BOSTON REGION METROPOLITAN PLANNING ORGANIZATION
Richard A. Davey, MassDOT Secretary and CEO and MPO Chairman
Karl H. Quackenbush, Executive Director, MPO Staff

MEMORANDUM

DATE **April 18, 2013**

TO **Boston Region Metropolitan Planning Organization**

FROM **Karl H. Quackenbush**
CTPS Executive Director

RE **Work Program for: Roadway Network Inventory for Emergency Needs: A Pilot Study**

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization, vote to approve the work program for the Roadway Network Inventory for Emergency Needs: A Pilot Study, in the form of the draft dated April 18, 2013.

Project Identification

Unified Planning Work Program Classification

Technical Support/Operations Analysis Projects

CTPS Project Number

11144

Client

Boston Region Metropolitan Planning Organization

CTPS Project Supervisors

Principal: Pam Wolfe
Manager: Maureen Kelly

Funding

MPO 3C Planning Contract #75086
MPO §5303 Contract #75364

Impact on MPO Work

This is MPO work and will be carried out in conformance with the priorities established by the MPO.

Background

Through a previous UPWP study, the MPO funded the development of an All-Hazards Planning application, a GIS-based website tool that displays the transportation network in the Boston region and contains data about the emergency routing network and transportation infrastructure, and the natural hazards to which the region may be vulnerable. This tool is used by the MPO staff when evaluating proposed transportation projects to assess whether those projects would improve evacuation routes or other emergency routes, or would create resiliency in the transportation network when the region is experiencing extreme weather conditions such as flooding.

This work program is a pilot project that will build upon the previous work product by adding data to the Web application related to the locations and characteristics of traffic signals on the region's emergency routing network. The staff will collect data in an effort to document whether existing traffic signals may be controlled from a traffic management or operations center, whether they allow for emergency vehicle preemption, and whether they have traffic monitoring equipment and backup power sources.

The product of the work program will be a new data layer on the All-Hazards Planning application that will map state-owned and municipally owned traffic signals and will document the types of existing signal equipment on a portion of the region's emergency routing network. A user of the application will be able to query it to retrieve information about those signals. Because this is a pilot project, the staff proposes to concentrate first on routes emanating from Boston, which has designated evacuation routes, and the extension of those routes into adjacent municipalities.

In addition to adding a new data layer, the staff will update the existing data layers in the Web application, which include layers depicting flood zones and the locations and condition of bridges in the region.

This project does not involve making recommendations for infrastructure upgrades. Rather it will gather information that can be used to inform the security evaluation of proposed TIP projects. It could also be used in future studies to identify where infrastructure upgrades would be beneficial from an emergency management standpoint.

Objectives

There are five objectives of this work program:

1. Gather data from MassDOT and municipalities on state-owned and municipally owned traffic signals
2. Take inventory and document the characteristics of those signals.
3. Prepare a new GIS layer of signals on the MPO's All-Hazards Planning Web application for use in TIP project evaluations and other planning work.
4. Update existing data layers in the Web application as data become available.
5. Document findings.

Work Description

The product of this work program will be a GIS data layer depicting the location of signals on a portion of the region's emergency routing network and information on the signals' characteristics. Additionally, existing data layers in the All-Hazards Web application, including those depicting bridge conditions and flood zones, will be updated. A report presenting the findings of the data collection effort will be prepared.

Task 1 Gather Data

Staff will request data from MassDOT on state-owned traffic signals, including diagrams of signal housing placement.

Municipalities in the study area will be contacted and asked to provide available data on municipally owned signals. Data will be requested from the following municipalities: Brookline, Cambridge, Chelsea, Dedham, Everett, Milton, Newton, Quincy, Revere, and Somerville.

Product of Task 1

Spreadsheet documenting signal location and characteristics

Task 2 Create GIS Layer for Signals

A new GIS layer will be created to depict the location and characteristics of traffic signals on a portion of the region's emergency routing network for incorporation into the MPO's All-Hazards Planning Web application.

Product of Task 2

New GIS layer

Task 3 Update All-Hazards Web Application

The new data layer for signals will be added to the All-Hazards web application, which will offer the user the ability to query the data and retrieve information about the characteristics of the signals.

Data from MassDOT will also be used to update an existing data layer in the application that depicts the location of bridges in the MPO region. Users may also query this data layer to retrieve information on the condition of bridges.

In addition, new Federal Emergency Management Agency (FEMA) flood zone data for Essex County will be incorporated in the application. Other layers may also be updated as new information becomes available.

Products of Task 3

Updated Web application

Task 4 Document Findings

The results of the study will be documented in a memorandum, which will provide an inventory of the condition of bridges and signals on roadways that are evacuation routes, with an appendix describing the characteristics of signal equipment. In the memorandum, the feasibility of expanding this type of work beyond the urban core area will be discussed.

Products of Task 4

Memorandum

Estimated Schedule

It is estimated that this project will be completed seven months after work commences. The proposed schedule, by task, is shown in Exhibit 1.

Estimated Cost

The total cost of this project is estimated to be $25,000. This includes the cost of 10.5 person-weeks of staff time and overhead at the rate of 96.58. A detailed breakdown of estimated costs is presented in Exhibit 2.

KQ/MK/mk

Exhibit 1
ESTIMATED SCHEDULE
Roadway Network Inventory for Emergency Needs: A Pilot Study

Task	Month						
	1	2	3	4	5	6	7
1. Gather Data							
2. Create GIS Layer							
3. Update All-Hazards Web Application							
4. Document Findings							

Exhibit 2
ESTIMATED COST
Roadway Network Inventory for Emergency Needs: A Pilot Study

Direct Salary and Overhead	**$25,000**

Task	Person-Weeks				Direct Salary	Overhead (96.58%)	Total Cost
	M-1	P-4	P-3	Total			
1. Gather Data	0.0	1.0	1.0	2.0	$2,309	$2,230	$4,540
2. Create GIS Layer	0.3	1.0	0.0	1.3	$1,770	$1,710	$3,480
3. Update All-Hazards Web Application	0.3	2.5	1.0	3.8	$4,711	$4,549	$9,260
4. Document Findings	0.4	0.5	2.5	3.4	$3,927	$3,793	$7,720
Total	1.0	5.0	4.5	10.5	$12,718	$12,283	$25,000

Other Direct Costs	**$0**

TOTAL COST	**$25,000**

Funding

MPO 3C Planning Contract #75086

MPO §5303 Contract #75364