Los Angeles Congestion Reduction Demonstration (Metro ExpressLanes) Program

National Evaluation: Ridesharing Data Test Plan

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16. Abstract

This report presents the Ridesharing Data Test Plan for the national evaluation of the Los Angeles (L.A.) County Congestion Reduction Demonstration (CRD) under the United States Department of Transportation (U.S. DOT) Urban Partnership Agreement (UPA)/CRD Program. The Los Angeles County CRD projects focus on reducing congestion by employing strategies consisting of combinations of tolling, transit, telecommuting/travel demand management (TDM), and technology, also known as the 4Ts. Tolling (pricing) strategies include converting high occupancy vehicle (HOV) lanes on two freeway corridors to variably-priced high-occupancy toll (HOT) lanes, adding a second HOT lane to portions of one corridor, and implementation of a downtown L.A. intelligent parking management system featuring demand-based pricing and real-time parking availability information. Transit improvements include increased bus service, transit station security improvements, expansion of two transit stations, creation of an El Monte Busway/Union Station connector, and the expansion of downtown L.A. transit signal priority. TDM strategies aim to establish 100 new registered vanpools. This Ridesharing Data Test Plan is one of ten test plans being developed. The other nine test plans consist of the following: traffic; tolling; transit; safety; environmental; content analysis; surveys, interviews and workshops; cost-benefit; and exogenous factors. Each test plan is based on the Los Angeles County CRD National Evaluation Plan. This test plan describes ridesharing data sources, data availability, and possible risks associated with the data. The methods for analyzing the ridesharing data are discussed. The schedule and responsibilities for collecting, analyzing, and reporting the ridesharing data are also presented.

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LIST OF ABBREVIATIONS

4Ts	Tolling, Transit, Telecommuting, and Technology
Caltrans	California Department of Transportation
CHP	California Highway Patrol
CRD	Congestion Reduction Demonstration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HOT	High-occupancy tolling
HOV	High-occupancy vehicle
I-10	Interstate 10 (El Monte Busway between Alameda St and I-605)
I-110	Interstate 110 (Harbor Transitway between Adams Blvd and Harbor Gateway Transit Center)
IPM	Intelligent Parking Management
LA	Los Angeles
LA CRD	Los Angeles Congestion Reduction Demonstration
LADOT	Los Angeles Department of Transportation
Metro	Los Angeles County Metropolitan Transportation Authority
Metrolink	Southern California Regional Rail Authority
MOE	Measure of effectiveness
SBCCOG	South Bay Cities Council of Governments
SCAG	Southern California Association of Governments
SGVCOG	San Gabriel Valley Council of Governments
TDM	Travel demand management
U.S. DOT	U.S. Department of Transportation
VMT	Vehicle miles traveled

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1.0 INTRODUCTION

This report presents the test plan for collecting and analyzing ridesharing data that will be used in the "ridesharing" portion of United States Department of Transportation (U.S. DOT) evaluation of the Los Angeles (LA) Congestion Reduction Demonstration (CRD), also known as the Metro ExpressLanes Program. The LA CRD (Metro ExpressLanes) is one of several large field deployments around the United States that are receiving U.S. DOT funding and which are intended to demonstrate congestion pricing and supporting strategies. The LA CRD (Metro ExpressLanes) Program national evaluation will address the four primary U.S. DOT evaluation questions shown in Table 1-1.

Table 1-1. U.S. DOT National Evaluation "Objective Questions"

Objective Question #1	How much was congestion reduced in the area impacted by the implementation of the tolling, transit, technology, and telecommuting strategies? It is anticipated that congestion reduction could be measured by one of the following measures, and will vary by site and implementation strategy: • 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.
Objective Question #2	What are the associated impacts of implementing the congestion reduction strategies? It is anticipated that impacts will vary by site and that the following measures may be used: • 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 (e.g., shifts in time of travel, mode, route, destination, or forgoing trips); • operational impacts on parallel systems/routes; • equity impacts; • environmental impacts; • impacts on goods movement; and • effects on businesses.
Objective Question #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?
Objective Question #4	What are the overall costs and benefits of the deployed set of strategies?

Source: "Urban Partnership Agreement Demonstration Evaluation – Statement of Work," United States Department of Transportation, Federal Highway Administration, November 2007.

The questions shown in Table 1-1 will be addressed by carrying out the following 11 "evaluation analyses" described in the LA CRD (Metro ExpressLanes) Program National Evaluation Plan[1]: tolling, technology, transit, travel demand management (TDM), congestion, safety, equity, environment, business impacts, non-technical success factors, and cost benefit. Each of these 11 analyses relies upon various evaluation measures of effectiveness.

"Test plans" are the evaluation planning documents that describe how specific data will be collected and processed to yield the evaluation measures of effectiveness required for the various analyses. Whereas evaluation analyses are categorized according to related evaluation questions or types of impacts, for example all equity-related impacts are addressed in the equity analysis, test plans are categorized according to common data types or sources. For example, the "Traffic System Data Test Plan" collects and processes all of the traffic data required for the national evaluation. There are a total of ten test plans for the LA CRD (Metro ExpressLanes) Program national evaluation. In addition to this Ridesharing Test Plan, there are test plans focusing on the following types of data: traffic; tolling; transit; safety; environmental; content analysis; cost benefit; surveys, interview, and workshops; and exogenous factors.

The relationship between test plans and evaluation analyses is discussed in Section 1.2. In short, analyses describe the evaluation questions and hypotheses to be investigated and the test plans describe how the data and measures of effectiveness needed to support the evaluation will be collected and processed. Most test plans collect data and provide measures of effectiveness that will be used in multiple analyses and most analyses rely upon data and measures developed through several different test plans.

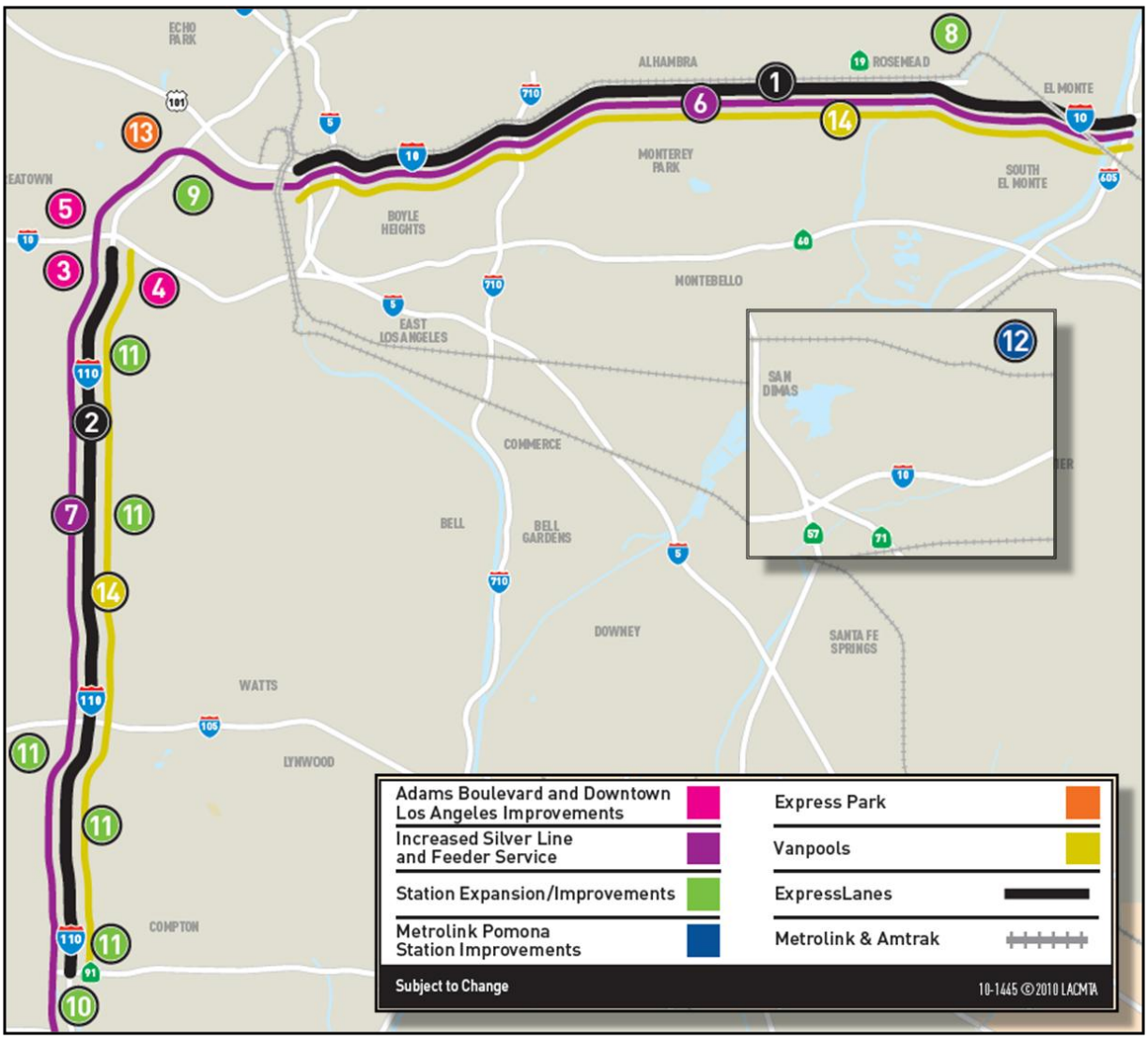
The remainder of this introduction chapter identifies the LA CRD (Metro ExpressLanes) Program deployments and elaborates on the relationship between test plans and evaluation analyses. The remainder of the report is divided into three sections. Chapter 2.0 presents the data sources, availability, and risks associated with data collected through this Ridesharing Data Test Plan. Chapter 3.0 discusses how the ridesharing analysis will be conducted and used in the national evaluation. Chapter 4.0 presents the schedule and responsibilities for conducting the ridesharing analysis.

1.1 LA CRD (Metro ExpressLanes) Program Projects

The LA CRD (Metro ExpressLanes) Program was selected by the U.S. DOT as an Urban Partner to implement projects aimed at reducing congestion based on four complementary strategies known as the 4Ts: Tolling, Transit, Telecommuting/TDM, and Technology. Under contract to the U.S. DOT, a national evaluation team led by Battelle is assessing the impacts of the projects in a comprehensive and systematic manner in LA County and other 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.

[1] Los Angeles County Congestion Reduction Demonstration National Evaluation Plan, January 13, 2010, U.S. DOT.

The LA CRD (Metro ExpressLanes) Program 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). Other participating agencies include the San Gabriel Valley Council of Governments (SGVCOG); the Southern California Association of Governments (SCAG); the South Bay Cities Council of Governments (SBCCOG); the Southern California Regional Rail Authority (Metrolink); Foothill Transit; the California Highway Patrol (CHP); and the Los Angeles County Sheriff's Department. The LA CRD projects are intended to reduce congestion, promote throughput, and enhance mobility in the Interstate-10 (I-10) and Interstate-110 (I-110) corridors, and in downtown Los Angeles. Figure 1-1 shows the location of the LA CRD (Metro ExpressLanes) Program projects and Figure 1-2 provides short summaries of the numbered projects on Figure 1-1.



Derived from Metro ExpressLanes project map

Note: See Figure 1-2 for the explanation of each numbered project on this map.

Figure 1-1. LA CRD (Metro ExpressLanes) Program Project Locations

Derived from Metro ExpressLanes project map.

1 EXPRESSLANES ON I-10
This project will convert existing HOV lanes on the I-10 from Alameda Street/Union Station to I-605 into ExpressLanes (44 lane miles). The budget will cover the toll technology, toll infrastructure and operational improvements required to complete the conversion. This project will also provide additional ExpressLanes capacity on the El Monte Busway between I-710 and I-605 through re-striping and buffer changes. No general purpose lanes are taken away to create the second ExpressLane between I-710 and I-605.

2 EXPRESSLANES ON I-110
This project will convert existing HOV lanes on the I-110 from 182nd Street/Artesia Transit Center to Adams Boulevard into ExpressLanes (38 lane miles). The budget will cover the toll technology, toll infrastructure and operational improvements required to complete the conversion.

ExpressLanes is a one-year demonstration project. Buses, motorcycles, vanpools, and carpools that currently use HOV lanes will not be charged a toll. General purpose lanes will continue to remain toll-free. The following projects will provide additional access and capacity to the I-10 and I-110 ExpressLanes, to encourage movement of more people rather than more vehicles.

ADAMS BOULEVARD AND DOWNTOWN LOS ANGELES IMPROVEMENTS

3 I-110 ADAMS/FIGUEROA FLYOVER STUDY
The Adams/Figueroa Flyover Study will investigate how the construction of a new structure – connecting the I-110 northbound HOV lane off-ramp directly to Figueroa Street – could improve traffic flow at the end of the I-110 HOV lane.

4 ADAMS BOULEVARD STREET WIDENING
Adams Boulevard will be widened between the Harbor Freeway off-ramp and Flower Street – adding an additional westbound right-turn-only lane to the HOV bypass connecting to Figueroa Street. Re-striping will also add one extra lane to the HOV off-ramp approaching Adams Boulevard to increase capacity.

5 TRANSIT SIGNAL PRIORITY IN LOS ANGELES
This project will install bus-signal priority technology on Figueroa Street between Wilshire Boulevard and Adams Boulevard (15 signals), and Flower Street between Wilshire Boulevard and Olympic Boulevard (5 signals) to enhance transit operations. It will also extend the existing AM peak-period northbound bus-only lane on Figueroa Street between 23rd Street and 4th Street to cover the PM peak-period.

INCREASED SILVER LINE AND FEEDER SERVICE

6 NEW BUSES FOR THE I-10 EL MONTE BUSWAY CORRIDOR
Before adding ExpressLanes to the corridor, Metro and its transit partner – Foothill Transit – will purchase 30 new buses and increase Silver Line and feeder service on the I-10 El Monte Busway, with a goal of providing service every three to seven minutes during rush hour.

7 NEW BUSES FOR I-110 HARBOR TRANSITWAY CORRIDOR
Before adding ExpressLanes to the corridor, Metro and its transit partners – Torrance Transit and Gardena Transit – will purchase 29 new buses to improve Silver Line and feeder service on the I-110 Transitway, with a goal of providing service every three to seven minutes during rush hour.

STATION EXPANSION/IMPROVEMENTS

8 EL MONTE TRANSIT STATION EXPANSION
The El Monte Station is the eastern terminus of the El Monte Busway, and is currently the busiest bus terminal west of Chicago. Given that the El Monte Station will now also be the eastern terminus of the ExpressLanes, expansion of the terminal will be required to accommodate additional high-capacity buses, passenger parking and bike lockers.

9 PATSAOURAS PLAZA/UNION STATION CONNECTION
A new Union Station stop will be created for the El Monte Busway, allowing direct access to the station's Patsaouras Transit Plaza. This will eliminate the long walks, operational delays and insufficient lighting and information displays passengers currently have to contend with when transferring at Alameda Street to Metro's Red and Gold lines, Metrolink and Amtrak.

10 IMPROVED ARTESIA TRANSIT CENTER SECURITY
Improvements at the largest transit center on the I-110 Harbor Transitway include bike lockers to promote non-motorized access and a law enforcement substation to assist with station security.

11 I-110 HARBOR TRANSITWAY PARK & RIDE AND TRANSIT STATION IMPROVEMENTS
Improvements to these facilities will include enhanced signage, lighting and security. Other benefits to customers include new bus stops under Slauson and Manchester stations for Lines 108/115, and improved signage and security for existing Harbor Transitway Park and Ride lots at Slauson, Manchester, Harbor Green Line, Rosecrans, Artesia, Carson, PCH and Harbor/Beacon in San Pedro.

METROLINK POMONA STATION IMPROVEMENTS

12 ADDITIONAL COMMUTER RAIL CAPACITY
This station on Metrolink's San Bernardino Line will undergo several improvements, including the addition of 143 new parking spaces and the expansion of platforms to accommodate longer eight-car trains.

EXPRESS PARK

13 DOWNTOWN PARKING MANAGEMENT
This project will use new parking technology to provide motorists alternative payment options and real-time parking availability information for nearly 13,000 on-street and off-street parking spaces in Downtown Los Angeles. The information will aid motorists in understanding their parking options and will guide them to available parking spaces – eliminating the need to search for parking and reducing traffic congestion.

New parking meters will be installed at approximately 5,500 on-street metered parking spaces in the downtown area. These meters will be capable of charging motorists demand-based parking rates – which change depending on the time of day and traffic congestion levels. They will also provide alternative payments options, allowing motorists to pay for parking using their credit card or cell phone and to receive a text message when their paid parking time is about to expire.

VANPOOLS

14 I-10/I-110 COMMUNITY-BASED VANPOOL FORMATION
This program will provide vanpool formation services to any community where ExpressLanes are implemented. This includes a dedicated vanpool representative that will actively train community groups to form vanpools and provide support to ensure that vanpools are created and retained.

In addition to receiving the incentive of free access to the new ExpressLanes, vanpoolers along those corridors will also be eligible for vanpool start-up assistance, which may cover the cost of driver and back-up driver training and exams, as well as special training on how best to keep existing vanpools together.

Figure 1-2. LA CRD (Metro ExpressLanes) Program Project Descriptions

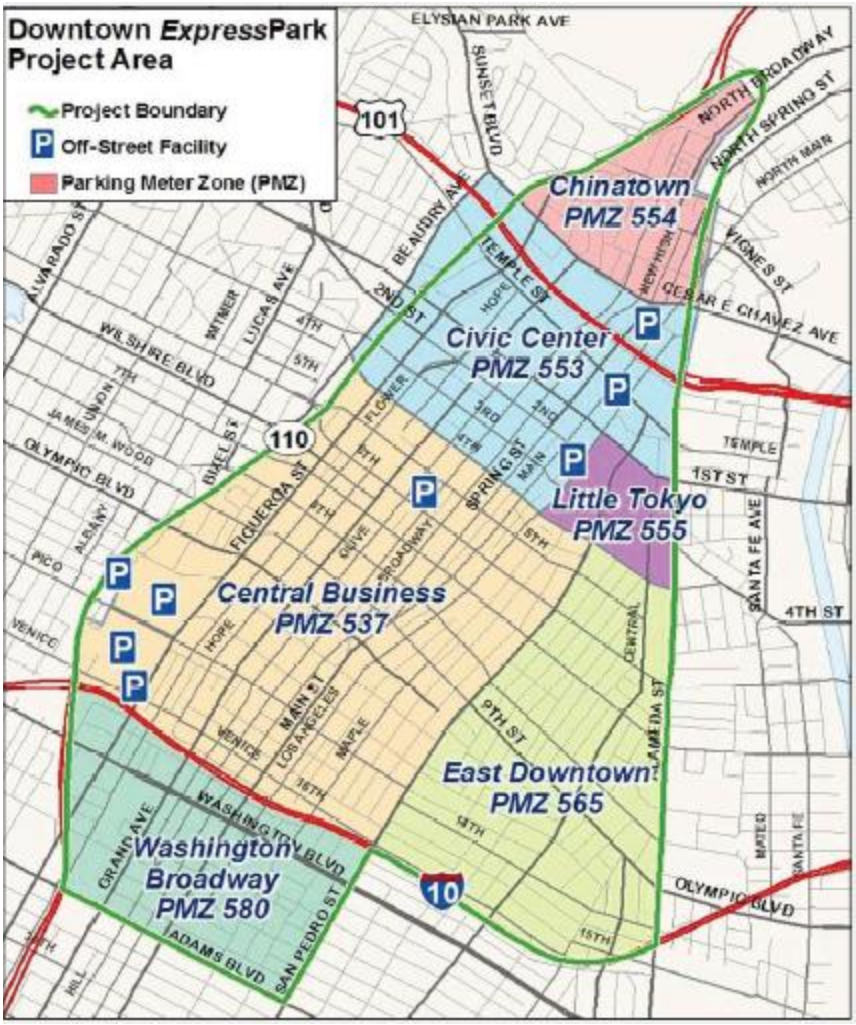
The U.S. DOT is allocating $210.6 million in Federal grant funding for the LA CRD projects, drawn from the Federal Transit Administration (FTA) 5309 Bus and Bus Facilities Program. The LA CRD projects consist of the following:

- **Transit Improvements** to increase the frequency of Metro bus rapid transit service through the acquisition of 59 new clean fuel expansion buses (30 buses in the I-10 El Monte Busway corridor and 29 buses in the I-110 Harbor Transitway corridor) and increased service: to one bus every seven minutes along the I-10 corridor and to one bus every ten minutes along the I-110 corridor. Various security upgrades will be made to the Harbor Gateway Transit Center (better lighting, new security cameras, bicycle lockers and a new LA County Sheriff's substation). Expansion of the El Monte Transit Center includes reconstruction of the existing transit passenger terminal, additional surface parking, and a new administration facility. A new El Monte Busway stop will be created at Union Station that will allow for direct pedestrian access to Union Station's Patsaouras Transit Plaza and thus promote transfers to/from the El Monte Busway and other transit services. Expansion of the Pomona (North) Metrolink station includes 143 new parking spaces and extended platforms to accommodate additional rail cars for the San Bernadino Line. Improvements to Harbor Transitway Park-and-Ride lots and Transit Stations include enhanced signage, lighting, and closed-circuit television cameras for existing lots at Slauson, Manchester, Harbor Green Line, Rosecrans, and Harbor Gateway as well as the relocation of bus stops for Lines 108 and 115 to the Slauson and Manchester Transitway stations. The 37th Street Station will also be fitted with translucent and architectural sound attenuation panels to reduce noise levels for waiting customers on the Harbor Transitway. Implementation of transit signal priority technology on Figueroa Street (15 signals between Wilshire Boulevard and Adams Boulevard) and Flower Street (5 signals between Wilshire Boulevard and Olympic Boulevard) in downtown Los Angeles. Lastly, to facilitate HOT traffic movement where the I-110 freeway enters downtown Los Angeles, Adams Boulevard will be widened and the Adams Boulevard off ramp will be restriped, both providing an additional lane of high occupancy vehicle (HOV) capacity.
- **High Occupancy Toll (HOT) Lanes** ("ExpressLanes") to expand freeway capacity by permitting toll-paying, single occupancy vehicles or those that do not meet the carpool occupancy requirement to use slack, HOT lane capacity on the I-10 and I-110 freeways. ExpressLanes will be created by converting existing HOV lanes into HOT lanes along the I-10 (from I-605 to Alameda Street) and along the I-110 (from 182nd Street to Adams Boulevard). In addition, a second HOT lane will be created (via restriping; no loss of general purpose lanes will occur) on I-10 from I-605 to I-710 where there is no slack HOV lane capacity during peak periods. All vehicles will pay to use the HOT lanes with the exception of transit vehicles, motorcycles and multiple-occupant private vehicles (three or more occupants on I-10 during peak hours, two or more all other times; two or more occupants on I-110). All tolls will be collected electronically, requiring all vehicles entering HOT lanes to be equipped with a transponder. Vehicles satisfying the ExpressLane occupancy requirements and therefore eligible to use the lane free of charge will "self declare" by setting a switch on their transponders. ExpressLane enforcement will be carried out manually through on-site law enforcement observation. Tolls will range from a minimum $0.25 per mile to a maximum $1.40 per mile depending on

congestion levels. When travel speeds in the HOT lanes fall below 45 mph for more than ten minutes, the ExpressLanes have reached capacity. At this point, the lanes will revert to HOV lanes and vehicles that do not meet the carpool occupancy requirements will not be permitted to "buy" their way into the lanes. Low income commuters[2] will receive cost reductions through the Equity Account Discount, consisting of a $25 discount for toll account set-up and waiver of the $3 non-usage maintenance fee.

- **Intelligent Parking Management (IPM)** ("LA ExpressPark") consists of a variable, demand-based parking pricing system coupled with a parking guidance system that will include real-time parking availability information. The IPM is intended to reduce traffic congestion, reduce air pollution, and improve transit efficiency by reducing parking search times by achieving 10 to 30 percent parking availability for on-street parking. The LA ExpressPark system will cover approximately 13,500 City of Los Angeles-owned or operated parking spaces (about 6,000 on-street, metered spaces and about 7,500 off-street spaces in an area of downtown Los Angeles bounded by the I-10 and I-110 freeways, Alameda Street and Adams Boulevard. The project area is shown in Figure 1-3. LA ExpressPark meter capabilities include demand-based parking rates based on time of day and length of stay; alternate payment options (coins, credit card, smart phone, cell phone); and increased convenience (text messages when paid parking time is about to expire). Vehicle sensors placed in the on-street metered parking spaces provide real-time occupancy and parking duration information. Parking conditions and availability in off-street parking locations will be determined using vehicle sensors, cordon counting systems and/or advanced revenue control systems. The parking guidance component of the IPM will provide information via a limited number of on-street dynamic message signs when not in use for active traffic management, an Internet web site, mobile phones using Metro's 511 interactive voice response system, smart phones and, pending industry support, in-vehicle navigation systems.
- **Ridesharing Promotion (travel demand management)** to increase the number of registered vanpools (with a goal of 100 new vanpools on the I-10 and I-110 corridors), and major employer-based ridesharing through the use of promotional methods including subsidies to travelers and vanpool operators and promotional outreach to major employers. In addition, a Metro ExpressLanes Carpool Loyalty Program is being developed which will incentivize vanpool trips by offering monthly drawings for gift cards on each corridor. Vanpools will be automatically entered into the drawing every time they use the Metro ExpressLanes and the toll system detects their FasTrak at the 3+ setting.

[2] The Equity Account Discount defines low income commuters as Los Angeles residents with an annual household income (family of 3) of $35,000 or less.



Derived from "ExpressPark Intelligent Parking Management: Downtown" Los Angeles Department of Transportation Pamphlet http://ladot.lacity.org/pdf/PDF217.pdf

Figure 1-3. LA ExpressPark Project Area

Schedule for the LA CRD (Metro ExpressLanes) Program. As shown in Figure 1-4, the LA CRD (Metro ExpressLanes) Program projects will become operational in a phased manner. Tolling on I-110 is scheduled to begin in October 2012, and tolling on I-10—the last project to be completed—is scheduled to begin in February 2013. Most of the LA CRD (Metro ExpressLanes) Program projects will be coming on line in advance of I-110 and I-10 tolling. One project will come online after tolling begins on the I-10.

Figure 1-4. LA CRD (Metro ExpressLanes) Program Project Completion ("Go Live") Schedule

1.2 LA CRD (Metro ExpressLanes) Program National Evaluation Plan and the Use of Ridesharing Data

Within a test plan, data are categorized by type into various "data elements." Table 1-2 includes a summary of the rideshare data elements that will be collected through this test plan, the measures of effectiveness (MOEs) that the data elements will be used to construct, and the hypotheses/questions those MOEs will be used to test or answer. This Ridesharing Data Test plan will collect only vanpool operating data. However, the ridesharing analysis will utilize several data elements that will be provided by other national evaluation test plans. Chapter 3 (Data Analysis) describes how all of the ridesharing data elements—those collected through this and other test plans—will be utilized to test all three ridesharing hypotheses, as enumerated in that chapter.

Table 1-2. Ridesharing Data Elements Collected Through This Test Plan and Used in Testing Evaluation Hypotheses/Questions Data

LA CRD Rideshare Data Element	LA CRD Measures of Effectiveness	LA CRD Hypotheses/Questions
1. Metro subsidized vanpool program data	• Change in number of registered vanpools and vanpool riders in the treatment corridors.	• LARideshare-1: CRD vanpool promotion will result in at least 100 new Metro-registered vanpools.
2. Metro subsidized vanpool program data (will provide vehicle miles traveled [VMT])	• Change in registered vanpool vehicle miles traveled in the treatment corridors	• LARideshare-1: CRD vanpool promotion will result in at least 100 new Metro-registered vanpools.

Source: Battelle, July 2012.

Table 1-3 shows which of the various LA CRD (Metro ExpressLanes) Program test plans will contribute data to each of the evaluation analyses. The "flow" between test plans is "one way" in the sense that test plans feed data and measures to the analyses rather than the reverse. The solid circles show where data from a given test plan constitutes a major input to an analysis; the open circles show where data from a given test plan constitutes a supporting input to an analysis. As shown in Table 1-3, the Ridesharing Data Test Plan provides input to the TDM (Rideshare), Equity and Cost Benefit analyses.

Table 1-3. Relationship Among Test Plans and Evaluation Analyses

LA CRD (Metro ExpressLanes) Program Test Plans	Evaluation Analyses										
	Tolling	Technology	Transit	Travel Demand Management (TDM)*	Congestion	Safety	Environmental	Equity	Business Impact	Non-Technical Factors	Cost-Benefit
Traffic System Data Test Plan	●		○	○	●	●	●	○			●
Tolling Test Plan	●	●			○		○	○	○		●
Transit System Data Test Plan	○		●	○	○		○	○			●
Ridesharing Test Plan				●				○			○
Safety Test Plan					○	●		○			●
Environmental Data Test Plan							●	○			○
Surveys, Interviews, Workshops Test Plan	●	●	●	●	○	○	○	●	●	●	
Content Test Plan										●	
Cost Benefit Test Plan											●
Exogenous Factors Test Plan	○	○	○	○	○	○	○	○	○	○	

Source: Battelle, July 2012.

● — Test Plan Data Constitutes a Major Input to the Evaluation Analysis

○ — Test Plan Data Constitutes a Supporting Input to the Evaluation Analysis

* The only Travel Demand Management (TDM) element included in the LA CRD are those related to ridesharing and therefore what is called the TDM Analysis in the evaluation plan documents for some of the other UPA and CRD sites is referred to as the Ridesharing Analysis in the LA CRD evaluation documents.

2.0 DATA SOURCES, AVAILABILITY, AND RISKS

This chapter describes the ridesharing data that will be collected through this test plan, the sources of data, availability of data and any risks associated with collecting and analyzing the data. This section also references several other data that will be collected through other test plans and which will be key to the ridesharing analysis.

The main focus of the LA CRD (Metro ExpressLanes) Program ridesharing element is vanpool formation in the two HOT lane corridors, I-10 and I-110. Since 2007, Metro has organized and led Metro Vanpool, a countywide public vanpool program purposed to reduce the number of drive-alone commuters, vehicle miles, traffic congestion, and Greenhouse Gas Emissions. Metro subsidizes up to $400 per vehicle per month buying down the vanpool vehicle rental cost by 25 to 50 percent. This stimulates public vanpool formation and rider retention. Through fiscal year 2011, over 1,000 vanpools operated in Metro Vanpool service carrying nearly 12,500 daily riders.

The LA CRD (Metro ExpressLanes) Program rideshare effort is seeking to increase this number by forming 100 new vanpools in the HOT lane corridors in order to contribute to the efficient operation of these two priced and managed facilities. Metro plans to achieve this vanpool formation goal in multiple ways. First, it will continue to promote the $400 per month vanpool subsidy. Promotion will occur through general marketing efforts and will also involve targeted marketing at employer worksites located within the HOT lane corridors. Finally, through the implementation of a Carpool Loyalty Program, Metro is also working to minimize and mitigate the unintended break-up of existing carpools once tolling is made available and other modes (vanpooling and transit) are improved.

Table 2-1 provides an overview of ridesharing data elements that will be sourced from existing resources. Section 2.1 elaborates on the table by identifying the data sources for the required data. Section 2.2 discusses the availability of the data and how the information will be provided to the evaluation team. Section 2.3 addresses potential risks in assembling the required data and the means for overcoming these risks. Lastly, the use of data from other test plans (e.g., Traffic System Data – and Surveys, Interviews, and Workshops Test Plans) will be discussed in Section 3.0.

Table 2-1. Summary of Data Needs for LA CRD (Metro ExpressLanes) Program Ridesharing Data Test Plan

Data Element	Location	Data Granularity	Data Collection Frequency	Data Reporting Frequency	Responsible Agency (Data Source)
1. Vanpool Program Data (e.g., vans, riders, miles, route, etc.)	I-10 and I-110 corridors	Data by vanpool group summarized by corridor	Monthly statistics during pre-and post deployment (Oct 2011 – Oct 2013)	Quarterly	Metro
2. Historic Vanpool Program Data (e.g., vanpools, vanpoolers, miles traveled countrywide)	Countywide	Countywide summary	2007 – Oct 2011	Once	Metro

Source: Battelle, July 2012.

2.1 Data Sources

All rideshare data will be provided by Metro through continuous record keeping of subsidized vanpools. Other LA test plans detail the remaining data needed for the TDM Analysis of ridesharing, including two specialized data collection efforts – a post-deployment vanpooler survey and employer focus groups, which are described in the Surveys, Interviews and Workshops Test Plan. Likewise, some data required to address the third hypothesis on potential carpool break-up is described in the Traffic System Data (e.g., occupancy counts) and Surveys, Interviews, and Workshops (e.g., transit survey) Test Plans.

Vanpool Program Data

Metro maintains records of all Metro-subsidized vanpools. This fare subsidy process allows Metro to maintain contact with each vanpool group on a monthly basis. Vanpool operating data will include:

- Historic statistics on Metro vanpools, vanpoolers and vanpool miles countywide (2007 to October 2011);
- Total number of Metro vanpools operating in the I-10 and I-110 corridors (based on vanpool origin and destination) and countywide; collected monthly from October 2011;
- Total number of vanpoolers riding in Metro-subsidized vanpools during the pre-deployment period for the two corridors and countywide;
- Total number of new Metro vanpools formed since enhanced promotional efforts began in Spring 2012 (in each corridor and countywide);
- Total number of new vanpoolers riding in Metro subsidized vanpools in each corridor and countywide;
- Vanpool operating miles by vanpool and total (for VMT reduction calculation) in each corridor and countywide.

Metro does not anticipate being able to acquire comparable operating data for vanpools operating without Metro subsidies. While Metro collects data on a monthly basis, it will be reported to the evaluation team on a quarterly basis for the period October 2011 to October 2013.

Data Elements Collected Through Other Test Plans

Table 1-2 and this Chapter 2.0 focus on data that will be collected through this Ridesharing Data Test Plan. The Ridesharing Analysis, however, will utilize several other important data elements collected through the Exogenous Factors and Surveys, Interviews, and Workshops Test Plans. Chapter 3.0 of this test plan (Data Analysis) discusses how all ridesharing data—collected through various test plans—will be analyzed.

Key ridesharing data from the Surveys Test Plan includes Metro's survey of all vanpoolers in the I-10 and I-110 corridors in the fall of 2013. Survey results will provide information to the rideshare analysis, by documenting the proportion of vanpoolers who switched from driving alone and other lower occupancy modes. It will also provide attitudinal data on the influence of the HOT lanes and the vanpool subsidy on the riders decision to vanpool. Note that vanpool data

for the October to December 2011 period will be based on estimates derived from Metro's 2008 Vanpool survey. This is because Metro's county-wide vanpooling program did not track vans operating in the two corridors during this period. Monthly statistics for the two corridors is available beginning from January 2012.

Other data from the Surveys Test Plan includes employer focus groups and the Carpooler Survey. The Carpooler survey will assess a group of current HOV lanes users to determine how the HOT lane and other CRD deployments may have influenced their behavior.

Data collected through the Exogenous Factors Test Plan that will be considered in the analysis of ridesharing data include gasoline price and employment trends, atypical travel conditions that may impact travel behavior (e.g., very large special events, extreme weather) and transportation system changes (e.g., any non-CRD related transit fare changes, major roadway capacity improvements). All of these exogenous factors can influence traveler behavior in ways that may otherwise appear to be responses to the CRD deployment. Reviewing data on exogenous factors in conjunction with the ridesharing data may not allow a definitive, quantitative identification of the independent influence of the CRD but, at the least, will provide a more informed context in which to interpret evaluation findings.

2.2 Data Availability

Vanpool operating data will be readily available from Metro for both the pre- and post-deployment evaluation periods. Metro maintains detailed records for each vanpool it supports for purposes of distributing vanpool subsidies. For vans operating in the two test corridors, Metro will assemble summary data on a quarterly basis and transmit the data to the National Evaluation team beginning in October 2011.

2.3 Potential Risks

There are no significant risks foreseen to obtaining the data for this test plan. The rideshare efforts to be implemented for the LA CRD (Metro ExpressLanes) Program are under the full control of Metro and will be implemented by in-house staff. The targeted financial incentives and outreach effort will simply be an extension and targeting of existing outreach activities and incentive programs.

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3.0 DATA ANALYSIS

The national evaluation team will complete a data analysis each quarter upon receipt of the vanpool operating data to check for anomalies or outliers. Any irregularities that are noted will be taken up with Metro for resolution.

The rideshare data analysis will primarily seek to address three key TDM hypotheses:

- ***LARideshare-1:*** CRD vanpool promotion will result in at least 100 new Metro-registered vanpools.
- ***LARideshare-2:*** Which factors were most effective in promoting ridesharing?
- ***LARideshare-3:*** Will CRD HOT and transit improvements lead to unintended breakups of current carpools?

The rideshare data will also be used in the tolling, congestion, equity, and cost benefits analysis areas. Likewise, data from the Surveys, Interviews and Workshops (i.e., transit survey, vanpooler survey and employer focus group), the Traffic System Data Test Plan (i.e., occupancy counts), and Tolling Data Test Plan (i.e., license plate survey and transponder application data) will be used in the TDM Analysis of ridesharing. Finally, exogenous factors, covered in a separate test plan, will be accounted for in terms the potential impact of outside influences on mode shift.

LA Rideshare-1 – Vanpool Formation

The primary focus of the TDM Analysis for ridesharing is assessing whether the vanpool formation target has been achieved. Using registered vanpooling reporting data (needed to receive financial incentives), Metro will document the total number of vanpools and number of new vanpools operating in the I-10 and I-110 corridors. Documentation began in October 2011. Spring 2012 is the kick-off date for targeted outreach to commuters and employers. Vanpools assigned to each corridor will be identified by assessing the origin and destination of each van. Monthly vanpool formation will be tracked beginning October 2011 and going through October 2013. New vanpool formation , total vanpools operating, and net vanpool formation (accounting for vanpools ceasing operations) will be tallied on a quarterly basis by Metro staff and transmitted to the National Evaluation team. Additionally, countywide historic vanpool operating data is available from 2007 through October 2011.

The contribution of vanpooling to mode shift will be assessed in a more qualitative manner to inform other analyses, including congestion. Mode shift will be assessed by measuring new vanpools formed (from Metro operating records) and accounting for prior mode (from the vanpooler survey). Shifts from lower to higher occupancy will be assessed (as will higher – i.e., transit – to lower) to assess mode shift and average trip distance (from Metro operating records) used to calculate VMT reduction. Again, this assessment of vanpool mode shift and VMT reduction will not be the primary analytical tool to assess overall mode shift, (this will occur in the congestion analysis), but the contribution of vanpooling to these measures will be informed through the rideshare analysis. Mode shift analysis is detailed in the Traffic System Data Test Plan.

LA Rideshare-2 – Rideshare Promotion Effectiveness

Attitudinal and contextual information will be analyzed to assess the effectiveness of various promotional activities in forming new vanpools, such as employer outreach, commuter outreach, and vanpool subsidies. This assessment will rely on survey responses in the vanpooler survey and overall impressions from the employer focus group(s).

Again, the vanpooler survey and employer focus groups are detailed in the Surveys, Interviews, and Workshops Test Plan.

LA Rideshare-3 – Carpool Break-up

It is expected that the national evaluation will include a survey of carpoolers[3] to assess the impact of the LA CRD (Metro ExpressLanes) Program (especially the HOT lanes) on carpooling. The details of the proposed carpool survey approach are being developed in the Draft Surveys, Interviews and Workshops Test Plan and the final decision on whether this survey will be possible—and its specific approach—will be finalized through that test plan. The carpool survey may involve a follow-up survey of carpools identified in the HOV lanes as part of the pre-deployment license plate survey. If conducted, the carpool survey results will be the primary source of information used to assess carpool break-up. However, other related data will also be consulted to help round out understanding. If the survey is not completed, the evaluation will rely solely on these other data sources for evaluating impact. These data are as follows:

- If a special carpool survey (as a stand alone effort or as an oversample/quota sample within the broader License Plate Survey) is not conducted, it is still possible that the License Plate Survey sample may include some carpoolers. Although given the relatively small proportion of carpoolers, it is unlikely that the standard sampling approach for the License Plate Survey (that is, no oversampling or quota sampling for carpoolers) will capture enough carpoolers to support statistically significant analysis. However, it may still be instructive to examine whatever results are obtained for even a relatively small number of carpoolers.
- Vehicle occupancy counts to assess overall changes in carpooling in the HOT lane and GP lanes (from the Traffic System Data Test Plan)
- Vanpooler survey to assess whether new vanpools in each corridor are formed from carpools that used the HOV lanes (from the Surveys, Interviews, and Workshop Test Plan)
- Transit Survey to assess whether new transit riders switched from carpooling in the HOV lanes (from the Surveys, Interviews, and Workshop Test Plan)
- Transponder Applicant data which include a question of whether the applicant is currently carpooling (from the Tolling Test Plan)
- Any data related to the evaluation of Metro incentives aimed at mitigating the break-up of carpools.

[3] Based on discussions with Metro, the current expectation is a survey of carpoolers (either separate or attached to the current license plate survey). This survey will identify carpoolers through an oversampling or quota sampling approach. The final decision on this survey will be provided in the Draft Surveys, Interviews, and Workshops Test Plan.

4.0 SCHEDULE AND RESPONSIBILITY

The deployment of vanpool outreach activities is scheduled by Metro for Spring 2012. Vanpool operating statistics for the I-10 and I-110 corridors will be reported by the vanpoolers to Metro on a monthly basis (including new and net new vanpools) then summarized and transmitted to the National Evaluation team on a quarterly basis from October 2011 through October 2013. The vanpool survey and employer focus groups will be undertaken during the post-deployment period, likely in the late summer or early fall of 2013.

The responsibilities for this test plan include:

- Metro will collect, summarize and transmit all rideshare data on quarterly basis beginning in early 2012.[4]
- The National Evaluation team will interpret and analyze data and report the results. Data quality checking will occur as the data is received, but most of the analysis will occur when all data is available in the fall of 2013.

[4] While the data will be for October 2011 – December 2011, it won't be transmitted until February 2012.

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APPENDIX A – HYPOTHESES/QUESTIONS FROM THE LA CRD (METRO EXPRESSLANES) PROGRAM NATIONAL EVALUATION PLAN

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Congestion	LACong-1	Deployment of the CRD improvements will reduce the travel time of users in the I-10 and I-110 corridors.
	LACong-2	Deployment of the CRD improvements will improve the reliability of user trips in the I-10 and I-110 corridors.
	LACong-3	Deployment of the Downtown LA Intelligent Parking Management Project will reduce congestion in the downtown.
	LACong-4	Deploying the CRD improvements will result in more vehicles and persons served in the I-10 and I-110 corridors during peak periods.
	LACong-5	Will surveyed travelers perceive a noticeable reduction in travel times in the treatment corridors?
	LACong-6	Will surveyed travelers perceive a noticeable improvement in trip-time reliability in the treatment corridors?
	LACong-7	Will surveyed travelers perceive a noticeable reduction in the duration of congested periods in the treatment corridors?
	LACong-8	Will surveyed travelers perceive a noticeable reduction in the length of peak congestion periods in the treatment corridors?
	LACong-9	Relative travel times for HOV/HOT lanes vs. general purpose lanes will either remain the same or (more likely) improve for HOV/HOT travelers as a result of the CRD deployments.
	LACong-10	The introduction of tolled SOV traffic into the HOT lanes in the deployment corridors will not negatively impact HOV or transit traffic in terms of average travel times or travel reliability.
	LACong-11	The CRD deployment will not cause traffic congestion to increase in the HOV/HOT lanes.
	LACong-12	Because of latent demand in the deployment corridors, the CRD deployments are not likely to impact traffic congestion on the general purpose lanes.
	LACong-13	Because of the CRD deployments, congestion on the arterials streets paralleling the corridors will be reduced.

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Tolling	LATolling-1	The HOT lanes will regulate vehicular access to the I-10 and I-110 and improve their operation.
	LATolling-2	Some general-purpose lane travelers will shift to the HOT lanes, while HOV lane travelers will continue to use them after they are converted to HOT.
	LATolling-3	After ramp-up, the HOT lanes on I-10 and I-110 pricing will maintain operating improvements on I-10 and I-110 after the initial ramp-up period.
	LATolling-4	The downtown IPM project will result in 70-90% of the parking spaces on each block occupied throughout the day.
	LATolling-5	The downtown IPM project may increase parking revenues that can be used to fund system expansion in other high-demand areas.
	LA Tolling-6	Implementing the HOT lanes will reduce the HOV violation rate.
	LA Tolling-7	Will CRD HOT and transit improvements lead to unintended breakups of current carpools/vanpools?
Transit	LATransit-1	CRD projects will enhance transit performance within CRD corridors through reduced travel times, increased service reliability, and increased service capacity.
	LATransit-2	User perceptions of security at transit stations/park-and-ride lots will be improved by CRD projects.
	LATransit-3	CRD projects will increase ridership and facilitate a mode shift to transit within CRD corridors.
	LATransit-4	Increased ridership and mode shift to transit will contribute to increased person throughput, congestion mitigation, and transit cost-effectiveness within CRD corridors.
	LATransit-5	What was the relative contribution of each CRD project element to increased ridership/ transit mode share/person throughput?
Ridesharing	LARideshare-1	CRD vanpool promotion will result in at least 100 new Metro-registered vanpools.
	LARideshare-2	Which factors were most effective in promoting ridesharing?
	LARideshare-3	Will CRD HOT and transit improvements lead to unintended breakups of current carpools/vanpools?
Technology	LATech-1	Travelers will access the IPM website and telephone information system.
	LATech-2	IPM will improve LADOT's ability to reconfigure parking restrictions and rates.
	LATech-3	IPM will improve LADOT's ability to enforce parking regulations.

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Safety	LASafety-1	The collective impacts of CRD improvements[5] will be safety neutral or safety positive.
	LASafety-2	The addition of transition zones will not increase incidents.
	LASafety-3	Will boundary jumping cause incidents?
	LASafety-4	Will the additional law enforcement presence (associated with speed and toll enforcement) coupled with enhancement of the dedicated tow truck vehicle removal services associated with the CRD impact incident response and/or clearance time?
	LASafety-5	Will adjusted enforcement procedures affect the number of incidents?
Equity	LAEquity-1	What is the socio-economic and spatial distribution of the direct social effects of the CRD projects?
	LAEquity-2	Are there any differential environmental impacts on certain socio-economic groups?
	LAEquity-3	Will the potential HOT and IPM net revenues be reinvested in an equitable manner?
Environmental	LAEnvironmental-1	Vehicle-related air emissions will decrease in the treatment corridors.
	LAEnvironmental-2	Vehicle-related fuel consumption will decrease in the treatment corridors.
Business Impacts	LABus-Imp-1	How will the downtown IPM project affect retailers and similar businesses that rely on customers' ability to access their stores?

[5] Relevant CRD changes include narrower lanes on portions of the I-10 freeway, new signage, new HOT procedures, new enforcement procedures, and reduced congestion (i.e., faster flowing traffic).

Evaluation Analysis	Hypothesis/ Question Number	Hypothesis/Question
Non-Technical Success	LANon-Tech-1	What role did factors related to these five areas play in the success of the deployment? 1. People: Sponsors, champions, policy entrepreneurs, neutral conveners, legislators 2. Process: Forums (including stakeholder outreach), meetings, alignment of policy ideas with favorable politics and agreement on nature of the problem), legislative and Congressional engagements 3. Structures: Networks, connections and partnerships, concentration of power & decision making authority, conflict mgt. mechanisms, communications strategies, supportive rules and procedures 4. Media: Media coverage, public education 5. Competencies: Cutting across the preceding areas: persuasion, getting grants, doing research, technical/technological competencies; ability to be policy entrepreneurs; knowing how to use markets
	LANon-Tech-2	Does the public support the CRD strategies as effective and appropriate ways to reduce congestion?
Cost Benefit	LACostBenefit-1	Will the LA CRD (Metro ExpressLanes) Program projects have a net societal benefit?

Source: Battelle, July 2012.

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