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 the Massachusetts Department of Transportation (MassDOT) and the MBTA, during federal fiscal year (FFY) 2018. MPO discretionary funding will not be used for these studies, although in certain instances an agency or one of its consultants may contract with MPO staff—the Central Transportation Planning Staff (CTPS)—to provide support for the preparation of an environmental impact report or a large-scale study. For these projects, support work that will be conducted by CTPS is described in Chapters 4 through 7. Likewise, the project listings in this appendix indicate whether there are components of the projects that will be conducted by CTPS. 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.

REGIONAL CORRIDOR OR TRANSIT STUDIES

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 Commonwealth—stemming from of the Central Artery/Tunnel project—to increase public transit.

The New Starts program, administered by the Federal Transit Administration (FTA), 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 GLX project.

As the project proceeded, the estimated cost to construct the GLX project increased from the $1.992 billion project cost estimate 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 then increased from the initial budget of $996 million to between $1.7 billion and $2.0 billion.

With the federal contribution capped at $996 million and the Commonwealth responsible for all project cost increases, MassDOT and the MBTA reevaluated 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 designs for stations 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 has 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.

South Coast Rail Project — Agency: Various

The South Coast Rail (SCR) project will restore passenger rail transportation from South Station in Boston to the South Coast of Massachusetts, including to 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, one at the end of the Fall River Secondary leg at the Weaver's Cove East site and the other at the end of the New Bedford Mainline leg at the Wamsutta site.

In November 2016, the SCR team was directed to examine possible strategies to expedite implementation of rail service to the South Coast after it was determined that the SCR project timeline would be significantly longer and the estimated cost would be much higher than originally estimated.

On March 15, 2017, MassDOT filed a Notice of Project Change (NPC) with the 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 using the existing Middleborough Secondary Line, which currently carries freight traffic. Offering

limited service, commuter trains would then connect to the Middleborough/Lakeville commuter rail service. While design and construction proceeds during Phase I, engineering design on the northern section of the route to Stoughton would continue.

The Southeastern Regional Planning and Economic Development District (SRPEDD) directs the SCR Task Force, which is composed of appointed members from the 31 communities in the SCR Corridor, regional transit authorities, and environmental groups. Initially established as a result of the 2002 Secretary's Certificate, the task force's focus is now limited to land-use planning rather than route determination and vetting. Visit the South Coast Rail website for more information about this project.

South Station Expansion Project

Agency: MassDOT

The 13 tracks currently available at Boston's South Station are insufficient for the amount of rail traffic, thus there are significant constraints to current and future rail mobility not only within Massachusetts but throughout New England and Amtrak's Northeast Corridor. Further, South Station operates above its design capacity for efficient train operations and lacks comfortable, modern facilities for orderly passenger queuing, which leaves riders standing in the elements as they wait to board their trains.

The South Station Expansion project will complete the necessary alternatives analysis, environmental review, and preliminary engineering (to approximately the 30 percent design stage) 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 streetscapes and pedestrian, bicycle, local transit, and vehicular facilities in and around South Station, including the reopening of the Dorchester Avenue station entrance for public use. The project planners will consider opportunities for joint public-private development above an expanded South Station, and will also develop a plan for the relocation of the existing US Postal Service General Mail Facility, which must be moved to accommodate the station's expansion.

Bus Rapid Transit Planning

Agency: MAPC, City of Boston, Barr Foundation

Boston BRT is an effort to popularize the concept of bus rapid transit (BRT) in the Boston region. The effort involves the Barr Foundation, the City of Boston, the Metropolitan Area Planning Council (MAPC), and other entities. Boston BRT issued a report on Gold Standard BRT in the Boston area in 2016, and has conducted various outreach, advocacy, research, and pilot efforts since. A pilot program in May and June 2017 tested the possibility of all-door boarding on the Silver Line between Downtown Crossing and Dudley Station. Future plans involve further research, advocacy, and potential demonstration projects.

SUBREGIONAL PLANS AND STUDIES

Lower Mystic Regional Working Group — Agency: MassDOT

MassDOT has convened the Lower Mystic River Regional Working Group, which is 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 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 the likely effects of development proposals. These analyses will inform the development of measures to address those effects, identify critical infrastructure that may be needed, and examine potential methods to pay for these improvements in an equitable manner.

MetroWest LandLine: Phase 1 — Agency: MetroWest Regional Collaborative (MAPC subregion)

MetroWest cities and towns boast many lovely paths and trails, but many of them don't connect. With the MetroWest LandLine Phase I project, MAPC's MetroWest Regional Collaborative (MWRC) is taking the first step to connect those trails and transform them into a cohesive, regional active transportation and recreational network called the MetroWest Landline.

This project 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 build community support for those action plans and for further strengthening the MetroWest LandLine.

CORRIDOR OR LOCATION STUDIES

Allston Interstate 90, Massachusetts Turnpike Interchange Improvement Project — Agency: MassDOT

The Interstate 90 Allston Interchange is located in Boston's Allston neighborhood, adjacent to the Charles River. Portions of the interchange are located above and next to the now-vacant Beacon Park Yard, formerly operated by the CSX railroad. The interchange is a significant part of the regional and local infrastructure carrying over 140,000 vehicles per day. Vehicles entering I-90 from the interchange can travel

the highway to the west making connections to I-95 and I-495. Eastbound vehicles can connect to Logan Airport, I-93 North and South and downtown Boston. Vehicles exiting from the interchange generally make local connections to Allston, Brighton, Cambridge, or points accessible by Soldiers Field Road or Memorial Drive.

Background

Built as part of the Massachusetts Turnpike Extension in 1964-65, the Allston Interchange is the site of a major toll plaza. The configuration of the interchange, which shifts to the north from I-90's east-west orientation, was constructed to avoid Beacon Park Yard. The Allston Viaduct, which is immediately east of the interchange, dates from 1965 and is at the end of its useful design life.

With the reduction in area of Beacon Park Yard and the implementation of all electronic tolling, the curvature of the Allston Interchange can be reduced to more closely follow the general direction of I-90. Beginning in the spring of 2014, MassDOT advanced a Project Development Process to determine how best to reconfigure the interchange while improving transit, walking, and cycling connections on the local roads around the interchange, particularly Cambridge Street in Allston.

The elevated viaduct carries I-90 through the Allston/Brighton area. (Cambridge Street and Soldiers Field Road are to the north and Brighton Avenue is to the south.) This section of I-90 has an average daily traffic (ADT) volume of approximately 144,000 vehicles per day. The viaduct is the primary east-west route between western Massachusetts, Worcester, and Boston, and it carries a significant amount of vacation traffic during the weekends in the summer and winter. ADT volumes west and east of the Allston Interchange are 142,000 and 147,000, respectively. ADT volumes for Cambridge Street are 38,000, volumes for Soldiers Field Road are 66,000, and volumes for the Allston Interchange ramps are 66,000. The I-90 Allston viaduct is at the end of its useful lifespan and must be replaced as it rapidly approaches structural deficiency.

Interstate 90 Allston Interchange Placemaking Study Agency: City of Boston

Major infrastructure changes that are currently being planned around the I-90 Allston Interchange will unlock the potential for a large, new mixed-use district in North Allston. The sprawling railyards and existing I-90 Massachusetts Turnpike interchange in this area of Boston will be replaced by a more compact interchange and multi-modal network of streets, paths, rail, and transit facilities. The Placemaking Report will provide guidance and recommendations for the redesign of the transportation infrastructure in and around the I-90 Allston Interchange. The goal is to enable outstanding urban places and spaces to emerge as specific master plans and redevelopment proposals are brought forward in the future.

For more information, visit www.bostonplans.org/planning/planning-initiatives/i-90-allston-interchange.

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 surrounding communities for use in developing and analyzing alternatives to improve transportation conditions. The study will focus primarily 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; cost; and the effects on existing users of the transportation network. Twenty intersections in the study area, from Galen Street to Soldiers Field Road, will be highlighted in the study.

Dudley Square Complete Streets Design Project — Agency: City of Boston

The Dudley Square Complete Streets Design Project is a community planning process, led by the Boston Transportation Department, which 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 the following:

- **Fairmount Corridor Business Development and Transit Ridership Growth Strategy:** The Fairmount Indigo CDC Collaborative, along with the MBTA, has received a Transportation, Community, and System Preservation grant to improve the transit service connection to job development sites in the Fairmount Corridor.

- **Fairmount Indigo Corridor Planning Initiative:** The Boston Planning and Development Agency 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.

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, suburbs north and east of Boston, and Boston's downtown business area. The corridor's highway-like design is inconsistent with present-day design preferences and local 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 eight to 10 lanes wide (120 to 140 feet), presenting a significant barrier between 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 project, more traffic now remains on facilities such as I-93 and US Route 1; therefore, a reduction in traffic volumes along Rutherford Avenue presents a unique opportunity to transform the corridor's character from a 1950s-era automobile-oriented facility to a 21st-century multimodal urban boulevard corridor that will accommodate private developments.

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 will include the 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 standards set by the Americans with

Disabilities Act (ADA) and Massachusetts Architectural Access Board (AAB); inventory of needed improvements and ADA ramp concept designs; utility research; crash data analysis; and development of improvement alternatives.

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. CTPS will develop projected ridership estimates using a proposed schedule developed during an operations analysis. Work efforts will include the following:

1. Updating CTPS's travel demand model to reflect current land-use assumptions.
2. Modelling the projected ridership for the duration of the pilot period in terms of daily and annualized riders, based on the proposed schedule. Model outputs will include riders boarding at Foxboro Station, new systemwide riders, and diversions from other stations.
3. Identifying, from the travel demand forecasting effort, a ridership target for the duration of the pilot period as well as average daily ridership, including riders shifting from other forms of public transit and riders new to public transit. Model outputs will identify ridership information as well as highway and transit volumes.
4. Identifying the effect that the proposed pilot service will have on the available parking supply at Foxboro Station and at other area stations.
5. Identifying parking and ridership revenues for the pilot service, daily and annually, by using the model.
6. Using outputs from the model, CTPS can also quantify the estimated regional air quality benefits resulting from the pilot service, and identify benefits and burdens from the service to areas of concern for environmental justice.

Pedestrian/Bicycle Crossing of the Mystic River — Agency: City of Everett

This study will select a location for a bicycle and pedestrian crossing over the Mystic River, from the Wynn Resort and Mystic View Park to Draw 7 Park in Somerville, and develop 25% design plans for the bridge. 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 (NSCT) 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 of Everett seeks to extend a bus-only lane south to the City limits on Route 99/Broadway. In addition to a traffic analysis and conceptual design development, this study would determine how such a lane would be constructed and the extent of right-of-way acquisitions required.

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 right-of-way and Second Street in the City of Everett. This study will develop a conceptual design for reconstructing Second Street to accommodate existing vehicle traffic as well as for incorporating 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 (Route 16), Broadway (Route 99), and Main Street in Everett. It is a highly congested and dangerous intersection that does not have adequate accommodations for transit, bicycles, or pedestrians. The existing 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.

North Station Area Mobility Action Plan — Agency: City of Boston

The goal of the planning effort for the North Station Area Mobility Action Plan is to develop a range of near-term, multimodal transportation improvements in the areas immediately adjacent to Boston's North Station. The project area (bounded by North Washington Street, Cross Street, Sudbury Street, Cambridge Street, and the Charles

River) continues to experience significant development, and increasing density levels present new mobility challenges. Overall goals include providing easier vehicle access, providing pedestrian priority on certain streets, organizing shuttle operations, and improving access to local businesses and mobility for residents.

For more information, visit www.bostonplans.org/planning/planning-initiatives/nsamap2016.

PLAN: Glover's Corner, Dorchester — Agency: City of Boston

The study area at Glover's Corner in Dorchester (between the Fields Corner and Savin Hill Stations) is increasing in density and this growth is expected to affect the transportation system. This initiative will prepare for future economic development and transportation demands by creating a future vision and physical plan, focusing on locations where the multi-modal transportation network is currently limited and constrained. The future network will need to include enhancements to existing Red Line station access and comprehensive bus services. Just as important, a safe and effective network for cyclists and pedestrians will be required. Transportation network capacity constraints will influence and inform land uses and build-out scenarios.

For more information, visit www.bostonplans.org/planning/planning-initiatives/plan-dorchester-glovers-corner.

PLAN: JP/ROX — Agency: City of Boston

The PLAN: JP/ROX provides recommendations and strategies around affordable housing, jobs and businesses, guidelines for urban design, improvements to transportation connections, open space, sustainability, and the public realm. The study examined the compatibility of different land uses, including housing, commercial, and light industrial, while studying the impacts of traffic and other forms of mobility in the study area. Of particular focus was the recent wave of mixed-use residential projects in the area, and determining the implications of redevelopment and areas of opportunity. The two-and-a-half year planning process engaged the communities between Forest Hills, Egleston Square and Jackson Square, generally bounded by Washington Street, Columbus Avenue, and Amory Street.

For more information, visit www.bostonplans.org/planning/planning-initiatives/plan-jp-rox.

PLAN: South Boston Dorchester Avenue — Agency: City of Boston

The Dorchester Avenue corridor in South Boston presents a unique opportunity to craft a vision for an area that is evolving. This initiative establishes goals and strategies that will help drive short- and long-term investments in a new network of streets, public parks and green space, a range of housing types, and commercial and retail

activity in South Boston. This plan will also be the foundation for updating zoning in the area so that it aligns with the community's vision and creates predictable conditions for future development.

For more information, visit www.bostonplans.org/planning/planning-initiatives/plan-south-boston-dorchester-ave.

CITYWIDE PROGRAMS OR STUDIES

Transportation Master Plan — Agency: City of Framingham

The Department of Public Works in Framingham is undertaking a three part transportation plan in conjunction with an economic development plan to identify the effects of anticipated growth on transportation systems. This plan will identify mitigation strategies and improvements on the Town's roadways and bicycle/pedestrian pathways, such as traffic calming updates, neighborhood outreach efforts, and other transportation-related 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" for implementing improvements and maintenance. The plan will address transportation systems owned and operated by the Town as well as connections to railroads and state highways.

Foxborough Local Bus Service — Agency: Town of Foxborough

The Town of Foxborough is working with the Greater Attleboro Taunton Regional Transit Authority (GATRA) and the Neponset Valley TMA to establish local bus service between downtown Foxborough and Patriot Place/Gillette Stadium. This bus service will serve three out four of the Town of Foxborough's Growth Nodes, identified in the Town's 2015 Master Plan as priority areas for development.

Neighborhood Slow Streets — Agency: City of Boston

Each year, Boston residents, neighborhood associations, and other community-based organizations will be able to apply to have traffic-calming measures implemented 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 one street at a time, the City 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 Pilot initiative aims to set more parking spots aside for motorists accessing Boston's busiest neighborhoods. The initiative 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 the number of parking spaces occupied on certain blocks. The price will stabilize when the number of occupied spots reaches an occupancy target, which is about one space open per block. In other cities, flexible meter rates have been shown to increase parking spot availability. By raising meter rates in Boston's most congested areas, the City could direct motorists to less busy streets where they could quickly find spots, 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 of Boston's program for providing parking spaces in municipal lots and on city streets for car-share vehicles. In the pilot phase of the program, 80 spaces were made available for car-share vehicles throughout the city. The pilot phase started in the fall of 2015 and lasted 18 months, reserving 49 spaces in municipal lots and 31 spaces curbside. Working with Zipcar and Enterprise CarShare, Boston Transportation Department planners visited a number of locations and selected places that would have the most benefit for residents while having the least impact on street operations and parking.

Go Boston 2030—Mobility Plan — Agency: City of Boston

Go Boston 2030 is the City of Boston's long-term mobility plan that envisions a bold transportation future. At the outset of the planning, a Vision Framework was developed based on 5,000 questions and comments collected from the public. Then, in spring 2016, more than 4,000 people gave feedback about the type of future and the projects and policies that they wanted to prioritize. Their ideas and were used to develop a Vision and Action Plan, which was released in March 2017. The Vision and Action Plan includes a goals and aspirational targets as well as details about the planned projects and policies.

For more information, visit www.boston.gov/transportation/go-boston-2030

Green Links

Agency: City of Boston

The goal for Boston Green Links is to create a connected network of paths and low-stress corridors that people of all ages and abilities can use, whether on foot, bike, or in a wheelchair. The city-wide plan will connect people in every Boston neighborhood to the City's greenway network by installing new paths and bike facilities, and creating safer road crossings. The plan includes projects in progress by the City, the Department of Conservation and Recreation, community groups, and others, as well as new projects developed with local input. The plan will be implemented over time, through grants, partnerships, and City-funded projects.

For more information, visit www.boston.gov/transportation/boston-green-links

Neighborhood Bike Projects

Agency: City of Boston

A City of Boston goal is to build a complete bicycle network that will connect residents to jobs, open space, educational opportunities, and local shops. In accordance with citywide planning efforts, Imagine Boston and Go Boston 2030, the City's departments continue to work together to plan, design, and fund transportation projects that improve streets for all users, including by identifying neighborhood connections that help complete the bike network. Typically the City adds or improves several miles of bike routes on city streets each year.

For more information, visit www.boston.gov/departments/boston-bikes/neighborhood-bike-projects

Autonomous Vehicles

Agency: City of Boston

Autonomous vehicles offer the promise of helping to achieve the goal of zero deaths and injuries from traffic crashes. On the other hand, these vehicles could displace an important workforce and encourage both sprawl and traffic congestion. In cooperation with MassDOT, the City launched an autonomous vehicle testing program to try to shape the development of this technology and policies to deliver on the potential promise while minimizing the drawbacks.

For more information, visit www.boston.gov/innovation-and-technology/autonomous-vehicles-bostons-approach

REGIONWIDE OR LONGER-RANGE PLANNING EFFORTS

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

Agency: MassDOT

MassDOT's Office of Transportation Planning has been conducting a statewide vulnerability assessment of its transportation assets. The study aims to provide a better understanding of which MassDOT's infrastructure assets are most likely to be at risk from 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 will also be investigated qualitatively.

The project aims to deliver the following outputs: 1) downscaled climate projections for three emission scenarios for four future years (2030, 2050, 2070, and 2100); 2) a prototype methodology for estimating future climate-related inland flooding risks and asset vulnerability; 3) high-level synthesis of extreme heat impact on transportation assets and operations; 4) future 100-year floodplain maps for selected climate scenarios and periods; and 5) a risk analysis of the exposure of MassDOT's critical assets to future inland flooding. Tasks 1 and 3 above are already completed, and task 2 is underway.

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 the Federal Highway Administration's Energy and Emissions Reduction Policy Analysis Tool (EERPAT), which will enable modeling of the effectiveness of various approaches to reducing transportation sector greenhouse gas (GHG) emissions. 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 analyses will be used to refine the transportation sector strategies included in EEOEA's Clean Energy and Climate Plan for 2020.

North/South Rail Link Feasibility Study

Agency: MassDOT

The North-South Rail Link project is a proposal to connect Boston's North and South Stations by rail. The rail link would provide more transit connectivity to the region by connecting markets on the north and south sides of Boston. Currently, people traveling by rail between North and South Stations must make two or more transfers; the rail link would allow for a one-seat ride. A Draft Environmental Impact Report (DEIR) for this project was undertaken between 1995 and 2003; however, the project was not pursued at the time. Since 2003, Boston has experienced many changes in economy, land use, and transportation demand, and construction technology has improved at the same time. This study is a feasibility reassessment that will update prior work and determine whether further technical and financial analyses are necessary.

CTPS will support this MassDOT study by conducting the following activities:

- Perform a market analysis for the North-South Rail Link project
- Provide modeling support to the project team to examine the existing transportation conditions and future-year no-build and build alternatives
- Support the project team's analysis

NEC FUTURE

Agency: Federal Railroad Administration

NEC FUTURE is a comprehensive federal planning effort, launched by the Federal Railroad Administration (FRA) in February 2012, to define, evaluate, and prioritize future investments in the Northeast Corridor (NEC), from Washington, D.C to Boston. The FRA has initiated a comprehensive planning process for future investment in the corridor through 2040. Through the NEC FUTURE program, the FRA will determine a long-term vision and investment program for the NEC, including the preparation of a Tier 1 Environmental Impact Statement (EIS) and Service Development Plan (SDP) in support of that vision. Technical work will include an analysis of market conditions in the corridor, development of program alternatives, and an evaluation of the environmental impacts of those alternatives. The FRA will recommend an approach that balances the needs of various users of the corridor—commuters, intercity passengers, and freight operators—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 at 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 US Department of Transportation's University Transportation Centers (UTC) Program. The New England UTC conducts multiyear research programs that seek to assess and make improvements for 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, utc.mit.edu/.

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APPENDIX B

Public Participation

MPO staff followed the procedures set forth in the MPO's adopted *Public Participation Plan for the Boston Region Metropolitan Planning Organization* when developing the FFY 2018 UPWP. These procedures are designed to ensure early and continued public involvement in the transportation-planning process.

The FFY 2018 UPWP development process began in November 2017. Staff solicited topics for study through outreach at Metropolitan Area Planning Council (MAPC) subregional municipal group meetings. Staff also sought suggestions and public input from other sources:

- Regional Transportation Advisory Council (Advisory Council) meetings
- Monthly "Office Hours"–during which MPO staff made themselves available, either in person or on the phone, to interested stakeholders
- Comments received during the FFY 2017 public review period
- Topics generated from recently completed planning studies and documents

Interest in planning studies covered numerous potential areas of regional transportation planning, including: roadway and infrastructure safety; the effects of land-use development; the impacts of automated and electric vehicles; transit service improvements and coordination; and best practices for bicycle and pedestrian planning.

The document development process, described in Chapter 1, culminated in the MPO UPWP Committee's recommendation for the FFY 2018 UPWP, including a set of new discrete studies. On May 4, the MPO approved a draft document for public circulation.

After receiving the MPO's approval to circulate the public-review draft FFY 2018 UPWP, staff posted the document on the MPO's website (http://bostonmpo.org/upwp). MPO staff then presented the UPWP and this set of new studies to the Advisory Council. Staff also emailed the MPO's contact list (MPOinfo) to notify recipients of the document's availability, and the 21-day period for public review and comment.

During the review period, the MPO held Office Hours, as well as an open-house style public meeting. At both events, staff made themselves available, either in person or on the phone, to interested parties who wanted to discuss the draft FFY 2018 UPWP. In addition, the open house featured printed copies of the draft UPWP document, summary documents and posters, and refreshments. All events and meetings where the draft FFY 2018 UPWP was discussed—including Office Hours, the open house, and all MPO and UPWP Committee meetings—were accessible via transit and to people with disabilities.

Table B-1 contains a summary of written comments on the draft FFY 2018 UPWP, and the MPO responses to those comments.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
1.1	Regional Transportation Advisory Council (RTAC)	Overall	Thanks MPO staff for its attention to reframing and improving communication, information, and materials related to the UPWP. This information has been helpful in explaining the UPWP processes to stakeholders and the public.	The MPO appreciates the comments and welcomes the Advisory Council's continued input on how to further improve the quality and clarity of our materials, communications and outreach.
1.2	Regional Transportation Advisory Council (RTAC)	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Strongly supports the Community Transportation Program Development study. Suggests that the MPO begin to consider criteria related to the sustainability of projects in this category. In the past, finding sustainable funding sources for transportation services initially funded through Federal grants has been a challenge. CT funds should be spent on infrastructure investment or as ""seed"" money to demonstrate services where there is a strong possibility of catalyzing additional funding for ongoing operations.	The MPO appreciates the comments, and will work with staff, the Advisory Council, and stakeholders on defining this investment program.
2.1	South Shore Coalition (SSC)	Appendix C/ Universe of Proposed New Studies for FFY 2018 UPWP	Support inclusion of the Travel Alternatives to Regional Traffic Bottlenecks study.	The MPO appreciates the comments.
2.2	South Shore Coalition (SSC)	Appendix C/ Universe of Proposed New Studies for FFY 2018 UPWP	Support inclusion of Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment study.	The MPO appreciates the comments.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
3.1	CrossTown Connect TMA	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Expresses interest in the Community Transportation Program Development study. States that CrossTown Connect TMA is interested in exploring partnership models for long term financial sustainability through this program. A grant received through the Community Transit Grant Program has been used toward the Maynard-Acton Commuter Shuttle, which has operated for six months and sees growing ridership. With parking at both Littleton/495 and South Acton stations at capacity during weekdays, other routes the TMA is working to implement this year include North Acton-South Acton, Boxborough-South Acton, and Littleton/495 Station-Westford. Currently envisioned funding is a mix of local, state, and private funds. The TMA has recently worked with local legislators to include an earmark for the Maynard-Acton Commuter Shuttle in the FY18 budget. In light of funding challenges, the TMA expresses interest in involvement with the Community Transportation Program Development study, stating that their projects could be of use to its inquiry.	The MPO appreciates the TMA's interest in the Community Transportation Program Development study. The TMA's projects and practices are of interest to the MPO and we will make sure relevant staff are informed of the TMA's desire to be involved in the study.
3.2	CrossTown Connect TMA	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Support inclusion of the Bicycle Level-of-Service Metric study.	The MPO appreciates the comments.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
3.3	CrossTown Connect TMA	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Supports inclusion of the Transportation Mitigation of Major Developments: Review of Strategies study.	The MPO appreciates the comments.
3.4	CrossTown Connect TMA	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Supports inclusion of the Travel Alternatives to Regional Traffic Bottlenecks study.	The MPO appreciates the comments.
3.5	CrossTown Connect TMA	Chapter 6, Chapter 7	Expresses appreciation of the MPO's ongoing work as both a discrete entity and in conjunction with other departments and organizations related to congestion, air quality, equity, bike/ped, and economic development. Studies of particular interest include Alternative Mode-Planning and Coordination; Community Transportation Technical Assistance Program; I-90/I-495 Interchange Traffic Analysis; and Regional Transit Service Planning Technical Support.	The MPO appreciates the comments and the positive feedback on the MPO's work. Staff look forward to further partnership and hearing more from the TMA about how the MPO can be an inclusive and cooperative partner in the transportation planning process.
4.1	495/ MetroWest Partnership	Appendix D/ Geographic Distribution of UPWP Funded Studies	States that Table D-1 is a helpful resource in determining the distribution of UPWP planning tasks since 2010.	The MPO appreciates the positive feedback.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
4.2	495/ MetroWest Partnership		Supports inclusion of the Foxboro Station Commuter Rail Pilot Program. The Pilot would support the Fairmount Line while more effectively utilizing existing infrastructure such as the Framingham Secondary Line and relieving capacity and parking constraints at the stations surrounding Foxborough. The proposed service would benefit the MBTA, riders, employers, commuters, and taxpayers of Foxborough and the 495/ MetroWest region. Weekday commuter service would benefit Foxborough residents commuting to other parts of the Commonwealth, and allow for new employment opportunities for riders on the Fairmount Line.	The MPO appreciates the comments.
4.3	495/ MetroWest Partnership	Chapter 7/ Agency and Other Client Transportation Planning Studies and Technical Analyses	Supports inclusion of the I-90/I-495 Interchange Traffic Analysis Technical Support. States the project is a long-term, comprehensive solution advancing with the Interchange Improvement Project slated for construction between 2021 and 2025. Recent analysis conducted by the Public Policy Center at UMass Dartmouth confirms that the 495/MetroWest region is a net importer of labor in addition to showing large volumes of workers commuting into, out of, and through the region. Improving the interchange will provide significant returns for commuters, employers, and residents of the Commonwealth.	The MPO appreciates the comments.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
4.4	495/ MetroWest Partnership	Appendix A/ Other Boston Region Transportation Planning Projects	Supports seven projects included in Appendix A. States that although the studies do not include MPO funding, but will likely result in project proposals before the MPO. [See comment letter for further information]	The MPO appreciates the comments and asks the Partnership to continue its involvement in these and MPO planning efforts.
4.5	495/ MetroWest Partnership	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Recognizes the addition of several new studies and expresses hope that they will benefit the subregions in the 495/MetroWest region. Notes that SWAP has received the second lowest amount of tasks out of all subregions, with 37 tasks since 2010 and 2 tasks performed in the last three years. Requests that the MPO consider regional equity when advancing some of the new studies. [See comment letter for further information]	The MPO appreciates the comment and feedback. The MPO, staff, and MAPC look forward to working with subregional muncipalities and stakeholders.
4.6	495/ MetroWest Partnership	Appendix C/ Universe of Proposed New Studies for FFY 2018 UPWP	Requests that the Low-Cost Improvements to MBTA Rapid Transit Service will include Commuter Rail locations, including the Franklin, Framingham/Worcester, and Fitchburg lines. Wayfinding solutions could be particularly helpful to the 495/MetroWest region.	The MPO appreciates the comment. Staff note that the Low-Cost Improvements to MBTA Rapid Transit Service study concept was incorporated into the Community Transportation Program Development study in the final draft of the UPWP. While locations for potential Community Transportation projects have not been selected, commuter rail stations are likely to be among the candidate locations for this investment program.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
4.7	495/ MetroWest Partnership	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Requests that the MetroWest RTA will benefit from the Regional Transit Service Planning Technical Support include in the UPWP. States the RTA has been innovative and proactive in expanding transit opportunities, adding that some needs still remain. Any investment into the MWRTA will provide excellent returns for both riders and employers in the 495/MetroWest region.	The MPO appreciates the comment.
4.8	495/ MetroWest Partnership	Appendix C/ Universe of Proposed New Studies for FFY 2018 UPWP	Supports inclusion of the First- and Last-Mile Shuttle Partnership Models. States that CrossTown Connect TMA have recently developed new shuttle routes in several communities, which would serve Fitchburg Line Commuter Rail stations. Funding has only allowed the implementation of the Maynard shuttle, which has growing ridership and minimal cost to determine its feasibility. Sustainability of the Maynard shuttle remains a challenge despite the demand and limited overhead costs. States this could serve as a case study for potential partnership models for first- and last-mile transit shuttles with potential funding recommendations by the MPO to help determine sustainability that could also allow for expansion into other communities. Requests the MPO consider studying the CrossTown Connect Model as part of this program.	The MPO appreciates the comment. Staff note that the First- and Last-Mile Shuttle Partnership Models study concept was incorporated into the Community Transportation Program Development study in the final FFY 2018 UPWP. Shuttles remain an important part of the study and future investment program.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
5.1	John Hanlon, Robert Consalvo, and Delavern Stanislaus, Boston Public Schools; Chris Osgood, Chief of the Streets, Boston Transportation and Sanitation	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Requests consideration of adding the potential impact of signal priority on school buses operated by the Boston Public Schools. Boston school buses travel nearly 45,000 miles per day in the City, and are on the road for a collective 5,000 hours of drive time. Granting school buses signal priority would result fuller and therefore fewer buses, which in turn would provide increased investment in schools, a smaller carbon footprint, and less traffic for other commuters. Signal priority would also allow more time at home or for extracurriculars for students, and less variability in routes would increase on-time arrival of students.	The MPO appreciates the comments and will take this idea into consideration when developing the detailed scope of work for this effort. Staff will also consider this idea for study as part of either an ongoing UPWP program or for inclusion in the FFY 2019 UPWP universe of potential studies.
6.1	Paige Duncan, Foxborough Planning Director	Appendix A/ Other Boston Region Transportation Planning Projects	Supports inclusion of the Foxboro Station Commuter Rail Pilot Program. States that the Town of Foxborough believes that Commuter Rail service will benefit the Town, the region, and the commonwealth. Notes that a poll conducted during outreach for Foxborough's 2014 Master Plan showed that 66.9% of respondents favored increasing train service to Foxborough, and the Town's Economic Development Committee and Board of Selectmen voted in favor of the pilot program.	The MPO appreciates the comment.
7.1	Rider Oversight Committee - Capital Investment & Finance Subcommittee	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Supports all studies listed in Chapter 6, giving particular support to 10 studies.	The MPO appreciates the support.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
7.2	Rider Oversight Committee - Capital Investment & Finance Subcommittee	Chapter 7/ Agency and Other Client Transportation Planning Studies and Technical Analyses	Supports the studies and technical analyses listed in Section 7.3.	The MPO appreciates the support.
7.3	Rider Oversight Committee - Capital Investment & Finance Subcommittee	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Requests that the Community Transportation Technical Assistance Program include attempts to identify transit equity issues when contacting local community officials. Notes the difficulties of identifying members of minority groups and those with low incomes who wish to provide input on transit equity issues. Suggests creating a database of local contacts and the transit equity issues that they present; if this expands the scope of the program beyond what is practical, this approach could be a new program or part of the Transportation Equity Program.	The MPO appreciates the comments and will forward these ideas to relevant staff, and take them into consideration for inclusion in the Community Transportation Program Development study.
8.1	Rutherford Corridor Improvement Coalition	Overall	Requests that the MPO elevate pedestrians, cyclists, and transit riders in CTPS analyses, giving them equal treatment to vehicles; incorporate strict TDM requirements on analyses of all new developments; require flex time and work at home regulations in TDM requirements, as well as emphasize multi-passenger service to water and rapid transit points; incorporate more frequent Orange Line service analysis; and develop a strong methodology to evaluate "disappearing traffic" and "induced demand."	The MPO appreciates the comments. Several new and ongoing studies and programs tackle similar issues, including Bicycle LOS Metric, Transportation Mitigation of Major Developments, and others. The MPO will forward these comments and ideas to relevant staff for consideration for incorporation into future studies and plans.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
8.2	Rutherford Corridor Improvement Coalition	Appendix A/ Other Boston Region Transportation Planning Projects	Expresses concerns regarding the City of Boston's plans for Rutherford Avenue/Sullivan Square, stating that the current design places regional traffic above local needs. Hundreds have residents have expressed a desire for a 50+ foot open space corridor along the neighborhood by narrowing Rutherford Avenue and moving traffic away from residences. This corridor would provide a transitional opportunity for multi-use paths and greater connection to Sullivan Square and MBTA facilities. Adds that the surface option redesign would provide acres of developable land that can be used for transit-oriented development.	The MPO appreciates the comments. Although not an MPO study in the UPWP, MPO staff will forward these comments to appropriate staff with the City of Boston and MassDOT.
9.1	Carl Seglem	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Requests broad consideration of ""transit operators"" to include school bus operators; institutional, company, and area transit providers; shuttle providers to and around Logan Airport; and commercial bus operators. Reducing travel times and increasing reliability with transit signal priority will make travelers more likely to use transit over single-occupancy vehicles. Other transportation operators could also benefit, resulting in decreased emissions and more efficient operations.	The MPO appreciates the comment. Staff will consider these ideas when developing the detailed work scope for the UPWP study.
10.1	Georgette Maloof		Expresses interest in repairs to the North Washington Street Bridge.	The MPO appreciates the comment. Staff will forward the comments to relevant staff with the City of Boston and MassDOT.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
11.1	Anu Gerweck	Appendix A/ Other Boston Region Transportation Planning Projects	Expresses appreciation of efforts toward the Pedestrian/ Bicycle Crossing of the Mystic River. The crossing will improve the safety of cyclists and vehicles.	The MPO appreciates the comment. Staff will forward the comments to relevant staff with the City of Everett, Somerville, Medford, and MassDOT.
12.1	Pat Brown	Executive Summary	Notes that the section heading "What Studies and Activities are in the FFY 2017 UPWP?" should be changed to FFY 2018.	The MPO appreciates the comment and staff will correct the relevant section.
12.2	Pat Brown	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Requests that the study clearly distinguish between transportation and recreation. States that "supporting bicycle travel and comfort" differs between on-road accommodations and off-road linear parks used primarily for recreation. Requests that the study includes evaluating the cost-effectiveness of any proposed bicycle LOS improvement measures. Requests that evaluation of existing data begin with an understanding of the limitations of that data. As an example, states that bicycle accidents which do not involve motor vehicles are typically not reported to local police, resulting in an artificially high proportion of vehicle-involve bicycle accidents. Limitations on the completeness, accuracy, and applicability of statewide data may preclude its use or require major caveats. Requests consideration of new data collection methods.	The MPO appreciates the comment and will take these ideas into consideration when developing the detailed scope of work for this effort.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
12.3	Pat Brown	Chapter 6/ Boston Region MPO Planning Studies and Technical Analysis	Notes that page 6-2 is duplicated in the document, and page 6-3 is not included.	The MPO appreciates the comment and staff will correct the relevant section.
12.4	Pat Brown	Appendix C/ Universe of Proposed New Studies for FFY 2018 UPWP	Requests that the header "Multimodal Mobility" at the bottom of page 2 of the Universe be moved to the top of the next page to appear with the projects in that category. Requests that Appendix C clearly state what "Primary" and "Secondary" designations indicate. Adds there is no discussion on how proposed studies in the Universe are ranked, and asks which criteria MPO staff uses for these rankings.	The MPO appreciates the comments. Staff will correct the table header. The introductory text to Appendix C provides information about how MPO staff and the UPWP Committee evaluate potential studies. Staff will make this text clearer and more detailed in future iterations of this document.
12.5	Pat Brown	Appendix C/ Universe of Proposed New Studies for FFY 2018 UPWP	Requests consideration of Before-and-After Studies of Bicycle- and Pedestrian-Related Improvements in TIP Projects for future funding.	The MPO appreciates the comment and staff will include this concept in the Universe of Potential Studies for the FFY 2019 UPWP.
12.6	Pat Brown	Appendix E/ MPO Glossary of Acronyms	States the MPO Glossary of Acronyms is helpful for non-professional readers.	The MPO appreciates the comment.

Comment Number	Commenter	Relevant Document Chapter	Comment on the Draft UPWP	MPO Response
13.1	Rana Aljammal		Requests inclusion of a safety analysis to identify location and cause of recurrent crashes along the I-90 W corridor, three miles east and west of I-95, with the goal of accident reduction. States that this stretch of I-90 W experiences almost daily crashes, based on information observed in Google Maps and Waze. Each crash creates traffic delays that exponentially increase with the passage of time. Effects of traffic delays are experienced beyond the region; delays in Eastern Massachusetts on I-90 W negatively impact commuters in Western Massachusetts. This impacts motor coaches operating out of Springfield, which can experience 10-40 delays in transit. These delays reduce the viability of this mode for many commuters. Adds that a solution to this program would support the goals of GreenDOT and YouMove MA by encouraging commuters to opt for on-time public transit over single-occupancy vehicles.	The MPO appreciates the comments. Staff will consider this location for study as part of an ongoing UPWP program or for inclusion in the FFY 2019 UPWP universe of potential studies.

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

APPENDIX C

Universe of Proposed New Studies for Federal Fiscal Year 2018 UPWP

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.

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Table C-1
Title

			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

Table C-1 (cont.)

			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
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

Table C-1 (cont.)

			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
MULTIMODAL MOBILITY																			
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

Table C-1 (cont.)

			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
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	

Table C-1 (cont.)

			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
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

Table C-1 (cont.)

			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-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		

Table C-1(cont.)

			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	
T-8	Balancing Roadway Space Allocation Among Travel Modes	Purpose: Both bike lanes and dedicated bus lanes have become increasingly 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

Table C-1 (cont.)

			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. Anticipated Outcome: Assessment of the feasibility of using WiFI connection data to better understand passenger trip patterns, and development of a pilot program					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

Table C-1 (cont.)

			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-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	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

Table C-1 (cont.)

			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
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 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
- Refreshed demographic data using ACS 2014 5-year estimates.

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	2	27	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%

Table D-1 (cont.)

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
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**	**21**	**195**			
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%

Table D-1 (cont.)

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
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%

Table D-1 (cont.)

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
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%

Table D-1 (cont.)

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
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			2	2	6,085	4.7%	15.8%
NSTF Subtotals	**32**	**3**	**2**	**23**	**60**			
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				3	21,962	4.6%	24.0%
Marshfield	2				2	25,132	4.0%	26.2%
Norwell	2				2	10,506	4.7%	18.0%

Table D-1 (cont.)

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
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**	**37**			
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**			

Table D-1 (cont.)

Community	2010-2014 Total	2015	2016	2017	2010-2017 Total	Population	Minority %	Low-Income %
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	4	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**	**3**	**51**			
Grand Total	**435**	**74**	**41**	**74**	**625**			

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 • 2016-17 Bicycle and Pedestrian Counts • Bicycle and Pedestrian Count Memo (summarizing counts 2014-2017) • Memorandum documenting plans for future Boston Region MPO bicycle and pedestrian counting methodologies	• 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 • Title VI Service Equity Analyses: Methodology Development • EJ and Title VI Analysis Methodology Review • Transportation Investments for Economic Development •	• Right-Size Parking Report • Transportation Demand Management— Case Studies and Regulations • Hybrid Electric Vehicle Retrofit Procurement • Autonomous Vehicles and Connected Cars research • MetroFuture Implementation technical memorandums

FFY 2015

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

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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]