BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Stephanie Pollack, MassDOT Secretary and CEO and MPO Chair
Karl H. Quackenbush, Executive Director, MPO Staff

MEMORANDUM

DATE **November 16, 2017**
TO **Boston Region Metropolitan Planning Organization**
FROM **Karl H. Quackenbush, Executive Director**
RE **Work Program for Bicycle Level-of-Service Metric**

Action Required

Review and approval

Proposed Motion

That the Boston Region Metropolitan Planning Organization (MPO) votes to approve the work program for the Bicycle Level-of-Service (LOS) Metric project presented in this memorandum

Project Identification

Unified Planning Work Program Classification

Planning Studies and Technical Analysis

CTPS Project Number

13281

Client

Boston Region MPO

CTPS Project Supervisors

Principal: Mark Abbott
Manager: Casey Claude

Funding

MPO Planning Contract #101725
MPO §5303 Contracts #98873 and #102088

Impact on MPO Work

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

Background

The bicycle network in the Boston metropolitan region is constantly growing and evolving. To ensure that this expansion includes the types of bicycle facilities that would safely and comfortably accommodate bicyclists, a rating system that considers condition, safety, user comfort, and efficiency of existing facilities would be beneficial for the MPO region. This rating system could be used to identify areas in need of improvement and highlight a given roadway or intersection's bicycle travel limitations. In this way, a bicycle LOS rating index could be a useful tool for improving safety of bicycle connections and maintaining a multimodal congestion management process. There are several existing methodologies that consider LOS, level of comfort (LOC), and level of traffic stress (LTS) for bicyclists, but none created specifically for the Boston metropolitan region.

In this project, MPO staff will formulate a plan for developing and applying bicycle LOS metrics. These metrics may consist of information collected from various sources, including intersection surveys and bicyclist counts. These data could help transportation planners and government officials make decisions about bicycle infrastructure, including prioritization of projects and allocation of funding. The anticipated result of this project would be a set of recommended bicycle LOS metrics that the MPO could use in its planning and monitoring processes.

In January 2017, MPO staff presented the Pedestrian Report Card Assessment (PRCA) tool to the Boston Region MPO board. Staff created the PRCA tool via the federal fiscal years (FFY) 2015 Unified Planning Work Program's (UPWP) pedestrian LOS study. While vehicle LOS is reported using one cumulative score designated with a letter (A to F), PRCA provides a more specific understanding of a roadway's or intersection's deficiencies by using several grading categories to score the pedestrian environment. A similar approach to assessing the bicycle environment would allow a bicycle LOS report card to identify specific problems at an intersection or along a roadway. As with walking, the quality of bicycle travel is complex and influenced by a variety of factors, which may lead MPO staff to develop a report card product similar to PRCA for bicycle travel through this bicycle LOS study.

Using the LOS rating metrics that will be developed in this study, MPO staff may seek to create an interactive tool that could analyze conditions and rate both existing and proposed bicycle facilities in the region. This tool would become one of the applications on the Boston Region MPO's website.

Objectives

The objectives of this project are to develop a method for calculating the bicycle LOS of roadways and intersections in the Boston Region MPO area and to provide guidance for implementing the methodology. This project supports two of the MPO's Long-Range Transportation Plan (LRTP) goals: 1) maintaining the transportation system, and 2) using the capacity of existing facilities more efficiently.

Work Description

Task 1 Conduct a Literature Review of Existing Bicycle LOS/LOC/LTS Criteria

MPO staff will conduct an introductory literature review of existing bicycle LOS, LOC, and LTS criteria to identify best practices. Resources may include the Transportation Research Board's 2010 Highway Capacity Manual, state transportation departments, and other MPOs, among other resources.

Product of Task 1

A brief literature review to be featured in the introduction of the final study memorandum

Task 2 Assess Data Needs and Availability

From its review of the literature, MPO staff will compile a list of the types of data used in previous bicycle LOS/LOC/LTS work, adding any additional data that could prove useful for calculating bicycle LOS. Staff will also analyze their data inventories to see what existing data could be used to monitor bicycle LOS. Relevant data may include, but are not limited to: bicycle counts, crash data, and the types of bicycle accommodations at locations. Staff will not conduct data collection for this project.

Product of Task 2

List of data that would be useful for calculating bicycle LOS, which will indicate whether the data are readily available and, if so, the data source

Task 3 Communicate with Local and State Entities

MPO staff will contact local transportation planners, Massachusetts Department of Transportation (MassDOT) employees, advocacy group representatives, professors at local higher-education institutions, transportation professionals, and individuals from other transportation entities in Massachusetts to learn about any bicycle LOS work currently underway or already completed, and to determine what data are readily available. In order to select which performance measures will be used to calculate bicycle LOS, staff also will ask these contacts which factors they believe have the greatest impact on bicycle transportation.

Staff will also coordinate with MassDOT in its effort to update the Statewide Bicycle Plan.

Products of Task 3

- List from Task 2 updated with any new information about useful data types, including data status, and available sources
- Input about which data should be used to calculate bicycle LOS
- Research about how significantly factors that affect bicyclists are perceived to influence bicycle LOS, which will inform how performance measures used in bicycle LOS calculations are weighted

Task 4 Determine How to Evaluate Bicycle Facilities

Once the available data sources have been identified, MPO staff will use the survey responses from Task 3 to determine how to calculate bicycle LOS along roadways and at intersections in the Boston Region MPO area.

Products of Task 4

Bicycle LOS calculation criteria and methodology

Task 5 Develop a Bicycle LOS Scoring Tool for Application in Future MPO Work

MPO staff will determine how to use the performance measures and calculation methodology selected in Task 4 to create a bicycle LOS scoring tool that will contribute to the Boston Region MPO's planning and monitoring processes. MPO staff may recommend mapping the scores calculated using the tool as a future application. MPO staff may also suggest incorporating the bicycle LOS scoring tool into the Congestion Management Process, the LRTP, and Transportation Improvement Program scoring criteria.

Products of Task 5

- Bicycle LOS scoring tool
- Recommendations for future bicycle LOS scoring tool application

Task 6 Produce a Memorandum Documenting the Results of the Study

MPO staff will produce a memorandum that documents the results of the literature review, including best practices and lessons learned in Task 1 explains the bicycle LOS performance measures and methodology selected in Task 4, describes how to apply the bicycle LOS scoring tool developed in Task 5, and recommends future uses for the tool (Task 5).

Product of Task 6

Memorandum

Estimated Schedule

It is estimated that this project will be completed 10 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 $55,000. This includes the cost of 21.7 person-weeks of staff time, overhead at the rate of 105.66 percent. A detailed breakdown of estimated costs is presented in Exhibit 2.

KQ/CMC/cmc

Exhibit 1
ESTIMATED SCHEDULE
Bicycle Level of Service Metric Project

Task	Month									
	1	2	3	4	5	6	7	8	9	10
1. Conduct a Literature Review of Existing Bicycle LOS/LOC/LTS Criteria										
2. Assess Data Needs and Availability										
3. Communicate with Local and State Entities										
4. Determine How to Evaluate Bicycle Facilities										
5. Develop a Bicycle LOS Scoring Tool for Application in Future MPO Work										
6. Produce a Memorandum Documenting the Results of the Study										

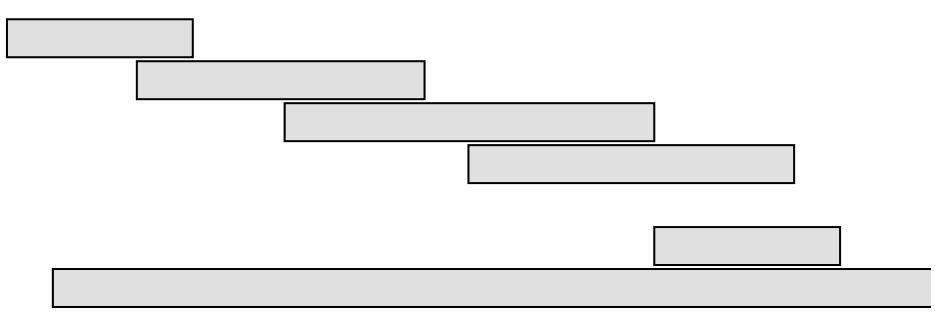

Exhibit 2
ESTIMATED COST
Bicycle Level of Service Metric Project

Direct Salary and Overhead	**$55,000**

Task	Person-Weeks					Direct Salary	Overhead (105.66%)	Total Cost
	M-1	P-5	P-3	P-2	Total			
1. Conduct a Literature Review of Existing Bicycle LOS/LOC/LTS Criteria	0.1	0.0	0.3	2.0	2.4	$2,677	$2,829	$5,506
2. Assess Data Needs and Availability	0.1	1.3	1.0	2.6	5.0	$6,774	$7,157	$13,931
3. Communicate with Local and State Entities	0.1	0.0	1.3	2.6	4.0	$4,644	$4,907	$9,550
4. Determine How to Evaluate Bicycle Facilities	0.1	0.0	1.0	2.6	3.7	$4,236	$4,476	$8,711
5. Develop a Bicycle LOS Scoring Tool for Application in Future MPO Work	0.1	0.0	0.4	1.0	1.5	$1,762	$1,862	$3,624
6. Produce a Memorandum Documenting the Results of the Study	1.4	0.0	0.6	3.1	5.1	$6,651	$7,027	$13,678
Total	1.9	1.3	4.6	13.9	21.7	$26,743	$28,257	$55,000

Other Direct Costs	**$0**

TOTAL COST	**$55,000**

Funding

MPO Planning Contract #101725
MPO §5303 Contracts #98873 and #102088