materials in languages other than English
- 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 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

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 9118.09: Professional Development

MPO staff maintains its technical expertise in part by participating in courses, programs, and workshops offered by FHWA, the 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 9118.07: General Graphics

Graphics support will be provided by MPO staff to 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 2018 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 initiatives as they arise.

Note: The above activities support all other projects in this UPWP in compliance with the 3C planning process. They foster 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	**8118**
FHWA 3C PL Funds	**$267,854**
FTA Section 5303 Funds	**$103,816**
FFY 2017 Total Budget	**$371,670**

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 latest 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) and FAST Act 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 2018, 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 and programming (PBPP) practice.

In FFY 2018, 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 monitor performance measures, set MPO performance targets, evaluate progress toward them, and track other indicators of interest.

The LRTP and Performance-Based Planning

The Transportation Improvement Program (TIP) and LRTP programs work together to support the MPO's performance-based planning program. The MPO adopted its goals and objectives and identified an initial set of performance measures in FFY 2015 as part of developing *Charting Progress to 2040*; these were used for scenario planning and evaluating LRTP projects and programs.

Since *Charting Progress to 2040* was adopted, FHWA and the FTA have finalized rules and plans that specify federally required performance measures for which states, MPOs, and public transportation providers will track trends and develop targets. In FFY 2017, the MPO coordinated with MassDOT, the MBTA, other Massachusetts MPOs, and other stakeholders to understand and respond to new PBPP requirements. The MPO also gathered information and data to begin setting targets for federally required performance measures and to establish other measures that the MPO will monitor. The MPO also developed reporting tools, particularly its online performance dashboard, to describe how the Boston region's transportation system performs in various areas.

In FFY 2018, the MPO will expand its PBPP practice as components of the LRTP and TIP programs. Staff will review the MPO's performance measures used in FFYs 2015–2017 under the LRTP program and continue to work with the MPO to establish a set of performance measures for ongoing monitoring and reporting. This suite of measures will include those specified in FHWA and FTA requirements and guidance. Other measures may be based on new Massachusetts Department of Transportation (MassDOT) measures or emerging data sources, or those identified by the MPO. Staff will continue to develop baseline information and a set of targets for the MPO's performance-based planning. The MPO will use the performance measures as part of LRTP and TIP development and to track how well TIP-implemented projects and programs are helping to meet the region's targets and goals.

In the Boston Region MPO, future LRTPs and TIPs will each include a performance report that describes the MPO's progress towards its 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 and targets. The TIP will report on project-level performance and the results of system-level analysis, as applicable, and will describe the anticipated effect

of programmed projects towards meeting established targets. Each LRTP and TIP will provide an opportunity to review and document progress in meeting performance goals and, if needed, make programmatic adjustments to meet those goals.

In the future, the MPO will review measures and targets on an ongoing basis and make revisions as needed. LRTP program work in FFY 2018 and future years 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*, which it continued 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 FFY 2018, staff will build on its previous work and identify one or more opportunities to explore options and compare various alternative scenarios to understand impacts on transportation, air quality, climate change, mode shift, the economy, and land use better. 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 (FFY 2019), staff will research, plan, coordinate with interested parties, and review investment priorities. Through ongoing performance-based 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 stateof-the-practice communications and planning tools and approaches.

In collaboration with 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 2018 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 FFYs 2018–2022 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 2018 Anticipated Outcomes

- Expand the MPO's scenario-planning capabilities by using the regional travel demand model set and various planning tools, such as CubeLand, to support the next LRTP and the MPO's performance-based planning and programming process
- Produce summaries of results from transportation scenario analyses for the MPO
- Continue to establish performance measures and develop baselines and targets for federal and MPO goals and objectives
- Prepare memoranda on performance based planning topics such as performance targets and reporting
- Prepare performance reports monitoring measures-ofinterest trends and tracking the MPO's progress toward meeting targets
- Conduct public outreach on all LRTP topics, including Needs Assessment updates, scenario planning, and development of performance measures and targets; report results to the MPO for use in all of its planning and programming
- 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
- Address comments or changes from FHWA and the FTA or changes to the State Implementation Plan (SIP).

TRANSPORTATION IMPROVEMENT PROGRAM

Project ID Number	**8218**
FHWA 3C PL Funds	**$145,288**
FTA Section 5303 Funds	**$56,312**
FFY 2018 Total Budget	**$201,600**

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

Purpose

The Boston Region MPO's 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 2019–2023 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 those funds, develops 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 workshops, MAPC subregional meetings with municipalities, and correspondence with municipal TIP contacts and chief elected officials to gather information on existing and new TIP funding requests. MPO staff compiles the projects into a Universe of Projects list for the MPO.

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.

Staff Recommendation

Staff develops a recommendation that proposes how to prioritize the MPO's Regional Target funding. Typically 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 FirstTier 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 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 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.

Staff estimates that there will be as many as four amendments and/or administrative modifications to the FFYs 2019–2023 TIP during FFY 2018.

For more information about the TIP development process or 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 2019–2023 TIP document will continue to report on the MPO's implementation of its performance-based planning program and the results of monitoring trends in the region and progress toward established goal-setting targets.

FFY 2018 Anticipated Outcomes

The FFYs 2019–2023 TIP, as well as amendments and administrative modifications to the FFYs 2018–2022 TIP will be prepared as described above.

Staff will explore enhancements to the TIP Interactive Database. Continued efforts related to the PBPP will include tracking performance measures and setting targets.

UNIFIED PLANNING WORK PROGRAM

Project ID Number	**8318**
FHWA 3C PL Funds	**$81,098**
FTA Section 5303 Funds	**$31,432**
FFY 2018 Total Budget	**$112,530**

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

Purpose

The UPWP, a 3C 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 FHWA and the FTA.

Work on the UPWP is ongoing year-round. This work program element focuses on developing the federal fiscal year (FFY) 2019 UPWP and supports the MPO and its UPWP Committee in monitoring FFY 2018 UPWP implementation and 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.

MAPC also provides 3C-funded transportation-planning work, which is described in the UPWP document.

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 and state DOT 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 2018 Anticipated Outcomes

- Development of the UPWP Study Recommendations Tracking Database, which 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, the Central Transportation Planning Staff (CTPS) to the Boston Region MPO will have a timely and efficient way to inform the MPO about the status of recommendations from its planning studies.
- Development of, and public outreach for, the FFY 2019 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 2018 UPWP.
- Amendments and administrative modifications to the FFY 2018 UPWP, as necessary.
- Other informational materials as needed.

AIR QUALITY CONFORMITY AND SUPPORT ACTIVITIES

Project ID Number	**8418**
FHWA 3C PL Funds	**$26,953**
FTA Section 5303 Funds	**$10,447**
FFY 2018 Total Budget	**$37,400**

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 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 TIP and every four years for a new 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 previously had 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. 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 20-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 2018 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 2019–2023 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 MassDOT (including the Highway Division, the Office of Transportation Planning, the 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 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. 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
- Provide data and recommendations to MPO agencies regarding funding and the implementation of transportation programs and projects with air quality benefits

TRANSPORTATION EQUITY PROGRAM

Project ID Number	**8518**
FHWA 3C PL Funds	**$105,522**
FTA Section 5303 Funds	**$40,898**
FFY 2018 Total Budget	**$146,420**

Note: FTA and FHWA funds include the MassDOT local match. This program includes the program previously called MPO Title VI Reporting.

Purpose

The objective of the Transportation Equity (TE) program is to perform activities related to Federal Transit Administration (FTA) and Federal Highway Administration (FHWA) Title VI, environmental justice (EJ), and other nondiscrimination requirements. These requirements are rooted in several federal laws and executive orders (EOs), including Title VI of the Civil Rights Act of 1964, Presidential EO 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations," and the Americans with Disabilities Act (ADA), as well as United States Department of Transportation (USDOT) nondiscrimination regulations, and guidance.

Title VI prohibits discrimination based on race, color, and national origin, including persons with limited English proficiency (LEP), in programs and activities that receive federal financial assistance. EO 12898 directs recipients of federal financial assistance to identify and address any disproportionate burdens placed on low-income and minority populations. The ADA prohibits discrimination against individuals with disabilities by recipients of federal financial assistance. In addition to these programs, FHWA's Title VI/Nondiscrimination Program prohibits discrimination on the basis of sex and age under other federal authorities, and requires metropolitan planning organizations (MPOs) to understand and consider the transportation needs of these populations.

The TE program encompasses the programmatic, monitoring, and reporting activities that are necessary for MPOs to comply with the above federal civil rights requirements and guidelines, including public outreach to protected populations, data collection and analysis, and support to other MPO programs regarding populations protected by the above EOs and laws. The TE program also involves monitoring the success of these activities and reporting their results to ensure compliance.

Approach

Completing FTA and FHWA Reporting Requirements

Although many TE program activities apply to all populations, regardless of the authority under which they are protected, the Boston Region MPO makes every effort to ensure that monitoring efforts for Title VI and EJ are identified as such and the results reported separately. As requested by the FTA and FHWA, reporting the impacts of the MPO's programs and activities will occur via various quantitative analyses, and documentation of the MPO's efforts to engage protected populations in its transportation-planning and decision-making process. Reporting will also include updates to the MPO's Language Access Plan (LAP), as stated in the plan, which guides the MPO's efforts to ensure that activities are accessible to persons with LEP. MPO staff—the Central Transportation Planning Staff (CTPS)—will compose annual and triennial reports as requested by the FTA and FHWA through the Massachusetts Department of Transportation (MassDOT), and respond to requests made by MassDOT regarding changes in the MPO's Title VI, EJ, and nondiscrimination reporting activities.

Supporting Participation in the MPO's Transportation-Planning Process and the Public Participation Program

CTPS will gather input and generate participation in the MPO's transportation-planning process in several ways. Staff will continue to develop relationships and conduct public engagement with community organizations that serve protected populations. Many of these organizations will also contribute to the MPO's evolving database of community organizations and contacts. Staff will use information acquired from these public-outreach efforts, as well as from data collection and analysis, such as Census data, to identify transportation gaps and needs of protected populations. This information will inform the MPO's certification documents—the Unified Planning Work Program (UPWP), Transportation Improvement Program (TIP), and Long-Range Transportation Plan (LRTP).

Staff will continue to develop methods for ensuring that all MPO communications with the public are accessible to people with a disability as well as to LEP persons. In accordance with the MPO's LAP, the MPO will translate vital documents (both digital and print formats) into languages other than English. Staff will also continue to ensure that all MPO documents and resources are accessible to people with disabilities, as described in the *CTPS Nondiscrimination Handbook*.

Providing Technical Support to the LRTP, TIP, and MPO-guided Studies

Staff will support development of the MPO's certification documents through evaluating projects, contributing to the Performance Dashboard, assisting in establishment of equity performance measures, and refining the equity analyses. Staff also will support the LRTP Needs Assessment, and analyze distribution of UPWP-funded studies on an ongoing basis.

Managing the MPO Staff's Transportation Equity Analysis Committee (TEAC)

This committee provides an opportunity for CTPS to discuss its analytical practices on behalf of the MPO and client agencies, make decisions about updating and implementing these practices, and promote integration of EJ and Title VI principles throughout MPO activities. TEAC's overarching goals are to ensure that these principles are integrated into the MPO's activities fully and that analytical processes are applied consistently. While the TIP and LRTP equity analyses are currently the primary concern of TEAC, other topics that deal with analytical components of the MPO's transportation equity program are also of interest. Topics under TEAC's consideration generally evolve as the need arises within the MPO.

Refining Equity-Related Analytical and Modeling Techniques

Federal requirements instruct the Boston Region MPO to conduct analyses that evaluate the impacts of the MPO's activities on populations protected by the civil rights regulations stated above. In order to improve the effectiveness of these analyses, including equity analyses, staff will refine current methods and develop novel methodologies. Staff will address analyses that are prepared using CTPS's regional travel demand model, as well as those that are done with other tools.

Supporting and Coordinating with Other Agencies

CTPS will continue to support 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.

FFY 2018 Anticipated Outcomes

- Prepare and submit a report documenting the MPO's FTA, Title VI, and FHWA Title VI/Nondiscrimination programs, as required, to MassDOT
- Continue outreach to Title VI and EJ communities, including minority, low-income, and LEP communities, and further integrate this process with the MPO's Public Participation Program and its transportation-planning process
- Expand and update the database of community organizations and contacts for public-engagement activities
- Gather and analyze data from the United States Census Bureau, and explore other potential sources of data, that support this program and inform the MPO's planning and programming decision-making

- Evaluate, refine, and complete equity analyses as needed for the MPO's TIP, LRTP, and UPWP
- Monitor developments at USDOT regarding civil rights, Title VI, and EJ; participate in workshops, conferences, and seminars, as appropriate; and use this knowledge to inform MPO activities
- Support the Community Transit Grant Program solicitation for projects, and help to evaluate applicant proposals
- Continue to train staff in Title VI, EJ, ADA, and other nondiscrimination policies as they relate to the MPO's activities
- Explore development of new analytical tools to assist MPO staff with planning and programming decision-making

CONGESTION MANAGEMENT PROCESS

Project ID Number	**2118**
FHWA 3C PL Funds	**$80,634**
FTA Section 5303 Funds	**$31,261**
FFY 2018 Total Budget	**$111,895**

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

Purpose

The MPO's 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 (LRTP, TIP, and 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, parkand-ride lots, freight movements, and bicycle and pedestrian facilities. CMP activities will include using electronic travel-time and speed data to monitor roadways, identify existing conditions, and recommend appropriate improvements in accordance with federal guidelines.

FFY 2018 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 2018

Project ID Number	**2218**
FHWA 3C PL Funds	**$55,600**
FTA Section 5303 Funds	**$-**
FFY 2017 Total Budget	**$55,600**

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 analysis requirements of 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]

[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.

The MPO's FFY 2017 freight planning activities included identifying bridges and tunnels with weight or height restrictions that limit efficient truck movement, collecting freight data to support MPO model development, and a continued focus on the new all-electronic tolling systems. 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.

FFY 2018 Anticipated Outcomes

Potential issues for 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.

CHAPTER 6

Boston Region MPO Planning Studies and Technical Analyses

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 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 2017), and completed and planned work products for planning studies started in a previous FFY and continued into FFY 2018. Table 6-2 summarizes the salary and overhead costs in FFY 2017 and FFY 2018, 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 2018. They provide detailed updates for the FFY 2018 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 2018

Name	ID	FHWA PL Funds	FTA Section 5303 Funds	Total Budget	Work Products
FFY 2017 Studies					
Safety Effectiveness of Safe Routes to School Programs	13280	$3,301	$1,279	$4,580	Final report presentation to the MPO
Low-Cost Improvements to Freeway Bottlenecks	13275	$4,680	$ -	$4,680	Final report presentation to the MPO
Addressing Safety, Mobility, and Access on Subregional Priority Roadways FFY 2017	13274	$3,639	1,411	$5,050	Final report presentation to the MPO
Priority Corridors for LRTP Needs Assessment: FFY 2017	13276	$4,027	$1,578	$5,650	Final report presentation to the MPO
TOTAL		**$15,692**	**$4,268**	**$19,960**	

Table 6-2: FFY 2017/FFY 2018 Ongoing Boston Region MPO Technical Analyses

Project Name	ID	FFY 2017 Total Funding	FFY 2017 Work Products and Progress	FFY 2018 PL Funding	FFY 2018 §5303 Funding	FFY 2018 Total Funding
CTPS Activities						
Community Transportation Technical Assistance Program	2418	$71,140	To be included in the final UPWP	$53,143	$20,597	$73,740
Bicycle/Pedestrian Support Activities	2518	$64,840	To be included in the final UPWP	$48,466	$18,784	$67,250
Regional Transit Service Planning Technical Support	14342	$35,210	To be included in the final UPWP	$ -	$44,980	$44,980
MAPC Activities						
Corridor/Subarea Planning Studies	MAPC 4	$167,480	To be included in the final UPWP	$112,180	$55,300	$167,480
Land Use Development Project Reviews	MAPC 5	$88,820	To be included in the final UPWP	$59,400	$29,420	$88,820
MetroFuture Implementation	MAPC 6	$90,000	To be included in the final UPWP	$59,400	$30,600	$90,000
Alternative-Mode Planning and Coordination	MAPC 7	$182,744	To be included in the final UPWP	$126,925	$66,577	$193,502
Community Transportation Technical Assistance Program	MAPC 8	$45,000	To be included in the final UPWP	$25,000	$20,000	$45,000

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6.2 PLANNING STUDIES

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

BICYCLE LEVEL-OF-SERVICE METRIC

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

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

Purpose

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

Approach

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

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

FFY 2018 Anticipated Outcomes

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

TRANSPORTATION MITIGATION OF MAJOR DEVELOPMENTS: REVIEW OF STRATEGIES

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

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

Purpose

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

Approach

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

FFY 2018 Anticipated Outcomes

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

SAFETY AND OPERATIONS ANALYSIS AT SELECTED INTERSECTIONS

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

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

Purpose

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

Approach

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

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

FFY 2018 Anticipated Outcomes

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

POTENTIAL IMPACTS OF CONNECTED AND AUTONOMOUS VEHICLES

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

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

Purpose

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

Approach

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

FFY 2018 Anticipated Outcomes

This project would further investigate the research and recommendations from the FY 2017 study. A workshop will be conducted for MPO member communities at which CAV research will be presented. This workshop will also serve as an opportunity for staff to collect feedback from these stakeholders and understand their concerns regarding CAV issues.

TRAVEL ALTERNATIVES TO REGIONAL TRAFFIC BOTTLENECKS

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

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

Purpose

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

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

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

Approach

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

FFY 2018 Anticipated Outcomes

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

ADDRESSING SAFETY, MOBILITY, AND ACCESS ON SUBREGIONAL PRIORITY ROADWAYS

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

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

Purpose

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

Approach

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

- Traffic signals (equipment, retiming, redesign, and coordination)
- Bus stop locations
- Processing buses through traffic lights
- Location and management of pedestrian crossings and signals, including
- Americans with Disabilities Act of 1990 (ADA) requirements

- Travel-lane utilization by motorized and bicycle traffic
- Speed-limit assessment
- Access management

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

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

FFY 2018 Anticipated Outcomes

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

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

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

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

Purpose

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

Approach

The LRTP identified needs for all modes of transportation in the MPO region. These needs guide decision-making about which projects to include in current and future Transportation Improvement Programs (TIPs). Projects that address the region's current mobility needs are those that focus on maintaining and modernizing roadways with high levels of congestion[2] and safety problems, expanding the quantity and quality of walking and bicycling, and making transit service more efficient and modern. During the past several years, the MPO has conducted these planning studies, and municipalities have been receptive to them.

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

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

FFY 2018 Anticipated Outcomes

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

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

COMMUNITY TRANSPORTATION PROGRAM DEVELOPMENT

Project ID Number	
Category	**Transit**
FHWA 3C PL Funds	**$60,350**
FTA Section 5303 Funds	**$24,650**
FFY 2018 Total Budget	**$85,000**

Purpose

In order to support a range of improvements that aim to increase use of non-motorized and shared-ride modes of travel, including transit, the MPO's Long-Range Transportation Plan (LRTP), *Charting Progress to 2040*, designates a transportation-investment program—the Community Transportation / Parking / Clean Air and Mobility (CT) program. The purpose of this work is to define and develop the MPO's CT program for inclusion in its Transportation Improvement Program (TIP).

The LRTP envisions approximately two percent of discretionary target funds to be allocated to the CT program, and the MPO has allotted federal dollars to this program in the current TIP. In the draft federal fiscal years (FFYs) 2018–2022 TIP, this program is funded in the amount of $1 million in FFY 2021 and $1 million in 2022.

The CT program includes three categories of projects:

- **Community Transportation:** Provides funding to launch locally developed transit or shuttle services that support first-mile/last-mile connections to existing transit services and other destinations by purchasing shuttle buses and/or funding operating costs.
- **Park-and-Ride Infrastructure:** Targets funding to construct additional parking spaces at transit stations that are at capacity, or at other viable locations.
- **Clean Air and Mobility Program:** Funds projects that improve mobility, air quality, and promote shift to transit or non-motorized travel modes. Examples include bike-share projects or shuttle-bus services, and associated infrastructure.

By clearly defining this program and understanding sustainable mobility models that are most promising for implementation, this program will hopefully encourage communities and service operators to develop effective projects.

Approach

Through this study, staff will establish an ongoing process for implementing the CT program over time. This will include a review of best practices at other MPOs for identifying and funding projects in the categories cited above. Based on this review, Boston Region MPO staff will develop a process for determining needs, analyzing demand, and evaluating projects in order to select those that have the most potential to connect communities with transit service, enhance mobility, improve air quality.. Staff will then use this process to select specific projects for funding this program in the FFYs 2019–2023 TIP.

A major focus of the best-practice review will be to research financially sustainable partnership models for first- and last-mile transit shuttles that could be implemented in the Boston Region MPO area. The MPO already has recognized that first- and last-mile shuttle connections are critical for improving mobility. In the past few years, the MPO has studied potential locations, routings, and scheduling of first- and last-mile shuttles as part of the Regional Transit Service Planning Assistance program. However, maintaining these services has proven difficult for a variety of institutional, operational, and financial reasons.

FFY 2018 Anticipated Outcome

This study will establish an ongoing program for identifying and selecting promising project candidates to include in future TIPs under the Community Transportation program. The study will also recommend specific projects for funding in the FFYs 2019–2023 TIP, including possible first- and last-mile transit shuttle service operations, park-and-ride and bicycle parking infrastructure improvements, pedestrian and bicycle mobility improvements, and other sustainable mobility options.

REVIEW OF AND GUIDE FOR IMPLEMENTING TRANSIT SIGNAL PRIORITY IN THE MPO REGION

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

Purpose

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

Approach

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

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

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

FFY 2018 Anticipated Outcome:

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

MPO STAFF-GENERATED RESEARCH TOPICS

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

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

Purpose

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

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

Approach

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

FFY 2018 Anticipated Outcomes

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

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	**2517**
FHWA 3C PL Funds	**$47,750**
FTA Section 5303 Funds	**$19,500**
FFY 2018 Total Budget	**$67,250**

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, other bicycle and pedestrian planning studies often are identified collaboratively by MPO members, communities, bicycle and pedestrian advisory groups, and CTPS. Through such studies, MPO staff provides support to communities in creating bicycle and pedestrian improvement projects that can be advanced through the MassDOT Project Development process.

FFY 2018 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, 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; possibly to include 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 development of strategies to address bicycle and pedestrian safety problems
- Provide ongoing technical support to communities for current tools and practices regarding 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	**4117**
FHWA 3C PL Funds	**--**
FTA Section 5303 Funds	**$44,980**
FFY 2018 Total Budget	**$44,980**

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 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 TMAs, MAPC subregions, and municipalities seeking to improve the transit services that they operate or fund.

FFY 2018 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	**2418 MAPC8**
FHWA 3C PL Funds	**(CTPS) $53,60 (MAPC) $25,000**
FTA Section 5303 Funds	**(CTPS) $21,380 (MAPC) $20,000**
FFY 2018 Total Budget	**$118,740**

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

Purpose

Through this ongoing program, MPO staff and 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 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, could be recommended. Descriptions of the various planning processes at MassDOT, the MBTA, the MPO, and MAPC, as well as guidance on how communities can get involved, could also be provided. Technical assistance activities could 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 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 2018 Anticipated Outcomes

In early FFY 2018 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 three–to–four 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 the community technical assistance requests that are selected for funding. Professional teams will be dispatched to client municipalities, and memoranda will document the work, recommendations, and outcomes of these consultations.

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 2018 Total Budget	$167,480

Note: FTA match is provided by MAPC and FHWA funds include the MassDOT local match.

Purpose

This UPWP task includes funding to support 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 ($30,000):

MAPC will continue planning work that can support transit-oriented development (TOD). MAPC will use demographic data to identify one existing transit station (subway or commuter rail) or high-volume bus corridor that has 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 site's potential for TOD. Where applicable, MAPC will conduct a market analysis to determine whether the market can support additional development at the chosen station area or corridor. Where appropriate, MAPC will work with the MBTA, CTPS, MassDOT, the Executive Office of Housing and Economic Development (EOHED), the Division of Capital Asset Management and Maintenance (DCAMM), landowners, and the municipalities in which the stations or corridors are located.

FFY 2018 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.

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 2018 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/Sub-Area Level Transportation and Land Use Planning ($57,480):

MAPC will work in one selected roadway corridor to coordinate multimodal 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.

Water Transportation Planning ($30,000):

MAPC will work with municipalities along Boston Harbor and the Mystic River to coordinate water transportation planning, related land use planning, and facilitate coordination with MassDOT, MBTA and Massport.

FFY 2018 Anticipated Outcomes Related to Water Transportation Planning

Activities and expected work products include coordination among stakeholders, recommended services that are sustainable and cost-effective.

ALTERNATIVE-MODE PLANNING AND COORDINATION

Project ID Number	MAPC7
FHWA 3C PL Funds	$126,925
FTA Section 5303 Funds	$66,577
FFY 2018 Total Budget	$193,502

Note: FTA match is provided by MAPC and FHWA funds include the MassDOT local match.

Purpose

MAPC provides alternative-mode transportation-planning support to the Boston Region MPO and municipalities that focuses on non-single-occupant vehicle modes. This work benefits bicycle and pedestrian transportation, encourages transit in areas that currently are underserved by existing RTAs, improves the region's understanding of Transportation Network Companies (TNCs), advances electric vehicles, and identifies and supports transportation demand management strategies.

Approach

Autonomous Vehicles, Connected Cars, and TNCs ($33,502)

MAPC will further the regional and municipal understanding of the potential future impacts of TNCs and autonomous vehicle/connected vehicle (AV/CV) technologies. MAPC staff will work with CTPS to identify how expanded TNC use and movement toward 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 federal agencies and other states and municipalities are regulating TNCs and preparing for AV/CV technologies.

Suburban Mobility and Technology ($35,000)

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 Arlington, Watertown, Newton, Everett, and Chelsea. Seed funding for the program came from the MPO's Clean Air and Mobility Program, a separate 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 ($30,000)

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, MassDOT, the Massachusetts Department of Conservation and Recreation, 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 2018 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 first-mile last-mile connections, 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 2018 Total Budget	$90,000

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

Purpose

This UPWP study area will continue to support implementation, evaluation, and update of MetroFuture, the Boston Region's 30-year comprehensive plan (through the year 2030) for sustainable growth and development, by increasing community engagement in 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 reduction of greenhouse gas emissions. As part of the MetroFuture update, MAPC will supplement the civic engagement tasks in developing the land use scenarios for the LRTP. 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 equity. This may include focusing on strategies to steer investments and development to low-income neighborhoods, working to mitigate and minimize displacement pressures, and expanding senior mobility.

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 for 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

This year, MAPC will begin updating 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 finish evaluating the existing plan, while designing a process for the update that takes into account the changing nature of mobility in Metro Boston. The plan update will begin in spring 2018.

FFY 2018 Anticipated Outcomes

Anticipated outcomes include enhanced and expanded engagement in land use and transportation planning processes, including the LRTP and MetroFuture.

LAND USE DEVELOPMENT PROJECT REVIEWS

Project ID Number	MAPC5
FHWA 3C PL Funds	$59,400
FTA Section 5303 Funds	$29,420
FFY 2018 Total Budget	$88,820

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

Purpose

This UPWP task supports 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 TIP and LRTP, and for consistency with the 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 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 2018 Anticipated Outcomes

Anticipated outcomes include analysis and reports 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.

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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 this chapter 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	**111xx**
Funding Source	**MassDOT**
Total Contract	**$400,000**
FFY 2018 Total Budget	**15,200**

Purpose

The purpose of this on-call contract is to provide the MassDOT Highway Division with travel demand modeling and planning assistance throughout FFY 2018.

Approach

For the past few years, the MassDOT Highway Division has engaged 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 retain CTPS's services for three years to provide necessary assistance to MassDOT Highway Division projects.

FFY 2018 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 2018 Total Budget	**$377,376**

Purpose

CTPS provides support to MassDOT's SPR program as requested. This contract will include multiple individual projects or tasks throughout the federal fiscal year.

Approach

This work includes studies, analyses, and technical assistance. Projects that are either underway or expected to begin in FFY 2018 are listed below. (Other projects may be added throughout FFY 2018.)

- 2017–2018 I93 North and Southeast Expressway High-Occupancy-Vehicle (HOV) Lane Monitoring
- Diversity Posters
- Miscellaneous Graphics
- Road Inventory and Related Support Maintenance
- Statewide Travel Model Assistance
- MassDOT Statewide Bike Plan Support
- Miscellaneous Technical Support

FFY 2018 Anticipated Outcomes

Activities and work products will depend on tasks requested by MassDOT's Office of Transportation Planning (OTP). 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 2018 Total Budget	**$13,300**

Purpose

Under this contract, CTPS will continue to provide technical support to MassDOT in implementing 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 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 2018 Anticipated Outcomes

Staff will provide technical support to MassDOT as described above.

MASSDOT TRANSIT PLANNING ASSISTANCE

Project ID Number	**Varies**
Funding Source	**MassDOT Section 5303**
Total Contract	**533,278**
FFY 2018 Total Budget	**$200,604**

Purpose

CTPS will provide transit-planning assistance to MassDOT and the MBTA by conducting various studies under MassDOT's FTA-funded Section 5303 Program. This contract will include multiple individual projects or tasks throughout the federal fiscal year.

Approach

This assistance may include:

- Analysis of projects and proposals (both short-term and ongoing), including traveldemand 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
- Preparation of environmental documentation for projects under development
- Other studies and activities requested by MassDOT

FFY 2018 Anticipated Outcomes

Activities and work products will depend on tasks requested by MassDOT's OTP. 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 2018 Total Budget	**$27,000**

Purpose

The purpose of this program is to test the template developed by a consulting firm, for collecting Model Inventory Road Element (MIRE) Fundamental Data Elements (FDEs) for intersections in a subset of Massachusetts intersections.

Approach

MPO staff will use a template application developed by a consultant to collect MIRE FDEs at approximately 5,500 intersections in Massachusetts. Staff will provide feedback on the template to the consultant (via MassDOT's Traffic Safety and Engineering group). If necessary, the template may be modified before it is used to collect MIRE FDEs on the more than 250,000 intersections in the Commonwealth of Massachusetts.

FFY 2018 Anticipated Outcomes

Anticipated outcomes include collecting MIRE FDEs for approximately 5,500 intersections in Massachusetts. Staff will provide written reports regarding the consultant's 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 FFY 2018; it might extend into FFY 2019, depending on when the grant funds are released and when CTPS receives a notice to proceed (NTP) with the work.

NORTH-SOUTH RAIL LINK

Project ID Number	**23329**
Funding Source	**MassDOT**
Total Contract	**$250,000**
FFY 2018 Total Budget	**$170,000**

Purpose

This work will 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 more than a decade ago, a current analysis is required.

FFY 2018 Anticipated Outcomes

This study will examine the local and regional demand for a north-south connection, and also address the air quality and economic impacts associated with the project. After collecting and analyzing data, CTPS will produce draft and final reports on the project for MassDOT.

LOWER MYSTIC RIVER WORKING GROUP SUPPORT

Project ID Number	**22209**
Funding Source	**MassDOT**
Total Contract	**$489,300**
FFY 2018 Total Budget	**$49,300**

Purpose

This study and support work stem from the proposed Wynn Casino development in Everett and findings in the 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. The EOEEA certificate required that a regional working group be established to study and understand the extent of these broader impacts.

Approach

MPO staff will take the lead in transportation modeling and analyses. In addition, staff will collaborate 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 2018 Anticipated Outcomes

MPO staff support is anticipated to include the following main tasks in FFY 2018:

- Assistance with stakeholder engagement: Staff will plan public meetings, attend working group meetings, and assist 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 year (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 2040.
- Identification of mitigation strategies and land use alternatives for forecast year (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 forecast year (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 implementation schedule: Staff will develop a recommended set of policies, programs, and infrastructure investments, which will include a blueprint and implementation schedule.
- 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.

I-90/I-495 INTERCHANGE TRAFFIC ANALYSIS TECHNICAL SUPPORT

Project ID Number	**23327**
Funding Source	**MassDOT**
Total Contract	**$87,097**
FFY 2018 Total Budget	**$10,000**

Purpose

The interstate 90 and 495 (I-90/I-495) interchange, Massachusetts Turnpike Exit 11A, serves commerce traveling to and from northern New England and points west and south. This travel includes commuter traffic associated with jobs in the MetroWest complex; Boston Proper; and the Route 128 corridor. The interchange also connects I-90 to the substantial employment locations along the I-495 corridor and serves recreational travel to and from Cape Cod. In addition, the interchange connects I-84, I-90, I-495, and I-95, which all are truck corridors between New York and Maine.

MassDOT is conducting a study to examine four possible reconfigurations of this interchange in order to improve safety and operations. The target reconstruction time is between 2021 and 2025.

Approach

CTPS was tasked to use the Massachusetts statewide travel demand forecasting model to project future travel demand for I-90 at interchanges 10, 10A, 11, and 12, as well as I-495 from W Main Street to I-290, and I-290 from I-495 to I-90. The following major tasks associated with this project were accomplished in FFY 2017:

1. CTPS updated the Massachusetts statewide travel-demand forecasting model to include all of Massachusetts, all of Rhode Island, and New Hampshire just south of Concord.
2. The land use assumption was updated to be consistent with the state control totals for 2012, 2020, 2030, and 2040.
3. The updated model was recalibrated.
4. CTPS projected 2040 traffic volumes under the No-Build conditions.
5. CTPS will complete the remaining tasks of projecting the traffic volumes for Build alternatives as well as supporting air quality analysis and environmental-justice analysis.

FFY 2018 Anticipated Outcomes

CTPS will document findings in a technical memorandum.

7.3 MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

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

MBTA NATIONAL TRANSIT DATABASE: DATA COLLECTION AND ANALYSIS

Project ID Number	**(SFY 2017) 14351 (SFY 2018) 14353 (SFY 2019) 14356**
Funding Source	**MBTA**
Total Contract*	**(SFY 2017) $141,398 (SFY 2018) $130,000 (SFY 2019) $156,000**
FFY 2018 Total Budget	**(SFY 2017) $15,800 (SFY 2018) $103,075 (SFY 2019) $27,275**

** Several different contract years are included in this work.*

Purpose

For many years, in support of the MBTA's National Transit Database submittals to the FTA, 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 service.

Approach

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

- Full-route ridechecks[1] on buses used in contracted MBTA local bus service and trackless trolleys
- MBTA automatic passenger counter (APC) data
- Passenger counts on APC-equipped buses to verify APC data
- 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 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. In addition, the MBTA will submit its SFY 2018 NTD estimates of passenger boardings and passenger miles for various transit modes to the FTA with the aid of CTPS during FFY 2019. The final technical memorandum for the 2018 NTD will be completed in FFY 2019.

FFY 2018 Anticipated Outcomes

In SFY 2018, CTPS will complete the final technical memorandum for SFY 2017 NTD reporting and will continue data collection begun in SFY 2017 for SFY 2018.

- Ridechecks will be conducted for the trackless trolley and contracted local bus service portions of the SFY 2018 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 TITLE VI PROGRAM MONITORING

Project ID Number	**(SFY 2017) 11408** **(SFY 2018) 11413**
Funding Source	**MBTA**
Total Contract	**(SFY 2017) $161,511** **(SFY 2018) $72,00**
FFY 2018 Total Budget	**(SFY 2017) $10,000** **(SFY 2018) $69,900**

** Several different contract years are included in this work.*

Purpose

Under this contract, CTPS provides the MBTA with technical assistance by 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 and analyzed on service indicators such as

- Service coverage
- Vehicle load
- Vehicle headway
- On-time performance
- Station conditions and amenities
- Distribution and operability of AFC faregates and fare vending machines
- Distribution of AFC retail sales terminals
- Station elevator and escalator locations and operability
- Vehicle age and condition

The data-collection and LOS-analysis activities will help to fulfill 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 the triennial FTA reporting.

FFY 2018 Anticipated Outcomes

CTPS will provide documentation about selected LOS evaluations for SFY 2017 MBTA revenue service and amenities, and staff will prepare the 2017 triennial MBTA Title VI program report.

MBTA BUS SERVICE DATA COLLECTION

Project ID Number	**11406**
Funding Source	**MBTA**
Total Contract	**$540,000**
FFY 2018 Total Budget	**$180,000**

Purpose

The work conducted under this contract will help the MBTA to 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 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 2018 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 RIDER OVERSIGHT COMMITTEE SUPPORT

Project ID Number	**14339**
Funding Source	**MBTA**
Total Contract	**$24,500**
FFY 2018 Total Budget	**$4,900**

Purpose

The 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, 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 with 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 2018 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 20178 Total Budget	**$3,240**

Purpose

CTPS will provide technical support to the 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 continue to 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.

FFY 2018 Anticipated Outcomes

- Participation in the PATI Engagement Committee
- Technical support and analyses required to review the proposed criteria for evaluating accessibility improvements

SUPPORT FOR MBTA SERVICE STANDARDS DEVELOPMENT

Project ID Number	**11414**
Funding Source	**MBTA**
Total Contract	**(SFY 2018) $30,000**
FFY 2018 Total Budget	**(SFY 2018) $22,500**

Purpose

Under this contract, CTPS will work with the MBTA and other partners to refine MBTA service standards and measures, develop new measures, and automate calculation of some of the existing metrics.

Approach

CTPS will assist the MBTA in evaluating some of the potential service metrics that were not included in the final MBTA Service Delivery Policy; as the MBTA did not have the data or processes in place to calculate the metrics to determine if they should be included in a future revision to the Service Delivery Policy. In addition, CTPS will help the MBTA refine some of the proposed metrics that have not been fully implemented, and develop tools to automate calculation of some of the new metrics.

FFY 2018 Anticipated Outcomes

Refined metrics and, to the extent feasible, tools for calculating some of the metrics

AFC 2.0 TITLE VI EQUITY ANALYSIS

Project ID Number	**11415**
Funding Source	**MBTA**
Total Contract	**$75,000**
FFY 2018 Total Budget	**$75,000**

Purpose

The MBTA is currently working to establish a new all-electronic fare payment system for all MBTA service modes; direct payment of cash fares would be eliminated. Because the impacts of such changes may have different effects on different ridership populations, the MBTA is required to conduct an equity analysis of the impacts of the new fare system.

Approach

CTPS will analyze information about existing passenger fare payment by demographic categories to estimate the effects of the new fare payment system on minority, nonminority, low-income, and non-low-income riders. CTPS will use this information to conduct an equity analysis of the new fare payment system.

FFY 2018 Anticipated Outcomes

Title VI equity analysis of the new MBTA fare system

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	**$50,000**
FFY 2018 Total Budget	**$50,000**

Purpose

CTPS will provide technical assistance to 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; assistance to Massport consultants, and support for additional to-be-determined transportation-planning activities. This work may be redirected or modified in response to emerging issues.

FFY 2018 Anticipated Outcomes

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

7.5 OTHER TECHNICAL SUPPORT WORK

The contracts and technical analysis in this section are being undertaken for other clients and agencies.

WEYMOUTH UNION POINT TECHNICAL SUPPORT

Project ID Number	**23328**
Funding Source	**Other (Developer)**
Total Contract	**$200,000**
FFY 2018 Total Budget	**$150,000**

Purpose

The South Weymouth Naval Air Station located in Weymouth, Abington and Rockland, was closed in 1997 by recommendation of the Base Realignment and Closure Commission. In 1998, the Massachusetts Legislature created the South Shore Tri-Town Development Corporation, which was subsequently reconstituted in 2014 as the Southfield Redevelopment Authority. The Southfield Redevelopment Authority is charged with reinforcing municipal control over the land use and redevelopment of the former base. The 1,400-acre site was recently purchased by a development company, which has ambitious redevelopment plans that contemplate as much as eight million square feet of commercial development and approximately 4,000 housing units.

Significant transportation impacts associated with the new development, now known as Union Point, are anticipated. An east-west parkway was constructed through the site as a result of a prior redevelopment effort. The site is immediately east of State Routes 18 and 58. Funds are programmed to widen State Route 18 in the near future. This improvement, along with other programmed improvements, will be represented in the Boston Region MPO's regional travel demand model.

The proposed development of Union Point is anticipated to occur in phases. Phase 1 is scheduled to be completed by 2022; and the full build-out of the property is planned to occur by 2032. CTPS will work with the project team to define the appropriate study area and will acquire updated traffic counts for a selection of intersections in the study area from the project team. CTPS will produce forecasts of travel demand for a base year, an intermediate year, and the future, full build-out year.

Approach

CTPS will follow the generate approach outlined below:

1. CTPS will run the travel-demand forecasting model for the base year, the opening year for the phase 1 build conditions, and a horizon year with the land use build-out assumption. CTPS will test different alternatives of highway and/or transit improvement scenarios.
2. CTPS will coordinate with the project team and provide data to support their analyses. Traffic data of morning and evening peak periods will be provided to the project team for assessing traffic impact and identifying mitigations. These outputs will be consistent with those developed for the MPO's LRTP.
3. A transit-crowding analysis for the Kingston/Plymouth commuter rail line will be performed.

FFY 2018 Anticipated Outcomes

CTPS will complete all model runs and analyses for different alternatives. CTPS will also provide traffic data to the project team for traffic impact analysis.

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 function of the MPO: Includes ongoing work to provide materials in accessible formats, and computer resource management, among other activities.
- Activities that assist the MPO and its subcommittees: Includes ongoing work to support the Access Advisory Committee, and MPO agenda setting, as well as coordination and participation in statewide and regional planning committees.
- Activities that offer data resources support to municipalities in the region: Includes work conducted through 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, how the work is accomplished, and a summary of the anticipated federal fiscal year (FFY) 2018 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 assigned in FFY 2017, a summary of the work products and/or progress made in FFY 2017, the funding proposed for each of these activities in the FFY 2018, and the anticipated work products and/or progress in FFY 2018.

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 2017/FFY 2018 Ongoing Administration, Resource Management, and Support Activities

Project Name	ID	FFY 2017 Total Funding	FFY 2017 Work Products and Progress	FFY 2018 PL Funding	FFY 2018 §5303 Funding	FFY 2018 Total Funding	FFY 2018 Planned Work Products and Progress
CTPS Activities							
Computer Resources and Modeling							
Computer Resource Management	Varies by Task	$464,710	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.	$296,753	$115,017	$411,770	Tasks and work products generally remain the same from year to year.
Data Resources Management	Varies by Task	$290,480	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.	$149,331	$57,879	$207,210	Tasks and work products generally remain the same from year to year.
Regional Model Enhancement	Varies by Task	$750,760	Update regional model databases and computer programs that implement modeling procedures.	$557,127	$215,933	$773,060	Continue to advance the existing regional model through enhancements to the input data and modeling procedures. Also, work on the development of an Activity Based Model (ABM), which will cover the same geography as the regional model.
Data/Technical and Other Support							
Access Advisory Committee Support	9418	$89,130	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.		$97,840	$97,840	Access Advisory Committee Support activities generally remain the same from year to year.

(Table 8-1 cont.)

Project Name	ID	FFY 2017 Total Funding	FFY 2017 Work Products and Progress	FFY 2018 PL Funding	FFY 2018 §5303 Funding	FFY 2018 Total Funding	FFY 2018 Planned Work Products and Progress
Provision of Materials in Accessible Formats	3118	$86,710	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, memorandum, reports, and other public materials. Review accessibility requirements, current CTPS standards and processes and work on implementing standards within memorandum and report templates.	$73,545	$28,505	$102,050	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.
Transit Data Support (formerly: Travel Operations Analyses)	4218	$11,120	Continue to respond to data request needs.	-	$15,840	$15,840	Continue to respond to data request needs.
Traffic Data Support (formerly: Travel Data Forecasts)	2718	$8,400	Continue to respond to data request needs.	$11,142	$4,318	$15,460	Continue to respond to data request needs.
Roadway Safety Audits	2318	$14,520	Continue providing support to MassDOT for safety audits conducted in the Boston Region MPO.	$15,730	$ -	$15,730	Tasks and work products generally remain the same from year to year.
MAPC Activities							
Land Use Data for Transportation Modeling	MAPC 10	$77,451	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.	$61,051	$26,400	$87,451	Tasks and work products generally remain the same from year to year.
UPWP Support	MAPC 3	$10,000	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	MAPC 2	$187,000	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.	$139,000	$48,000	$187,000	Tasks and work products generally remain the same from year to year.
MPO/MAPC Liaison and Support Activities	MAPC 1	$157,000	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.	$112,000	$48,000	$160,000	Continue work in support of the operational land use model.

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	$296,753
FTA Section 5303 Funds	$115,017
FFY 2018 Total Budget	$411,770

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

Purpose

In order to fulfill the Boston Region Metropolitan Planning Organization (MPO) functions, the Central Transportation Planning Staff (CTPS) to the MPO maintains state-of-the-practice computer resources.

Approach

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

6218 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.

6318 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, content, and accessibility of this communications 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 (the Advisory Council) meetings and committee meetings, as well as their related materials, are posted on the website.

6418 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.

6318 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.

6618 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.

6718 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.

6818 Computer Resource Planning

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

FFY 2018 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	$149,331
FTA Section 5303 Funds	$57,879
FFY 2018 Total Budget	$207,210

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

Purpose

CTPS provides travel data and analyses at regional, corridor, and site-specific levels to support transportation planning and decision-making in the Boston Region MPO area.

Approach

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

5218 Socioeconomic Data

CTPS will maintain and keep current its database of statistics from the US Census Bureau's decennial Census and American Community Survey, and products derived from these sources.

5318, 5418 Response to Data Requests

CTPS will process or analyze data upon request to meet the needs of local, state, and federal agencies, as well as private institutions and firms. The 5318 project number is used for data requests handled by CTPS's Information Technology and Systems (IT&S) group; the 5418 number is used for data requests handled by all other groups.

5518 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 MassDOT and MassGIS in order to prevent duplication of effort, ensure 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 2018 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	**Varies**
FHWA 3C PL Funds	**$60,000**
FTA Section 5303 Funds	**$23,000**
3C Direct Support Total	**$83,000**
SPR Funds	**$12,500**
MassDOT Section 5303 Funds	**$5,500**
MassDOT Other Funds	**n/a**
MBTA Funds	**$850**
Massport Funds	**$500**
Agency-Funded Work Direct Support Total	**$19,350**

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

Purpose

Through this activity, CTPS provides integral direct support for all CTPS projects and functions.

Approach

Computer Equipment

CTPS computer needs are programmed in the CTPS FiveYear 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 2018 Anticipated Outcomes

Direct costs include computer and general office equipment, professional consulting services, instate 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	**9418**
FHWA 3C PL Funds	**$-**
FTA Section 5303 Funds	**$97,840**
FFY 2018 Total Budget	**$97,840**

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 that represents people with disabilities. AACT advises the MBTA on all accessibility matters relating to use of the MBTA's systemwide fixed-route services and THE RIDE, the MBTA's 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 2018 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 systemwide 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 activities of the AACT executive board of directors

- Maintain awareness of and provide guidance for 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 of 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	**3118**
FHWA 3C PL Funds	**$73,545**
FTA Section 5303 Funds	**$28,505**
FFY 2018 Total Budget	**$102,050**

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

Purpose

The purpose of this program is to comply with 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 2018 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	**7118**
FHWA 3C PL Funds	**$557,127**
FTA Section 5303 Funds	**$215,933**
FFY 2018 Total Budget	**$773,060**

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

Purpose

Through this work program, 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. In effect, the model is a simulation of travel behavior that emulates the millions of travel decisions that 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 FFY 2017, CTPS continued to maintain the regional model and enhanced it. Maintenance included updating the transit route system from the base year 2012 to 2016. Maintenance also included updates to the highway network to reflect projects completed between 2012 and 2016, including conversion of the toll collection system. In calendar year 2016, MassDOT converted to open road tolling, consequently eliminating all ticket and barrier systems. The tolling system within the model needed to be entirely re-specified and re-programmed. Also, during the past year, the model software vendor (Caliper) updated the software version (TransCAD 6 to TransCAD 7). This meant that revisions were needed to the customized model program (GISDK), which runs the model. These revisions also included developing a scenario manager, which TransCAD 6 could not support, but that TransCAD 7 does support. These revisions improved the model's performance and accuracy.

For enhancements, many customized reports were added to the updates, which improved the model's reporting. Many of these reports focused on transit, with enhanced reporting of transfers within a mode as well as transfers between modes.

Another area of substantial enhancement was in air quality analysis. Considerable resources were used to update the interfaces in the model in accordance with Environmental Protection Agency (EPA) mobile emission programs. Another area of enhancement focused on the calculations associated with accessibility to transit, which is a key input to the mode choice program.

After making these maintenance and enhancement changes, the model needed to be re-calibrated. This was done using 2016 ridership information as well as hundreds of new traffic counts.

Other ongoing model activities in FFY 2017 included a continued relationship with the Massachusetts Institute of Technology (MIT), which is building an activity based model (ABM) for the 164-community region. To support this effort, staff shared a considerable amount of model data with MIT. Also, staff collaborated with MAPC to continue refining the CubeLand model continued. During FFY 2017, new data sources from Google and INRIX were used to help with the model calibration process.

Finally, under a separate contract with MassDOT, the statewide model was updated from the 1990 base files to 2016. This statewide model is used to inform the regional model about travel passing through the 164-community regional model, as well as to inform it with travel that begins or ends within the 164-community region, but ends outside of the 164-community region.

FFY 2018 Anticipated Outcomes

MPO staff plans to pursue the following activities associated with the Boston Region MPO's travel demand model:

- Continue to use the 2011 Massachusetts Travel Survey (2011 MTS), the most recent MBTA user surveys, the most recent traffic counts, and the latest MBTA counts to maintain, update, and calibrate the model set.
- Refine the scenario-management program and continue to make the model interface more flexible and powerful.
- Continue to refine linkage between the statewide and CTPS model sets to improve CTPS model with a better way to estimate external-external travel through the region. This linkage will also allow for improvements in forecasting 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 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.
- Continue to support (by supplying data) the MIT effort to build an ABM for the 164-community region.

- Work toward development of a parking choice model for the Boston core. In the previous fiscal year, a parking inventory was completed for the core. This inventory can be used as the basis for the parking choice model.
- Continue to refine model documentation.
- Continue to provide technical support and training to users of the model.
- Continue to improve linkage between the regional model set and the EPA's Motor Vehicle Emissions Simulator (MOVES) software, which calculates mobile emissions.
- Work toward the development of a dynamic traffic assignment (DTA) model for use in the MPO model set. Current practice suggests that 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 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 CubeLand, and examine potential for using CubeLand 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.
- Continue to improve ways to use Google and INRIX travel data in the development and calibration of the regional model.
- Work on ways to improve representation of Transportation Network Companies (TNCs) such as UBER and LYFT in the regional model.
- Massport has recently completed a calendar year 2016 ground access survey. Consequently, the Logan ground access model (funded by Massport) will be re-estimated. The results of this model need to be incorporated into the regional model
- The truck model is in need of an update. During the current work program, methods for updating the model will be examined. The update likely would 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 2018

Project ID Number	**4218**
FHWA 3C PL Funds	**$-**
FTA Section 5303 Funds	**$15,840**
FFY 2018 Total Budget	**$15,840**

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 MBTA and other entities, 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 2018 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 2018

Project ID Number	**2718**
FHWA 3C PL Funds	**$11,142**
FTA Section 5303 Funds	**$4,318**
FFY 2018 Total Budget	**$15,460**

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

For 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 CTPS to perform various quick-response analyses or data. Accounting for these requests, which are expected to require less than two person-days each, is done under this general project description.

FFY 2018 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	**2318**
FHWA 3C PL Funds	**$15,730**
FTA Section 5303 Funds	
FFY 2018 Total Budget	**$15,730**

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

Purpose

This program supports CTPS participation in Roadway Safety Audits (RSAs).

Approach

An RSA, as defined by FHWA, is a formal safety performance examination of an existing or future road or intersection by an independent audit team. 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 2018 Anticipated Outcomes

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

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	**$112,000**
FTA Section 5303 Funds	**$48,000**
FFY 2018 Total Budget	**$160,000**

Note: FTA funds include a local match from MAPC 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 implement the 3C process and engagement in regional transportation planning lead by MassDOT, the MBTA, or municipalities in the region. Additionally, it includes reporting to the 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 ($70,000)

MAPC actively participates in and attends statewide and regional planning committees, task forces, and boards 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), Regional Coordination Councils, and MassDOT and MBTA board meetings, as well as various MassDOT, MBTA, or municipally led transportation planning groups. 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 started or completed, but participating in various advisory committees is an ongoing task.

Support of the Public Participation Process for Metropolitan Planning Documents ($20,000)

MAPC provides education and outreach for 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 CTPS in its outreach to environmental justice and senior populations and to people with disabilities.

MPO Elections ($5,000)

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

Performance Based Planning and Programming (PBPP) ($10,000)

MAPC will support CTPS in developing the PBPP targets and identifying data to measure progress toward meeting targets and objectives.

Long Range Transportation Plan (LRTP) ($15,000)

MAPC will support CTPS to develop the next LRTP, with focus on scenario planning and public engagement.

Transportation Improvement Program (TIP) Evaluation and Criteria ($5,000)

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 ($35,000)

MAPC will work with CTPS and MassDOT to develop MPO meeting agendas and presentations, and participate in MPO processes.

FFY 2018 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; PBPP targets and data; LRTP scenarios; 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 2018 Total Budget	**$10,000**

Notes: 1) FTA and FHWA funds include the MassDOT local match. 2) FTA match provided by MAPC and FHWA funds include the MassDOT local match.

Purpose

This UPWP task supports MAPC's management and oversight of UPWP-funded planning studies, projects, and programs, including preparing updates and budget information in monthly reports to MassDOT.

Approach

MAPC assists with the annual development of the UPWP and supports, in coordination with MassDOT and CTPS, 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 2018 Anticipated Outcomes

MAPC staff will prepare UPWP project listings and monthly reports on UPWP activities. MAPC will assist with annual development of the UPWP and support 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 AND FORECASTS FOR TRANSPORTATION MODELING (MAPC)

Project ID Number	MAPC10
FHWA 3C PL Funds	$61,051
FTA Section 5303 Funds	$26,400
FFY 2018 Total Budget	$87,451

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

Purpose

This program allows MAPC to support the MPO's planning and decision-making by providing CTPS with detailed population, household, employment, and land use data (current conditions and projections) for transportation modeling and project evaluation.

Approach

Regional Population, Household, and Employment Projections: MAPC will collaborate with MassDOT, interested state agencies, RPAs, and other stakeholders to help produce regional socioeconomic projections based on updated information about migration patterns, household formation, economic activity, and development patterns.

Land-Use Allocation Model Development: MAPC will make targeted improvements to the land use allocation model and will use the model to create land use scenarios to be evaluated during development of the LRTP.

Development Database: MAPC will continue to monitor development projects that are being planned across the region and will maintain an up-to-date development database in a new online portal at **www.massbuilds.com**. MAPC will support CTPS in applying this data for project evaluation or updates to the travel demand model.

FFY 2018 Anticipated Outcomes

Anticipated outcomes include updated population and household projections, an improved land use allocation model, multiple land use alternatives for use in the LRTP, new data 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 2018 Total Budget	$187,000

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

Purpose

The 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 jointly identify and review the transportation priorities in their areas and recommend subregional projects and priorities for the TIP, LRTP, UPWP, and MBTA's Focus 40 long-range planning.

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, planning for first-mile last-mile connections to transit, and engagement in the MPOs Performance Based Planning and Programming initiative and development of the next LRTP.

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

FFY 2018 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, public comment and input on MPO process and certification documents, 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	$1,648,725
Continuing MPO Planning Studies and Technical Analyses	$205,930
MAPC Planning Studies and Technical Analyses	$584,802
New MPO-Funded Discrete Studies	$705,000
Agency and Other Client Planning Studies and Technical Support	$1,575,070
CTPS Administration, Resource Management, and Support Activities	$1,638,960
MAPC Resource Management and Support Activities	$44,451
Total	**$6,885,938**

The funding for the projects, programs, and activities 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	**$3,694,506**
MPO FTA 3C Planning (Section 5303)/MassDOT Local Match	**$1,289,065**
MassDOT FTA 3C Planning (Section 5303)/MassDOT Local Match	**$200,604**
MAPC FTA 3C Planning (Section 5303)/MassDOT Local Match	**$327,297**
FHWA Statewide Planning and Research (SPR)/MassDOT Local Match	**$377,376**
MassDOT	**$297,100**
MBTA	**$459,990**
Other	**$100,000**
Total	**$6,885,938**

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.

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) 2018. CTPS has received its estimated FFY 2018 FHWA PL allocation of $3,694,506. MAPC's FFY 2018 FHWA PL allocation is $701,596. CTPS has received its estimated amount of FFY 2018 FTA Section 5303 allocation of $1,274,278. MAPC's FFY 2018 FTA Section 5303 allocation is $327,297. 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.

Table 9-1: FFY 2018 Unified Planning Work Program Budget—Administration, Resource Management, and Support Activities

Project ID	Name	FFY 2017 CTPS UPWP Budget	Expected Project Status as of 10/1/2017	CTPS PL Funds	CTPS Section 5303 Funds	Proposed FFY 2018 CTPS Budget
6218	System Admin and Computer Room Management	$ 122,560	Ongoing	$ 86,359	$ 33,471	**$ 119,830**
6318	MPO Website	$ 98,420	Ongoing	$ 46,246	$ 17,924	**$ 64,170**
6418	Software Development	$ 18,010	Ongoing	$ 2,847	$ 1,103	**$ 3,950**
6518	Staff Assistance and Training	$ 24,930	Ongoing	$ 22,211	$ 8,609	**$ 30,820**
6618	Liaison with Other Agencies	$ 5,350	Ongoing	$ 2,818	$ 1,092	**$ 3,910**
6718	Computing Resource Purchasing and Maintenance	$ 151,950	Ongoing	$ 113,708	$ 44,072	**$ 157,780**
6818	Computer Resource Planning	$ 43,490	Ongoing	$ 22,564	$ 8,746	**$ 31,310**
Computer Resource Management Subtotal		**$ 464,710**		**$ 296,753**	**$ 115,017**	**$ 411,770**
5218	Socioeconomic Data	$ 38,120	Ongoing	$ 25,144	$ 9,746	**$ 34,890**
5318	Response to Data Requests (ITS Group)	$ 23,310	Ongoing	$ 9,419	$ 3,651	**$ 13,070**
5418	Response to Data Requests (Other Groups)	$ 15,350	Ongoing	$ 22,118	$ 8,572	**$ 30,690**
5518	GIS/DBMS	$ 213,700	Ongoing	$ 92,650	$ 35,910	**$ 128,560**
Data Resources Management Subtotal		**$ 290,480**		**$ 149,331**	**$ 57,879**	**$ 207,210**
9418	Access Advisory Committee Support	$ 89,130	Ongoing	$ -	$ 97,840	**$ 97,840**
3118	Provision of Materials in Accessible Formats	$ 86,710	Ongoing	$ 73,545	$ 28,505	**$ 102,050**
7118	Regional Model Enhancement	$ 750,760	Ongoing	$ 557,127	$ 215,933	**$ 773,060**
2318	Roadway Safety Audits	$ 14,520	Ongoing	$ 15,730	$ -	**$ 15,730**
2718	Traffic Data Support	$ 8,400	Ongoing	$ 11,142	$ 4,318	**$ 15,460**
4218	Transit Data Support	$ 11,120	Ongoing	$ -	$ 15,840	**$ 15,840**
Other Administration Subtotal		**$ 960,640**		**$ 657,543**	**$ 362,437**	**$ 1,019,980**
Direct Support		**$ 226,500**		**$ 60,000**	**$ 23,000**	**$ 83,000**
Administration, Resource Management, & Support Activities Subtotal		**$ 1,942,330**		**$ 1,163,628**	**$ 558,332**	**$ 1,721,960**

Table 9-2: FFY 2018 Unified Planning Work Program Budget—Certification Requirements

Project ID	Name	FFY 2017 CTPS UPWP Budget	Expected Project Status as of 10/1/2017	CTPS PL Funds	CTPS Section 5303 Funds	Proposed FFY 2018 CTPS Budget
9018	Support to the MPO and Its Committees	$ 257,870	Ongoing	$ 165,294	$ 64,066	**$ 229,360**
9218	General Graphics	$ 85,820	Ongoing	$ 61,380	$ 23,790	**$ 85,170**
9318	Regional Transportation Advisory Council Support	$ 92,970	Ongoing	$ 78,633	$ 30,477	**$ 109,110**
9618	Public Participation Process*	$ 173,370	Ongoing	$ 135,466	$ 52,504	**$ 187,970**
3C Planning and MPO Support Subtotal		**$ 610,030**		**$ 440,773**	**$ 170,837**	**$ 611,610**
8118	Long Range Transportation Plan	$ 292,791	Ongoing	$ 267,854	$ 103,816	**$ 371,670**
8218	Transportation Improvement Program	$ 164,840	Ongoing	$ 145,288	$ 56,312	**$ 201,600**
8318	Unified Planning Work Program	$ 123,200	Ongoing	$ 81,098	$ 31,432	**$ 112,530**
8418	Air Quality Conformity Determinations and Support	$ 28,940	Ongoing	$ 26,953	$ 10,447	**$ 37,400**
8518	Transportation Equity Program (including MPO Title VI Reporting)	$ 129,360	Ongoing	$ 105,522	$ 40,898	**$ 146,420**
2118	Congestion Management Process	$ 99,880	Ongoing	$ 80,634	$ 31,261	**$ 111,895**
2218	Freight Planning Support	$ 51,200	Ongoing	$ 55,600	$ -	**$ 55,600**
Other Certification Requirements Activities Subtotal		**$ 890,211**		**$ 762,949**	**$ 274,166**	**$ 1,037,115**
Certification Requirements Subtotal		**$ 1,500,241**		**$ 1,203,722**	**$ 445,003**	**$ 1,648,725**

*includes TransReport

Table 9-3: FFY 2018 Unified Planning Work Program Budget—Ongoing and Continuing MPO Planning Studies and Technical Analyses

Project ID	Name	FFY 2017 CTPS UPWP Budget	Expected Project Status/ Completion as of 10/1/2017	CTPS PL Funds	CTPS Section 5303 Funds	Proposed FFY 2018 CTPS Budget
13274	Addressing Safety, Mobility, and Access on Subregional Priority Roadways: FFY 2017	$ 110,000	95%	$ 3,639	$ 1,411	**$ 5,050**
13275	Low-Cost Improvements to Freeway Bottlenecks	$ 50,000	90%	$ 4,680	$ -	**$ 4,680**
13276	Addressing Priority Corridors from the LRTP Needs Assessment: FFY 2017	$ 110,000	95%	$ 4,072	$ 1,578	**$ 5,650**
13280	Safety Effectiveness of Safe Routes to School Program	$ 80,000	88%	$ 3,301	$ 1,279	**$ 4,580**
2418	Community Transportation Technical Assistance	$ 71,140	Ongoing	$ 53,143	$ 20,597	**$ 73,740**
2518	Bicycle and Pedestrian Support Activities	$ 64,840	Ongoing	$ 48,466	$ 18,784	**$ 67,250**
14342	Regional Transit Service Planning Technical Support	$ 35,210	Ongoing	$ -	$ 44,980	**$ 44,980**
Technical Analyses Subtotal		**$ 171,190**		**$ 101,608**	**$ 84,362**	**$ 185,970**
MPO-Funded Planning Studies and Technical Analyses Subtotal		**$ 521,190**		**$ 117,300**	**$ 88,630**	**$ 205,930**

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

Universe ID	Staff-recommended New Projects	CTPS PL Funds	CTPS Section 5303 Funds	Proposed FFY 2018 CTPS Budget
A-3	Bicycle Level-of-Service Metric	$ 39,600	$ 15,400	**$ 55,000**
L-1	Transportation Mitigation of Major Developments: Review of Strategies	$ 36,000	$ 14,000	**$ 50,000**
M-1	Safety and Operations Analysis at Selected Intersections	$ 50,400	$ 19,600	**$ 70,000**
M-5	Potential Impacts of Connected and Autonomous Vehicles	$ 36,000	$ 14,000	**$ 50,000**
M-7	Travel Alternatives to Regional Traffic Bottlenecks	$ 50,400	$ 19,600	**$ 70,000**
M-9	Addressing Safety, Mobility, and Access on Subregional Priority Roadways 2018	$ 86,500	$ 33,500	**$ 120,000**
M-10	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment 2018	$ 86,500	$ 33,500	**$ 120,000**
T-13	Community Transportation Program Development	$ 61,300	$ 23,700	**$ 85,000**
T-14	Review of and Guide to Regional Transit Signal Priority	$ 46,800	$ 18,200	**$ 65,000**
O-1	MPO Staff-Generated Research Topics	$ 14,400	$ 5,600	**$ 20,000**
Total for Staff-recommended New Discrete and Ongoing Studies		**$ 507,900**	**$ 197,100**	**$ 705,000**

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

Table 9-5: FFY 2018 Unified Planning Work Program Budget - New and Continuing Agency Transportation Planning Studies and Technical Analyses

Project ID	Name	Total Contract[a]	FFY 2017 CTPS UPWP Budget	Expected Project Status as of 10/1/2017	Funding Source	FFY18 Agency Funds	Direct Support	Proposed FFY 2018 CTPS Budget
Varies by Specific Project	MassDOT SPR Program Support[b]	$ 998,000	$ 572,000	Contract issued every SFY	MassDOT SPR	$ 364,876	$ 12,500	**$ 377,376**
111xx	MassDOT Highway Division On-Call Modeling Support	$ 400,000	$ 140,100		MassDOT	$ 15,200		**$ 15,200**
22209	Lower Mystic River Working Group Support	$ 489,300	$ 246,500		MassDOT	$ 49,300	$ -	**$ 49,300**
11158	Section 405C Traffic Records Improvement	$ 97,000	$ 69,100		MassDOT	$ 27,000		**$ 27,000**
23329	North/South Rail Link	$ 250,000	$ 149,700		MassDOT	$ 170,000		**$ 170,000**
14354	South Coast Rail	$ 249,579			MassDOT	$ 13,000		**$ 13,000**
23327	I-90/I-495 Interchange Traffic Analysis	$ 87,097			MassDOT	$ 9,300		**$ 9,300**
13154	MassDOT Title VI Program	$ 169,900	$ 37,500		MassDOT	$ 13,300		**$ 13,300**
Varies by Specific Project	MassDOT Transit Planning Assistancec	$ 533,278	$ 270,170	Contract issued every year	MassDOT Section 5303	$ 195,104	$ 5,500	**$ 200,604**
MassDOT Subtotal		**$ 3,274,154**	**$ 1,485,070**			**$ 857,080**	**$ 18,000**	**$ 875,080**
22127	Massport Technical Assistance	$ 50,000	$ 53,150	Contract issued every 3 years	Massport	$ 49,500	$ 500	**$ 50,000**
Massport Subtotal		**$ 50,000**	**$ 53,150**			**$ 49,500**	**$ 500**	**$ 50,000**
11408	MBTA 2017 Triennial Title VI Report	$ 161,511	$ 95,021		MBTA	$ 9,800		**$ 9,800**
11406	MBTA Bus Service Data Collection IX	$ 540,000	$ 180,000		MBTA	$ 180,000	$ -	**$ 180,000**
14339	MBTA Rider Oversight Committee Support	$ 24,500	$ 2,600		MBTA	$ 4,900		**$ 4,900**
14351	MBTA SFY 2017 National Transit Database: Data Collection and Analysis	$ 141,398	$ 125,698		MBTA	$ 15,800		**$ 15,800**

(Table 9-5 cont.)

Project ID	Name	Total Contract[a]	FFY 2017 CTPS UPWP Budget	Expected Project Status as of 10/1/2017	Funding Source	FFY18 Agency Funds	Direct Support	Proposed FFY 2018 CTPS Budget
14353	MBTA SFY 2018 National Transit Database: Data Collection and Analysis	$ 148,500	$ 10,900		MBTA	$ 102,700	$ 375	**$ 103,075**
14356	MBTA SFY 2019 National Transit Database: Data Collection and Analysis	$ 156,000			MBTA	$ 27,100	$ 175	**$ 27,275**
11413	MBTA 2018 Title VI Program Monitoring	$ 72,000	$ 95,021		MBTA	$ 69,600	$ 300	**$ 69,900**
11415	AFC 2.0 Title VI Planning	$ 100,000			MBTA	$ 100,000		**$ 100,000**
11414	MBTA Service Standards	$ 72,000			MBTA	$ 36,000		**$ 36,000**
14349	MBTA Plan for Accessible Transit Infrastructure	$ 18,370	$ 4,200		MBTA	$ 3,240		**$ 3,240**
MBTA Subtotal		**$ 1,434,279**	**$ 513,440**			**$ 549,140**	**$ 850**	**$ 549,990**
23328	Weymouth Union Point	$ 150,000				$ 100,000		**$ 100,000**
Other Subtotal		**$ 150,000**				**$ 100,000**		**$ 100,000**
Agency and Other Client Funded Subtotal			**$ 2,051,660**			**$ 1,555,720**	**$ 19,350**	**$ 1,575,070**

[a] The total contract amounts include direct costs. These are not included in the Federal Fiscal Year (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 6 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.

Blank or NA = No FFY 2017 budget or status noted either because this is a new study or contract, or because this study or contract was not active in FFY 2017.

Table 9-6: FFY 2018 Unified Planning Work Program Budget—MAPC Administration, Resource Management, and Support Activities

Project ID	Name	FFY 2017 MAPC UPWP Budget	PL Funds	Section 5303 Funds	Proposed FFY 2018 MAPC Budget
MAPC 1	MPO/MAPC Liaison and Support Activities	$ 157,000	$ 112,000	$ 48,000	**$ 160,000**
MAPC 3	Unified Planning Work Program (MAPC)	$ 10,000	$ 7,000	$ 3,000	**$ 10,000**
MAPC 2	Subregional Support Activities	$ 187,000	$ 139,000	$ 48,000	**$ 187,000**
MAPC 10	Land Use Data to Support Transportation Modeling	$ 77,451	$ 61,051	$ 26,400	**$ 87,451**
MAPC Resource Management and Support Activities		**$ 431,451**	**$ 319,051**	**$ 125,400**	**$ 444,451**

Table 9-7: FFY 2018 Unified Planning Work Program Budget—MAPC Planning Studies and Technical Analyses

Project ID	Name	FFY 2017 MAPC UPWP Budget	PL Funds	Section 5303 Funds	Proposed FFY 2018 MAPC Budget
MAPC 7	Alternative-Mode Planning and Coordination	$ 182,744	$ 126,925	$ 66,577	**$ 193,502**
MAPC 4	Corridor/Subarea Planning Studies	$ 167,480	$ 112,180	$ 55,300	**$ 167,480**
MAPC 8	Community Transportation Technical Assistance Program [a]	$ 45,000	$ 25,000	$ 20,000	**$ 45,000**
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 Planning Studies and Technical Analyses Subtotal		**$ 574,044**	**$ 382,905**	**$ 201,897**	**$ 584,802**

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

Table 9-8: FFY 2018 Unified Planning Work Program Budget—Summary of FFY 2018 Budgets for CTPS

3C Studies & Programs by Budget Categories	CTPS 3C PL Funds	CTPS Section 5303 Funds	Proposed FFY 2018 CTPS Budget
Administration, Resource Management, and Support Activities	$ 1,103,628	$ 535,332	**$ 1,638,960**
MPO Certification Requirements	$ 1,203,722	$ 445,003	**$ 1,648,725**
Continuing MPO-Funded Planning Studies and Technical Analyses	$ 117,300	$ 88,630	**$ 205,930**
New MPO-Funded Discrete Studies	$ 507,900	$ 197,100	**$ 705,000**
Direct Support	$ 60,000	$ 23,000	**$ 83,000**
Total for CTPS 3C Studies and Programs	**$ 2,992,550**	**$ 1,289,065**	**$ 4,281,615**

Agency-Funded CTPS Work	Agency Funds	Direct Support	Proposed FFY 2018 CTPS Budget
MassDOT SPR Funds	$ 364,876	$ 12,500	**$ 377,376**
MassDOT Section 5303 Funds	$ 195,104	$ 5,500	**$ 200,604**
MassDOT Other Funds	$ 297,100	$ -	**$ 297,100**
MBTA Funds	$ 549,140	$ 850	**$ 549,990**
Massport Funds	$ 49,500	$ 500	**$ 50,000**
Other	$ 100,000	$ -	**$ 100,000**
Total for Agency-Funded CTPS Project Work	**$ 1,555,720**	**$ 19,350**	**$ 1,575,070**

Total FFY 2018 CTPS Budget (3C + Agency Work)	**$ 5,856,685**

Budget figures include salary, overhead, and direct support.

Table 9-9: FFY 2018 Unified Planning Work Program Budget—Summary of FFY 2018 Budgets for MAPC

3C Studies & Programs by MAPC Budget Categories	MAPC 3C PL Funds	MAPC Section 5303 Funds	Proposed FFY 2018 MAPC Budget
MAPC Planning Studies and Technical Analyses	$ 382,905	$ 201,897	**$ 584,802**
MAPC Administration, Resource Management, and Support Activities	$ 319,051	$ 125,400	**$ 444,451**
Total MAPC FFY 2018 UPWP Programmed Funds	**$ 701,956**	**$ 327,297**	**$ 1,029,253**

Table 9-10: FFY 2018 Unified Planning Work Program Budget: 3C Budget and Overall Budget

Agency Supporting MPO/3C Work	3C PL Funds	Section 5303 Funds	Proposed FFY 2018 3C Budget
CTPS	$ 2,995,550	$ 1,289,065	**$ 4,281,615**
MAPC	$ 701,956	$ 327,297	**$ 1,029,253**
3C Budget Subtotal by Funding Program	**$ 3,694,506**	**$ 1,616,362**	**$ 6,885,938**

Total Programmed in FFY 2018 (CTPS 3C Budget + CTPS Agency-Funded Budget + MAPC 3C Budget)	**$ 6,885,938**

[Table 9-11: Programmed FFY 2018 Federal Transit Administration Section 5303 Funding by Element and Task]

[Under Development]

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APPENDIX A

Other Boston Region Transportation Planning Projects

[Under Development]

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, such as MassDOT and the MBTA, during FFY 2018. 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 (CTPS) to provide support for the preparation of an environmental impact report or a large-scale study. For these projects, CTPS support work is described in Chapters 4 through 7, with a cross-reference to the project listing in this appendix. Likewise, projects listed in this appendix indicate whether there is a CTPS component. 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 the surface-transportation planning projects occurring in the region.

Projects formatted in BOLD are in the process of being updated.

A.1 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.

Central Broadway Streetscape Improvements

Agency: City of Somerville

The City of Somerville initiated its Central Broadway Streetscape project in 2014, studying existing transportation needs, and evaluating and preparing an urban streetscape design that improves safety and function along Central Broadway. The study will result in a preferred design and engineering specification for a multimodal corridor that enhances safety and accessibility along Central Broadway, and stimulates economic development opportunities called for in the “Somerville by Design” neighborhood plan for Winter Hill.

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.

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

MassDOT (the Office of Transportation Planning) has been conducting a statewide transportation asset-vulnerability assessment. The study aims to provide a better understanding of which MassDOT's assets (infrastructure) are most likely to be at risk due to future inland flooding by utilizing the latest climate model results, suitable hydrologic and hydraulic tools, geospatial analysis and scenario planning methods. The potential impact of extreme heat on transportation assets and operations is also investigated qualitatively. The project aims to deliver the following outputs: 1) Downscaled climate projections for three emission scenarios (Representative Concentration Pathway 4.5, 6.0 and 8.5) for four future periods (2030, 2050, 2070 and 2100) (completed); 2) A prototype methodology for estimating future climate-related inland flooding risks and asset vulnerability at the state level (in process); 3) High-level synthesis of extreme heat impact on transportation assets and operations (completed); 4) Future 100-year floodplain maps for selected climate scenarios and periods; 5) Risk analysis of MassDOT's critical assets' exposure to future inland flooding.

Arsenal Street Corridor 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. The study will also examine and evaluate alternatives in the context of vehicular, bicycle and pedestrian use, land use, economic development, community effects, health effects, and

cost, as well as in the context of impact on existing users of the transportation network. Twenty study area intersections, from Galen Street to Soldiers Field Road, are highlighted in the study.

Lower Mystic Regional Working Group Agency: MassDOT

The Massachusetts Department of Transportation (MassDOT) has convened the Lower Mystic River Regional Working Group chaired by the Secretary of Transportation, and made up of elected officials and staff of the three communities of Boston, Everett and Somerville as well as the Metropolitan Area Planning Council (MAPC). Representatives from other state agencies, the office of Representative Mike Capuano, and the Wynn Everett Casino are also members of the Working Group. The purpose of the Working Group is to assess and develop short and long-range transportation improvements that can support sustainable redevelopment and economic growth for this area, particularly in and around Sullivan Square. Central to this work will be transportation analyses to determine likely impacts of development proposals, which will inform potential measures that could be taken to address those impacts, critical infrastructure that may be needed, as well as an examination of potential methods to pay for these improvements in an equitable manner.

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.

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*: Fairmount 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.**

CTPS will support Fairmount Planning Initiatives through the* Fairmount Line Station Access Analysis *project (page 6-15).

Green Line Extension — Agency: MBTA

The Green Line Extension (GLX) project is an initiative to extend existing MBTA Green Line service from a relocated Lechmere Station in East Cambridge to Somerville and Medford with a spur to Union Square in Somerville. The purpose of this project is to boost transit ridership, improve air quality, ensure equitable distribution of transit services, and support opportunities for smart-growth initiatives and sustainable development in Cambridge, Somerville, and Medford. The project is

required by the State Implementation Plan (SIP) and fulfills a longstanding commitment of the Central Artery/Tunnel project to increase public transit.

The Federal Transit Administration (FTA) New Starts program provides grants for new and expanded rail, bus rapid transit, and ferry systems that reflect local priorities to improve transportation options in key corridors. In June 2012, FTA approved entry of the GLX Project into the Preliminary Engineering phase of project development under the New Starts Program. In January 2015, the MBTA and the FTA signed a Full Funding Grant Agreement (FFGA), which establishes the scope of federal participation in the Green Line Extension project.

As the project proceeded, it was later found that the estimated cost to construct the GLX project had grown from the $1.992 billion project cost established in January 2015. The new total cost was projected between $2.7 billion and $3.0 billion. The Commonwealth's share of overall project costs would then be between $1.7 billion and $2.0 billion, rather than the initial budget of $996 million.

With the federal contribution capped at $996 million and the Commonwealth responsible for all project cost increases, MassDOT and the MBTA re-evaluated the GLX project in order to recommend to the Commonwealth if, and how, the project should proceed. Then MassDOT and the MBTA worked to identify opportunities to value engineer elements of the project in order to bring costs of the overall project closer to the original anticipated costs. The MBTA Fiscal and Management Control Board (FMCB) and the MassDOT Board of Directors were briefed about these developments.

The GLX project management team developed a new approach to the GLX project that focused on maintaining the same functionality and service plan of the former concept (so as to not diminish ridership, and air-quality and transportation benefits), but to do so in a manner that utilized different construction approaches and designs to reduce costs. In addition, the project management team developed station designs and a vehicle maintenance facility that could provide the same function as originally envisioned, but that were greatly reduced in scope and costs. Based on this redesign, the project management team developed a new project, which had a total capital cost estimate of $2.28 billion.

The MBTA is now moving forward on the project utilizing a design-build (DB) project delivery method. The MBTA issued an invitation to bid in November 2016 and identified three qualified DB teams. A draft request for proposal (RFP) was issued in March 2017. A final RFP will be

issued in May 2017 with proposals and bids due in September 2017. The award of the contract will occur in November 2017 with construction beginning in the spring of 2018.

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 architectures 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.

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 FHWA's Energy and Emissions Reduction Policy Analysis Tool (EERPAT), which will enable modeling of the effectiveness of various approaches to reducing

transportation sector GHG emissions. The EERPAT tool will help MassDOT model the GHG impacts associated with capital investments, and examine system adjustments for both transit and roadway operations. The EERPAT tool also may allow for the modeling of GHG impacts of education and encouragement policies designed to encourage mode shift, carpooling, and eco-driving. The results of this modeling and other analysis will be used to refine the transportation sector strategies included in EEOEA's Clean Energy and Climate Plan for 2020 (CECP).

MBTA Modal Plans

Agency: MassDOT

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

CTPS will support the development of MBTA Model Plans through the* MassDOT Statewide Planning and Research Program Support *project (page 7-16).

North/South Rail Link Feasibility Study

Agency: MassDOT

NEC FUTURE

Agency: Federal Railroad Administration

NEC FUTURE is a comprehensive federal planning effort, launched by the Federal Railroad Administration 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 provided 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, 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. The NEC Future process has proceeded to Phase 2, which is ongoing. 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 which includes the Massachusetts Institute of Technology (lead university), Harvard University, and the state universities of Massachusetts, Connecticut, and Maine. It is funded by the USDOT'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 develop a systems-level understanding of livable communities. For further information, visit the New England University Transportation Center's website.

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, and 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, such as the 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 now remaining on facilities 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.

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.

In November of 2016, in response to a significantly longer time line and a much higher estimated project cost, the SCR team was directed to examine possible strategies for faster implementation of rail service to the South Coast.

On March 15, 2017 MassDOT filed a Notice of Project Change(NPC) with the Massachusetts Environmental Policy Act (MEPA) Office articulating a phased approach to the project. Phase I would build the Southern Triangle from Cotley Junction south to Fall River and New Bedford and using the existing Middleborough Secondary Line, which currently carries freight traffic. Offering limited service, commuter trains would then connect to the Middleborough/Lakeville Service. While design and construction proceeds during Phase I, engineering design on the norther section of the route to Stoughton would continue.

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 Task Force focus 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.

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. The study will also examine and evaluate alternatives in the context of vehicular, bicycle and pedestrian use, land use, economic development, community effects, health effects, and cost, as well as in the context of impact on existing users of the transportation network. Twenty study area intersections, from Galen Street to Soldiers Field Road, are highlighted in the study.

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 alternatives analysis, environmental review, and preliminary engineering (approximately 30 percent design) 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.

Transportation Master Plan

Agency: City of Framingham

The Department of Public Works in Framingham is undergoing a three part transportation plan in conjunction with an economic development plan to identify effects on transportation systems of likely growth, and identify mitigation and improvements of the Town's roadways and bicycle/pedestrian pathways, traffic calming updates, other transportation, and neighborhood outreach efforts. Part 1 of the Transportation Master Plan is currently underway. Part 2 is expected to commence in the near future along with the economic development plan. This comprehensive plan for the Town's transportation systems will provide a long-term "road map" of what is required for improvements and maintenance. The plan will include transportation systems owned and operated by the Town, as well as connections to railroads and state highways.

Edgell Road Corridor Study

Agency: City of Framingham

The Department of Public Works in Framingham developed a draft complete streets assessment of the Edgell Road corridor from Vernon Road north to the Edmands Road/Water Street intersection. The evaluation provides recommendations for enhancement and improvements at six key intersections. Tasks undertaken for this study include: evaluation of existing and projected traffic conditions; review of current bicycle and pedestrian accommodations in accordance with the Town's Complete Streets Policy (adopted January 2015) and current ADA/AAB standards; inventory of needed improvements and ADA ramp concept designs; utility research; crash data analysis; development of improvement alternatives; amongst others.

Bus Rapid Transit Planning

Agency: MAPC, City of Boston

NSPC Mobility Study — Agency: MAPC

Lower Mystic Regional Working Group — Agency: MassDOT, MAPC, CTPS

The Massachusetts Department of Transportation (MassDOT) has convened the Lower Mystic River Regional Working Group chaired by the Secretary of Transportation, and made up of elected officials and staff of the three communities of Boston, Everett and Somerville as well as the Metropolitan Area Planning Council (MAPC). Representatives from other state agencies, the office of Representative Mike Capuano, and the Wynn Everett Casino are also members of the Working Group. The purpose of the Working Group is to assess and develop short and long-range transportation improvements that can support sustainable redevelopment and economic growth for this area, particularly in and around Sullivan Square. Central to this work will be transportation analyses to determine likely impacts of development proposals, which will inform potential measures that could be taken to address those impacts, critical infrastructure that may be needed, as well as an examination of potential methods to pay for these improvements in an equitable manner.

MetroWest LandLine: Phase 1 — Agency: MWRC (MAPC)

MetroWest cities and towns boast many lovely paths and trails, but many of them don't connect. With the MetroWest LandLine Phase I project, MWRC is taking the first step in connecting those trails, and transforming them into a cohesive, regional active transportation and recreational network called the MetroWest Landline.

With this project, which will launch in the fall of 2018, MAPC's transportation team, working with MWRC members, will develop and promote an action plan to close one priority gap in each participating city and town. This joint effort will built community support for those action plans and for further strenghtening the MetroWest LandLine.

Foxboro Station Commuter Rail Pilot Program — Agency: Town of Foxborough

CTPS is assisting MassDOT and the Town of Foxborough with the proposed Foxboro Station Commuter Rail Pilot program. Utilizing the proposed pilot schedule developed as part of the operations analysis effort, CTPS will develop projected ridership estimates for the pilot. Work efforts will include the following:

1. Update CTPS' model to reflect current land use assumptions.
2. Utilizing the operations analysis schedule for the pilot service, model the projected ridership for the pilot duration in terms of daily and annualized riders. Model outputs will include riders boarding at Foxboro Station, new systemwide riders, and diversions from other stations.
3. From the travel demand forecasting effort, identify a ridership target for the pilot period duration, as well as average daily ridership, including riders shifting from other forms of public transit and riders new to public transit. Model outputs identify ridership information as well as highway and transit volumes.
4. In addition to ridership estimates, identify the impact that the proposed pilot service will have on the available parking supply at Foxborough and at other area stations.
5. From the model, identify project parking and ridership revenues for the pilot service, daily and annually.
6. Using outputs from the model, CTPS can also:

*quantify the estimated regional air quality benefits resulting from pilot service.
*identify EJ impacts or benefits of the service.

Foxborough Local Bus Service

Agency: Town of Foxborough

The Town of Foxborough is working with GATRA and the Neponset Valley TMA to establish local bus service between downtown Foxborough and Patriot Place/Gillette Stadium. This bus service will serve 3 out 4 of the Town of Foxborough's Growth Nodes, identified in the 2015 Master Plan as priority areas for development.

Pedestrian/Bicycle Crossing of the Mystic River

Agency: City of Everett

This study will select a bridge design and location and develop 25% design plans for a bike/pedestrian crossing of the Mystic River from the Wynn Resort/Mystic View Park to Draw 7 Park in Somerville. This connection would be a further extension of the Northern Strand Trail from Everett and connect to the developing path network on the east side of the

Mystic River. It would complete a 10-mile continuous off road path from the North Shore to the City of Boston.

Extension of the Northern Strand Bike Trail — Agency: City of Everett

This study will determine an appropriate path and develop a conceptual design for extension of the Northern Strand Community Trail to the Mystic River. The NSCT currently runs from Lynn to Everett, ending just north of Revere Beach Parkway in Everett. The future extension would make connections to the Mystic River, Wynn Resort, Gateway Shopping Center and Mystic View Park.

Lower Broadway Dedicated Bus Lane Study and Design — Agency: City of Everett

Seeking to build on the success of the upper Broadway bus lane, the City seeks to extend a bus-only lane south to the City limits on Rte 99/Broadway. This study would determine how such a lane would be constructed, the extent of ROW acquisitions required, and conceptual design and traffic analysis.

Second Street Reconstruction — Agency: City of Everett

The Everett Transit Action Plan (2016) identified a future transit route that would extend the Silver Line Gateway from Chelsea to Everett Square utilizing existing MBTA ROW as well as Second Street in the City of Everett to reach Everett Square. This study will develop a conceptual design to reconstruct Second Street to accommodate existing vehicle traffic as well as dedicated bicycle and bus lanes from the Chelsea line to Everett Square.

Sweetser Circle Visioning Process — Agency: City of Everett

Sweetser Circle is the interchange between Revere Beach Parkway (Rte 16), Broadway (Rte 99) and Main Street. It is a highly congested and dangerous intersection that does not have adequate accommodations for transit, bicycles or pedestrians. The current roadway layout also prevents access to over 10 acres of un-used parkland. This study would begin a process to develop a new vision for the roadway and parklands in this area that would inform future maintenance and reconstruction of the interchange.

Neighborhood Slow Streets — Agency: City of Boston

Each year, residents, neighborhood associations, and other community-based organizations will be able to apply for traffic calming in a specific neighborhood. Selected neighborhoods will work with the Boston Transportation Department and Public Works Department to plan and implement their Neighborhood Slow Streets project. Rather than planning and implementing changes on one street at a time, Boston will address an entire “zone” within a neighborhood. A typical zone will consist of 10 to 15 blocks. The Slow Streets program will emphasize quick-install, low-cost fixes, such as signage, pavement markings, speed humps, and daylighting.

Performance Parking Pilot — Agency: City of Boston

The Performance Parking initiative aims to set more parking spots aside for those trying to get to our busiest neighborhoods. The iniative is studying how the City can use flexible meter rates to reduce the amount of time it takes to find a parking space. The meter prices may go up or down depending on how full the parking spaces are on certain blocks. The price will stabilize when the amount of drivers using spots reaches our occupancy target, which is about one space open per block. Flexible meter rates have been shown to open up more parking spots in other cities who have used them. By raising meter rates in Boston’s most-congested areas, the city can direct motorists to less busy streets to quickly find spots and boost the use of public transportation and encourage motorists who intend to park for a long time to use off-street parking.

DriveBoston — Agency: City of Boston

DriveBoston is the City’s program to provide parking spaces in municipal lots and on city streets for carshare vehicles. In the pilot phase of the program, 80 spaces will be distributed throughout the city. The pilot phase starts in the fall of 2015 and lasts 18 months. There will be 49 spaces in municipal lots and 31 spaces reserved curbside. Working with Zipcar and Enterprise CarShare, Transportation Department planners visited a number of locations and picked places with the largest benefit for residents that also had the smallest impact on street operations and parking.

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APPENDIX B

Public Participation and Response to Public Comments

[Under Development]

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APPENDIX C

Federal Fiscal Year 2018 UPWP
Universe of Proposed New Studies

Appendix C: Federal Fiscal Year 2018 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) 2018 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

Each proposed study in the universe is 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:
    - Safety
    - System Preservation
    - Clean Air/Clean Communities
    - Transportation Equity
    - Capacity Management/Mobility
    - 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.

FFY 2018 Draft Universe of Studies and Evaluation

			LRTP Goal Areas						Mode			Study Scale		Impact			Other		
ID	Project Name	Project Purpose and Outcome	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																			
A-1	Analysis of Bicycle and Pedestrian Crash Clusters	**Purpose:** This study would review bicycle and pedestrian crash clusters identified by the MassDOT Highway Division and the Boston Region MPO. Three locations would be selected for closer study and to develop recommendations for safety and mobility improvements to improve bicycle and pedestrian safety. **Anticipated Outcome:** MPO staff would work with municipalities and other stakeholders to propose cost-effective and low-cost improvements to increase safety for bicyclists and pedestrians at those locations.	P		S	S				P		P		S	P		P		
A-2	Before and After Studies of Bicycle- and Pedestrian-Related Improvements in TIP Projects	**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 projects funded through the TIP, with an emphasis on bicycle and pedestrian projects. **Anticipated Outcome:** Identify effects of the newly constructed projects on traveler behavior, safety, and mode split compared to existing conditions and relative to conditions on similar nearby streets that did not receive newly constructed facilities.	P		S	S				P			P			P	P		
A-3	Bicycle Level-of-Service Metric	**Purpose:** This study 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. It would include a literature review of existing bicycle level-of-service (LOS) criteria and would identify data that CTPS staff should use when modeling cyclist trips. Depending on data availability, staff will establish criteria for an LOS metric to use when evaluating bicycle facilities in the Boston region. **Anticipated Outcome:** 1) Enhanced ability to calculate expected bicycle trips and 2) improved prioritization of projects.	P		S	S				P			P	P			P		
A-4	Exploring Places and Times for Car-Free Days	**Purpose:** This study would aim to understand and analyze the appropriateness of instituting car-free days or locations. CTPS staff would work with up to three selected municipalities to analyze streets, days, and times 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. **Anticipated Outcome:** A 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

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

FFY 2018 Draft Universe of Studies and Evaluation

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LAND USE, ENVIRONMENT, AND ECONOMY																			
L-1	Transportation Mitigation of Major Developments: Review of Strategies	**Purpose:** This study would build off of the MPO's Core Capacity Constraints study (included in the FFY 2015 UPWP, to be complete by Fall 2017) that focused on examining strategies to mitigate the impacts new developments may have on the region's transportation system. 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. **Anticipated Outcome:** 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.			S			P	P	S	S	S	P	P					P
L-2	Energy and Electric Vehicle Use in the MPO Region	**Purpose:** 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. **Anticipated Outcome:** This study 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. Currently, much of this data is held and organized by various municipalities and other bodies that have expressed interest in working together but have not yet done so; the MPO could serve as a clearinghouse for this data-sharing. 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
L-3	Shopping Behavior and Mode of Arrival	**Purpose:** This study aims to create a regional understanding and application of previous research conducted in other states about shopping behavior by mode of arrival. Previous research indicates that the mode breakdown of arrivals can vary greatly depending on the built environment and context of a retail corridor. In many urban retail corridors more shoppers than merchants might recognize arrive by non-automotive modes and that in many types of stores and retail environments pedestrians, bicyclists, and transit riders spend just as much money as drivers. 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 this study could be to survey retail arrivals and behavior across three very different built environments; another would be to focus on major retail corridors in an urban environment (possibly choosing the locations of study could be to build off of a study that the MPO is currently conducting on priority bus lanes), recognizing that consumer behavior in those corridors is particular poorly understood. **Anticipated Outcome:** This study would seek to quantify findings about mode of arrival and/or customer spending by mode of arrival in specific commercial corridors or areas and make recommendations for allocations of scarce street space and planning resources accordingly. 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	P	S	P					P
MULTIMODAL MOBILITY																			

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

FFY 2018 Draft Universe of Studies and Evaluation

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M-1	Safety and Operations Analysis at Selected Intersections	**Purpose:** 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. The study would use data CTPS receives from Google to isolate the traffic effects of crashes on the surrounding road network. **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.	P	S			S		P			P	S	S	S	P		P	
M-2	Safety Improvements at Express-Highway Interchanges	**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 costly complete rebuilds but rather low-cost improvements that address safety and operations. **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	S			S		P			S	P		P		P		
M-3	North Shore Mobility Study	**Purpose:** There is significant interest in examining opportunities to build on latent demand for multimodal transportation options on the North Shore. Interesting possibilities include a South Salem commuter rail station near Salem State Univ.; reviving bikeshare on the SSU campus; coordinating rail shuttles to and from SSU and NSCC; examining possible last-mile partnerships; bringing bike-friendly options to Lynn; the North-South Rail Link and commuter rail modernization in general, with a special emphasis on making the system work for people working non-traditional schedules. **Outcome:** A study of connections between various modes of transit and transportation on the North Shore, with a particular emphasis on connections and scheduling for non-9-to-5 users, existing and potential.					P		S	S	P	S	P		P	S	S		P
M-4	Canton-Area Transportation Study	**Purpose:** The Town of Canton is interested in CTPS studying several potential improvements to the transportation network in and around the town. These include crash-prone intersections, pedestrian improvements, potential impacts from South Coast Rail, and in the longer term potential changes to local interchanges, last-mile partnerships for access to commuter rail, etc. **Outcome:** A study examining short- and longer-term ideas for multimodal transportation options in Canton and the surrounding area.			S		P	S	P	S	S	P			P	S			P
M-5	Potential Impacts of Autonomous Vehicles	**Purpose:** Under this proposal, staff would study the potential ways in which automated vehicles might become part of the regional transportation environment and their potential impacts on needed infrastructure and travel behavior. **Outcome:** An evaluation of ways in which the region's transportation planning and programming priorities might need to change as a result of the introduction of AVs.	P				S		P				P	P		S			P

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

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M-6	Safe Routes to School Followup	**Purpose:** To determine the percentage of trips generated from driving children to school (consider trip chaining, distance out of way of end destination, public and private schools, metro/suburb/rural differences) and link to effectiveness of SRTS efforts. The study could utilize other data analyze the effectiveness of SRTS – not just crash data, but also health, mode share, equity, etc., but recognize that there are many other factors. This would have to take place over longer period of time. **Outcome:** A study building on previous results to provide a comprehensive picture of the successes and challenges of the SRTS program.	P							P				S	P		P		
M-7	Travel Alternatives to Regional Traffic Bottlenecks	**Purpose:** To use traffic data (Inrix or otherwise) to develop an understanding of how regional traffic moves through cities, and explore alternatives at key bottlenecks that prioritize the needs of municipalities and mode shift to sustainable modes. **Outcome:** a study or handbook about how to handle congestion resulting from regional traffic flows, with an emphasis on providing mode shift opportunities.		S	S		P	S	P			S	P	P	S				P
M-8	Metrics for Describing the Full Spectrum of Travel Needs	**Purpose:** Develop clearer, concise, and gripping ways to use data of roadway users to better communicate balance of needs on a corridor (people throughput versus amount of space used by the vehicles) to steer away from LOS and help prioritize sustainable modes. **Outcome:** develop a set of metrics and/or popularly accessible terms to express the needs of all corridor travelers.	P	S	S	S	S		S	P	S		P	P	S				
M-9	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	**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. **Outcome:** Anticipated outcomes include data collection, technical analysis, development of recommendations, and documentation for selected corridors.	P				S		P			P			P			P	
M-10	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	**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. Outcome: 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. **Outcome:** Studies that 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.					P		P			P				P		P	

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

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TRANSIT																			
T-1	Monitoring On- and Off-Site Park-and-Ride Lot Use at and Near MBTA Stations	**Purpose:** 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. 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, as well as on-street parking, and might attempt to project demand and pricing dynamics into the future. **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	P	S	P		P	S			P
T-2	A Review of Bus Interlining Operations at the MBTA	**Purpose:** Interlining is the practice of using transit vehicles interchangeably between different routes or lines. 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. **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.		S		S	P				P		P	P					P
T-3	Low-Cost Improvements to MBTA Rapid Transit Service	**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. This study would primarily focus on the MBTA rapid transit system but could include the MBTA commuter rail as well as locations within regional transit agency service areas that are in need of improvement. **Anticipated Outcome:** The first part of the study would involve a literature review to determine the range of low-cost solutions that exist and which ones would be most appropriate and efficacious to address identified service issues at the chosen locations. The resulting report would also 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.		S			P				P			P					P

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T-4	Beyond Commuter: Conceptualizing a Broadly Targeted Suburban Rail System	**Purpose:** Many suburban stakeholders (including in public meetings on both the North and South Shores) have shown interest in making the MBTA Commuter Rail network more useful to travelers going to a variety of destinations at a variety of times outside the traditional commute hours. This desire has resonance with international, and increasingly North American, efforts to utilize suburban mainline rail infrastructure to provide full-spectrum transit service, rather than a "peaky" service targeted mainly at 9-to-5 commuters. Additionally, utilizing existing rail infrastructure more efficiently and intensively can expand regional transit options at relatively little capital expense. This study will: examine international best practices for using suburban rail infrastructure to provide consistent, frequent service throughout the day; analyze recent North American efforts in this regard, including in Denver and Toronto; and create a conceptual framework for applying the lessons to MBTA's network. **Anticipated Outcome:** A white paper or conceptual study that compiles information on how mainline suburban rail networks have become useful to a broader spectrum of users in other metropolitan areas and begins to develop a framework for applying those lessons to the MBTA commuter rail network.					P				P		P		S		P			P
T-5	Comprehensive Ferry Transportation Planning in the Inner Core Area	**Purpose:** To study the possibility of more ferry service within water-adjacent parts of the ICC area. Quincy, Medford, and Everett are already doing some things with ferry transportation. As part of the casino development, Everett will have ferry service from the casino to South Boston and the airport. This study provides an opportunity for centralizing communication and planning for expansion of ferry services, which is currently being handled by several different bodies. **Anticipated Outcome:** A study analyzing potential demand and trip patterns for new or improved ferry service or other water-based transportation within the inner Boston region.					P	S			P	S	P			P				P
T-6	Title VI Service Equity Analysis: Methodology Development Phase II	**Purpose:** The first phase of this study was conducted to develop an approach to conducting Title VI service equity analyses that improved upon the FTA's methodologies, which led to the idea of using a transit supply metric to quantify adverse effects, known as the Modified Transit Opportunity Index (MTOI). In this first phase, most of the effort was focused on the general idea of using a transit supply metric and working it into the procedure for conducting a Title VI service equity analysis. This second phase will place more emphasis on developing the Modified Transit Opportunity Index to ensure its merit as a method to measure adverse effects, and to develop a program to calculate the Modified Transit Opportunity Index for the entire MBTA network. Some specific items that should be considered: ● How do we compare small changes in MTOI over a large population to large changes in MTOI over a small population? The adverse effects of a service change could be further weighted by the degree of change in MTOI (perhaps through a decay curve), or accompanying policy could state that adverse effects don't exist until the change in MTOI (absolute or percent) passes a certain threshold? ● Should Title VI service equity analysis procedures using MTOI (a measure of transit supply) incorporate ODX data (a measure of transit demand)? ● Do we place weights on the different parameters that form the MTOI metric? ● How do we best combine the multiple data sources required to calculate the MTOI into an effective long-standing platform? **Anticipated Outcome:** This study will result in a tool to calculate the Modified Transit Opportunity Index for the entire MBTA network. The methodology and tool could be adapted to other regional transit authorities.				P					P		P	P	S			P		

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FFY 2018 Draft Universe of Studies and Evaluation

			LRTP Goal Areas						Mode			Study Scale		Impact			Other		
ID	Project Name	Project Purpose and Outcome	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
T-7	Estimating Systemwide Passenger Delay Attributed to On-Board Cash Transactions	**Purpose:** The previous study in this series sought to quantify the amount of stop-level delay attributed to a set of variables for a set of trips observed on MBTA Routes 116 and 117. Through multiple regression modeling it was estimated that customers adding value to their CharlieCard take an extra 6.3 seconds to board, and those paying with cash take an extra 9.4 seconds to board. While this may be considered a significant amount of time per occurrence, the observed frequency of these events was low, resulting in a relatively low contribution to bus delay. This study will expand to a systemwide analysis of delay from cash payment, using the MBTA's AFC database. Delay will be assessed on each route from an operator's perspective (delay per bus trip), as well as the customer's perspective (delay per customer) using ODX. This study is important as it provides insight into the tradeoffs between the benefits and burdens of transferring to a cashless system. **Anticipated Outcome:** A report documenting the delay associated with cash fare payment on MBTA routes from both the operator's perspective and the customer's perspective				S	P				P		P	P	S			P	
T-8	Balancing Roadway Space Allocation Among Travel Modes	**Purpose:** Both bike lanes and dedicated bus lanes have become increasinly intriguing and popular options for mobility within the Boston region in recent years, as succesful examples of both have been rolled out. A recent MPO study identified a set of roadway corridors in the Boston region where bus passengers would most benefit from the installation of dedicated bus lanes. However, in addition to challenges related to reallocating road space to non-car modes, the process of creating mobility options must work to allocate space to both bikes and transit, especially in corridors where both modes are popular but street space is scarce. This study will look at the set of previously identified corridors, and develop a strategy for each corridor for bikes and buses to coexist harmoniously. Strategies could involve looking for separate, but parallel paths, for bikes along these corridors, or designing roadway geometries that accommodate both bikes and buses where separate but parallel paths do not exist. **Anticipated Outcome:** For each identified corridor, identification of strategies for bikes and buses to coexist harmoniously, and perhaps a toolkit for designing streets that work for both transit and bikes.	S			S	P			S	P		P	P					P

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

FFY 2018 Draft Universe of Studies and Evaluation

			LRTP Goal Areas						Mode			Study Scale		Impact			Other		
ID	Project Name	Project Purpose and Outcome	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
T-9	Inferring Trip Origins and Destinations Using WiFi Data	**Purpose:** Transit agencies use a range of data, such as Automated Fare Collection (AFC) and Automated Passenger Counters (APC), in order to understand how customers use the transit system. These data sources provide information about passenger origins, but do not provide information about their destinations or their paths through the system. In a previous study, CTPS developed a procedure for using AFC data to infer customer origin-destination pairs on the rapid transit system. Additionally, the MBTA is in the process of refining a tool to infer passenger origin-destination and trip-path information for the bus and rapid transit network. However, current technology does not provide information to validate the inferred trip-path information and passenger surveys are expensive, take time to conduct and process, and can only provide a snapshot of travel patterns on the day of survey, not continuous information detailing varied travel patterns on the network. Additionally, very limited data is available about the trip patterns of commuter rail riders. This project would study the feasibility of using WiFI connection data to better understand passenger trip patterns, and would develop a pilot program for the MBTA. When a mobile device has WiFi enabled, it will continually search for a WiFi network by sending out a unique identifier (known as a Media Access Control) to nearby routers. In the With WiFi service offered on the Green Line and Commuter Rail, WiFi connection requests from mobile devices can be collected as passengers pass through Green Line stations or commuter rail coaches, and used to infer the passenger's origin and destination within the system. The data collected is automatically de-personalized, which means that no browsing data or personal information is collected, and no individuals can be identified. Origin and destination data collected for these locations will be beneficial because it can be used to compare and calibrate existing methods of inferring origin and destination information from the automatic fare collection (AFC) system on the Green Line, and offer more frequent and cost effective estimations of passenger activity on the commuter rail over traditional methods involving manual passenger counts.					P				P		P		P	S				P
T-10	Green Line Transit Signal Priority Modeling	**Purpose:** This study would use Synchro to estimate the time savings of transit signal priority for the B, C, and E line to determine if service frequency could be increased along the lines, or if it would merely result in reliability improvements. **Anticipated Outcome:** Estimated time savings of transit signal priority for the B, C, and E branches and determination of potential transit time savings and/or increase in service.	S			S	P				P	P			P	S				P
T-11	Evaluating Adequacy of Transit Span of Service	**Purpose:** Transit agencies currently uses ridership levels at the beginning or end of the day to evaluate whether to extend or contract a service's span, that is, the times at which a service operates. However, this data does not provide information about demand outside the existing span of service. This study would look to information beyond ridership to see if there is a consistent way to answer the question "when should this service operate?" This study would develop a methodology to compare the roadway volumes of surrounding streets throughout the day to help guide decisions about changing the span of service. This data might come from roadway counts or Google origin-destination data. Alternative data sources could be explored as well. **Anticipated Outcome:** A methodology to compare the roadway volumes of streets surrounding transit services throughout the day to help guide decisions about changing the span of service.				P	S				P		P	S		P				P

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

FFY 2018 Draft Universe of Studies and Evaluation

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ID	Project Name	Project Purpose and Outcome	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
T-12	Bringing Excess Wait Time Across the Atlantic: Implementing a process to calculate the excess wait time resulting from uneven headways	**Purpose:** The relatively recent implementation of various forms of automated data collection provides the opportunity to measure transit performance from a passenger perspective. For example, traditional measures of on-time performance compare scheduled to actual vehicle arrival/departure times. However, this measure does not necessarily reflect the customers' perspective, particularly on frequent services where customers may not rely on schedules to time their arrival at the stop. Transport for London (TfL) uses an "excess wait time" metric to evaluate how well its frequent bus services are running. This metric describes the additional time passengers must wait because buses are not arriving at even intervals. With this information, we would be able to quantify the 'amount' of delay experienced by passengers on the system. **Anticipated Outcome:** A methodology for calculating the excess wait time resulting from uneven headways				P	S				P		P	P					P
T-13	First- and last-mile shuttle-partnership models	**Purpose:** In the current Long-Range Regional Transportation Plan (LRTP), the Boston Region MPO envisions first- and last-mile shuttles as a potential solution to some of the mobility needs in the MPO region. Upcoming years in the MPO Transportation Improvement Program (TIP) will include a first- and last-mile shuttle component of the community transportation, parking, clean air and mobility priority area. In the past few years, the MPO has studied potential locations, routings, and scheduling of first- and last-mile shuttles as part of the Regional Transit Service Planning Assistance program. In previous years, the MPO also ran grant programs, partnering with municipalities and transportation management associations (TMAs), to initiate these types of first- and last-mile transit services. However, there were only a few applicants to those previous grant programs. There has been little research at the MPO into financially-sustainable partnership models for first- and last-mile transit services. This study would investigate potential partnership models for first- and last-mile transit shuttles and identify the most promising models for inclusion of first- and last-mile transit services in the Boston Region MPO's TIP. **Anticipated Outcome:** A report or white paper detailing potential partnership models for first- and last-mile transit shuttles.					P		S		P	S	P	S					P
T-14	Considerations for Implementing Transit Signal Priority in the MPO Region	**Purpose:** Municipalities and transit operators in the Boston Region MPO area have started to investigate transit signal priority as a method of providing better travel times to public transit riders at individual intersections or along a corridor with multiple signalized intersections. There are many types of transit priority signal systems and technologies. In advance of any implementation of a transit signal priority system or technology, municipalities and other agencies that own traffic signal systems will have to coordinate with public transit operators on a specific transit signal priority system or a set of transit signal priority technologies. CTPS proposes a review of transit signal priority technologies to understand current transit signal priority systems, their potential for integration with local traffic signal systems, and their potential for integration with local transit operator vehicle fleets. This study will also investigate the institutional issues for implementing transit signal priority in the region. **Anticipated Outcome:** White paper documenting the technological and institutional issues affecting implementation of transit signal priority in the MPO region.				S	P		S		P		P	P	S	S			P

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

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			LRTP Goal Areas						Mode			Study Scale		Impact			Other		
ID	Project Name	Project Purpose and Outcome	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
T-15	Transit Priority Treatment Evaluation Toolbox for Boston MPO Region	**Purpose:** Municipalities and transit operators in the Boston region have expressed interest in using transit priority treatments to improve travel times for transit vehicles, primarily busses, but also for light-rail. Recent efforts include a peak-period bus lane project in Everett to improve travel times for Boston-bound bus travelers on some MBTA bus routes. Other municipalities and transit operators have expressed interest in exploring transit priority treatments at a corridor, route, and intersection scale. In this study, CTPS would develop a toolbox of evaluation methods and metrics to study transit priority treatments for roadway corridors, transit routes, and street intersections in the MPO region. With an analysis toolbox, CTPS would be better able to respond to requests from municipalities or transit operators that seek out analysis and planning assistance for transit priority treatments. **Anticipated Outcome:** A toolbox of evaluation methods and metrics to study transit priority treatments for roadway corridors, transit routes, and street intersections in the MPO region.				S	P		S		P		P	P	S	S			P
T-16	Traffic and Parking Analysis to Support Potential Dedicated Bus Lanes	**Purpose:** To conduct traffic/parking analysis work for dedicated bus lanes identified in earlier CTPS report "Prioritization of Dedicated Bus Lanes," found at https://www.massdot.state.ma.us/Portals/49/Docs/BusLane20160513%20.pdf. Work would focus on corridors other than Washington Strreet in Roslindale (already studied by MAPC) and North Washington Avenue (studied by City of Boston)**.** **Anticipated Outcome:** Traffic/parking analyses preparing for dedication of bus lanes on a corridor or corridors identified as possible candidates by the previous study.				S	P				P	S	P		P	S	S	P	
T-17	Allston Transit Study	**Purpose:** The Allston I-90 Interchange Project, which will alter the alignment of I-90 and create new land use development opportunity, includes the proposal to create a West Station along the Framingham/Worcester Commuter Rail Line. This infrastructure project also affords the possibility of a bus transit connection through the old Beacon Rail Yard, potentially providing a more direct routing of buses from the Harvard Square area to the Longwood Medical Area via a connection over I-90 and the adjacent rail lines. This proposed transportation study would assess the demand for bus transit service that could connect with the rail service. **Anticipated Outcome:** A study examining possibilities for improving transit in the Allston-Beacon Yard area of Boston, especially those afforded by the rebuilding of I-90 and the redevelopment of Beacon Yard.				S	P	S	S	S	P	P				P			P

Green highlighted rows are new studies that were chosen for funding in FFY 2018. (See Chapter 6.)

FFY 2018 Draft Universe of Studies and Evaluation

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ID	Project Name	Project Purpose and Outcome	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																			
O-1	MPO Staff-Generated Research Topics	**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 2017. **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	

Notes: (1) Green highlighted rows are new studies that were chosen for funding in FFY 2018. These studies are described in further detail in Chapter 6.

(2) Studies T-14 and T-15 were combined into a single study at the recommendation of staff and committee.

(3) Studies T-6 and T-16 are being conducted by CTPS during FFY 2018, but funded with MassDOT Section 5303 funds from FFYs 2017 and 2018.

(4) Study O-1 was not evaluated using the evaluation areas, as it dedicates an amount of funding for a yet-to-be-determined MPO staff research proposal.

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

APPENDIX D

Geographic Distribution of UPWP Funded Studies

[Under Development]

APPENDIX D: GEOGRAPHIC DISTRIBUTION OF UPWP STUDIES AND TECHNICAL ANALYSES

D.1 INTRODUCTION

This appendix summarizes the Metropolitan Planning Organization (MPO)-funded work products produced by MPO staff (CTPS) and the staff of the Metropolitan Area Planning Council (MAPC) during federal fiscal years (FFY) 2010 through 2016, as well as those expected to be completed by the end of FFY 2017. 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 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 in Table D-1 below covers UPWP tasks completed from FFY 2010 through FFY 2017 and includes work that resulted in benefits to specific municipalities. Studies that had a regional focus are presented in Table D-2.

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 information 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 2017. 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 2010 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 focus that was regional or not limited to a specific geography.

- 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
- 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 2017 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

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

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
Boston	18	4	3	1	26	617,599	53.0%	44.1%
Everett	10	3	2	1	16	41,667	46.4%	45.1%
Waltham	10	2	3	1	16	60,632	31.3%	32.2%
Somerville	12	1	1	1	15	75,754	30.9%	33.3%
Cambridge	8	1	4	5	18	105,163	37.9%	33.1%
Newton	10	2			12	85,145	20.4%	20.8%
Quincy	11				11	92,272	34.5%	36.3%
Chelsea	9	1		2	12	35,178	74.7%	47.3%
Malden	9	1		2	12	59,451	47.5%	41.8%
Lynn	7		1		8	90,330	52.4%	48.4%
Medford	6		1		7	56,173	23.8%	29.9%
Revere	7				7	51,755	37.6%	44.3%
Brookline	4	1	1	2	8	58,732	26.7%	27.8%
Melrose	5	1		1	7	26,983	10.5%	25.1%
Belmont	3		2	1	6	24,729	18.6%	21.3%
Arlington	3		1	3	7	42,845	16.4%	24.7%
Saugus	3				3	42,845	16.4%	24.7%
Winthrop	2				2	17,497	11.5%	35.7%
Watertown	1				1	31,915	18.3%	23.5%
Nahant	0				0	3,410	4.5%	33.2%
Inner Core Subtotals	**138**	**17**	**19**	**20**	**194**			
Lexington	8	2			10	31,393	26.3%	18.1%
Lincoln	8	1			9	6,362	17.2%	16.4%
Acton	2	4	1		7	21,924	24.5%	19.1%
Bedford	5	2			7	13,320	16.0%	16.8%
Hudson	5	2			7	19,063	11.1%	30.7%
Maynard	3	4		1	8	10,106	9.9%	30.8%
Sudbury	6	1			7	17,659	10.6%	10.8%
Concord	3	3	1	3	10	17,668	12.8%	18.2%
Littleton	2	3			5	8,925	7.7%	23.2%
Bolton	3	1		1	5	4,897	6.5%	18.7%
Boxborough	1	3			4	4,996	21.1%	23.1%
Stow	3	1			4	6,590	7.8%	19.5%
Carlisle	1	1			2	4,852	12.3%	15.6%
MAGIC Subtotals	**50**	**28**	**2**	**5**	**85**			
Weston	12	2	2	2	18	11,261	16.6%	14.8%
Framingham	13	1	1	2	17	68,321	34.7%	36.3%
Wellesley	9	2	1	1	13	27,984	17.6%	13.8%
Natick	9		1	1	11	33,005	14.6%	24.5%

Southborough	7	1		1	9	9,766	13.9%	13.2%
Marlborough	6			2	8	38,498	24.8%	31.5%
Holliston	4			1	5	13,547	6.7%	25.8%
Ashland	3			1	4	16,593	18.5%	22.0%
Wayland	3			1	4	12,994	14.7%	20.2%
MetroWest Subtotals	**66**	**6**	**5**	**12**	**89**			
Burlington	10	1	1	1	13	24,498	20.8%	22.4%
Reading	8	2	1	1	12	24,746	7.6%	20.7%
Woburn	6	1	1	2	10	38,120	18.3%	28.8%
Wilmington	5		1	1	7	22,324	7.7%	16.4%
Winchester	4		2	1	7	21,374	14.3%	14.9%
Lynnfield	2	2	1	1	6	11,595	6.5%	18.7%
Stoneham	3	1	1	1	6	21,437	9.5%	31.5%
Wakefield	3		1	1	5	24,931	7.0%	24.4%
North Reading	1	1	1	1	4	14,892	6.1%	17.7%
NSPC Subtotals	**42**	**8**	**10**	**10**	**70**			
Salem	5	2	1	3	11	41,340	24.1%	40.6%
Danvers	6			1	7	26,493	6.2%	27.5%
Beverly	4	1		1	6	39,502	8.6%	32.8%
Peabody	4			2	6	51,252	12.3%	36.6%
Rockport	3			1	4	6,952	4.1%	31.4%
Swampscott	3			2	5	13,787	7.0%	22.3%
Gloucester	2			1	3	28,789	5.9%	40.1%
Marblehead	2			2	4	19,809	5.0%	22.3%
Hamilton	1			1	2	7,764	8.7%	25.5%
Ipswich	1			1	2	13,175	5.3%	30.6%
Middleton	0		1	2	3	8,988	12.7%	21.1%
Wenham	1			1	2	4,875	5.5%	22.5%
Essex	0			1	1	3,504	3.9%	25.5%
Manchester	0			2	2	5,136	3.6%	25.9%
Topsfield	0			1	1	6,085	4.7%	15.8%
NSTF Subtotals	**32**	**3**	**2**	**22**	**59**			
Braintree	8	1	1		10	35,745	14.7%	26.2%
Weymouth	5	1			6	53,744	11.9%	32.7%
Cohasset	2	1			3	7,542	3.8%	17.9%
Holbrook	3				3	10,792	19.2%	32.3%
Scituate	2	1			3	18,133	4.7%	22.3%
Hingham	2				2	21,962	4.6%	24.0%
Marshfield	2				2	25,132	4.0%	26.2%
Norwell	2				2	10,506	4.7%	18.0%
Duxbury	1				1	15,059	3.7%	18.7%
Hanover	1				1	13,879	4.2%	20.1%
Hull	1				1	10,293	5.7%	32.4%
Pembroke	1				1	17,837	3.9%	22.1%
Rockland	1				1	17,489	9.2%	35.8%
SSC Subtotals	**31**	**4**	**1**	**0**	**36**			

Milford	7	1			8	28,000	17.5%	31.4%
Hopkinton	6	1			7	14,925	8.3%	14.1%
Medway	4				4	12,752	6.5%	20.5%
Sherborn	4				4	4,119	6.7%	13.1%
Bellingham	3				3	16,333	8.2%	22.8%
Franklin	3				3	31,635	8.6%	19.9%
Millis	3				3	7,891	7.3%	20.8%
Wrentham	3				3	10,955	3.8%	20.9%
Norfolk	2				2	11,227	15.4%	13.7%
SWAP Subtotals	**35**	**2**	**0**	**0**	**37**			
Needham	6	1	1		8	28,886	10.9%	15.2%
Dedham	4	1	1		6	24,729	14.9%	25.1%
Westwood	5	1			6	14,618	8.5%	19.2%
Foxborough	3	1			4	16,865	8.3%	25.2%
Randolph	4				4	32,111	60.9%	36.6%
Walpole	3	1			4	24,071	9.2%	21.6%
Stoughton	3			1	3	26,963	21.6%	31.9%
Canton	2				2	21,561	16.7%	24.3%
Norwood	2				2	28,603	17.3%	30.1%
Medfield	0	1			1	12,024	6.1%	12.7%
Sharon	0				0	17,612	19.0%	16.2%
Milton	5				5	27,002	24.1%	22.3%
Dover	4				4	5,589	8.8%	10.7%
TRIC Subtotals	**41**	**6**	**2**	**1**	**50**			
Grand Total	**435**	**74**	**41**	**70**	**620**			

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 2017 that were regional in focus. Some regionally focused studies may have work products that overlap with those analyzed in table D-1 above.

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 Sandy Johnston, UPWP Manager, at sjohnston@ctps.org.

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

FFY 2017	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• Planning for Autonomous and Connected Vehicles • Study of Promising GHG-Reduction Strategies • Using GTFS Data to Find Shared Bus Route Segments with Excessively Irregular Headways • Pedestrian Level-of-Service Metric 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 • Barriers and Opportunities Influencing Mode Shift • Bicycle Network Gaps: Feasibility Evaluations	• North Suburban Mobility Study • North Shore Mobility Study • Perfect Fit Parking Report and Website • Hubway Bikeshare Coordination • MetroWest LandLine Gaps Analyses
FFY 2016	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• 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	• Right-Size Parking Report • Transportation Demand Management—Case Studies and Regulations • Hybrid Electric Vehicle Retrofit Procurement • Autonomous Vehicles and Connected Cars research

• Title VI Service Equity Analyses: Methodology Development • EJ and Title VI Analysis Methodology Review • Transportation Investments for Economic Development	• MetroFuture Implementation technical memorandums
FFY 2015	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• 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	• 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**
• 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	• 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**
• 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	• 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**
• Analysis of JARC and New Freedom Projects	• Snow Removal Policy Toolkit

• 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	• MetroFuture implementation strategies—updated implementation strategies including focus on equity indicators
FFY 2011	
Central Transportation Planning Staff	**Metropolitan Area Planning Council**
• 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	• 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**
• 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	• 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

MPO staff intends to continue to collect this data on an annual basis and develop a process for using it 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 potentially be used in a number of different ways to help guide the spending decisions made in future UPWPs. Depending on the direction the development of this process takes, 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
- Develop graphics illustrating the geographic distribution of UPWP studies and spending and mapping that distribution relative to Environmental Justice and Transportation Equity concern areas.
- 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.

APPENDIX E

MPO Glossary of Acronyms

Acronym	Definition
3C	continuous, comprehensive, cooperative [metropolitan transportation planning process]
A&F	Administration and Finance Committee
AACT	Access Advisory Committee to the MBTA
ABP	Accelerated Bridge Program [MassDOT]
ADA	Americans with Disabilities Act of 1990
ADT	average daily traffic
AADT	annual average daily traffic
AFC	automated fare collection [system]
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
BPDA	Boston Planning and Development Agency, formerly known as the Boston Redevelopment Authority (BRA) [City of Boston]
BRA	Boston Redevelopment Authority [City of Boston]
BRT	bus rapid transit
BTD	Boston Transportation Department

Acronym	Definition
CA/T	Central Artery/Tunnel [project] (also known as "the Big Dig")
CAA	Clean Air Act of 1970
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 Plan [MassDOT]
CMAQ	Congestion Mitigation and Air Quality [federal funding program]
CMP	Congestion Management Process
CNG	compressed natural gas
CO	carbon monoxide
CO2	carbon dioxide
CTPS	Central Transportation Planning Staff
CTTAP	Community Transportation Technical Assistance Program
DBMS	Database Management System
DCAMM	Division of Capital Asset Management and Maintenance [Massachusetts]
DCR	Department of Conservation and Recreation
DEIR	draft environmental impact report
DEP	Department of Environmental Protection [Massachusetts]
DMU	diesel multiple unit [transit vehicle]

Acronym	Definition
DTA	dynamic traffic assignment [travel demand modeling]
EERPAT	Energy and Emissions Reduction Policy Analysis Tool
EIR	environmental impact report
EIS	environmental impact statement
EJ	environmental justice
EOEEA	Massachusetts Executive Office of Energy and Environmental Affairs
EOHED	Massachusetts Executive Office of Housing and Economic Development
EOHHS	Massachusetts Executive Office of Health and Human Services
EPA	Environmental Protection Agency [federal]
EPDO	equivalent property damage only [a traffic-related index]
ETC	electronic toll collection
FAST Act	electronic toll collection
FEIR	final environmental impact report
FFGA	full funding grant agreement
FFY, FFYs	federal fiscal year, federal fiscal years
FHEA	Fair Housing Equity Assessment
FHWA	Federal Highway Administration
FMCB	Fiscal and Management Control Board of the MBTA
FONSI	finding of no significant impact
FTA	Federal Transit Administration
GANS	grant anticipation notes [municipal bond financing]

Acronym	Definition
GHG	greenhouse gas [as in greenhouse gas emissions]
GIS	geographic information system
GLX	Green Line Extension [Green Line Extension project]
GPS	global positioning system
GTFS	General Transit Feed Specification [data standard]
GWI	global warming index
GWSA	Global Warming Solutions Act of 2008 [Massachusetts]
HOV	high-occupancy vehicle
HPP	high-priority projects
HSIP	Highway Safety Improvement Program [federal funding program]
HTC	Healthy Transportation Compact
ICC	Inner Core Committee [MAPC municipal subregion]
IMS	intermodal management system
INVEST	Infrastructure Voluntary Evaluation Sustainability Tool [FHWA]
IPCC	Intergovernmental Panel on Climate Change
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

Acronym	Definition
LEP	limited English proficiency
LNG	liquefied natural gas
LOS	level of service
LRTA	Lowell Regional Transit Authority
LRTP	Long-Range Transportation Plan [MPO certification document]
MAGIC	Minuteman Advisory Group on Interlocal Coordination [MAPC municipal subregion]
MAP-21	Moving Ahead for Progress in the 21st Century Act
MAPC	Metropolitan Area Planning Council
MARPA	Massachusetts Association of Regional Planning Agencies
MassDOT	Massachusetts Department of Transportation
MassGIS	[Commonwealth's] Office of Geographic Information Systems
Massport	Massachusetts Port Authority
MassRIDES	MassDOT's statewide travel options program
MBCR	Massachusetts Bay Commuter Railroad
MBTA	Massachusetts Bay Transportation Authority (also known as "the T")
MCAD	Massachusetts Commission Against Discrimination
MEMA	Massachusetts Emergency Management Agency
MEPA	Massachusetts Environmental Policy Act
MGL	Massachusetts general laws
MHS	metropolitan highway system
MOU	memorandum of understanding
MOVES	Motor Vehicle Emissions Simulator [EPA air quality model]

Acronym	Definition
MPO	metropolitan planning organization [Boston Region MPO]
MPOinfo	Boston Region MPO's email contact list
MWGMC	MetroWest Growth Management Committee [MAPC municipal subregion]
MWRC	MetroWest Regional Collaborative [MAPC municipal 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
NHS	National Highway System
NMHC	non-methane hydrocarbons
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	Public Participation Plan [MPO document]
PBPP	performance-based planning and programming
PDM	Pre-Disaster Mitigation Program [federal]

Acronym	Definition
PEV	pedestrian environmental variable
PL	metropolitan planning funds [FHWA] or public law funds
PM	particulate matter [category of air pollution]
PMT	Program for Mass Transportation [MBTA]
ppm	parts per million
PRC	Project Review Committee [MassDOT]
PSAC	Project Selection Advisory Council [MassDOT]
RCCs	Regional Coordinating Councils
RIF	roadway inventory file
RMV	Registry of Motor Vehicles [MassDOT division]
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 [of the Boston Region MPO]
RTC	Regional Transportation Center
SAFE	service and fare equity [Title VI]
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users
SCCCT	Statewide Coordinating Council on Community Transportation
SCI	sustainable communities initiative

Acronym	Definition
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 [federal program]
STB	State Transportation Building [Boston]
STBGP	Surface Transportation Block Grant Program [federal funding program; replaced STP]
STIP	State Transportation Improvement Program
STP	Surface Transportation Program [federal funding program; replaced by STBGP]
TAM	transit asset management
TAP	Transportation Alternatives Program [federal funding program]
TAZ	transportation analysis zone [travel demand modeling term]
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
TIGER	Transportation Investment Generating Economic Recovery [TIGER Discretionary Grant program, federal]
TIP	Transportation Improvement Program [MPO certification document]
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]
TSIMS	Transportation Safety Information Management System
TSM	transportation systems management [FHWA]
UFP	ultrafine particles
UPWP	Unified Planning Work Program [MPO certification document]
USDOT	United States Department of Transportation [agency oversees FHWA and FTA]
USGS	United States Geological Survey
UZA	urbanized area
V/C	volume-to-capacity ratio

Acronym	Definition
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 planning initiative]
WTS	Women in Transportation Seminar
YMM	youMove Massachusetts [MassDOT planning initiative]