

Los Angeles Congestion Reduction Demonstration (Metro ExpressLanes) Program

National Evaluation: Content Analysis Test Plan

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<p>16. Abstract</p> <p>This report presents the Content Analysis Test Plan for the national evaluation of the Los Angeles County Congestion Reduction Demonstration (CRD) under the United States Department of Transportation (U.S. DOT) Urban Partnership Agreement (UPA) 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 the 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 Content Analysis Test Plan is one of ten test plans being developed. The other nine test plans consist of the following: traffic; tolling; transit; ridesharing; safety; environmental; 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 content analysis data sources, data availability, data analysis and possible risks associated with the data. The schedule and responsibilities for collecting, analyzing, and reporting the data are also presented.</p>			
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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
ExpressLanes	Component of LA CRD, pilot converted HOT lanes
ExpressPark	Component of LA CRD, pilot LA parking management system
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
L.A.	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
SBCCOG	South Bay Cities Council of Governments
SCAG	Southern California Association of Governments
SGVCOG	San Gabriel Valley Council of Governments
TDM	Travel demand management
UPA	Urban Partnership Agreement
U.S. DOT	U.S. Department of Transportation

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1.0 INTRODUCTION

This report presents the test plan for collecting and analyzing information that will be used in the “content analysis” portion of the United States Department of Transportation (U.S. DOT) evaluation of the Los Angeles Congestion Reduction Demonstration (CRD) (Metro ExpressLanes) Program. This includes information on LA CRD (Metro ExpressLanes) Program marketing and outreach activities, media coverage of the program, and partnership documents. The LA CRD (Metro ExpressLanes) Program 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	<p>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:</p> <ul style="list-style-type: none"> • 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	<p>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:</p> <ul style="list-style-type: none"> • 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	<p>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?</p>
Objective Question #4	<p>What are the overall costs and benefits of the deployed set of strategies?</p>

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 Plan¹:

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

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 Content Analysis Test Plan, there are test plans focusing on the following types of data: traffic; tolling; ridesharing; safety; environmental; transit; surveys, interviews, and workshops; cost benefit; 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.

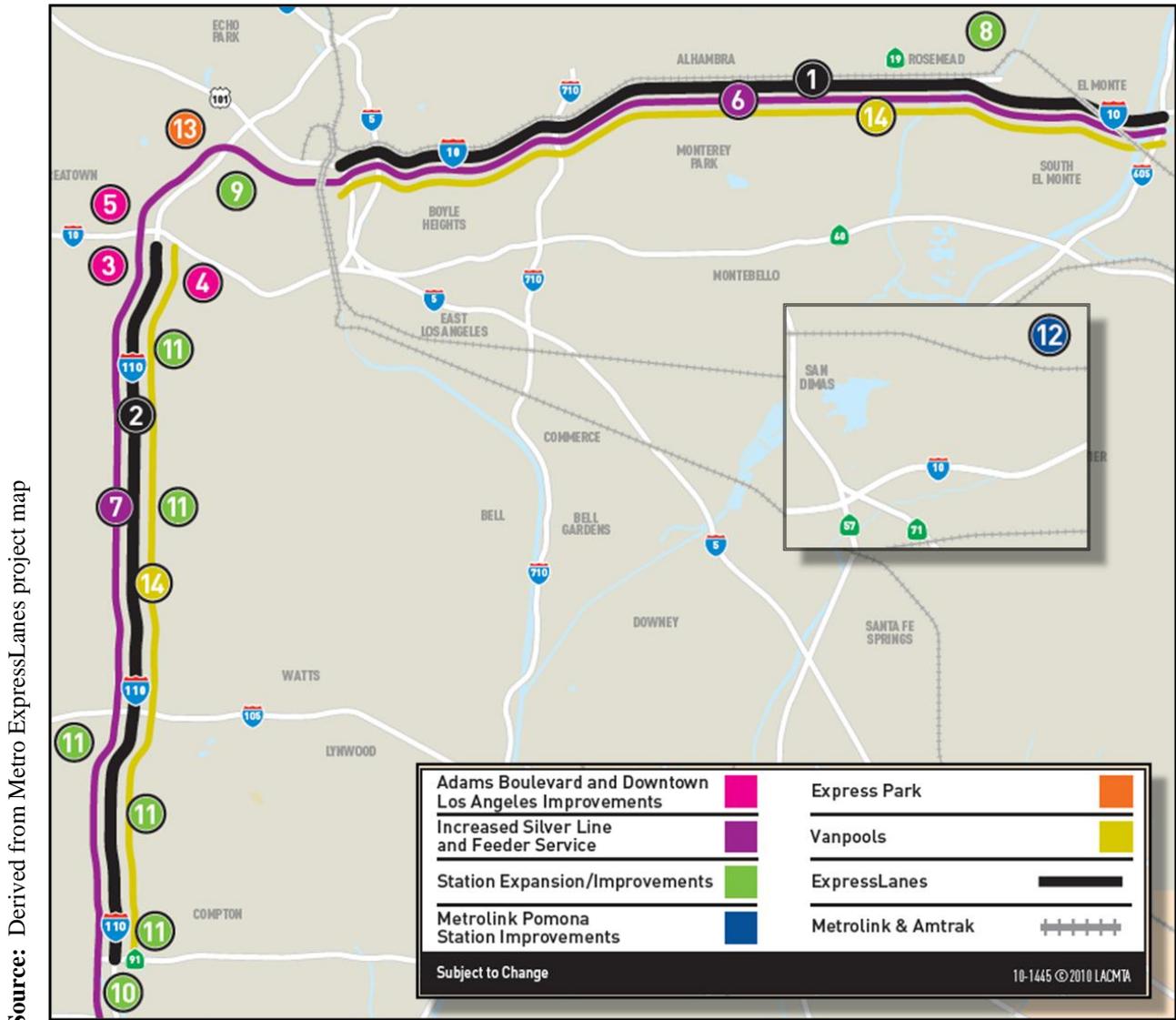
The remainder of this introduction chapter identifies the LA CRD (Metro ExpressLanes) Program deployments and elaborates on the relationship between test plans and evaluation analyses. The remainder of the report is divided into three sections. Chapter 2.0 presents the data sources, availability, and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

1.1 The Los Angeles CRD 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 Los Angeles (L.A.) 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.

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 Southern California Association of Governments (SCAG); the

San Gabriel Valley Council of Governments (SGVCOG); 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 (Metro ExpressLanes) Program 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.



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

Source: 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 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 Express Lanes 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 (Metro ExpressLanes) Program projects, drawn from the Federal Transit Administration (FTA) 5309 Bus and Bus Facilities Program. The LA CRD (Metro ExpressLanes) Program 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 L.A. 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 commuters² 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)** (“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 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. 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.

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.

Source: Derived from “ExpressPark Intelligent Parking Management: Downtown”
 Los Angeles Department of Transportation Pamphlet
<http://ladot.lacity.org/pdf/PDF217.pdf>

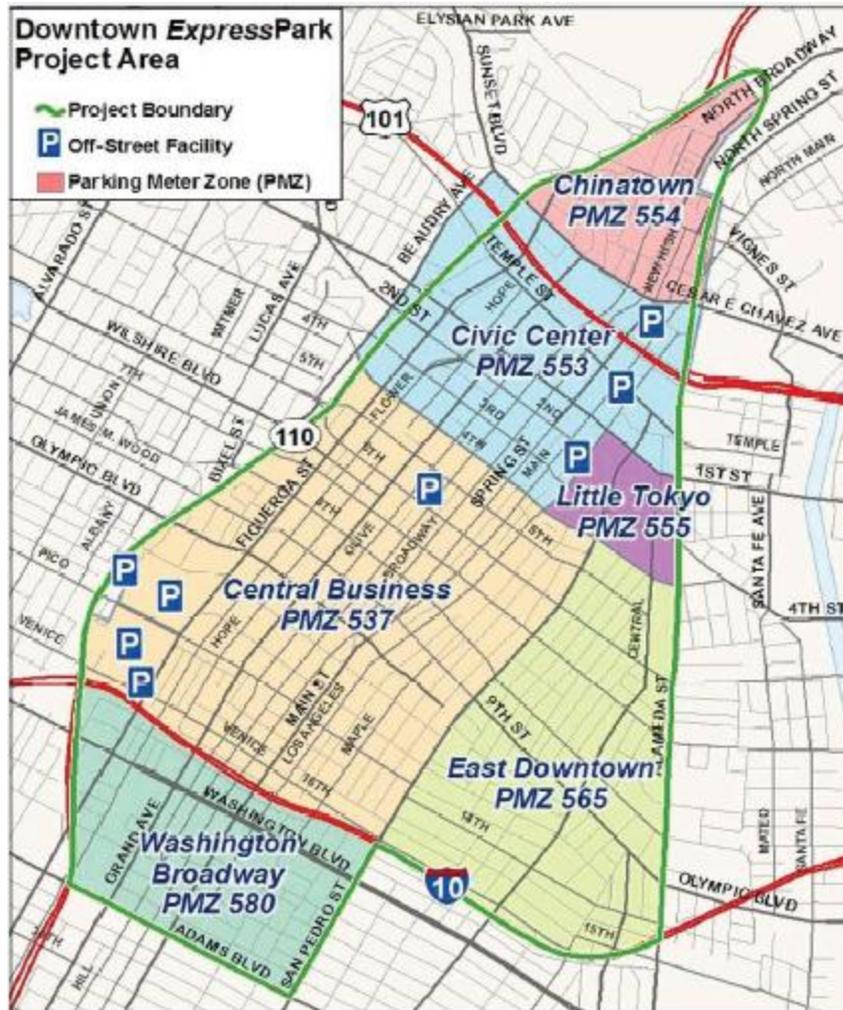
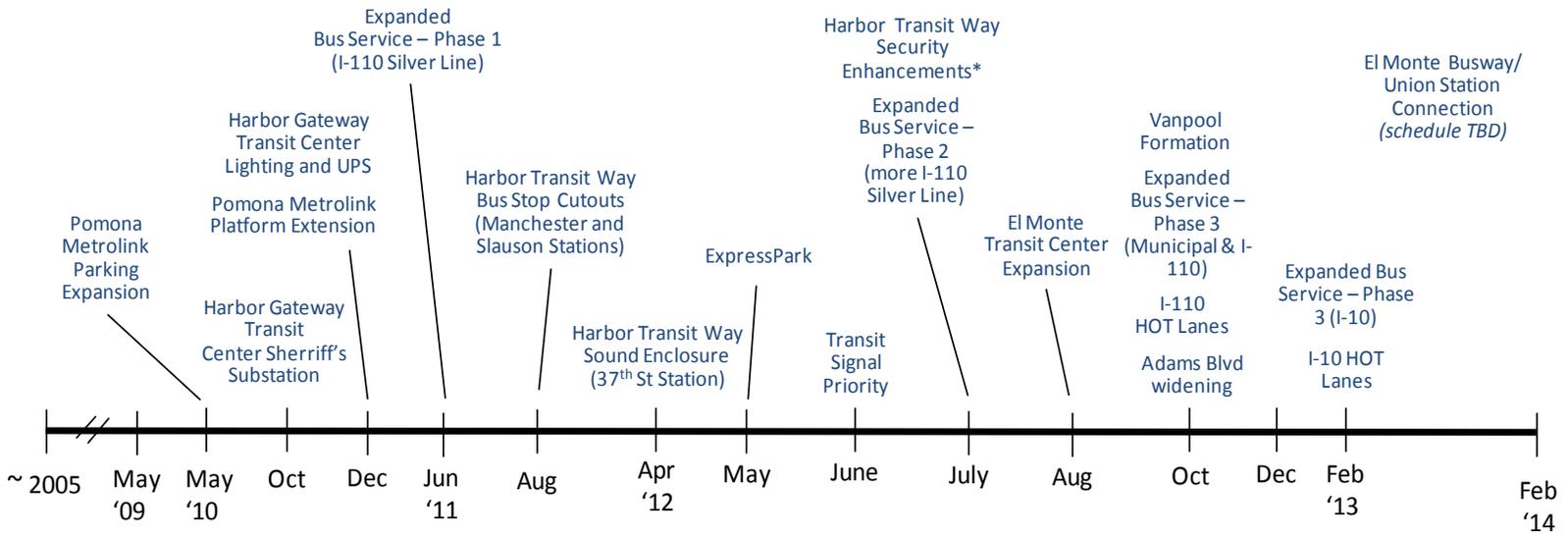


Figure 1-3. ExpressPark Project Area

Schedule for the LA CRD (Metro ExpressLanes) Program Projects. 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 on line after tolling begins on the I-10.

Source: Based on information provided by Metro; March 2012.



*Stations: Slauson, Manchester, Harbor Green Line, Rosecrans, Harbor Gateway

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 Data from the Content Analysis

Table 1-2 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 1-2, the Content Analysis Test Plan provides major input to the non-technical success factors analysis and, by providing an understanding of the overall process and context for the LA CRD (Metro ExpressLanes) Program, it provides supporting input to the interpretation of results in most of the other evaluation analyses.

Within a test plan, data are grouped by type into various “data elements.” Table 1-3 lists the LA CRD (Metro ExpressLanes) Program content analysis data elements and, by associating those elements with the measures of effectiveness and the hypotheses/questions from the related evaluation analyses, summarizes why these data are important.

Table 1-2. Relationships 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, April 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.

**Table 1-3. Content Analysis Test Plan Data Elements Used
in Testing Evaluation Hypotheses/Questions**

LA CRD (Metro ExpressLanes) Program Transit Data Element	LA CRD (Metro ExpressLanes) Program Measure of Effectiveness	LA CRD (Metro ExpressLanes) Program Hypotheses/Questions*
1. Partnership Documents	<ul style="list-style-type: none"> • Partnership documents (e.g., Memoranda of Understanding) 	LANon-Tech-1
2. Outreach Materials	<ul style="list-style-type: none"> • Outreach materials (e.g., press releases, brochures, websites, etc.) 	LANon-Tech-1
3. Media Coverage	<ul style="list-style-type: none"> • Newspaper, Radio, TV, Blogs 	LANon-Tech-1

Source: Battelle, April 2012.

*Listed are acronyms corresponding to hypotheses/questions to be addressed with data from this test plan. An explanation of these acronyms can be found in Appendix A, which contains a compilation of the hypotheses/questions for all the analysis areas from the LA CRD (Metro ExpressLanes) Program National Evaluation Plan.

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2.0 DATA SOURCES, AVAILABILITY, AND RISKS

This chapter identifies the data sources for the content analysis and discusses the availability of those data and any potential risks associated with collecting and processing them for use in the evaluation. Table 2-1 summarizes the data requirements for the Content Analysis Test Plan. The details associated with source, timing and other particulars are discussed in the sections that follow.

2.1 Data Sources

Table 2-1 summarizes the content analysis data needs, including individual data elements associated with each of the three major data types (outreach materials, partnership documents and media coverage), the data collection timelines, and data sources. Each of the data types are discussed below. Together, these data will allow the national evaluation team to understand what the LA CRD (Metro ExpressLanes) Program local partners did to make their project successful and the keys to success and lessons learned. For example, outreach material/activities will provide information on how and how well the partners engaged targeted audiences (political decision makers, agency leaders and technical staff, the general public, etc.) and what messages the local partners communicated. Partnership documents will provide insights into how the multi-agency LA CRD (Metro ExpressLanes) Program partnership was united. Media coverage data will indicate how the media reacted to the project and portrayed it to the public.

Outreach Materials/Activities: To the extent possible, all outreach materials related to the CRD project that are created and distributed by local partner agencies (or any marketing/communications contractors) starting from the beginning of the LA CRD (Metro ExpressLanes) Program through the end of the national evaluation data collection period (one full year past the implementation of the final CRD project) will be compiled and archived by Metro and transmitted by Metro to the national evaluation team in electronic format. In addition, any outreach activities conducted by any of Metro's CRD partner agencies and any marketing/communications contractors will be logged and reported by Metro to the national evaluation team over this same period.

Partnership Documents: To the extent possible, all CRD partnership documents will be archived and transmitted by Metro to the national evaluation team in electronic format before the final CRD project (I-10 HOT lanes in February 2013) becomes operational. Partnership documents refer to any internal communications that are documented by the project partners. These items may include formal documentation (e.g., MOU agreements created by partners to clarify roles and responsibilities) as well as communications among partners during the proposal development and project implementation stage (e.g., baseline). It may also include items such as meeting agendas and notes. The purpose of document collection is to better understand the activities and actions that project partners created and implemented in the process of collaborating on the project. (Note: these documents will only be viewed by the researcher who is conducting the content analysis).

Media Coverage: From its first occurrence through the end of the national evaluation data collection period, all local, regional, and national media coverage of the LA CRD (Metro ExpressLanes) Program will be sought for the national evaluation. The primary source for the data will be Metro, who will provide media clippings from local media sources pertaining to the CRD projects.

Table 2-1. Summary of Data Needs for Los Angeles CRD Content Analysis Test Plan

Data Element		Data Collection Timing*				Data Reporting Frequency	Agency Responsible for Transmitting Data to the National Evaluation Team
		Baseline		Post-Deployment			
		Begin	End	Begin	End		
1.0 Outreach Materials/Activities	1.1 Press Releases	First occurrence	February 2013	March 2013	February 2014	Quarterly	Metro
	1.2 Project Fact Sheets/Brochures	First occurrence	February 2013	March 2013	February 2014	Quarterly	Metro
	1.3 Tours/Public Meetings/Presentations	First occurrence	February 2013	March 2013	February 2014	Quarterly	Metro
	1.4 Other Media Events	First occurrence	February 2013	March 2013	February 2014	Quarterly	Metro
2.0 Partnership Documents	2.1 Partnership Agreement Documents	First occurrence	NA	NA	NA	One time in 2011	Metro
	2.2 Memoranda of Understanding	First occurrence	NA	NA	NA	One time in 2011	Metro
	2.3 Other communication documents (examples of this might include agency resolutions authorizing initial participation in the CRD application, committing project funding, and designating staff support)	First occurrence	NA	NA	NA	One time in 2011	Metro
3.0 Media Coverage	3.1 Local and national newspapers	First occurrence	February 2013	March 2013	February 2014	Monthly	Metro
	3.2 Blogs	First occurrence	February 2013	March 2013	February 2014	Monthly	Metro
	3.3 Magazines	First occurrence	February 2013	March 2013	February 2014	Monthly	Metro
	3.4 Local radio and TV clips	First occurrence	February 2013	March 2013	February 2014	Monthly	Metro

Source: Battelle, April 2012.

* For the purposes of this test plan, the “baseline” period is the beginning of the LA CRD (Metro ExpressLanes) Program up until the last of the LA CRD (Metro ExpressLanes) Program projects become operational and the “post-deployment” period is the one year period following implementation of the last project.

2.2 Data Availability

It appears that all of the necessary data will be available from the LA CRD (Metro ExpressLanes) Program local partners. The national evaluation team will coordinate with Metro on data availability and data delivery per the following instructions:

- ***Outreach Materials/Activities:*** Metro will assemble the information related to its outreach, such as stakeholder meetings, communications plans, printed or electronic marketing material and provide these electronically to the national evaluation team.
- ***Partnership Documents:*** Metro will assemble any relevant materials they are able to find – that are not already available electronically via the public websites – and deliver them electronically to the national evaluation team.
- ***Media Coverage:*** The national evaluation team will receive monthly updates on all news media coverage for the LA CRD (Metro ExpressLanes) Program projects. This information is already being collected by the Metro communications team and they have agreed to forward their documentation to the national evaluation team.

2.3 Potential Risks

There do not appear to be any significant risks associated with collecting outreach materials/activities, partnership documents, and media coverage data. Data availability may be an issue when collecting archived outreach materials/activities and partnership documents. However, the collection methodology established by the national evaluation team is intended to avoid gaps in data availability by having the partners send material on a regular basis. In addition, a delay in project deployment may require adjustment in the evaluation timeline, and thereby extend the overall data collection period.

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3.0 DATA ANALYSIS

The content analysis will be carried out using the overall approach for the non-technical success factors analysis (of which the content analysis is one component) described in the LA CRD (Metro ExpressLanes) Program National Evaluation Plan. The content analysis is directed by two key questions: 1) What did the partners do to try to make their CRD projects successful?; and 2) What were the keys to success and what are the associated lessons learned that will be useful to USDOT and other state and local transportation agencies?

The analysis will assess public reaction to the LA CRD (Metro ExpressLanes) Program project, chronicle project hurdles and challenges, and evaluate the methods used to overcome the hurdles and challenges. The analysis will also examine the role the media plays as both an intermediary in conveying information to the public as well as a shaper of public opinion. In addition, the analysis will assess whether and how there was a coherent marketing and communications plan for the CRD project and will explore the dynamics of collaboration through partnership documents.

All outreach materials/activities, partnership documents, and media coverage data will be stored, organized and analyzed using NVivo, a qualitative data analysis software.³ Utilizing the NVivo software is a benefit for the content analysis. The software creates project efficiencies through its ability to store, organize and link project materials in one location. The software also has the ability to develop and store qualitative analysis techniques such as document coding and tracking characteristics and counts for each project element. NVivo will also be used to store, organize and analyze the stakeholder interviews and workshops – additional elements of the non-technical success factors analysis. NVivo can link the content analysis data elements to the data from the stakeholder interviews and workshops, thereby facilitating a more in-depth non-technical success factors analysis. In addition, NVivo can verify inter-coder reliability by tracking and reporting the similarities or differences among multiple coders.

A descriptive analysis will be used for the outreach materials/activities and partner documents. This will involve a detailed description for each data element that answers the following questions: 1) What was done? 2) When did it happen? and 3) What form did it take? This descriptive information will then be correlated with the media coverage data. For example, a timeline of outreach and partner activities will be developed and compared with the amount and type of media coverage generated over the same time period.

For the media coverage, NVivo will be used to code the data. In order to assure reliability and validity of the analysis, at least two coders will be utilized to determine the appropriate coding categories. NVivo will identify any disagreement among coders, which will then be resolved by coming to an agreement among coders as to the appropriate coding category. A preliminary coding structure organizes the data into the following categories:

³ For more information on the NVivo software, please visit: <http://www.qsrinternational.com>.

- **Outcomes:** Impact of the project on both public perception of congestion relief and on how partner agencies do their work; success or failure of project to meet its stated goals.
- **Public reactions:** Does the public react to the project? If they do, is it positive, negative, constructive?
- **Challenges:** Any events that occur that challenge the successful outcome of the project.
- **Nature of media coverage:** Opinion-based, public education, portray project as positive, negative, or neutral.
- **People:** Skills, background, and attitudes people and organizations bring to the success (or failure) of the project; who and how are key actors and organizations talked about.
- **Context:** Initial project conditions such as general environment (turbulence, competitive and institutional elements) and direct antecedents (conveners; general agreement on the problem; existing relationships or networks).
- **Discourse:** Stories people tell, debated categories (what is the purpose and outcomes of the UPA project, symbols, importance and function of documents, reports, etc.).

Based on this coding structure, NVivo can create a number of nodes and sub-nodes that have names tied directly to the above categories. Snippets of text from each type of data included in the content analysis (e.g., news media articles, outreach materials) are allocated to whichever node or sub-node most clearly reflects the content. The software thus gives the ability to conduct qualitative analysis thematically by analyzing the information assigned to each node and sub-node.

One aspect of the media coverage analysis will remain in question until the national evaluation team has received a substantial amount of the data. There is potential for a large volume of media coverage that will render difficult an analysis of each media piece. In this case, the national evaluation team would keep a count of all media coverage, but perform an analysis on a sample of the media, perhaps selected during spikes in coverage.

4.0 SCHEDULE AND RESPONSIBILITY

The schedule for collection and reporting of the data for the content analysis varies by data element as indicated above in Table 2-1. Generally, baseline data collection begins with the first occurrence, e.g., activities associated with the initial local partnership formation that led to the funding application to U.S. DOT, and ends as the last of the projects become operational in February 2013. For the sake of this test plan and for simplicity, the post-deployment period outreach materials and activities and the media coverage will require continuous collection by Metro. As shown in Table 2-1, the timing for transmittal of media coverage and marketing/outreach data from the local partners to the national evaluation team varies from “as they occur” (e.g., press releases) to monthly or quarterly. Partnership documents, on the other hand, are a reflection of past actions and need to be assembled by the partners and sent only once to the national evaluation team.

The responsibilities for this test plan include:

- Metro will collect and provide media coverage, outreach materials/activities, and partnership documents to the national evaluation team.
- The national evaluation team will receive, analyze, and report on the above listed data.

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APPENDIX A – HYPOTHESIS/QUESTIONS FROM THE L.A. COUNTY CRD 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 in 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 maintains 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.
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 ⁴ 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?

⁴ 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, April 2012.

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