FFY 2021 UPWP Universe of Proposed Studies

For UPWP Committee Review
3/5/2020

Study Information				LRTP Goals					
ID	**Project Name**	**Project Purpose and Outcome**	**Notes**	**S**	**SP/M**	**CM/M**	**TE**	**CA/SC**	**EV**
ACTIVE TRANSPORTATION				**Key:** 5 = most relevant, 1 = least relevant					
A-1	Improving Pedestrian Variables in the Travel Demand Model	***Purpose:*** Several important variables would be incorporated into the regional travel demand model for considering pedestrian activity. The Pedestrian Environmental Variable (PEV) is used in CTPS's travel demand forecasting model as a metric to gauge the quality of the pedestrian environment at transit stations and stops. The PEV, calculated at the model's transportation analysis zone (TAZ) geographic level, is presently composed of three weighted and indexed elements: pedestrian level of service (based on physical characteristics in the TAZ), geographic characteristics of the station/stop (such as presence of sidewalks), and pedestrian hindrances (such as designated truck routes). ***Anticipated Outcome:*** This research would enrich the indices of the three aforementioned PEV elements by incorporating new variables, such as roadway density, level of mixed land use, density, number of intersections, safety measures represented by crash rates at the TAZ level, and other land use characteristics. Once new PEVs are developed for each TAZ, the travel model's mode choice component would be recalibrated. ***Estimated Budget:*** $25,000	This effort is approximately six weeks of work, which includes research, implementation, and review of results.	5	2	5	3	3	2
A-2	Cost/Benefit Analysis for Pedestrian and Bicycle Safety Measures	***Purpose:*** This study would collect data on the cost of pedestrian and bicycle safety measures constructed through MPO-funded projects, and possibly other capital projects in the Boston region, and analyze their safety benefits in a before-and-after fashion relative to their costs. ***Anticipated Outcome:*** Cost/benefit analyses of capital projects intended to improve safety for pedestrians and bicyclists. ***Estimated Budget:*** $45,000		5	3	3	4	4	2
LAND USE, ENVIRONMENT, AND ECONOMY									
L-1	Regional Travel Demand Management Strategies	***Purpose:*** Travel demand management, or TDM, is a hot topic around the country, but TDM ordinances and practices are relatively rare in Massachusetts. Staff will review TDM best practices around the country and make recommendations about how to apply them in the Boston region. ***Anticipated Outcome:*** Possible outputs from this study include a toolkit for municipalities, TMAs, and transit providers; recommendations for collaboration between planning entities; and an evaluation to determine the value of the MPO creating a TDM technical assistance program. ***Estimated Budget:*** Scalable. Staff estimate $30,000 for literature review and an additional $30,000 to produce a guidebook.		2	3	5	3	5	5
ROADWAY AND MULTIMODAL MOBILITY									
M-1	Addressing Safety, Mobility, and Access on Subregional Priority Roadways	***Purpose:*** 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 in these studies include data collection, technical analysis, development of recommendations, and documentation for selected corridors. ***Anticipated Outcome:*** Recommendations for addressing safety, mobility, and access for the selected subregional priority roadways. ***Estimated Budget:*** $125,000	Recurring study (every year)	5	5	5	3	3	3

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M-2	Addressing Priority Corridors from the Long-Range Transportation Plan Needs Assessment	***Purpose:*** These studies develop conceptual design plans that address regional multimodal transportation needs along priority corridors identified in the LRTP, *Destination 2040*. 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. ***Anticipated Outcome:*** Conceptual design plans for the selected priority corridors. ***Estimated Budget:*** $125,000	Recurring study (every year)	5	5	5	3	3	3
M-3	Low-Cost Improvements to Express Highway Bottleneck Locations	***Purpose:*** Recurring bottlenecks, the subject of this study, are influenced by the design or operation present at the point where the bottleneck begins (e.g. locations where traffic merges, diverges, or weaves, or where there are lane drops or abrupt changes in highway alignment). Low-cost infrastructure solutions, as opposed to major construction projects, could involve changes in the design of roadway locations where traffic merges, traffic operations, or highway alignment. The previous two studies of express-highway bottlenecks were very well received by MassDOT and the FHWA. Some of the recommendations from those studies already have been executed. The MPO has been conducting these studies to identify low-cost methods to reduce congestion, increase safety, and improve traffic operations in the Boston region. ***Anticipated Outcome:*** This study would select additional express-highway bottleneck locations and produce reports documenting low-cost solutions to existing traffic congestion issues at the selected locations. A before-and-after analysis of previous work may be included, depending on the final scope of the study. ***Estimated Budget:*** $60,000	Recurring study (every other year)	5	4	5	2	2	2
M-4	Trip Generation Rate Research	***Purpose:*** According to the Massachusetts Environmental Policy Act (MEPA) and National Environmental Policy Act (NEPA) any proposed land use development project (exceeding certain traffic and environmental thresholds) is required to prepare a traffic/transportation impact analysis. This analysis shows the transportation system impacts associated with the proposed action. Key to this analysis are the trip generation rates. Standard practice for this type of land use analysis is to use the Institute of Transportation Engineers' (ITE) trip generation rate manual to estimate the trip generation rates for the proposed development. However, ITE rates are based on national averages for different states in the US, suburban locations, and smaller sample sizes. So, ITE lacks the regional/local transportation characteristics to consider factors such as transit availability, transit usage, bicycle and pedestrian facilities, and economic growth centers. For these reasons, using ITE rates for all land use projects may lead to unrealistic trip generation estimation. In addition, ITE rates are known for giving wide ranges of rates and also very low sample sizes, thus resulting in a high degree of variability and interpretability in their application. As a result, the use of these rates varies considerably and this can affect the mitigation of transportation-related impacts of proposed land use projects and possibly change the scale of the development. ***Anticipated Outcome:*** For this research, CTPS will examine recently completed development impact studies in the greater Boston area. For these projects, CTPS will review available travel monitoring data; trip generation rates used in MEPA/NEPA submissions; and the statewide travel model's trip generation results as a point of comparison. This research can greatly aid in the MPO's understanding of the appropriateness of the ITE rates, model trip generation rates to support corridor studies, environmental processes such as NEPA and MEPA filings, and the relationship between land use and trip activity. ***Estimated Budget:*** $60,000	Related to FFY 2018 UPWP study, Transportation Mitigation of Major Developments, and FFY 2020 study, Transit Mitigation for New Development Sites	2	2	5	2	3	4

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M-5	Intersection Improvement Program	***Purpose:*** Staff will select 10 to 15 intersections in the region based on CMP performance metrics and then consult with planners/engineers from these respective communities to verify the congestion issues at the preselected locations. Staff will then survey the selected intersections and determine 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 to improve traffic operations. ***Anticipated Outcomes:*** Recommendations for low-cost improvements for the selected intersections that local planners and engineers can use to develop projects. ***Estimated Budget:*** $75,000		3	4	5	2	2	3
TRANSIT									
T-1	Regional Safe Routes to Transit Principles	***Purpose:*** Staff would produce a set of principles to help guide municipalities and transit providers when implementing infrastructure that can help transit riders access transit comfortably and safely. This study may examine first- and last-mile shuttles, drawing on the FFY 2020 UPWP study Operating a Successful Shuttle Program. ***Anticipated Outcomes:*** Documentation of principles for implementing infrastructure improvements and operational projects to improve access to transit, including first- and last-mile connections. ***Estimated Budget:*** $40,000–60,000		5	2	4	3	4	2
T-2	Access to Commercial Business Districts Phase 2	***Purpose:*** This study would follow up on the Transportation Access Studies of Central Business Districts study conducted in FFY 2019. The methodology would follow that of the FFY 2019 study—surveying business owners and their customers, inventorying existing curb-lane designations, and identifying off-street parking—but with a larger sample size. **Anticipated Outcomes:** A toolbox that CTPS will make available to municipalities and other partners for conducting CBD-access studies. ***Estimated Budget:*** $75,000	Follow-up on FFY 2019 UPWP study	2	3	4	3	4	5
T-3	The Future of the Curb Phase 2	***Purpose:*** This study would develop a guidebook for municipalities about ways to approach the process of planning and implementing curb management strategies. Building off the Future of the Curb study undertaken in FFY 2019, which compiled nationwide examples of municipalities that repurposed their curb lanes in response to changing demands and conflicts, this study would explore a wide range of issues related to implementing such changes. This study would provide guidance about several key topic areas: •Engaging the public, including equity populations, in developing curb management plans and strategies •Evaluating how the benefits and potential adverse effects of changes to curb management may affect equity populations •Developing a plan for monitoring and enforcing compliance with the curb management strategy •Establishing metrics to evaluate the success of curb management changes, which may have effects on congestion, emissions, accessibility, parking turnover, impacts to businesses, safety, bus reliability, travel times, and other factors •Developing high-level curb management plans to provide policy guidance that is consistent with the municipality's larger transportation goals •Considering the broader context of curb space changes, such as land use, density, and existing activities at the curb The study would include outreach to municipalities in the Boston region to learn about the process that they took to implement curb management strategies. The study would document these municipalities' considerations, successes, challenges, and best practices. ***Anticipated Outcomes:*** A guidebook for planning and implementing curb management strategies. ***Estimated Budget:*** $60,000	Follow-up on FFY 2019 UPWP study	5	4	4	4	3	4

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T-4	TOD Resident Survey	***Purpose:*** CTPS will conduct surveys of residents of a representative sample of new residential developments near transit stations across the Boston region, with an emphasis on making sure developments from a variety of built environments are included. Surveys will ask about resident behavior, including • whether they moved to the development explicitly for the ability to use transit; • the frequency and purpose of their transit usage (before moving to the TOD, currently, and anticipated in the future); • other travel behavior; • car ownership; and • demographic details. Staff will also compile available data on parking availability at stations and demand from previous CTPS counts, and analyze the changes over time relative to developments and possibly reported resident behavior. ***Anticipated Outcome:*** A dataset documenting survey responses and a memorandum or web page presenting analysis. Data will be made available to agency partners and municipalities throughout the region. ***Estimated Budget:*** $60,000	This study draws on work currently being conducted in MassDOT's MBTA Station Access Study (which is expected to be finished by summer 2020), MAPC's Perfect Fit Parking Program, and the MPO's Congestion Management Program.	2	3	5	2	4	4
RESILIENCE									
R-1	Multimodal Resilience and Emergency Planning	***Purpose:*** CTPS would use existing data to create a "story" of climate change and to better visualize options in the event of an emergency situation for the entire transportation network. CTPS can build upon its existing All-Hazards Planning tool and incorporate open data sets, multiple transportation modes, vulnerable population information and high-quality design. The resulting tool would be designed to be user-friendly and geared towards municipal planners (especially those concerned with network resiliency) and residents. ***Anticipated Outcomes:*** An interactive tool for visualizing risks to the transportation network from the impacts of climate change and current emergency plans. ***Estimated Budget:*** $30,000 to update the CTPS All-Hazards Planning Tool, plus an additional $10,000–20,000 to produce a StoryMap or interactive GIS map.	There is potential to scale up this work to model how the transportation network will react to various emergency or disaster scenarios, perhaps through the LRTP scenario planning process or a future UPWP study.	5	5	3	4	5	3
TECHNICAL SUPPORT and OTHER									
O-1	Staff-Generated Research and Technical Assistance	***Purpose:*** This program supports 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 brings 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. Starting in FFY 2020, the range of projects that could be funded through this budget line was expanded to include small technical assistance projects in addition to research. Individual MPO staff are able to identify small-scale needs in the diverse communities within the MPO region and work with partner entities make recommendations to solve the problems. This budget line allows 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. ***Anticipated Outcomes:*** Reports on staff-proposed innovative research and small technical assistance projects. ***Estimated Budget:*** Typically $20,000-$40,000.	Recurring study (every year)	n/a*	n/a*	n/a*	n/a*	n/a*	n/a*

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O-2	Mapping Major Transportation Infrastructure Projects in the Boston Region	***Purpose:*** In 2005, MPO staff created a map of the historical development of transportation infrastructure in the region, covering highway and transit networks. While some work has been done to update it in the interim, staff believe that an up-to-date, comprehensive, and truly multimodal map would be a valuable, cost-effective resource to transportation planning in the region. Depending on resources, the map could be produced either in print or in interactive online format, or both. ***Anticipated Outcomes:*** Comprehensive, multimodal map of the historical development of transportaton infrastructure in the Boston region. ***Estimated Budget:*** $20,000 to produce an updated print map and simple online tool.		1	3	2	3	2	2
O-3	Informing the Big Ideas Behind the MPO's Scenario Planning Process	***Purpose:*** This task would supplement upcoming outreach efforts for the development of the MPO's new LRTP. To support development of "big picture" items to be tested through scenario planning, staff would conduct a thorough program of outreach to stakeholders—including MPO member municipalities, other agencies, community groups, and advocacy groups—to determine priorities for possible analyses. Possible scenario elements to discuss with stakeholders include congestion pricing; free transit fares on some or all services; implementation of the Transportation Climate Initiative or another funding mechanism; and large-scale regional zoning changes. ***Anticipated Outcomes:*** Identification and prioritization of ideas for scenario analysis. ***Estimated Budget***: $20,000		3	5	5	5	5	3

Notes:
* = Relationship to Goals and Objectives depends on the individual project(s) selected

16 Total study concepts

LRTP Goal Area Acronyms:
S = Safety. SP/M = System Preservation and Modernization. CM/M = Capacity Management and Mobility. TE = Transportation Equity. CA/SC = Clean Air/Sustainable Communities. EV = Economic Vitality.

Abbreviations:

CBD = central business district. CMP = Congestion Management Process. CTPS = Central Transportation Planning Staff. FHWA = Federal Highway Administration. FFY = federal fiscal year. ITI = Institute of Transportation Engineers. LRTP = Long-Range Transportation Plan. MAPC = Metropolitan Area Planning Council. MassDOT = Massachusetts Department of Transportation. MBTA = Massachusetts Bay Transportation Authority. MEPA = Massachusetts Environmental Policy Act. MPO = Metropolitan Planning Organization. NEPA = National Environmental Policy Act. PEV = Pedestrian Environmental Variable. TAZ = transportation analysis zone. TDM = transportation demand management. TIP = Transportation Improvement Program. TMA = transportation management association. TOD = transit-oriented development. UPWP = Unified Planning Work Program.