SUBJECT: LOS ANGELES COUNTY CONGESTION REDUCTION DEMONSTRATION (LA CRD) PROJECT NATIONAL EVALUATION PLAN

ACTION: RECEIVE AND FILE

RECOMMENDATION

Receive and File the National Evaluation Plan for the LA CRD Project. Attachment A contains the Executive Summary. The full report is available upon request or at www.metro.net/expresslanes.

BACKGROUND

In April 2008, the US Department of Transportation (USDOT) entered into an agreement with the California Department of Transportation (Caltrans) and the Los Angeles County Metropolitan Transportation Authority (MTA) for the LA CRD Project. The agreement identifies an award of a $210.6 million federal grant to convert existing High Occupancy Vehicle (HOV) lanes, on I-10 El Monte Busway and I-110 Harbor Transitway, into dynamically-priced high-occupancy toll (HOT) lanes as an initial congestion pricing pilot project, known as ExpressLanes.

This one-year Demonstration Project is one of six projects competitively selected by USDOT to develop innovative programs to reduce congestion through the implementation of value pricing as part of the Urban Partners Agreement/Congestion Reduction Demonstration (UPA/CRD) Grant Program.

The purpose of the national evaluation is to assess the impacts of the UPA/CRD projects in a comprehensive and systematic manner across all six sites. USDOT has retained Battelle Memorial Institute to conduct the national evaluation. The evaluation will generate information and produce materials to support deployment of the strategies in other metropolitan areas. The national evaluation will also generate findings for use in future federal policy and program development related to mobility, congestion, and facility pricing.

The LA CRD projects focus on reducing congestion by employing strategies consisting of combinations of tolling, transit, travel demand management, and technology, also known as the “4Ts”. The Battelle team developed a National Evaluation Framework (NEF) to provide a foundation for evaluation of the UPA/CRD sites. The NEF is based on the 4Ts congestion reduction strategies and will address the following four questions through the collection of one-year of pre-deployment data and one-year of post deployment data:

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1 The five additional urban partners are Miami, Minnesota, San Francisco, Seattle, and Atlanta.
1. How much was congestion reduced in the area impacted by the implementation of the tolling, transit, technology, and telecommuting strategies? Potential measures include:

   - Reductions in vehicle trips made during peak/congested periods;
   - Reductions in travel times during peak/congested periods;
   - Reductions in congestion delay during peak/congested periods; and
   - Reductions in the duration of congested periods.

2. What are the associated impacts of implementing congestion reduction strategies? Potential measures include:

   - Increases in facility throughput during peak/congested periods;
   - Increases in transit ridership during peak/congested periods;
   - Modal shifts to transit and carpools/vanpools;
   - Traveler behavior change;
   - Operational impacts on parallel systems/routes;
   - Equity impacts; and
   - Environmental impacts.

3. What are the non-technical success factors with respect to the impacts of outreach, political and community support, and institutional arrangements implemented to manage and guide the implementation?

4. What are the overall costs and benefits of the deployed set of strategies?

Developed over the last year, all of the LA CRD partners (Metro, Caltrans, Foothill Transit, Gardena Transit, LADOT, Metrolink, Torrance Transit) have reviewed the relevant performance measurements proposed in the Evaluation Plan and have agreed to collect the data.

**POLICY IMPLICATION**

The agreement between MTA and the USDOT for the LA CRD Project requires performance monitoring for the Demonstration Project. The federal requirement for the evaluation is separate from the State Tolling Authority requirement that Metro and Caltrans report back to the legislature on the performance of the ExpressLanes Project. However, the data collected for the national evaluation will be useful in meeting the State’s reporting requirement.

Project Management Body of Knowledge best practice recommends that performance measurements be presented to the Board for approval. In July 2009, the MTA Board approved the following key performance measures for the Demonstration Project:

   - Arriving at your destination in less time in either the ExpressLanes or general purpose lanes (travel time savings, average vehicle speed)
   - Change from driving alone to car pooling, riding transit, and or MTA vanpool (mode shift)
   - Increase in efficiency by moving more people on the ExpressLanes in a specified period of time (person throughput)
   - Improved transportation access for the low income commuter (public surveys; credit redemption)

These key performance measures along with the National Evaluation will comprise the formal performance measurements for the Demonstration Project.
OPTIONS

The Ad Hoc Committee may choose not to approve the National Evaluation Plan at this time. This alternative is not recommended as the national evaluation is a requirement of the $210.6 million federal grant.

ATTACHMENT

Executive Summary, National Evaluation Plan for the Los Angeles County Congestion Reduction Demonstration Project

Prepared by: Stephanie Wiggins, Executive Officer, Congestion Reduction Initiative
ATTACHMENT A

LOS ANGELES COUNTY
CONGESTION REDUCTION
DEMONSTRATION
NATIONAL EVALUATION PLAN

U.S. Department of Transportation
Research and Innovative Technology Administration
Federal Highway Administration
Federal Transit Administration

November 13, 2009
Publication No. FHWA-JPO-
EXECUTIVE SUMMARY

This report provides an analytical framework for evaluating the Los Angeles County (LA) Congestion Reduction Demonstration (CRD) effort under the United States Department of Transportation (U.S. DOT) Urban Partnership Program Agreement (UPA) program. It identifies the hypothesis and questions to be tested and answered in the evaluation; the evaluation analyses and measures of effectiveness; and the data needed to conduct the analysis.

Background

In 2006, the U.S. DOT, in partnership with metropolitan areas, initiated a program to explore reducing congestion through the implementation of pricing activities combined with necessary supporting elements. This program was instituted through the UPAs and the Congestion Reduction Demonstrations (CRDs). Within each program, multiple sites around the U.S., including Los Angeles, were selected through a competitive process. The selected sites were awarded funding for implementation of congestion reduction strategies. The applicants' proposals for congestion reduction were based on four complementary strategies known as the 4Ts: Tolling, Transit, Telecommuting/Travel Demand Management, which includes additional travel demand management (TDM) strategies, and Technology.

The UPA/CRD national evaluation is sponsored by the U.S. DOT. The Research and Innovative Technology Administration (RITA) Intelligent Transportation Systems Joint Program Office (ITS JPO) is responsible for the overall conduct of the national evaluation. Representatives from the modal agencies are actively involved in the national evaluation. The Battelle team was selected by the U.S. DOT to conduct the national evaluation through a competitive procurement process.

The purpose of the national evaluation is to assess the impacts of the UPA/CRD projects in a comprehensive and systematic manner across all sites. The national evaluation will generate information and produce technology transfer materials to support deployment of the strategies in other metropolitan areas. The national evaluation will also generate findings for use in future federal policy and program development related to mobility, congestion, and facility pricing. The Battelle team developed a National Evaluation Framework (NEF) to provide a foundation for evaluation of the UPA/CRD sites. The NEF is based on the 4Ts congestion reduction strategies and the questions that the U.S. DOT seeks to answer through the evaluation.

The Los Angeles County CRD Projects

The Los Angeles County (LA) Congestion Reduction Demonstration effort is led by the Los Angeles County Metropolitan Transportation Authority (Metro). The CRD projects are being implemented with the assistance of a number of supporting agencies especially the California Department of Transportation (Caltrans) and the Los Angeles Department of Transportation (LADOT). The Los Angeles County CRD projects are intended to reduce congestion, promote throughput, and enhance mobility in the I-10 and I-110 corridors, and in downtown Los Angeles. Figure ES-1 shows the location of the L.A. CRD project elements.
The U.S. DOT is allocating $210.6 million in Federal grant funding for the Los Angeles projects. These funds are drawn from the Federal Transit Administration (FTA) 5309 Bus and Bus Facilities Program (the “Bus Program”). The Los Angeles County CRD projects are briefly described as follows.

**Transit Improvements.** Over half of LA’s CRD budget will be devoted to transit improvements. The frequency of Metro Rapid service in the I-10 El-Monte Busway and I-110 Harbor Transitway corridors will be significantly increased through the acquisition of new buses. Other major improvements include a new downtown transit operating and maintenance facility;
improved Artesia Transit Center security; expansion of the El Monte Transit Center; the creation of an El Monte Busway/Union Station connection; expansion of the Pomona Metrolink Station (platforms and parking); and the implementation of additional transit signal prioritization in downtown Los Angeles.

**High Occupancy Toll (HOT) Lanes.** L.A. will use CRD funds to convert HOV lanes to HOT in the I-10 and I-110 freeways. This will expand freeway capacity by permitting toll-paying, single-occupancy vehicles to use slack, HOT lane capacity. Since the current I-10 HOV lane operates near capacity during peak travel periods, L.A. also plans to add an additional HOT lane to the section of the I-10 bounded by the I-710 and I-605 interchanges.

**Intelligent Parking Management (IPM).** LADOT will be deploying an IPM (also known as “ExpressPark”) in downtown L.A. to alleviate congestion by reducing parking space seek time, an important source of traffic congestion. IPM entails demand-based pricing of city managed parking to promote space turnover and to maintain balance between the parking spaces available and the number of travelers wishing to make use of those spaces. The IPM effort will use advanced technologies to help downtown travelers rapidly locate available parking spaces and to apprise them of current parking prices.

**Technology.** L.A. will employ advanced technologies in support of both the HOT and IPM efforts. These technologies include algorithms that estimate HOT lane capacity and detect parking spot availability; and advanced, real-time information dissemination technology that will make this information available to travelers through their computers, cell phones, PDAs, and electronic signage.

**Ridesharing Promotion (Telecommuting/Travel Demand Management).** L.A. will use a variety of promotional methods to increase the number of registered vanpools, and major employer-based ridesharing in general, in the I-10 and I-110 corridors. The methods include subsidies to travelers and vanpool operators and promotional outreach to major employers.

**Deployment Schedule**

Some transit elements of the Los Angeles County CRD programs are expected to be operational in July, 2010. Most of the remaining projects elements will be deployed by December, 2010. The major exception is a new Metro transit operating and maintenance facility. It is scheduled to be completed in December, 2011.

**Evaluation Analyses and Test Plans**

The national evaluation of the Los Angeles County CRD projects focuses on the 11 of 12 analysis areas outlined in the NEF. (The goods movement analysis area was not judged to be relevant to the L.A. CRD projects.) Plans for collecting and analyzing the data to support the 11 analyses are described in 11 test plans. Table ES-1 presents the relationship among the analysis areas and the test plans.
### Table ES-1. Relationships among Data Test Plans and Evaluation Analyses

<table>
<thead>
<tr>
<th>Data Test Plans</th>
<th>Evaluation Analyses</th>
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<tbody>
<tr>
<td></td>
<td>Tolling</td>
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<tr>
<td>Traffic</td>
<td>●</td>
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<td>Tolling</td>
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<td>Ridesharing</td>
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<td>Safety</td>
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<td>Transportation Modeling</td>
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<td>Environmental</td>
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<td>Surveys and Interviews</td>
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<td>Content</td>
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<td>Cost Benefit</td>
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<td>Exogenous Factors</td>
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</table>

● Major Input  ○ Supporting Input

* = This corresponds to the "Telecommuting/TDM" analysis in the UPA/CRD National Evaluation Framework. The L.A. CRD local partners have requested that the reference to telecommuting be dropped in the L.A. evaluation documents because telecommuting is not included among their strategies.

The transit analysis area is summarized in Table ES-2 to provide a representative example of the hypothesis-driven evaluation approach used in the L.A. CRD National Evaluation Plan. Transit is a key element of the Los Angeles County CRD. The CRD transit projects focus on making riding the bus in the I-10 and I-110 corridors more attractive and convenient by significantly increasing the frequency of bus rapid transit (BRT) service, reducing bus travel times through signal prioritization; mitigating traffic bottlenecks through infrastructure investments; and by reducing travelers potential security concerns at park-and ride-lots and bus stops.
### Table ES-2. Transit Analysis Approach

<table>
<thead>
<tr>
<th>Hypotheses/Questions</th>
<th>Measures of Effectiveness</th>
<th>Data</th>
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<tbody>
<tr>
<td>CRD projects will enhance transit performance within CRD corridors through reduced travel times, increased service reliability, and increased service capacity</td>
<td>• Reduced end-to-end transit route trip times&lt;br&gt;• Reduced perceived door-to-door passenger trip times&lt;br&gt;• Increased in-transit service speeds&lt;br&gt;• Increased transit reliability (headway variance if freq &lt; 12 mins / schedule adherence if freq &gt; 12 mins)&lt;br&gt;• Increased transit capacity (# seats per hour)&lt;br&gt;• Improved user satisfaction</td>
<td>• Transit travel time data&lt;br&gt;• Transit reliability / schedule adherence data&lt;br&gt;• Transit service characteristics data&lt;br&gt;• Traveler survey data</td>
</tr>
<tr>
<td>User perceptions of security at transit stations/park-and-ride lots will be improved by CRD projects</td>
<td>• User perceptions of security at transit stations/park and ride lots</td>
<td>• Traveler survey data</td>
</tr>
<tr>
<td>CRD projects will increase ridership and facilitate a mode shift to transit within CRD corridors</td>
<td>• Increased transit ridership&lt;br&gt;• Increased persons per peak revenue hour/period&lt;br&gt;• Reduced cost per passenger mile&lt;br&gt;• Increased park-and-ride lot utilization&lt;br&gt;• Corridor mode split (%)</td>
<td>• Transit ridership data&lt;br&gt;• Traveler survey data&lt;br&gt;• Transit service characteristics data&lt;br&gt;• Park-and-Ride lot utilization data&lt;br&gt;• Traffic volume and vehicle occupancy data</td>
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<td>Increased ridership and mode shift to transit will contribute to increased person throughput, congestion mitigation, and transit cost-effectiveness within CRD corridors</td>
<td>• Increase in person throughput attributable to transit&lt;br&gt;• Total change in traffic congestion (as determined in the Congestion Analysis)&lt;br&gt;• Change in transit cost per passenger mile&lt;br&gt;• User perceptions of project impacts</td>
<td>• Transit ridership data&lt;br&gt;• Traveler survey data&lt;br&gt;• Transit service characteristics data&lt;br&gt;• Park-and-Ride lot utilization data&lt;br&gt;• Traffic congestion data (from Congestion Analysis)&lt;br&gt;• Traffic volume and vehicle occupancy data&lt;br&gt;• Transit cost data</td>
</tr>
<tr>
<td>What was the relative contribution of each CRD project element to increased ridership/transit mode share/person throughput?</td>
<td>• All of the above measures, supplemented by those obtained from other aspects of the evaluation</td>
<td>• All of the above data sources</td>
</tr>
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</table>
The first hypothesis shown in Table ES-2 relates to the use of CRD funds to attain reduced transit travel times and improved service reliability by buses in the I-10 and I-110 corridors. Six measures of effectiveness (reduced end-to-end transit route trip times, reduced perceived door-to-door passenger trip times, etc.) are presented in the adjacent column. They enumerate the measures that the evaluation will use to assess the correctness of the hypothesis. The third column lists the key data elements that will be needed to compute the measures of effectiveness. In the case of the first hypothesis, these data elements include numeric transit travel time and reliability data, which will provide objective measures of service improvements. Required data also includes survey data that will help the evaluation determine whether transit users perceive these service improvements.

This transit analysis example typifies the multi-layered approach that will be used in many of the CRD evaluation analyses. In such a multi-layered approach, the later hypotheses focus on the intended “bottom line” results, which for the CRD is primarily to reduce congestion. The earlier hypotheses focus on the series of causes and effects that are intended to yield those bottom line results. In this case those earlier causes and effects consist of improving transit performance in order to increase ridership and transit mode share. Testing hypotheses at each of these layers helps explain how and why the intended congestion reduction results were realized or not realized.

Plans for collecting and analyzing data pertaining to the transit hypotheses and all other evaluation hypotheses are detailed in a series of data test plan documents. Preliminary versions of these data test plan documents are included within the body of this evaluation plan. Full, finalized versions of the data test plans will be generated in coming months.

Responsibility for collecting the data required by the evaluation resides with the Los Angeles County CRD partners. The Battelle evaluation team will provide guidance to the partners on data collection. The evaluation team is also responsible for analyzing the data and reporting results.

Next Steps

The next steps in the Los Angeles County CRD National Evaluation include developing the detailed test plans and initiating data collection and analysis activities. The detailed test plans will be developed based on this Los Angeles County CRD National Evaluation Plan. It is anticipated that the draft test plans will be developed by January 2010. The results of the Los Angeles County CRD national evaluation are expected in late-2012.