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Jeffrey B. Mullan
MassDOT Secretary and CEO
and MPO Chairman

Karl H. Quackenbush
Acting Director, MPO Staff

MEMORANDUM

DATE **August 18, 2011**

TO **Transportation Planning and Programming Committee of the Boston Region Metropolitan Planning Organization**

FROM **Karl H. Quackenbush, CTPS Acting Director**

RE **Work Program for: Regional HOV Lane System Planning Study**

ACTION REQUIRED

Review and approval

PROPOSED MOTION

That the Transportation Planning and Programming Committee of the Boston Region Metropolitan Planning Organization vote to approve the work program for Regional HOV Lane System Planning Study in the form of the draft dated August 18, 2011.

PROJECT IDENTIFICATION

Unified Planning Work Program Classification
Planning Studies

CTPS Project Number
13250

Client
Boston Metropolitan Planning Organization

CTPS Project Supervisors
Principal: Karl H. Quackenbush
Manager: William S. Kuttner

Funding
MPO §5303 Contract #67436;
MPO 3C PL Contract #66104

IMPACT ON MPO WORK

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

BACKGROUND

Traffic on the regional express highway system increased rapidly during the 1970s and 1980s as growth in population, jobs, and auto ownership filled the then recently completed express highway system. Traffic has continued to grow in recent years in response to these trends, but at a slower rate. The recent economic slowdown has resulted in a general leveling of traffic, with increases in some areas and decreases in others. This leveling is assumed to be temporary, and a trend of gradually increasing traffic is projected into the foreseeable future.

Congestion and delay are today commonplace throughout much of the regional express highway system. Congestion does not occur uniformly across the highway system, and the sections with the worst congestion understandably call for the earliest remedies. The completion of the Central Artery project relieved congestion in the core of the region, but substantial congestion remains, and a gradual increase in traffic should be anticipated.

Accommodating traffic growth without serious increases in congestion will require adding capacity in some manner. Widening of U.S. 3 to New Hampshire and the Central Artery Project are complete. Widening of the Route 128 beltway corridor between Routes 9 and 24 is underway, and the possible widening of I-93 to New Hampshire is under investigation. Increasing capacity without widening can in certain instances be achieved using management and operations strategies, such as ramp metering and real-time message boards.

Another approach to adding capacity without adding general-purpose lanes to an existing highway is to set up a special lane dedicated to high-occupancy vehicles, or HOVs. By offering a congestion-free lane for buses and autos with multiple occupants, the number of persons passing through a congested corridor can be significantly increased. Other potential benefits include reduced delay in general-purpose lanes, reduced congestion on surface roadways, and efficient additional capacity to accommodate future travel growth.

There are a number of variants to the design, implementation, and operation of these preferential lane facilities. Some jurisdictions have expanded eligibility criteria to include very low emissions or a willingness to pay, utilizing new open-road tolling technology. Also, pavement and right-of-way requirements can vary depending upon traffic and physical circumstances.

Some HOV facilities have already been implemented in the Boston region, mostly on I-93 within or near Boston. These facilities have increased roadway capacity and reduced travel times for buses and other HOVs. A detailed MPO study of extending and improving the preferential lane facilities in Dorchester is now underway.

The corridors that are analyzed will be organized generally by stretches between interchanges where major expressways, both radial and circumferential, cross one another. Promising sections for HOV implementation may be identified along a portion of one of these longer expressway system components. Where studies of HOV and related options have been undertaken or are currently in process, these past and current efforts will be utilized in this study.

OBJECTIVES

The principal objectives of this work program are:

1. To gather regional vehicle-type and occupancy data to support evaluation of potential HOV lanes, as well as to support development and calibration of the regional travel-demand model set as related to HOV considerations.

2. To evaluate components of the regional expressway system between key interchanges by direction for appropriateness and potential benefit of HOV lane implementation.

3. To describe on a conceptual basis HOV treatments for expressway system components where significant potential benefits are identified.

WORK DESCRIPTION

The work required to accomplish the study objectives has been grouped in four tasks:

Task 1 Develop Evaluation Criteria and Data-Gathering Needs

Currently available traffic, travel time, and other data will be studied and organized. A first-pass evaluation of selected expressway system components based upon available data will be developed. This step will suggest the evaluation criteria and identify specific data-gathering needs.

Products of Task 1

Compilation of currently available data. One or more preliminary evaluations of selected expressway system components for appropriateness of HOV treatments based on available data. Field data-gathering plan.

Task 2 Gather Vehicle-Type and Vehicle-Occupancy Data

CTPS personnel will count, classify, and characterize traffic flows at key locations to obtain data identified in Task 1 as necessary to the evaluation process. These data will be obtained in conformity with the specific vehicle classes used in the various trip tables assigned as part of the regional travel-demand model set.

In addition to collecting vehicle-type and occupancy data to specifically characterize expressway system components, it is also anticipated that a broader sample of count information will be obtained in order to support model development and calibration more fully. This count information could include off-peak directions and periods, as well as non-expressway traffic flows. The count information will be compared with current model assignments in anticipation of possible model calibration efforts that could be undertaken as a separate CTPS activity.

CTPS has undertaken peak-period occupancy counts in support of required HOV facility monitoring as well as some initial occupancy counts on selected regional expressways in anticipation of a broader set of ongoing occupancy and classification efforts. The data from these efforts have been reviewed and will inform further fieldwork in support both of analyzing specific expressway components and of serving broader needs of model development.

Travel times are measured by CTPS as part of the Congestion Management Process (CMP). The ongoing CMP efforts might be augmented in collaboration with this study—for example, by measuring travel times over longer travel distances.

Product of Task 2

Tabular information describing the vehicle-type and occupancy findings

Task 3 Evaluate Expressway System Components

As field data are obtained, it will be possible to perform a more complete evaluation and comparison of the regional expressway system components.

Product of Task 3

Technical memorandum presenting the evaluation of expressway system components for appropriateness of HOV treatments

Task 4 Describe Potential HOV Implementation

Potential HOV implementation will be described for one or more of the regional expressway system components found to be appropriate for an HOV treatment. Conceptual analysis of projected use, entry/exit sections, weaves and merges, right-of-way availability, and other sketch-planning considerations will be described and discussed.

Products of Task 4

Technical memorandum describing potential HOV or similar preferential lane treatments for a set of regional expressway components.

ESTIMATED SCHEDULE

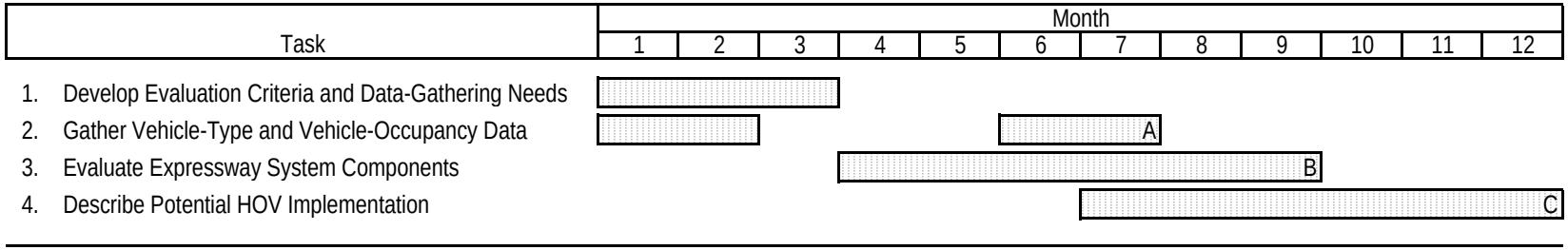
It is estimated that this project will be completed 12 months after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 1.

ESTIMATED COST

The total cost of this project is estimated to be $59,929. This includes the cost of 30.5 person-weeks of staff time, overhead at the rate of 94.57 percent, and travel. A detailed breakdown of estimated costs is presented in Exhibit 2. About one-eighth of this work will take place in federal fiscal year 2011, with completion in FFY 2012.

KQ/WSK/wsk

Exhibit 1
ESTIMATED SCHEDULE
Regional HOV Lane System Planning Study



Products/Milestones

A: Vehicle-type and vehicle-occupancy data set
B: Memorandum applying evaluation criteria
C: Memorandum describing potential implementation

Task 2 occupancy data will be gathered over a two-month period in the fall of 2011 and a two-month period in the spring of 2012.

Exhibit 2
ESTIMATED COST
Regional HOV Lane System Planning Study

Direct Salary and Overhead	$59,529

Task	M-1	P-5	P-4	P-2	P-1	Temp	Total	Direct Salary	Overhead (@ 94.57%)	Total Cost
1. Develop Evaluation Criteria and Data-Gathering Needs	0.1	2.0	0.0	0.2	0.0	0.0	2.3	$3,614	$3,418	$7,033
2. Gather Vehicle-Type and Vehicle-Occupancy Data	0.0	4.2	0.0	0.0	0.0	15.0	19.2	$14,106	$13,340	$27,445
3. Evaluate Expressway System Components	0.2	2.0	0.0	0.2	0.0	0.0	2.4	$3,779	$3,574	$7,354
4. Describe Potential HOV Implementation	0.1	4.0	1.0	0.2	1.3	0.0	6.6	$9,096	$8,602	$17,697
Total	0.4	12.2	1.0	0.6	1.3	15.0	30.5	$30,595	$28,934	$59,529

Other Direct Costs	$400
Travel	$400

TOTAL COST	$59,929

Funding
MPO §5303 Contract #67436; MPO 3C Planning Contract #66104