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**PLANNING AND PROGRAMMING COMMITTEE  
JULY 16, 2014**

**SUBJECT: BICYCLE MODEL DEVELOPMENT**

**ACTION: RECEIVE AND FILE**

**RECOMMENDATION**

Receive and File this status report on the bicycle model development and local tests of the completed Bicycle Sketch Plan Tool.

**ISSUE**

On January 18, 2012, the Board passed a motion directing the CEO to develop the technical travel demand modeling capability to estimate travel demand by bicycle. Attachment A contains the motion.

We have completed the first phase of this effort, which is the development of a Bicycle Sketch Plan Tool that jurisdictions can use to evaluate their bicycle projects. This tool was developed with input from jurisdictions, a national advisory panel, and the Los Angeles County Bicycle Coalition. In November 2013, we presented the Bicycle Sketch Plan Tool to the Ad-hoc Sustainability Committee and at the annual national conference of the Transportation Research Board in January 2014.

Upon completing the Bicycle Sketch Plan Tool, we conducted a series of test runs with a number of jurisdictions to evaluate the tool's functionality. These test runs consisted of evaluating congestion reduction and other mobility benefits of bicycle facilities within their jurisdiction, as well as the tool's user-friendliness. The Ad-Hoc Sustainability Committee directed that we brief the Planning and Programming Committee on our efforts to date and the results of the test runs.

**DISCUSSION**

Staff has been working with Cambridge Systematics, Inc. on developing the capability of modeling bicycle related investments. Developing a bicycle model for Los Angeles County is a technical and logistical challenge to undertake. Therefore, a two-phased work plan was developed to comply with the Board motion, which also provided for \$1.5 million to be budgeted to fund this work effort.

The two-phased work plan consists of:

- Phase I – A web-based Geographic Information System (GIS) sketch planning tool that allows jurisdictions to evaluate bicycle projects based on project attributes, land use, and socioeconomic conditions. The cost to conduct Phase I was \$499,060 ; and,
- Phase II – A fully-integrated travel demand model component that enables demand modeling of bicycle mode choice and route choice, including sensitivity to roadway congestion, trade-off between travel modes, and connectivity concerns from each cycling origin to its destination. The cost to conduct Phase II is \$955,428.

The cost to conduct both phases of the Bicycle Model Development Project totals \$1,454,488, which does not exceed the \$1.5 million authorized by the Board.

A panel of local jurisdictions and agencies, as well as an advisory panel of national and international experts, provided input to help guide both phases of the Bicycle Model Development Project.

#### Phase I – Bicycle Sketch Plan Tool

The first phase of the Bicycle Model Development Project is a web-based GIS Bicycle Sketch Plan Tool that is now complete. This analytical tool is designed as a menu driven, hands-on website that jurisdictions can access to conduct their own analyses of a single bicycle project, or a package of projects.

The Bicycle Sketch Plan Tool forecasts bicycle trips at the community level over a 20 year period. This Tool utilizes existing data and research to forecast bicycle trips as a function of socioeconomic data, land use characteristics, and transportation network data. The Bicycle Sketch Plan Tool is sensitive to the following types of bicycle projects:

- Bikeways (trails, bike lanes, cycle tracks, and bike boulevards),
- Worksite bike amenities (parking and/or showers),
- Rail transit bicycle parking, and
- Bike-sharing programs.

The analysis conducted by the Bicycle Sketch Plan Tool provides jurisdictions with a range of benefits associated with these planned project types, including forecasts of bicycle trips, reduced vehicle miles traveled, air quality and greenhouse gas emissions reductions, household travel cost savings, and public health benefits. In addition, jurisdiction staff can view their planned projects on a map alongside neighboring jurisdictions' projects to evaluate the regional connectivity of the bicycle network.

A technical report has been prepared that describes the methodology and assumptions of the Bicycle Sketch Plan Tool and can be made available upon request.

## Test Runs with Jurisdictions

For the past several months, we have conducted test runs with 11 jurisdictions as well as the Los Angeles County Bicycle Coalition on the utility and features of the Bicycle Sketch Plan Tool. The test runs were conducted to ensure effective functioning of the Bicycle Sketch Plan Tool and to assess whether enhancements were needed. The staff of jurisdictions were shown how to operate the Bicycle Sketch Plan Tool and conduct “what-if” analyses of their bicycle projects. After conducting these test runs, jurisdictions reported they found the Bicycle Sketch Plan Tool to be useful in assisting them in the analysis and prioritization of their bicycle projects. Attachment B contains the list of jurisdictions.

During this test run process we were also provided with a number of recommendations to improve the functionality and user friendliness of the Bicycle Sketch Plan Tool. These recommendations include easier project entry, quicker analysis of bicycle projects, updated socio-economic data, enhanced mapping, and broaden the ability to conduct analyses, such as displaying cost-per-mile implications of project concepts.

As a result, we will be making a series of enhancements to the Bicycle Sketch Plan Tool’s user interface over the next nine months to streamline the user experience, improve its flexibility and response time, and bolster its performance reporting capabilities. We will continue to work with jurisdictions and stakeholders throughout this period to ensure the updated Bicycle Sketch Plan Tool meets the county’s needs.

## Phase II – Bicycle Travel Demand Model

Phase II of the Bicycle Model Development Project is a more comprehensive effort that will result in adding functional bicycle mode choice and route choice components to MTA’s Travel Demand Model. This phase expands upon the foundation of the Bicycle Sketch Plan Tool by providing a better sense of where to locate bicycle facilities for maximum benefit. For example, this phase will be able to model the complete bicycle trips of individual users from their origins to their destinations, including which users choose to bicycle and why, and if so, the specific routes they are most likely to take. This phase will also provide us with the capability to compare which bicycle project and/or route would provide the most benefit in terms of mobility and travel time savings.

Although this effort requires more detailed technical calculation than the Bicycle Sketch Plan Tool, it addresses additional questions that cannot be answered by the Tool such as:

- How does roadway congestion, or transit travel times affect certain users’ willingness to bicycle;
- How do transit-access bike projects address the first-last mile accessibility challenge; and,
- To what extent do bicycle projects enhance bicycle network connectivity to improve the system-wide attractiveness of bicycling in Los Angeles County.

In addition, Phase II will require additional data collection, which is critical in the required validation of MTA's Travel Demand Model. This phase is scheduled for completion in mid-2015.

### **NEXT STEPS**

We will work with the remaining jurisdictions and other stakeholders to familiarize their staff on how to use the Bicycle Sketch Plan Tool. In addition, we will continue working on Phase II of integrating the bicycle mode choice and route choice components into MTA's Travel Demand Model.

### **ATTACHMENTS**

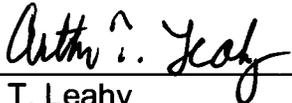
- A. January 18, 2012 Board Motion
- B. List of Jurisdictions

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Arthur T. Leahy  
Chief Executive Officer

## Attachment A

### Amendment to Planning and Programming Item NO. 10 by Directors O'Connor, Najarian and Huizar January 18, 2012

#### **BICYCLE (ACTIVE TRANSPORTATION) TRAVEL DEMAND MODELING MOTION**

There is a groundswell of effort being carried out by the MTA and municipal jurisdictions throughout Los Angeles County to plan for and invest in bicycle infrastructure as part of the *Active Transportation* planning concept acknowledging a holistic transportation system conducive to bicycling and pedestrian activities. *Active Transportation* produces enriched health, reduced traffic congestion and air pollution, economic vitality, and an overall improved quality of living increasingly important and valuable for the residents of Los Angeles County;

#### Background:

- At the April, 28, 2011 meeting, the MTA Board directed the creation of an *Active Transportation* Agenda, which includes advancing and addressing eight active transportation objectives.
- Los Angeles County jurisdictions have to comply with the mandate of SB 375 and the Sustainable Community Strategy to enact policies and programs to meet or exceed a greenhouse gas emission reduction targets as set forth in statute.
- The Call for Projects program is the agency's most widely recognized contribution to Active Transportation allocating approximately 14% of its funding to bicycle planning and 10% to pedestrian planning.
- According to the Southern California Association of Government (SCAG), in Los Angeles County 99.1% of the population lives a short bike ride from transit (2 miles or less) and 93.5% of the population lives a short walk from transit (0.5 miles or less).

During the process of conducting the Congestion Mitigation Fee Study, jurisdictions have identified a robust list of bicycle related projects such as the Integrated Mobility Hubs that include bike sharing facilities as a way to mitigate the impact of growth in their communities. However, bicycle related projects have not been able to be modeled in this Study. Thus, the benefit of these bicycle and pedestrian projects (Integrated Mobility Hubs) cannot be quantified in a similar manner as intersection improvements and roadway capacity projects.

Presently, regional and county transportation agencies across the country, including the MTA, do not currently possess the technical travel demand modeling capability to measure and quantify the benefit and cost of investing in bicycle related projects (*Active Transportation* infrastructure). The bicycle mode of the (*Active Transportation*)

transportation category is a transportation category lacking the technical travel demand modeling capability performance measures that can be quantified through a rigorous modeling assessment.

It is increasingly important in the development of MTA transportation policy to have the capability to prioritize transportation investment by comparing the benefit and cost of the various modes of transportation with criteria that are consistent across all modes, including bicycle (active transportation) infrastructure projects.

**We, THEREFORE, MOVE that the MTA Board direct the CEO to do the following:**

- 1. Modify the existing contract of the Congestion Mitigation Fee Study (as Modification #3) with the additional tasks to develop the technical travel demand modeling capability to estimate travel demand by bicycle and, if possible, in conjunction with other active transportation travel such as walking.** This modeling capability could be used to quantify the congestion reduction benefit and other mobility benefits of the bicycle related projects (Active Transportation) identified thus far in the list of projects of the Congestion Mitigation Fee Program currently under development with jurisdictions.

This technical travel demand modeling capability could also be utilized to model bicycle investment (*Active Transportation*) in other major MTA activities such as the Long Range Transportation Plan, Short Range Transportation Plan, Call-for Projects, Transit Corridor Planning, Joint Development, SB 375 GHG compliance, and other critically important transportation activities carried out by MTA;

2. Work with the MTA OMB to provide the necessary funding for the remainder of FY 11-12 and continue the funding in the budget preparations for FY 12-13 to develop this technical travel demand modeling capability for bicycle travel (active transportation) and execute the contract modification to the existing contract of the Congestion Mitigation Fee Study not to exceed \$1.5 million.
3. Develop a phased work plan that includes investigating the state of the practice in this field, identifying performance measures; and collecting the necessary data to develop the technical travel demand modeling capability for bicycle travel (Active Transportation) that works for Los Angeles County.
4. Coordinate with the appropriate stakeholders that would provide the input to develop a technical travel demand model for bicycle travel and, if possible, other active transportation such as walking that reflects the complexity and diversity of MTA's transportation initiatives across Los Angeles County.

## **Attachment B**

### **List of Jurisdictions That Conducted Test Runs with Bicycle Sketch Plan Tool**

1. Burbank
2. Calabasas
3. County of Los Angeles
4. Long Beach
5. Los Angeles
6. Palmdale
7. Pasadena
8. Redondo Beach
9. Santa Clarita
10. Santa Monica
11. Torrance