



## BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Richard A. Davey, MassDOT Secretary and CEO and MPO Chairman  
Karl H. Quackenbush, Executive Director, MPO Staff

### MEMORANDUM

**DATE:** September 12, 2013  
**TO:** Boston Region Metropolitan Planning Organization  
**FROM:** Karl H. Quackenbush  
CTPS Executive Director  
**RE:** Work Program for: Addressing Safety, Mobility, and Access on  
Subregional Priority Roadways, FFY 2014

#### Action Required

Review and approval

#### Proposed Motion

That the Boston Region Metropolitan Planning Organization vote to approve the work program for Addressing Safety, Mobility, and Access on Subregional Priority Roadways, FFY 2014 in the form of the draft dated September 12, 2013.

#### Project Identification

Unified Planning Work Program Classification

Planning Studies

CTPS Project Number

13265

Client

Boston Region Metropolitan Planning Organization

CTPS Project Supervisors

*Principal:* Efi Pagitsas

*Manager:* Chen-Yuan Wang

Funding

MPO Planning Contract #78890

MPO §5303 Contract #78922

## IMPACT ON MPO WORK

This is Metropolitan Planning Organization (MPO) work and will be carried out in conformance with the priorities established by the MPO.

## BACKGROUND

During MPO outreach for the development of the Unified Planning Work Program (UPWP) and the Long-Range Transportation Plan (LRTP), Metropolitan Area Planning Council (MAPC) subregional groups and other entities submit comments and identify transportation problems and issues that concern them. Often these issues are related to bottlenecks, safety, or lack of safe or convenient access to abutters along roadway corridors in their areas. Such issues can affect not only mobility and crash incidence along a roadway and its side streets, but also livability and quality of life, including economic development and air quality.

To address these kinds of issues of the MAPC subregional groups and others, MPO staff will identify and study roadway corridor segments in the MPO region that are of concern to them but that have not been identified in the LRTP regional needs assessment.<sup>1</sup> These will not be major arterials, but arterial or collector roadways that may carry fewer vehicles daily than major arterials and may be maintained by a city or town. The emphasis of the study will be on the issues identified by the relevant subregional groups and the development of recommendations for low-cost improvements. Subjects that will be considered in addition to mobility, safety, and access are transit feasibility, truck-related issues, and bicycle and pedestrian transportation.

The selection of the corridor segments to be studied will be based on criteria that include mobility and safety needs, agency, municipal, and MAPC subregional group input, and implementation feasibility, as described in Task 2. Up to two corridor segments will be selected; the number selected will depend on the lengths of the segments and the nature of the issues that need to be addressed. A segment selected for study may span multiple towns, or it may be restricted to just a few intersections in a town center, shopping area, or office/business park.

A roadway corridor study is usually a logical way to address subregional multimodal transportation needs, as it evaluates a roadway corridor segment comprehensively: pedestrians, bicyclists, motorists, public transportation users, and abutters all are considered, using a holistic approach in analyzing the issues and developing

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<sup>1</sup> A work scope for "Priority Corridors for LRTP Needs Assessment—FFY 2013," dated October 4, 2012, was approved by the MPO and that study is presently near completion. The two corridors that were selected for that study are Route 30 from Shoppers World Way to Speen Street and Route 2 in Concord and Lincoln.

recommendations for improvements within the roadway's right-of-way. The result is a roadway corridor with not only improved vehicular traffic operations, but also increased safety and quality of life for all users: Pedestrians and bicyclists can safely cross the street on their way to shops, schools, or recreation; buses can run on time; and transit riders can be assured of safe access to and from train stations.

## OBJECTIVES

The objectives of this study are to:

- Select up to two arterial or collector roadway segments, based on prioritization criteria and input from subregional MAPC groups, municipalities, and agencies
- Identify the safety, mobility, access, and other transportation-related problems within the segments
- Evaluate the feasibility of multimodal transportation solutions to the problems, including pedestrian, bicycle, truck, and transit modes

## WORK DESCRIPTION

MPO staff will perform the following tasks:

- Solicit agency, MAPC subregion, and municipal input
- Select study locations
- Collect data
- Analyze data
- Recommend improvements
- Document methodology and findings

### Task 1 Solicit Agency, MAPC Subregion, and Municipal Input

MPO staff will review existing comments from LRTP, UPWP, and other outreach activities to begin constructing an initial list of corridors to consider.

Subsequently, staff will invite pertinent municipal officials, members of the MAPC subregional groups for the areas in which the potential study segments are located, representatives from the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning and MassDOT's Highway Division, and representatives of the MAPC to comment on the initial list of potential corridors. The participants will provide advice and input on data, help select study locations and identify transportation-related problems, and provide input to the development of potential multimodal transportation solutions and recommendations. Recommendations from this study will be carried out by the municipalities or the Highway Division; therefore it is important that the study recommendations reflect their experience and design standards.

*Product of Task 1*

Notes on participant's advice and input on: data, selection of study locations, identification of problems, and possible solutions

**Task 2 Select Roadway Segments to Be Studied**

MPO staff will develop a ranking system similar to the one developed for the "Addressing Safety, Mobility, and Access on Subregional Priority Roadways—FFY 2013" study and apply it to the candidate segments for this study in order to select as many as two segments. The system will use metrics for the following criteria areas:

- Safety
- Congestion
- Transit significance
- Regional significance
- Implementation potential
- Regional equity

The segments selected for study will be those that study participants consider suitable and for which the communities through which they pass will be committed to promoting implementation of the study recommendations. The staff's proposed selection of up to two segments, along with the list of candidate segments, will be presented to the MPO for discussion and approval.

Within each segment selected for this study, MPO staff, working in conjunction with agency, subregional, and municipal officials, will identify problem subsegments and isolated locations where this study should focus on developing multimodal transportation improvements. To this end, staff will examine the segment to identify safety and mobility problems facing pedestrians, bicyclists, motorists, and transit users in the corridor, as well as transit-service deficiencies and connectivity problems. Staff will also identify truck traffic issues, such as crash locations with unusually high truck involvement, possible turning-radius issues at intersections along the corridor, heavy truck volumes adding to congestion along the corridor, and points of truck conflict with cars and pedestrians. In addition, staff will review the Highway Division's and MPO's TIP project information databases and contact the municipalities to identify projects and studies that have already been planned or conducted that include each roadway segment selected for study; this information will not only guide the selection of problem locations within each segment, but also enable staff to consider previous recommendations for incorporating into this study.

*Products of Task 2*

Documentation of:

- Safety, operational, and mobility problems facing pedestrians, bicyclists, and motorists
- Transit-service issues, including service deficiencies and problems with connectivity and linkage
- Truck traffic issues
- Projects and studies already planned or conducted that include the roadway segments
- The corridor segment selection process (in a table and accompanying technical memorandum)

### Task 3 Collect and Gather Data

Once the problem locations have been identified for each roadway segment selected for 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 the Highway Division. Unavoidably, some data will need to be collected in the field for some types of analyses in this work program. The following data likely would be gathered from existing sources or collected in the field for the problem locations under study:

- Turning-movement counts for the AM and PM peak periods, including trucks, pedestrians, and bicyclists, and average annual weekday traffic data from automatic traffic recorder counts
- Traffic-signal timing plans and coordination settings, signage, and lane configurations
- Bus service performance data and locations of stops, signage, and shelters
- Truck traffic data, including truck origins and destinations
- Right-of-way, pavement widths and conditions, sidewalk widths and conditions, and condition of and signage for midblock crossings
- Development projects, development of mitigation proposals, and proposed transportation projects; and specific proposed improvements for the chosen roadway segments from these sources
- Crash statistics, rates, and diagrams for locations with crash rates exceeding the Highway Division's district average
- Signage, street markings, and pavement conditions

#### *Products of Task 3*

- Various kinds of data for assessing safety, mobility, and operational performance at the problem locations
- A list of economic development and transportation improvement proposals previously planned for the roadway segments

#### Task 4 Analyze Data

Based on the types of analyses performed in similar past studies and the need to provide “complete streets”—where pedestrians, bicyclists, motorists, and transit riders of all ages and abilities are safe to traverse—the following types of analyses and evaluations will be performed:

- Analyze crash data and prepare crash diagrams to examine and confirm safety issues and identify possible improvements
- Analyze crash and traffic volume data and intersection turning-radius data in order to determine potential truck traffic safety improvements
- Evaluate the need to provide new sidewalks, replace broken and crumbled sidewalks, and provide continuity of sidewalks
- Evaluate the need to provide new midblock pedestrian crossings or improve existing ones by installing pedestrian crosswalk flashing beacons, improving signage at or near them, or making them accessible to people with disabilities
- Assess safe and economical means to accommodate bicyclists—for example, adding bike lanes, providing adequate shoulders, or making other provisions for bicyclists to share the road with motorists
- Conduct traffic signal warrant, signal retiming and coordination, and roundabout analyses to determine the appropriate intersection traffic controls and best signal timing plans for safe and efficient movement of pedestrians, bicyclists, and motorists
- Assess the need for traffic signal equipment upgrades, including for the purpose of complying with the requirements of the Americans with Disabilities Act for signalized intersections
- Evaluate on-time performance of bus service, bus-stop placement in relationship to demand and pedestrian activity, and need for bus route signs and shelters

#### *Products of Task 4*

Analysis results, including crash analysis tables, intersection crash diagrams, delay and queue calculations, warrant analyses, bus performance statistics, maps and other graphics showing pedestrian and bicyclist needs, and all other results from Task 4

#### Task 5 Recommend Improvements

Based on consultations with agency and municipal officials and with subregional group representatives, and on the analyses described above, staff will make recommendations in many areas, including geometric configuration, traffic control devices, pavement rehabilitation, roadway enhancement, and other changes to improve traffic operations, including the effective and safe accommodation of pedestrians and bicyclists for traveling upon and crossing streets. Additional recommendations will be made related to truck traffic, improving on-time

performance of bus service, and increasing the safety of people walking or bicycling to and from bus stops and train stations.

*Products of Task 5*

Recommendations to address: pedestrian, bicyclist, and motorist safety; accommodation of pedestrians, bicyclists, and transit users; other traffic operations issues, including those related to trucks; and bus service issues

**Task 6 Document Study Methodology and Results**

Documentation will be in the form of a report or technical memorandum on the following subjects: study background, agency and municipal input, identification of problems, data collection, analyses, and recommendations. The document will follow the MassDOT Highway Division's guidelines for preparing 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 for the areas in which the arterial segments are located, and the MassDOT Highway Division and Office of Transportation Planning. After comments have been addressed, the draft will be submitted to the MPO for final approval.

*Product of Task 6*

A final technical memorandum for each selected roadway segment documenting all of the project's tasks and products, including recommendations

**ESTIMATED SCHEDULE**

It is estimated that the study of one or two selected corridor segments will be completed 12 months after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 1.

**ESTIMATED COST**

The total cost of this project is estimated to be \$79,967. This includes the cost of 29.3 person-weeks of staff time, overhead at the rate of 97.42 percent, and travel. A detailed breakdown of the estimated costs is presented in Exhibit 2.

KQ/EP/ep

**Exhibit 1**

**ESTIMATED SCHEDULE**

**Addressing Safety, Mobility, and Access on Subregional Priority Roadways, FFY 2014**

Task	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Solicit Agency and Municipal Input	A											
2. Select Roadway Segments to Be Studied	B											
3. Collect and Gather Data		C										
4. Analyze Data			D									
5. Recommend Improvements						E						
6. Document Study Methodology and Results	F											

**Products/Milestones**

- A: Notes on participants' input
- B: Technical memorandum on location selection
- C: Data for analysis
- D: Analysis results
- E: Study recommendations for corridor segments
- F: Technical memorandum



**Exhibit 2****ESTIMATED COST****Addressing Safety, Mobility, and Access on Subregional Priority Roadways, FFY 2014****Direct Salary and Overhead** **\$79,767**

Task	Person-Weeks						Direct Salary	Overhead (97.42%)	Total Cost
	M-1	P-5	P-4	P-2	Temp	Total			
1. Solicit Agency and Municipal Input	0.1	1.5	0.0	0.0	0.0	1.6	\$2,709	\$2,639	\$5,347
2. Select Roadway Segments to Be Studied	0.2	0.7	0.0	0.0	0.0	0.9	\$1,525	\$1,486	\$3,011
3. Collect and Gather Data	0.0	2.0	0.0	0.0	5.1	7.1	\$5,956	\$5,803	\$11,759
4. Analyze Data	0.3	4.0	1.5	2.1	0.0	7.9	\$11,068	\$10,783	\$21,851
5. Recommend Improvements	0.3	3.0	2.0	0.0	0.0	5.3	\$8,117	\$7,908	\$16,025
6. Document Study Methodology and Results	3.0	3.5	0.0	0.0	0.0	6.5	\$11,029	\$10,745	\$21,774
Total	3.9	14.7	3.5	2.1	5.1	29.3	\$40,405	\$39,362	\$79,767

**Other Direct Costs** **\$200**

Travel	\$200
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**TOTAL COST** **\$79,967****Funding**

MPO Planning Contract #

MPO §5303 Contract #