



**APPENDIX C**  
**UNIVERSE OF PROPOSED NEW STUDIES**  
**FOR FEDERAL FISCAL YEAR 2020 UPWP**



This appendix describes the Universe of Proposed New Studies, a key step in the evolution of the federal fiscal year (FFY) Unified Planning Work Program (UPWP). The Universe documents the study concepts that the Boston Region Metropolitan Planning Organization (MPO) staff collected or suggested for the development of the FFY 2020 UPWP. Each entry includes a summary of the purpose of the proposed study.

Studies in the Universe are organized into the following categories:

- Active Transportation
- Land Use, Environment, and Economy
- Multimodal Mobility
- Transit
- Transportation Equity
- Resilience
- Other Technical Support

Staff introduced the Transportation Equity and Resilience categories for the FFY 2020 UPWP development process.

Staff and the UPWP Committee evaluate each proposed study in the universe based on the following 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 affects 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 analyzing a specific location or transportation service 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 spent in the region over time and to compare the amount of spending across the various evaluation areas. Furthermore, tracking study prioritization by LRTP goal area, mode, and study scale 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. Table C-2 tracks the breakdown of studies chosen for funding in the UPWP from FFY 2016 to the present.

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 about the process of developing and evaluating the Universe, please see Chapter 2.

**Table C-1  
Universe of Proposed Studies, Grouped by Subject Area, FFY 2020**

ID	Project Name	Project Purpose and Outcome	Estimated Cost Level	LRTP Goal Areas						Mode			Study Scale		Impact			Other			
				Safety	System Preservation	Clean Air/Clean Communities	Transportation Equity	Capacity Management Mobility	Economic Vitality	Roadway	Bicycle/Pedestrian	Transit	Specific Community or Location	Broader Region	Enhance State of Practice	Low-Cost/Near-Term Implementation	Long-Term Implementation	Connection to Existing or Past Work	Continuing Study	Study Carried Over from 2019 Universe	New Study Concept for FFY 2020
<b>ACTIVE TRANSPORTATION</b>																					
A-1	Locations with High Bicycle and Pedestrian Crash Rates in the Boston Region MPO Area	This study would collect and analyze performance data for intersections that have a high presence of bicycle and/or pedestrian crashes and recommend strategies to alleviate congestion and improve safety at these intersections.	Medium	P			S					P			P		P	S	Y		Y
A-2	Transportation Equity Areas Bicycle and Pedestrian Analysis	This study would analyze the bike network in the MPO region in communities with large minority and low-income populations (and potentially other equity populations). This analysis would be more extensive than that contained in the LRTP Needs Assessment, examining the functional connectivity of the network in terms of its effectiveness in providing access to jobs and other activities.	Medium	P			P					P			P				Y		Y
<b>LAND USE, ENVIRONMENT, AND ECONOMY</b>																					
L-1	(More) Transportation Access Studies of Commercial Business Districts	The proposal is to conduct transportation access studies, similar to those conducted in FFY 2019's Transportation Access Studies of Central Business Districts study, on a recurring basis, each year targeting a new group of CBDs. While the FFY 2019 CBD Access study will classify CBDs and select a sample for surveying that represents the variability of CBDs in the region, staff understands that the CBDs in the region may not all be represented by the limited sample afforded by the project budget. Primary work products would include a report detailing the results of the year's work (or separate reports detailing each CBD individually), and a dataset tracking the results over time.	Medium							P	S	S	P	S		P	S		Y		Y
L-2	Zoning and MBTA Ridership	This study would examine the opportunity cost of zoning constraints near MBTA stations in terms of foregone MBTA ridership. Zoning close to transit could be well below the density that could be supported or what is required to support the frequency that customers want. This might involve reviewing current actual and allowable densities, comparing these with what the market supports in comparable place types when allowed, and creating ridership estimates.	High			S		P	P				P		P			P			Y

(Table C-1 cont.)

ID	Project Name	Project Purpose and Outcome	Estimated Cost Level	LRTP Goal Areas						Mode			Study Scale		Impact			Other		
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<b>ROADWAY and MULTIMODAL MOBILITY</b>																				
M-1	Safety Improvements at Express-Highway Interchanges	This study will continue to address the 2013 MassDOT Top 200 High-Crash Locations and 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. MPO staff would develop recommendations for these low-cost safety and operational improvements.	High	P	S			S		P			S	P		P		Y		Y
M-2	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	During MPO outreach, MAPC subregional groups identify transportation problems and issues that concern them, often those relating to bottlenecks or lack of safe access to transportation facilities in their areas. These issues can affect livability, quality of life, crash incidence, and air quality along an arterial roadway and its side streets. If problems are not addressed, mobility, access, safety, economic development, and air quality are compromised. Tasks include data collection, technical analysis, development of recommendations, and documentation for selected corridors.	High	P				S		P			P			P				Y
M-3	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	These studies develop conceptual design plans that address regional multimodal transportation needs along priority corridors identified in the LRTP, <i>Charting Progress to 2040</i> . MPO staff would recommend conceptual improvements for one or more corridors, or several small sections within a corridor, that are identified by the CMP or the LRTP's Needs Assessment process. These studies provide cities and towns with the opportunity to review the requirements of a specific arterial segment, starting at the conceptual level, before committing design and engineering funds to a project. If the project qualifies for federal funds for construction of the recommended upgrades, the study's documentation also might be useful to MassDOT and the municipalities.	High					P		P			P				P			Y
M-4	Safety and Operations at Selected Intersections	The Safety and Operations Analyses at Selected Intersections study provides municipalities in the MPO with recommendations and conceptual designs for potential short-term, low-cost solutions or long-term, high-cost solutions for intersections that need safety improvements and congestion management.	High	P				P		P			P				P			Y

(Table C-1 cont.)

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M-5	Low-Cost Intersection Improvement Program	Staff will select the intersections based on CMP performance metrics, and then consult with planners/engineers from these respective communities to see if they agree that there are congestion issues at the preselected locations. Staff will then survey the selected intersections and determine the recommended low-cost improvements for the locations. These recommendations will be presented to each community. The communities can acknowledge the recommended improvements to each intersection and create their own project that would improve traffic operations.	Medium	P				P			P			P							Y
M-6	TIP before-and-after studies	This study would examine the results of a TIP project in a before-and-after fashion, measuring whether anticipated improvements to safety, traffic flow, and other factors did in fact materialize. Locations to be analyzed could be selected from the UPWP Study Recommendations Tracking Database.	Medium	P				P				S				S		Y			Y
M-7	Congestion Pricing Sensitivity Analysis*	There has been significant legislative, advocacy, and scholarly interest in whether and how a congestion pricing scheme might work in the Boston region. Critical questions to understand relate to sensitivity and elasticity: At what price point will drivers change behavior? What pricing scheme would relieve congestion? At what point do the costs to the public outweigh the potential benefit of fee? This study could potentially include a literature review, comparative analysis that takes into account the experiences of other regions, analysis of survey data, and modeling.	High but scalable	S	S	P	S	P			P		S		P	P					Y
M-8	Downtown Framingham Mobility Study	This study would focus on a comprehensive approach to improve mobility in downtown Framingham as a regional center. Possible tasks include identifying strategies to manage truck traffic; Complete Streets improvements; evaluating grade separation of the MBTA commuter rail; moving parking to the outskirts and providing shuttles; improving transit connections to retail along Route 9 and various office parks; using the Agricultural Branch rail spur for passenger service; and improving/ connecting the off-street multi-use trail network.	High	S		S		P			P	S	S	P			S	P			Y

(Table C-1 cont.)

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<b>TRANSIT</b>																					
T-1	Using US Census Data as a Proxy for Transit Rider Survey Data	Transit agencies and other analysts often perform analyses, such as service equity analyses, that require transit rider demographic data. Where possible, transit rider demographics are collected through rider surveys. Census data may be used in places where ridership data are not available because a new service is proposed or where existing services may be significantly altered. For example, when the alignment of a route changes, new riders might be served. Because these potential new riders were never surveyed, we do not know their demographics. However, census demographics of residents near transit service are not necessarily representative of transit riders. This study would attempt to solve such a problem by developing a model to estimate the demographics of the likely transit users from the census data based on relationships found between the survey and census data. Staff would compare rider demographic characteristics from the recent MBTA systemwide survey to those of the census residents near transit service (perhaps by looking at income, minority status, modes used to travel to work, or other variables) along with the levels of transit service provided. Using this model, staff could refine Census data to better represent transit riders. Staff may also be able to use this model to improve existing analyses that rely on census data to measure the transit opportunity of likely transit users rather than the transit opportunity of all people who live near bus stops.	Medium				S	P	S	S	S	P	P				P				Y
T-2	Transit Mitigation Methodology for New Development Sites*	MPO staff could develop a standard methodology for identifying transit impacts from new development, and potentially a menu of mitigation options based on the level of impact. This work could in part follow up on the “Comparing Large-Scale Transportation Mitigation Programs” memo presented to the MPO in December 2018.	Medium			S		P				P			P	P		Y			Y
T-3	Operating a Successful Shuttle Program	The MPO would create a training/best practices module based on the experiences of CrossTown Connect and other successful TMAs/microtransit/shuttle operations, laying out for interested parties (such as municipalities and TMAs) how to make such a program successful.	Medium			S		P				P			P	P					Y
T-4	Further Development of the MPO’s Community Transportation Program	This task would further the development of the MPO’s Community Transportation program from a framework as approved by the MPO into a fully fledged funding program through the administration of a pilot round of projects. This study could work in concert with the effort to create a training module for a successful shuttle program (T-3).	Low			S		P				P				P		Y			Y



(Table C-1 cont.)

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<b>TRANSPORTATION EQUITY</b>																				
E-1	Disparate Impact Metrics Analysis	This study will include three tasks: 1. Literature review for the metrics that are assessed for disparate impacts—carbon monoxide, travel time, and congested VMT—and how a given increase or decrease may affect people at a population level. 2. Use results of literature review to develop potential thresholds to test using MPO model results from <i>Destination 2040</i> . Apply potential thresholds to the model results along with margin of error to come up with new proposed thresholds for the DI/DB policy. 3. Write memo describing results of literature review and analysis.	Medium	S		S	P							P	P			Y		Y
<b>RESILIENCE</b>																				
R-1	Exploring Resilience in MPO-funded Corridor and Intersection studies	Climate change and resiliency are a growing challenge and a statewide priority that will become more important in the coming years, and both issues were raised in the MPO's recent certification review. The MPO could launch a discrete study or begin a recurring study or technical assistance program on the topic of making transportation infrastructure resilient. The goal of this study would be to increase MPO staff familiarity with this topic in order to provide assistance to municipalities seeking to combat extreme weather, flooding, and other climate-related challenges.	High	S	P			S		P	S	S	P		P			Y		Y
R-2	Essex Transportation Resiliency Study	The causeway across which Route 133 crosses in Essex floods regularly. Apple Street, the alternate route, is a small road that cannot handle diversionary traffic. The Town of Essex has requested that the MPO study ways to make Route 133 more resilient and/or improve Apple Street to handle traffic during flood events and buses at all times. There is potential to coordinate with the Municipal Vulnerability Program and the town's Hazard Mitigation Plan.	High		P			S		P	S		P			S	P			Y

(Table C-1 cont.)

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<b>TECHNICAL SUPPORT and OTHER</b>																					
O-1	MPO Staff-Generated Research Topics and Community Assistance Projects	This program would support work by MPO staff members on topics that relate to the Boston Region MPO's metropolitan transportation-planning process, that staff members have expressed interest in, and that are not covered by an ongoing UPWP study or discrete project. 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. For FFY 2020, staff propose to expand the range of projects that could be funded through this budget line to include not only research, but small technical assistance projects. Individual MPO staff would be able to identify small-scale needs in the diverse communities in which they live (within the MPO region) and a partner entity or entities to work with in making recommendations to solve the problem. This budget line would allow staff to then use some of their time to study the problem—involving their colleagues with specialty skills if staff resources and availability allow—and make recommendations to solve it.	Low												P	P			Y	Y	
O-2	How the MPO Can Implement the Recommendations of the Commission on the Future of Transportation	The Commission on the Future of Transportation made a number of recommendations that are targeted specifically at, or impact, MPOs. This study would evaluate those recommendations and analyze how the Boston Region MPO could react to and/or implement them, making specific recommendations for each program area.	Low		S		S	P	S						P	P	S	P	Y		Y
O-3	Improve Stakeholder Engagement with the UPWP	This study would examine the impacts of including the public more fully in MPO studies while they are being conducted, including the additional resources required to include public involvement in a study and the opportunity cost in terms of the number of studies the MPO would be able to fund.	Medium				P								P	S			Y		Y

**Notes:**

\* this study proposed by MAPC

22 Total study concepts

**Key**

- P Primary area(s) that study concept addresses
- S Secondary area(s) that study concept addresses
- Y Condition is true for this study concept

**Cost Scale**

- High \$80,000–\$120,000
- Medium \$40,000–\$79,999
- Low \$0–\$39,999

**Glossary:**

CBD = Central Business District. CMP = Congestion Management Process. DI/DB = Disparate Impact/Disproportionate Burden. FFY = federal fiscal year. HSIP = Highway Safety Improvement Program. LRTP = Long-Range Transportation Plan. MAPC = Metropolitan Area Planning Council. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority. MPO = Metropolitan Planning Organization. TIP = Transportation Improvement Program. TMA = Transportation-Management Associations. UPWP = Unified Planning Work Program. US = United States. VMT = Vehicle-Miles Traveled.

**Table C-2**  
**Studies Funded in the UPWP, by Category, FFYs 2016–20**

	<b>FFY 2016</b>	<b>FFY 2017</b>	<b>FFY 2018</b>	<b>FFY 2019</b>	<b>FFY 2020</b>
Active Transportation	1	1	1	1	1
Land Use, Environment, and Economy		1	1	1	0
Roadway and Multimodal Mobility	3	4	5	6	4
Transit	2	1	2	1	3
Transportation Equity*	1				1
Resilience*					1
Other	1	1	1	1	1
<b>Total</b>	<b>8</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>11</b>

\*New category in FFY 2020

FFY = Federal Fiscal Year. UPWP = Unified Planning Work Program.

