



## BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

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Stephanie Pollack, MassDOT Secretary and CEO and MPO Chair  
Tegin L. Teich, Executive Director, MPO Staff

### ***WORK PROGRAM***

## **ADDRESSING SAFETY, MOBILITY, AND ACCESS ON SUBREGIONAL PRIORITY ROADWAYS: FFY 2021**

DECEMBER 3, 2020

### **Proposed Motion**

The Boston Region Metropolitan Planning Organization (MPO) votes to approve this work program.

### **Project Identification**

#### **Unified Planning Work Program (UPWP) Classification**

Boston Region MPO Planning Studies and Technical Analyses

**Project Number** 13421

#### **Client**

Boston Region MPO

#### **Project Supervisors**

*Principal:* Mark Abbott

*Manager:* Chen-Yuan Wang

#### **Funding Source**

MPO Planning Contract #112310

### **Schedule and Budget**

**Schedule:** Ten months after work commences

**Budget:** \$127,900

Schedule and budget details are shown in Exhibits 1 and 2, respectively.

### **Relationship to MPO Goals**

The Boston Region MPO elected to fund this study with its federally allocated metropolitan planning funds during federal fiscal year (FFY) 2021. The work completed through this study will address the following goal areas established in the MPO's Long-Range Transportation Plan (LRTP): safety, system preservation, capacity management and mobility, clean air and clean communities, transportation equity, and economic vitality.

## Background

During outreach for the development of the Boston Region MPO's UPWP and LRTP, Metropolitan Area Planning Council (MAPC) subregional groups and other entities submit comments and identify transportation problems and issues that concern the region. Often these issues are related to roadway bottlenecks, safety, or lack of safe or convenient access to abutting properties along roadway corridors. Such issues not only affect mobility and safety along a roadway and its side streets, but also livability, quality of life, economic development, and air quality.

To address these issues, MPO staff administers the *Addressing Safety, Mobility, and Access on Subregional Priority Roadways* study each year to identify and evaluate roadway corridor segments in the MPO region that are of concern, but have not been identified in the LRTP regional needs assessment.<sup>1</sup> The roadways selected for study are not necessarily major arterials; they can also include arterial or collector roadways that carry fewer vehicles daily. The studies are meant to emphasize the issues that are identified by relevant subregional groups and offer recommendations for short- and long-term improvements. In addition to safety, mobility, and access, other subjects considered are bicycle and pedestrian transportation, transit feasibility, and truck-related issues.

Roadway corridor segments are selected for study based on criteria that are used to evaluate safety and mobility needs; agency, municipal, and MAPC subregional group input; and the feasibility of implementing study recommendations. A segment selected for study may span multiple municipalities, or it may be restricted to a few intersections in a town center, shopping area, or office park.

A roadway corridor study is a logical way to address subregional multimodal transportation needs, since it evaluates a roadway corridor segment comprehensively and considers all users, including people who walk, bicycle, drive, and take public transportation, and owners of adjacent properties. A holistic approach is taken to analyze the issues and develop recommendations for improvements within the roadway's right-of-way. The recommendations are intended to improve transportation facilities and traffic operations, and to increase safety and quality of life for all users. People should be able to walk or bicycle across the street safely on their way to shops, schools, or recreation; buses should be able to run on schedule; and transit riders should be assured safe access to and from transit stations.

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<sup>1</sup> *Destination 2040*, the Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization, endorsed by the Boston Region Metropolitan Planning Organization on August 29, 2019. The Plan was reviewed by the MPO's federal partners and went into effect on October 1, 2019.

## Objectives

This work program has three objectives:

1. Identify safety, mobility, access, and other transportation-related problems of the study roadway
2. Develop and evaluate multimodal transportation solutions to address problems, maintain, and modernize roadways, and use the existing roadway more efficiently and increase transportation options for people who walk, bicycle, drive trucks, and take transit
3. Select a roadway segment to study in FFY 2022 based on prioritization criteria and input from agencies, municipalities, and MAPC subregional groups

## Work Description

For this work program, the selection of candidate study corridors was completed in FFY 2020. This was done to allow the MPO staff to complete field data collection before the winter and expedite the study process. MPO staff reviewed over 20 potential corridors in the region and will present the final selection to the MPO. The staff will perform the following tasks in FFY 2021:

- Establish an advisory task force
- Identify problem locations
- Collect and gather data
- Analyze data
- Develop and evaluate improvement strategies
- Document findings and recommendations
- Select FFY 2022 LRTP study locations
- Finalize study and prepare for MPO presentation

### **Task 1 Establish an Advisory Task Force and Identify Problem Locations**

The MPO staff, in conjunction with agencies, municipalities, and subregional groups, will establish an advisory task force to participate in the study. The task force members' jurisdictions would include areas in which the selected roadway segment is located. The task force would also include representatives from the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning, MassDOT Highway Division, the Metropolitan Area Planning Council (MAPC), the Massachusetts Bay Transportation Authority (MBTA), and regional transit authorities (if the segment is in the service area of the MetroWest Regional Transit Authority or Cape Ann Transportation Authority).

These stakeholders will advise the MPO staff about the study area and data sources; help identify transportation-related problems; and help develop multimodal transportation solutions and recommendations. The recommendations from this

study will be implemented by either municipalities or the MassDOT Highway Division; therefore, it is important that the recommendations reflect those entities' experience and MassDOT design standards.

### ***Products of Task 1***

- Formation of an advisory task force
- Documentation of safety, operational, and mobility problems facing people who walk, bicycle, drive vehicles (including trucks), and take transit
- Documentation of stakeholder input

## **Task 2 Collect and Gather Data**

Once the issues have been identified on the roadway segment selected for this study, corresponding recent and historical data will be gathered from existing sources, including studies performed by municipalities or proponents of private development projects, and databases maintained by the MPO and MassDOT Highway Division. Staff will also review statewide pedestrian and bicycle plans and municipal resource guides for walkability and bikeability to identify existing databases for planning, evaluating, and designing pedestrian and bicycle facilities.<sup>2</sup> In addition, staff will use INRIX/RITIS data to collect roadway speeds and trip origin/destination data.<sup>3</sup> Some of the data may need to be collected in the field, such as the following:

- Average weekday traffic counts and turning-movement counts for the peak periods, including data on truck traffic and the numbers of people walking and bicycling
- Traffic signal equipment, signage, and lane configurations
- Bus service performance data and locations of stops, signage, and shelters
- Right-of-way, pavement conditions, sidewalk widths and conditions, pedestrian and bicycle amenities, and gaps in pedestrian and bicycle networks
- Planned development projects, development mitigation proposals, and proposed transportation projects

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<sup>2</sup> Massachusetts Department of Transportation, *Massachusetts Pedestrian Transportation Plan, Massachusetts Bicycle Transportation Plan, Municipal Resource Guide for Walkability, and Municipal Resource Guide for Bikeability*, May 2019.

<sup>3</sup> INRIX is a private company that collects roadway travel times and origin-destination data for most roadways that are collectors, arterials, limited-access roadways or freeways. Regional Integrated Transportation Information System (RITIS) provides INRIX data to MassDOT, which provides access to the Boston Region MPO. The data are archived and provided to transportation planning organizations that use the data to monitor congestion through performance measures.

- Crash data and police reports from the MassDOT Registry of Motor Vehicles and municipalities
- Transportation-related assets which could be vulnerable to climate change

### ***Products of Task 2***

- Datasets for assessing safety, mobility, and operational performance at the problem locations, including roadway inventory data, an inventory of bus service and performance data, and an inventory of transportation assets vulnerable to climate change
- A list of planned economic development and transportation improvement proposals for the selected roadway segment

### **Task 3 Analyze Data**

The analysis performed in this study will be guided by the goals and principles identified in the statewide pedestrian and bicycle plans. MPO staff will perform the following tasks based on analyses conducted in similar past studies and with consideration to providing Complete Streets and connectivity, so that people of all ages and abilities can traverse streets safely:

- Analyze crash data, prepare crash diagrams, and identify safety concerns including those at Highway Safety Improvement Program locations
- Evaluate the need for closing gaps in pedestrian and bicycle networks, such as by installing and repairing sidewalks, bicycle lanes, and multiuse paths, to comply with MassDOT standards
- Evaluate the need for improving safety for pedestrians and bicyclists and making facilities such as crosswalks and sidewalks more accessible
- Assess potential safe and economical means of accommodating bicyclists by, for example, adding protected bicycle lanes, providing adequate shoulders, constructing multiuse paths, and allowing shared-use lanes
- Review intersection and roadway geometric layout to determine safety improvements by, for example, reducing crossing distance with curb extensions, increasing pedestrian signal intervals, and preventing left-turn movement conflicts
- Analyze traffic volume and classification data to determine potential traffic safety improvements
- Analyze INRIX/RITIS data to determine trip origin and destination patterns and vehicle travel speeds
- Conduct analyses of traffic signal warrants, signal retiming plans, and signal coordination to determine appropriate intersection traffic controls and the best

- signal timing plans for the safe and efficient movement of people who walk, bicycle, and drive vehicles
- Assess the need for upgrading traffic signal equipment to comply with MassDOT standards
  - Evaluate the on-time performance of bus service, bus stop placement in relation to demand and pedestrian activity, and the need for bus signs and shelters
  - Review access management to determine improvements that could be made, for example, by consolidating and sharing driveways; adding left-turn and U-turn lanes; and spacing traffic signals and median treatments
  - Evaluate adaptation alternatives to protect transportation assets from climate change by applying MC-FRM, FIRM, and NOAA models to determine vulnerabilities.<sup>4</sup>

### ***Products of Task 3***

- Crash analyses tables and figures
- Collision diagrams
- Delay and queue calculations
- Bus performance statistics tables
- Pedestrian and bicyclist activity maps and graphics
- Gaps in pedestrian and bicycle networks
- Origin and destination patterns
- List of problems and needs
- List of climate change problems and needs

### **Task 4 Develop and Evaluate Improvement Strategies**

Based on the results of consultation with the advisory task force and the analyses described above, staff will develop short- and long-term recommendations that include Complete Streets improvements, geometric and traffic control improvements, pavement rehabilitation, roadway enhancements, and other changes to improve traffic safety and operations. In addition, MPO staff will recommend improved pedestrian and bicycle facilities that provide safe accommodation and connectivity and support goals and principles of the statewide pedestrian and bicycle plans. Additional recommendations will suggest improvements to allow buses to run on time and make it safe for people to walk and bicycle to and from bus stops and train

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<sup>4</sup> MC-FRM is the Massachusetts Coast Flood Risk Model for analyzing flood risk for coastal communities. FIRM is the Flood Insurance Rate Map for assessing and planning for flood risk. The maps are produced by the Federal Emergency Management Agency. The National Oceanic and Atmospheric Administration (NOAA) provides data, tools, and information to help understand and prepare for climate variability and change.

stations. Adaption recommendations for climate change will also be included to ensure that proposed improvements will be viable in the long-term.

#### ***Products of Task 4***

- Recommendations for addressing pedestrian, bicyclist, and motorist safety needs; accommodation of pedestrians, bicyclists, and transit users; climate change; and other traffic operations improvements, including accommodating trucks and buses and reducing congestion

#### **Task 5 Document Methodology, Findings, and Recommendations**

MPO staff will produce a report on the background of the study, agency and municipal input, identification of problems, data collection, analyses, and recommendations. The document will follow the MassDOT Highway Division's guidelines for preparation of functional design reports as much as possible, taking into consideration the study's budget. A draft document will be made available for review by municipal officials, members of the subregional groups where the study segment is located, the MassDOT Highway Division and the MassDOT Office of Transportation Planning prior to being finalized.

#### ***Product of Task 5***

- A report documenting all of the project's tasks and products, including recommendations

#### **Task 6 Select Roadway Segments for Study in FFY 2022**

During the review period for the draft report, MPO staff will start the process of selecting roadway locations to study in FFY 2022. Staff will review public comments gathered during the development of the LRTP, UPWP, and from other FFY 2021 outreach activities, and construct an initial list of roadway segments to consider. Subsequently, staff will invite input from the MassDOT Office of Transportation Planning and Highway Division District offices, and relevant municipal officials, MAPC subregional representatives, and regional transit authorities. Staff will seek their comments on the candidate roadway segments, and their advice and input regarding data, the selection of study segments, and the identification of major transportation problems associated with those roadways.

MPO staff will develop a ranking system and apply it to the candidate roadway segments to select a roadway corridor for study. The ranking system will use metrics based on the following criteria:

- Safety conditions
- Multimodal significance
- Subregional priority

- Implementation potential
- Regional equity (so that locations will be studied throughout the MPO's planning area over time)

The proposed selection, along with the list of candidate segments, will be presented to the MPO board.

***Products of Task 6***

- A technical memorandum documenting the selection process for the study location

**Task 7 Finalize Study and Prepare for MPO Presentation**

After receiving comments on the draft report from municipal officials, MassDOT, and other study advisory groups, MPO staff will address these comments and finalize the study report. The final study report will be presented to the MPO board.

***Products of Task 7***

- Final report and MPO presentation



The Boston Region Metropolitan Planning Organization (MPO) operates its programs, services, and activities in compliance with federal nondiscrimination laws including Title VI of the Civil Rights Act of 1964 (Title VI), the Civil Rights Restoration Act of 1987, and related statutes and regulations. Title VI prohibits discrimination in federally assisted programs and requires that no person in the United States of America shall, on the grounds of race, color, or national origin (including limited English proficiency), be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination under any program or activity that receives federal assistance. Related federal nondiscrimination laws administered by the Federal Highway Administration, Federal Transit Administration, or both, prohibit discrimination on the basis of age, sex, and disability. The Boston Region MPO considers these protected populations in its Title VI Programs, consistent with federal interpretation and administration. In addition, the Boston Region MPO provides meaningful access to its programs, services, and activities to individuals with limited English proficiency, in compliance with U.S. Department of Transportation policy and guidance on federal Executive Order 13166.

The Boston Region MPO also complies with the Massachusetts Public Accommodation Law, M.G.L. c 272 sections 92a, 98, 98a, which prohibits making any distinction, discrimination, or restriction in admission to, or treatment in a place of public accommodation based on race, color, religious creed, national origin, sex, sexual orientation, disability, or ancestry. Likewise, the Boston Region MPO complies with the Governor's Executive Order 526, section 4, which requires that all programs, activities, and services provided, performed, licensed, chartered, funded, regulated, or contracted for by the state shall be conducted without unlawful discrimination based on race, color, age, gender, ethnicity, sexual orientation, gender identity or expression, religion, creed, ancestry, national origin, disability, veteran's status (including Vietnam-era veterans), or background.

A complaint form and additional information can be obtained by contacting the MPO or at [http://www.bostonmpo.org/mpo\\_non\\_discrimination](http://www.bostonmpo.org/mpo_non_discrimination). To request this information in a different language or in an accessible format, please contact

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**Exhibit 1**

**ESTIMATED SCHEDULE**

**Addressing Safety, Mobility, and Access on Subregional Priority Roadways FFY 2021**

Task	Month									
	1	2	3	4	5	6	7	8	9	10
1. Establish an Advisory Task Force and Identify Problem Locations	█									
2. Collect and Gather Data		█								
3. Analyze Data			█							
4. Develop and Evaluate Improvement Strategies					█					
5. Document Methodolgy, Findings, and Recommendations					█					
6. Select Roadway Segments for Study in FFY 2022									█	A
7. Finalize Study and Prepare for MPO Presentation										█

Products/Milestones

A: Technical memorandum about selection process

B: Final report

**Exhibit 2****ESTIMATED COST****Addressing Safety, Mobility, and Access on Subregional Priority Roadways FFY 2021**

<b>Direct Salary and Overhead</b>										<b>\$127,420</b>
Task	Person-Weeks						Direct Salary	Overhead (106%)	Total Cost	
	M-1	P-5	P-4	P-3	P-1	Total				
1. Establish an Advisory Task Force and Identify Problem Locations	1.0	1.0	0.0	0.0	0.5	2.5	\$4,152	\$4,401	\$8,553	
2. Collect and Gather Data	0.2	1.0	0.0	0.0	1.3	2.5	\$3,426	\$3,631	\$7,057	
3. Analyze Data	0.3	3.0	1.0	0.8	1.8	6.9	\$10,134	\$10,742	\$20,876	
4. Develop and Evaluate Improvement Strategies	1.0	6.8	0.8	0.4	1.4	10.4	\$17,108	\$18,135	\$35,243	
5. Document Methodolgy, Findings, and Recommendations	3.4	5.6	0.6	0.2	1.0	10.8	\$18,201	\$19,293	\$37,494	
6. Select Roadway Segments for Study in FFY 2022	0.4	2.0	0.2	0.0	1.0	3.6	\$5,639	\$5,977	\$11,616	
7. Finalize Study and Prepare for MPO Presentation	0.5	1.0	0.2	0.0	0.2	1.9	\$3,195	\$3,386	\$6,581	
Total	6.8	20.4	2.8	1.4	7.2	38.6	\$61,854	\$65,566	\$127,420	
<b>Other Direct Costs</b>										<b>\$480</b>
Travel										\$480
<b>TOTAL COST</b>										<b>\$127,900</b>

**Funding**

MPO Planning Contract #112310