Los Angeles Congestion Reduction Demonstration (Metro ExpressLanes) Program

National Evaluation: Surveys, Interviews, and Workshops Test Plan

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16. Abstract

This report presents the Surveys, Interviews, and Workshops Test Plan for the national evaluation of the Los Angeles (LA) Congestion Reduction Demonstration (Metro ExpressLanes) under the United States Department of Transportation (U.S. DOT) Congestion Reduction Demonstration (CRD) Program. The Los Angeles CRD projects focus on reducing traffic congestion by employing strategies consisting of combinations of tolling, transit, telecommuting/travel demand management (TDM), and technology, also known as the 4Ts. Those strategies include the conversion of existing high occupancy vehicle (HOV) lanes to high occupancy tolling (HOT) lanes with variable tolling on the I-10 El Monte Busway corridor and the I-110 Harbor Transitway corridor and the implementation of an intelligent parking management system for on- and off-street parking spaces with demand-based pricing in downtown Los Angeles. Transit improvements include increased bus service in the two CRD corridors; improved Harbor Gateway Transit Center security; expansion of the El Monte Transit Center; the creation of an El Monte Busway/Union Station connection; expansion of the Pomona (North) Metrolink Station; security, signage, and lighting improvements to several Harbor Transitway Park & Ride and Transit Stations; and the implementation of transit signal prioritization in downtown Los Angeles. Strategies also include rideshare outreach and subsidies to increase the number of registered vanpools on the two CRD corridors. This Surveys, Interviews, and Workshops 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; content; cost-benefit, and exogenous factors. Each test plan is based on the LA CRD National Evaluation Plan. This test plan describes survey, interview, and workshop data sources, data availability, and data analysis. The schedule and responsibilities for collecting, analyzing, and reporting the survey, interviews and workshop related analyzes are also presented.

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LIST OF ABBREVIATIONS

4Ts	Tolling, Transit, Telecommuting, and Technology
AVR	Average Vehicle Ridership
CHP	California Highway Patrol
CRD	Congestion Reduction Demonstration
Caltrans	California Department of Transportation
ExpressLanes	Component of LA CRD, pilot converted HOT lanes
FHWA	Federal Highway Administration
FSPS	Freeway Service Patrol Staff
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
LADOT	Los Angeles Department of Transportation
LA ExpressPark	Component of LA CRD, pilot LA parking management system
MOE	Measure of Effectiveness
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
VMT	Vehicle Miles Traveled

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1.0 INTRODUCTION

This report presents the test plan for collecting and analyzing data from surveys, interviews, and workshops for the national evaluation of the Los Angeles (LA) Congestion Reduction Demonstration (Metro ExpressLanes Program) under the United States Department of Transportation (U.S. DOT) Congestion Reduction Demonstration (CRD) program. 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	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 Surveys, Interviews, and Workshops Test Plan, there are test plans focusing on the following types of data: traffic; tolling; exogenous factors; ridesharing; safety; environmental; content analysis; transit; and cost benefit.

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 nine sections corresponding to the various surveys, interviews and workshops: Chapter 2.0 describes the on-board transit rider survey. Chapter 3.0 describes the vanpoolers survey. Chapter 4.0 describes the license plate survey and Chapter 5.0 describes the carpooler survey. Chapter 6.0 describes the general public survey. Chapter 7.0 describes the stakeholder interviews and workshops. Chapter 8.0 describes focus group(s) with major employers. Chapter 9.0 describes the feedback sessions with California Highway Patrol officers, Freeway Service Patrol staff, and bus operators. Chapter 10.0 describes interviews with LA parking management personnel and Chapter 11.0 describes surveys that the local partners are conducting in support of their own research but which will also inform the national evaluation.

1.1 The LA CRD (Metro ExpressLanes) Program Projects

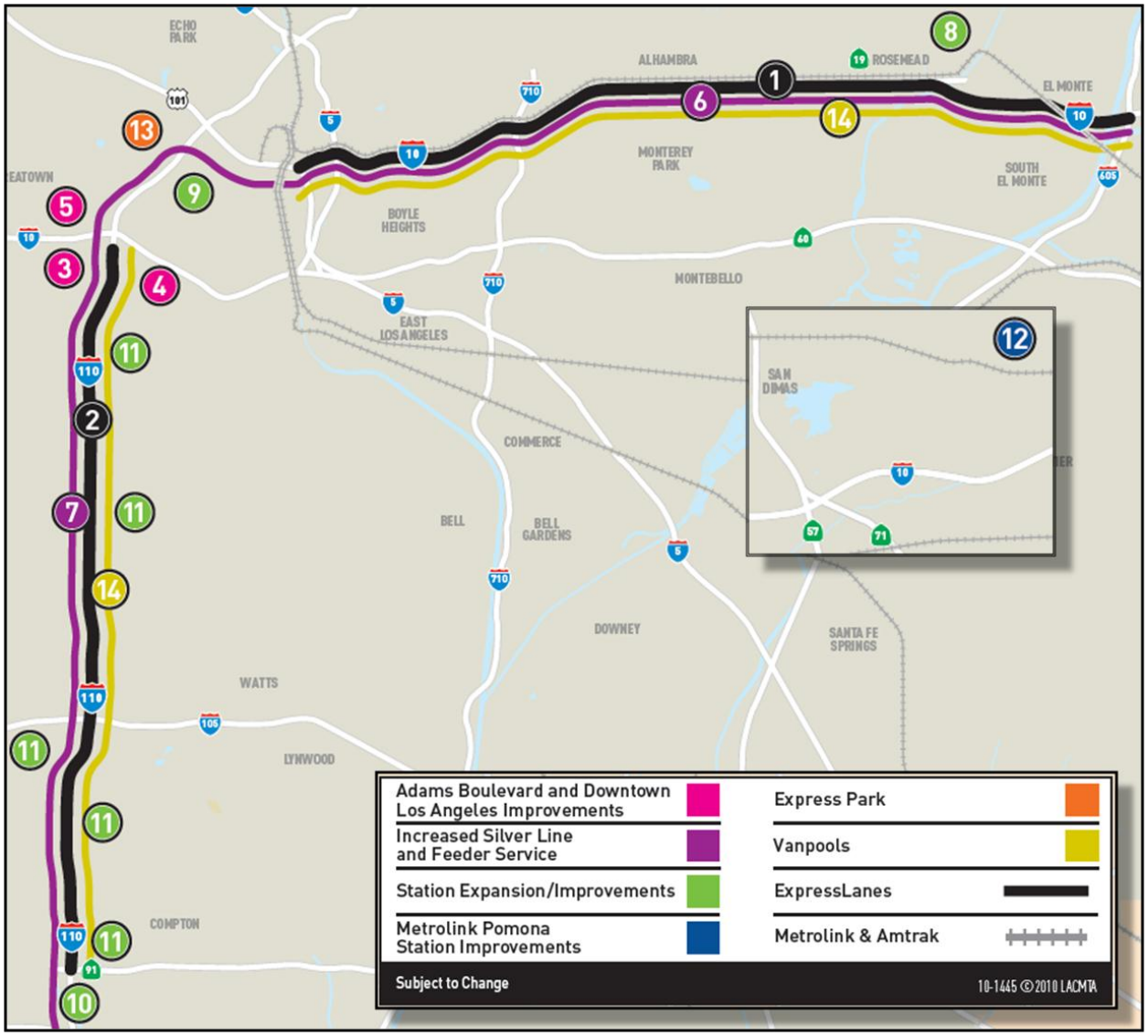
The LA CRD (Metro ExpressLanes) Program was selected by the U.S. DOT as an Urban Partner to implement projects aimed at reducing congestion based on four complementary strategies known as the 4Ts: Tolling, Transit, Telecommuting/TDM, and Technology. Under contract to the U.S. DOT, a national evaluation 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

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

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; and the California Highway Patrol (CHP). 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.

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 Gatway 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 the regional 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

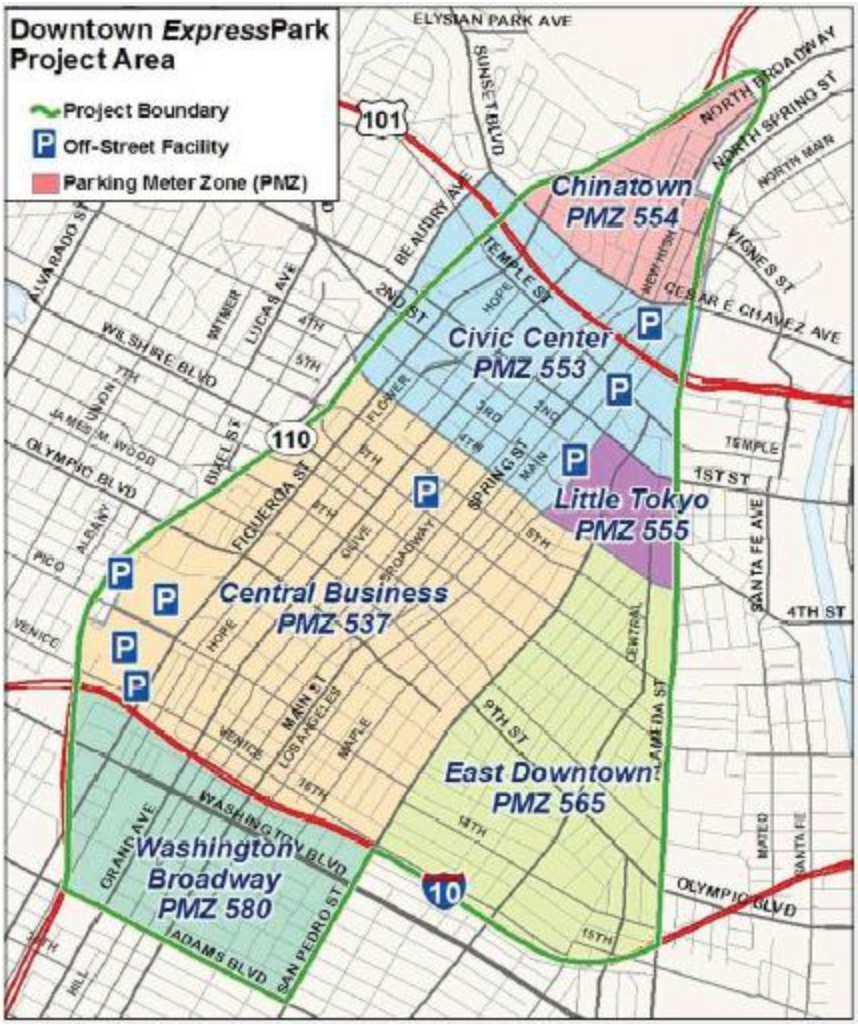


Figure 1-3. LA ExpressPark Project Area

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 on line after tolling begins on the I-10.

Based on information provided by Metro; July 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 Survey, Interview, and Focus Group Data

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 Surveys, Interviews and Workshops Test Plan provides major input to all of the evaluation analyses except for the cost benefit analysis.

Table 1-3 summarizes the survey, interview, and workshop data collection that will be carried out in support of the national evaluation, including identification of the party responsible for carrying out the activity. Table 1-3 includes only those activities intended specifically to support U.S. DOT research. The national evaluation team's utilization of the results of surveys being conducted by the local partners to support local partner research (that is, activities not intended specifically to support the national evaluation) are discussed in Chapter 11.

Table 1-3 reflects the following changes relative to the LA CRD Evaluation Plan finalized in January 2010 (for further information see Appendix B):

- Replaced the "Corridor Drivers" survey with the License Plate Survey and Carpooler Survey. The License Plate survey is a survey conducted by Metro on a periodic basis, eliminating the costs associated with developing a survey exclusively for the national evaluation.
- Replaced the unscheduled "General Public" survey with the I-10 and I-110 General Public Surveys. These area specific surveys are conducted by Metro on a periodic basis, eliminating the costs associated with developing a survey exclusively for the national evaluation.
- Replaced the "Rideshare" survey with the Vanpooler Survey. The Vanpooler Survey mirrors Metro's rideshare goals of increasing vanpooler programs.
- Replaced the "On-Board Transit Rider" Survey periodically conducted by Metro with a standalone On-Board Transit Rider Survey. The survey was necessary due to the insufficient sample size of riders on the CRD funded routes.
- Eliminated pre-deployment interviews with parking management personnel and pre-deployment focus groups with major employers. Data on parking and employer perceptions of the program is only necessary post-deployment.

Table 1-2. 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, September 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 summarizes the survey, interview, and workshop data collection that will be carried out in support of the national evaluation, including identification of the party responsible for carrying out the activity. Table 1-3 includes only those activities intended specifically to support U.S. DOT research. The national evaluation team's utilization of the results of surveys being conducted by the local partners to support local partner research (that is, activities not intended specifically to support the national evaluation) is discussed in Chapter 11.

Table 1-3. National Evaluation Survey, Interview and Workshop Data Collection Activities

Data Collection Activity	Organization Responsible for Conducting the Survey/Interview/ Workshop	Summary Description
Surveys		

On-Board Transit Survey	Metro	• Three surveys: (1) pre-CRD transit service AND pre-tolling; (2) post-CRD transit service BUT pre-tolling; and (3) post-CRD transit service AND post-tolling.
		• 400 valid surveys in each round
		  ○ Survey 1: 400 surveys for I-110 portion of Silver Line
		  ○ Survey 2: 400 surveys for I-110 portion of Silver Line and 400 surveys for I-10 portion of Silver Line
		  ○ Survey 3: 400 surveys for I-110 portion of Silver Line and 400 surveys for I-10 portion of Silver Line
		• Survey completed by passengers while riding bus
		• Impact of CRD projects on transit riders' attitudes
		• Impact of CRD projects on transit riders' travel behavior

Vanpooler Survey	Metro	• Post-deployment survey of all vanpoolers in the I-10 and I-110 corridors • Mailed or emailed surveys to registered vanpoolers • Impact of vanpool promotion and incentives on vanpool formation • Perceptions of role of CRD project on mode shift
License Plate Survey	Metro	• Pre- and post-ExpressLanes deployment on each corridor (one survey for I-10 and one survey for I-110) • Mail survey (respondents identified through license plate video data collection on I-10/I-110 Corridors) • Respondents include I-10 and I-110 HOV, HOT and general purpose lane users • 350 valid surveys (per corridor) in each round • Changes in travel behavior related to CRD projects • Perception of CRD projects on reducing congestion and equity of pricing
Carpooler Survey	Metro	• Evaluation Team recommends post-deployment survey of carpoolers • Assemble sample frame by cross-referencing ZIP codes found in both the license plate survey and the Average Vehicle Ridership (AVR) database • Focus on understanding (1) how many pre-HOT lane carpoolers are still carpooling (and why) or (2) no longer carpooling but instead using general purpose lanes as SOVs or HOT lanes as SOVs (and why) • Number of surveys based on margin of error desired for survey estimates, confidence level associated with margin of error, the percentage of current carpools hypothesized to break up, and the assumed survey response rate

Table 1-3. National Evaluation Survey, Interview and Workshop Data Collection Activities (Continued)

Data Collection Activity	Organization Responsible for Conducting the Survey/Interview/ Workshop	Summary Description
Surveys (Cont.)		
I-10 and I-110 General Public Surveys	Metro	• Post-ExpressLanes, LA ExpressPark, and expanded bus service deployment • Telephone survey (respondents identified through random digit dialing techniques) • Respondents include residents living in zip codes that fall at least partially within a six-mile buffer around the I-10 and I-110 freeway areas relevant to CRD projects. • 600 valid surveys for each corridor • Impact of CRD projects on reducing congestion, perceptions of CRD transit security and its impact on mode choice decisions, perceptions of equity in congestion pricing, and the environmental impact of the projects
Interviews and Workshops		
Stakeholder Interviews and Workshops	National Evaluation Team	• Pre- and post-deployment: two rounds of small-group interviews with key CRD program participants, first round conducted in Summer/Fall 2012 (with three different stages of LAC CRD Projects occurring: post-deployment; full implementation; and early implementation). The second set of interviews will be conducted Fall/Winter 2013 (with two different stages of LAC CRD Projects occurring: early post-deployment; late stage post-deployment) • Large-group workshops after each round of interviews • Gain additional insights into the institutional arrangements, partnerships, outreach methods, and other activities contributing to successfully planning, deploying, and operating the LAC CRD projects
Major Employers Focus Group	Metro	• Post-deployment only • Qualitative data on perceptions of employer representatives of vanpool promotional activities.
California Highway Patrol (CHP), Freeway Service Patrol Staff (FSPS), and Bus Operator Feedback Sessions	Metro	• Group feedback meetings conducted on a monthly basis for one year starting from month of ExpressLanes deployment • All: Perception of changes in safety, traffic levels, and traffic patterns resulting from the CRD projects • CHP Specific: Perception of changes in enforcement procedures and their effects resulting from the CRD projects
LA DOT Parking Management Personnel Interviews	Metro	• Post-deployment only • Perception of benefits and impact of LA ExpressPark technology, changes in operational effectiveness due to technology, and impact of technology on enforcing parking violations

Source: Battelle, September 2012.

Table 1-4 summarizes the data to be collected through surveys, interviews and workshops and the rationale behind it, that is, the relationship between each data element and the associated measures of effectiveness (MOEs) and evaluation hypotheses and questions identified in the LA CRD (Metro ExpressLanes) Program Evaluation Plan. Table 1-4 is organized by the population groups to be studied (header row) and then by the study instrument to be used (first column). The proposed surveys, interviews and workshops are based on the latest information from the local partners.

Table 1-4. Surveys, Interviews, and Workshops Test Plan Data Elements Used in Testing Evaluation Hypotheses/Questions

Survey/ Interview/ Workshop	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Base-line	Post-Deploy-Ment
Population: Transit Riders (Chapter 2)					
1. On-Board Transit Survey	1.1 Reported Changes in Traveler Behavior	• Previous HOV travelers elect to use HOT lanes • Some general purpose lane travelers will shift to transit in the HOT lanes	LATolling-2	X	X
1. On-Board Transit Survey	1.2 User Perception and Satisfaction	• Improved user satisfaction • User perceptions of security at transit stations/park and ride lots • User perceptions of project impacts	LATransit-1 LATransit-2 LATransit-4	X	X
1. On-Board Transit Survey	1.3 Travel Time Reductions	• Reduced end-to-end transit route trip times • Reduced perceived door-to-door passenger trip times • Increased in-transit service speeds	LATransit-1	X	X
1. On-Board Transit Survey	1.4 Travel Time Reliability	• Increased transit reliability (headway variance if freq < 12 mins / schedule adherence if freq > 12 mins)	LATransit-1	X	X
1. On-Board Transit Survey	1.5 Changes in Travel Mode	• Increased transit ridership	LATransit-3	X	X
Population: Vanpool Riders (Chapter 3)					
2. Surveys of Vanpoolers	2.1 Changes in Travel Mode (Related to Vanpooling)	• Percentage shift from SOV to vanpooling • Influence of CRD project on mode shift	LARideshare-1		X
Population: Corridor Drivers (Chapter 4)					
3. License Plate Survey	3.1 Reported Changes in Traveler Behavior	• Previous HOV travelers elect to use HOT lanes • Some general purpose lane travelers will shift to HOT lanes	LATolling-2	X	X
3. License Plate Survey	3.2 Travel Time Reductions	• Percentage of respondents reporting a reduction in average travel time	LACong-5	X	X

Table 1-4. Surveys, Interviews, and Workshops Test Plan Data Elements Used in Testing Evaluation Hypotheses/Questions (Continued)

Survey/ Interview/ Workshop	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Base-line	Post-Deploy-Ment
Population: Corridor Drivers (Chapter 4) (Cont.)					
3. License Plate Survey	3.3 Travel Time Reliability	• Percentage of respondents reporting an improvement in travel time reliability	LACong-6	X	X
3. License Plate Survey	3.4 Changes in Congestion	• Percentage of respondents reporting and average reduction in the duration of the congestion episodes they experience	LACong-7	X	X
3. License Plate Survey	3.5. Changes in Congestion	• Percentage of respondents who perceive a reduction in the average length of peak period congestion periods	LACong-8	X	X
Population: Carpoolers (Chapter 5)					
4. Carpooler Survey	4.1 Reported Changes in Traveler Behavior	• Previous carpoolers who elected to stop carpooling and use either the HOT or general purpose lanes as SOVs • Influence of CRD project on shift in travel behavior	LARideshare-3		X
Population: General Public (Chapter 6)					
5. I-10 and I-110 General Public Surveys	5.1. User Perception and Satisfaction	• Public opinion	LANon-Tech-2		X
Population: Agency Stakeholders (Chapter 7)					
6. Stakeholder Interviews and Workshops	6.1 Travel Time Reductions	• Percentage of respondents reporting a reduction in average travel time	LACong-5	X	X
6. Stakeholder Interviews and Workshops	6.2 Travel Time Reliability	• Percentage of respondents reporting an improvement in travel time reliability	LACong-6	X	X
6. Stakeholder Interviews and Workshops	6.3 Changes in Congestion	• Percentage of respondents reporting an average reduction in the duration of the congestion episodes they experience • Percentage of respondents who perceive a reduction in the average length of peak period congestion periods	LACong-7 LACong-8	X	X

Table 1-4. Surveys, Interviews, and Workshops Test Plan Data Elements Used in Testing Evaluation Hypotheses/Questions (Continued)

Survey/ Interview/ Workshop	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Base-line	Post-Deploy-Ment
Population: Agency Stakeholders (Chapter 7) (Cont.)					
6. Stakeholder Interviews and Workshops	6.4 User perception and satisfaction	• Socio-economic and spatial distribution of tolls, parking fees, and adaptation costs • Socio-economic and spatial distribution of changes in travel time and trip distance • Socio-economic and spatial distribution of changes in total transportation costs • Public perception of the individualized equity impacts of the HOT lanes and the downtown IPM project	LAEquity-1	X	X
6. Stakeholder Interviews and Workshops	6.5 Revenue investments	• Spatial and modal distribution of revenue investments	LAEquity-3	X	X
6. Stakeholder Interviews and Workshops	6.6 User perception and satisfaction	• Observations by LA partners	LANon-Tech-1	X	X
Population: Major Employers (Chapter 8)					
7. Major Employer Focus Groups	7.1 Employer perceptions of vanpooling	• Employer representatives' perspectives on the relative influence of various factors on their shift to vanpooling • Employer representatives' perceptions on effectiveness of vanpool promotional activities and incentives	LARideshare-2		X
Population: California Highway Patrol (Chapter 9)					
8. California Highway Patrol Feedback Sessions	8.1 Reported changes in traveler safety behavior	• Few if any safety events involving HOT transitions • Few if any citations for transition zone violations • Few if any safety incidents attributable to boundary jumping • Few if any citations for boundary jumping	LASafety-2 LASafety-3		X
8. California Highway Feedback Sessions	8.2 CHP perception of safety	• Corridor operating personnel do not perceive a significant number of incidents attributable to transition zones • Corridor operating personnel do not perceive a significant number of incidents attributable to boundary jumping • Corridor operating personnel do not perceive a significant number of incidents attributable to changed enforcement procedures	LASafety-2 LASafety-3 LASafety-5		X

Table 1-4. Surveys, Interviews, and Workshops Test Plan Data Elements Used in Testing Evaluation Hypotheses/Questions (Continued)

Survey/ Interview/ Workshop	Data Element	Measures of Effectiveness	Hypotheses/ Questions*	Base-line	Post-Deploy-Ment
Population: Freeway Service Patrol Staff (Chapter 9)					
9. Freeway Service Patrol Staff Feedback Sessions	9.1 Reported changes in traveler safety behavior	• Few if any safety events involving HOT transitions • Few if any citations for transition zone violations • Few if any safety incidents attributable to boundary jumping • Few if any citations for boundary jumping	LASafety-2 LASafety-3		X
9. Freeway Service Patrol Staff Feedback Sessions	9.2 Freeway Service Patrol Staff perception of safety	• Corridor operating personnel do not perceive a significant number of incidents attributable to transition zones • Corridor operating personnel do not perceive a significant number of incidents attributable to boundary jumping	LASafety-2 LASafety-3		X
Population: Bus Operators (Chapter 9)					
10. Bus Operator Feedback Sessions	10.1 Reported changes in traveler safety behavior	• Few if any safety events involving HOT transitions • Few if any citations for transition zone violations • Few if any safety incidents attributable to boundary jumping • Few if any citations for boundary jumping	LASafety-2 LASafety-3		X
10. Bus Operator Feedback Sessions	10.2 Bus operator perceptions of safety	• Corridor operating personnel do not perceive a significant number of incidents attributable to transition zones • Corridor operating personnel do not perceive a significant number of incidents attributable to boundary jumping	LASafety-2 LASafety-3		X
Population: LA DOT Parking Management Personnel (Chapter 10)					
11. LA DOT Parking Management Personnel Interviews	11.1 Parking management perceptions of IPM technology	• Perception of LADOT managers that IPM improved agency's ability to reconfigure parking restrictions and rates • Perceptions of LADOT managers that IPM technology has enhanced its ability to enforce parking regulations	LATech-2 LATech-3		X

Source: Battelle, September 2012.

*The full set of LA CRD evaluation hypotheses/questions are listed in Appendix A.

Table 1-5 summarizes the high-level timeline for conducting the various interviews, surveys, and workshops. As indicated in Table 1-5, baseline data collection occurs between June 2011 and October 2012. This lengthy baseline period is a result of the spread of CRD project deployment which ranges from mid 2010 through early 2013. Post-deployment data collection will occur between March 2013 and March 2014, again due to the spread of CRD project deployment. Table 1-5 also identifies the specific data products which are expected to be transmitted to the national evaluation team by those responsible for data collection (e.g., survey data sets, survey analysis results, etc.).

Table 1-5. Surveys, Interviews, and Workshops Timelines

Survey, Interview Element	Baseline Data Collection	Post-Deployment Data Collection	Data Source and Agency	Data Products to be Transmitted to National Evaluation Team
On-Board Transit Rider Survey	Survey 1: June 2011[3] Survey 2: Sept 2012[4]	Survey 3: May 2013[5]	Metro	Datasets and Analysis Reports
Vanpooler Survey	NA	Fall 2013	Metro	Datasets and Analysis Reports
License Plate Survey	I-110: Sep/Oct 2012 I-10: Sep/Oct 2012	I-110: Oct 2013 I-10:Oct 2013	Metro	Datasets and Analysis Reports
Carpooler Survey	NA	I-110: Oct 2013 I-10: Oct 2013	Metro	Datasets and Analysis Reports
I-10 and I-110 General Public Surveys	NA	I-110: Sept 2013 I-10: Sept 2013	Metro	Datasets and Analysis Reports
Stakeholder Interviews	Aug – Sep 2012	Fall/Winter 2013[6]	National evaluation team	NA (National evaluation team will conduct these interviews)
Stakeholder Workshop	Oct 2012	Fall/Winter 2013	National evaluation team	NA (National evaluation team will conduct the workshop)
Major Employers Focus Group	NA	Fall 2013	Metro	Focus Group Summary
California Highway Patrol, Freeway Service Patrol and Bus Operators Feedback Sessions	NA	March 2013 – March 2014	Metro	Quarterly Feedback Meeting Reports
Interviews with Parking Management Personnel	NA	March – May 2013	National evaluation team	NA (National evaluation team will conduct the interviews)

Source: Battelle, September 2012.

[3] Survey 1: pre-CRD transit service and pre-tolling

[4] Survey 2: post-CRD transit service but pre-tolling

[5] Survey 3: post-CRD transit service and post-tolling

[6] Post-Deployment interviews and workshops will be conducted after the deployment of all LA CRD elements. Due to the phased manner of the projects and the potential for unforeseen delays the dates have been left open.

The general logic for survey timing is that the baseline surveys (if applicable) should be conducted in advance of the implementation of any CRD project that is expected to significantly impact responses to the specific questions on the survey in question. The post-deployment surveys should be conducted after the implementation of all CRD projects which could impact responses. In other areas of national evaluation data collection, (for example transit and traffic system data), data will be collected on a continuous basis and therefore the incremental impact of individual projects will be explored as those projects incrementally come on line. In the case of surveys, where it is not practical to conduct a separate survey after each project becomes operational, the impact of individual projects can only be parsed via questions exploring why traveler behavior changed or what factors contributed to perceptions.

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2.0 ON-BOARD TRANSIT RIDER SURVEY

2.1 Purpose

This chapter describes the purpose, approach, data analysis, schedule and responsibilities associated with the pre- and post-deployment on-board transit rider survey that will be conducted by the local partners.

The national evaluation team recommends three stand-alone, on-board transit rider surveys as part of the CRD evaluation. The on-board surveys are critical to understanding how and why transit riders' attitudes and/or travel behavior have been impacted and by which specific CRD projects. Metro's silver line route running along I-110 and I-10 will be surveyed.

2.2 Approach

Metro conducts system-wide on-board surveys each year, generally in the spring. Approximately 15,000 surveys are collected covering all of the lines (an average of 68 responses per line). However, the questionnaire for this survey is fairly fixed and cannot accommodate many additional CRD-oriented questions. Additionally, there would not be enough responses to draw statistically significant conclusions about the riders on the CRD-funded routes. Therefore, it has been determined that special surveys to support the national evaluation, both pre- and post-deployment, will be necessary.

The transit rider surveys will compare travel behavior and attitudes before and after CRD project implementation. Some of the CRD transit projects are capital construction projects. These include security improvements at the I-110 Harbor Transitway station, the expansion of the I-10 El Monte Transit Center, and the El Monte/Union Station Connector. Other CRD transit projects include additional bus service. The CRD bus service will be added in three waves. Wave 1 will add service to the I-110 portion of the Silver Line in June 2011 to decrease average headways from 30 minutes to 10 minutes. Wave 2 will add extra late night and weekend service to the I-110 portion of the Silver Line in June 2012. Wave 3 will occur in October 2012. It will add extra service on I-10 to the Foothill Transit Silver Streak and Route 699 Express and also add extra feeder service on I-110 to Gardena Transit's Line 1 and Torrance Transit's Lines 1 and 2. These routes do not operate on I-110 per se but rather serve as feeder routes into the Silver Line.

The goal of the three on-board surveys is to measure, as much as possible, attitudes and behaviors for three key time intervals:

- *Survey 1* – pre-CRD transit service AND pre-tolling;
- *Survey 2* – post-CRD transit service BUT pre-tolling; and
- *Survey 3* – post-CRD transit service AND post-tolling.

Table 2-1 shows the recommended schedule of surveys along with the phase-in dates of the CRD transit projects.

Survey 1 (June 2011), will be conducted exclusively on the I-110 portion of the Metro Silver Line. The reason for this is because the Wave 1 and Wave 2 transit service enhancements are limited to the I-110 portion of the Silver Line. Survey 1 will serve as a pre-transit/pre-tolling baseline for I-110.

Survey 2 (September 2012), will be done on the entire Metro Silver Line, both the I-110 and the I-10 segments. Survey 2 will serve as a follow-up to Survey 1 by measuring changes in attitudes and travel behaviors for Silver Line riders on I-110. It will also act as the baseline survey for Silver Line riders on I-10.

Table 2-1. Recommended Schedule of On-Board Transit Rider Surveys

Event	Date
Survey 1	Jun 2011
Wave 1 Transit Service	Jun 2011
Harbor Transitway Security Enhancements	Oct 2011
Wave 2 Transit Service	Jun 2012
El Monte Transit Center Expansion	Jul 2012
Survey 2	Sep 2012
I-110 HOT Lanes & Wave 3 Transit Service	Oct 2012
El Monte/Union Station Connector	Dec 2012
I-10 HOT Lanes	Feb 2013
Survey 3	May 2013

Source: Battelle, September 2012.

Survey 3 (May 2013) will be done on the entire Metro Silver Line, both the I-110 and I-10 segments. Survey 3 will serve as the post-deployment survey. It will measures changes in attitudes and travel behaviors of Silver Line riders on I-10 and I-110 after tolling.

The national evaluation team has reviewed the survey protocol used by Metro and supports using it for the national evaluation surveys. Metro has contracts with survey vendors that conduct the agency's annual on-board transit surveys. Metro survey staff uses SPSS software to select a random sample of bus trips and assigns survey representatives to ride the buses for those trips. The survey representative meets the bus at the terminal and rides the bus to the end of the line. He/she distributes the questionnaires to passengers and collects the questionnaires before each passenger leaves the bus.

In order to have statistically significant results with acceptable sampling error, it is recommended that a minimum of 400 questionnaires be collected. For Survey 1, this would be 400 completed questionnaires for the I-110 portion of the Silver Line. For Surveys 2 and 3, it would be 400 completed questionnaires for the I-110 portion of the Silver Line and 400 completed questionnaires for the I-10 portion of the Silver Line, the Silver Streak, and the Route 699 combined. A sample size of 400 will yield an error rate of +/- 4.9 percent at the 95 percent confidence interval. This means that with the same sampling procedures, 95 times out of 100 the maximum error will be within 4.9 percentage points of the true value that would be obtained if a 100 percent census of all transit customers on all trips were conducted.

2.3 Preliminary On-Board Transit Rider Survey Questions

Questions will include, but not be limited to, respondents' origin and destination, length of bus use, how they arrived at the transit station/stop, prior mode of travel, their reasons for using transit, access to a private automobile, the type of fare paid, their perception of CRD transit improvements, congestion, and the equity of pricing. The suggested questions for the on-board transit rider survey are provided below. The final wording of the questions, sequencing, and

format for the Los Angeles County CRD on-board surveys will be determined by Metro and their contractors in coordination with the national evaluation team.

1. Where did you board this bus? (Choose only one)

☐ **Harbor Gateway Transit Center**	☐ **37th/USC**
☐ **Rosecrans**	☐ **Union Station**
☐ **Harbor Freeway**	☐ **USC Hospital**
☐ **Manchester**	☐ **Cal State LA**
☐ **Slauson**	☐ **El Monte Transit Center**

2. What is the primary purpose of this trip today?

☐ **Work**	☐ **Personal business**
☐ **School**	☐ **Social/entertainment**
☐ **Shopping**	☐ **Medical appointment**
☐ **Other (please specify below):**	

_____

3. What is your MAIN reason for using the bus? (*Please check ONE only.)*

☐ **Save time**
☐ **Avoid traffic**
☐ **Save money**
☐ **Don't drive/no car**
☐ **More convenient than car**
☐ **Parking limited/expensive at destination**
☐ **Other (*please specify*):** _____

4. Approximately how many days a week do you ride this bus route?

☐ **4-5 days per week**	☐ **Less than one day per week**
☐ **1-3 days per week**	☐ **Very infrequently**

5. How long have you been riding this bus route?

☐ **First time riding**
☐ **Less than 6 months**
☐ **6 months to 1 year**
☐ **1 to 5 years**
☐ **More than 5 years**

6. How did you make this trip before you began riding this bus route?

☐ **Always made the trip by this bus**
☐ **Rode another bus**
☐ **Drove alone**
☐ **Carpooled**
☐ **Never made this trip before**
☐ **Other (please specify):** _____

7. How did you get to the stop location where you caught this bus? *(Please check ONE only.)*

☐ **Walked**
☐ **Drove alone and parked**
☐ **Drove with others and parked**
☐ **Dropped off by car**
☐ **Transferred from another transit service**
☐ **Other (please specify):**_____

8. Did you have an automobile available for this trip?

   ☐ **Yes** ☐ **No**

9. How do you normally pay for your bus fare?

   ☐ **Cash**
   ☐ **TAP Card**
   ☐ **Paper Pass**
   ☐ **Other (please specify) _____**

10. Does your employer pay some or all of a bus pass for you?

    ☐ **Yes** ☐ **No** ☐ **Not employed**

11. How would you rate each of the following aspects of service on **this** bus route?

Please circle the number that best reflects your opinion						
	Very Good	**Good**	**Fair**	**Poor**	**Very Poor**	**Don't Know**
On time performance	5	4	3	2	1	0
Travel time	5	4	3	2	1	0
Hours of service (How long buses run)	5	4	3	2	1	0
Frequency of service (How often buses run)	5	4	3	2	1	0
Wait time at station/stop	5	4	3	2	1	0
Value of service for the price	5	4	3	2	1	0
Availability of seats	5	4	3	2	1	0
Parking availability at the Park and Ride lots	5	4	3	2	1	0
Your ability to connect with other transit service	5	4	3	2	1	0
Security at the bus station/stop	5	4	3	2	1	0
Your overall satisfaction with this bus service	5	4	3	2	1	0

12. Are you:

    ☐ **Male** ☐ **Female**

13. What is your age?

    ☐ **Under 18**
    ☐ **18-24**
    ☐ **25-34**
    ☐ **35-44**
    ☐ **45-54**
    ☐ **55-64**
    ☐ **65 or over**

14. Are you of Hispanic or Latino origin?

    ☐ **Yes** ☐ **No**

15. Which best describes your racial or ethnic background?

- ☐ **African American/Black**
- ☐ **American Indian or Alaskan Native**
- ☐ **Asian**
- ☐ **Caucasian/White**
- ☐ **Other (please specify): _____**

16. Approximately what was your household's total income last year?

- ☐ **Less than $10,000**
- ☐ **$10,000 to $24,999**
- ☐ **$25,000 to $34,999**
- ☐ **$35,000 to $49,999**
- ☐ **$50,000 to $74,999**
- ☐ **$75,000 to $99,999**
- ☐ **$100,000 to $149,999**
- ☐ **$150,000 to $199,999**
- ☐ **$200,000 to $249,999**
- ☐ **$250,000 or more**
- ☐ **Prefer not to answer**

Between June 2012 and October 2012, the CRD will add service to the I-110 segment of the Silver Line, to routes that feed the I-110 segment of the Silver Line and to the Silver Streak and Route 699 Express on I-10. In order to measure people's perceptions of these improvements, Surveys 2 and 3 should include questions 19 and 20.

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17. Over the last several months, there have been some transit service changes to routes serving I-110 and I-10. Did these changes in transit service influence your decision to ride this bus?

☐ **Yes** ☐ **No** ☐ **Not aware of change**

18. Compared to several months ago, how has each of the following aspects of service on this bus route changed?

Please circle the number that best reflects your opinion				
	Better	**Worse**	**No change**	**Don't Know**
On time performance	3	2	1	0
Travel time	3	2	1	0
Frequency of service (How often buses run)	3	2	1	0
Availability of seats	3	2	1	0
Your ability to connect with other transit service	3	2	1	0
Hours of service (how long buses run)	3	2	1	0

Once tolling begins on I-110 and I-10, several questions will be added pertaining to equity and whether tolling influenced the person's decision to take transit. These questions include the following.

19. How much would you agree/disagree that tolls on I-110/I-10 influenced your decision to ride this bus?

    ☐ Strongly Agree
    ☐ Somewhat Agree
    ☐ Neutral
    ☐ Somewhat Disagree
    ☐ Strongly Disagree

20. How much would you agree/disagree that charging variable tolls on I-110/I-10 to reduce congestion is fair to all income groups?

    ☐ Strongly Agree
    ☐ Somewhat Agree
    ☐ Neutral
    ☐ Somewhat Disagree
    ☐ Strongly Disagree

2.4 Data Analysis

This discussion focuses on the analysis of data collected by Metro Transit through the on-board transit rider survey. Metro, or their survey consultants, will perform standard, basic data quality and error checks as they compile the raw survey results, such as checks for outliers and incomplete responses. The national evaluation team will perform additional checking as they begin to analyze the data.

The results from the on-board rider surveys will be used primarily in the transit analysis and will compare pre-tolling and transit project implementation to post-tolling and transit project implementation. The survey results will be used to identify types of individuals changing from driving alone or carpooling to riding transit as well as types of individuals making new trips by transit. The survey results will be analyzed by members of the national evaluation team in a number of ways. In addition to examining the responses to each question, cross tabulations will be run to explore the interaction of different variables, such as income and bus use. Some examples of the analyses to be conducted using the survey data are highlighted below.

- **Prior mode of travel and mode change to transit.** This analysis will examine possible mode change to transit as a result of the Los Angeles County CRD projects. By asking riders about their main reason for taking transit, the on-board surveys will provide a key source for information on mode change to transit and the factors influencing this mode change.

- **Frequency of use and use of other modes.** The survey results will identify how long riders have taken the route and how frequently they use it. Once tolling begins on I-10 and I-110, the survey will also ask riders whether they have a transponder and if so how frequently they use it to drive these corridors in their personal automobile.
- **Equity issues.** Riders will be asked whether they believe dynamic tolling on I-10 and I-110 is a fair way to address congestion and whether the presence of tolls influenced their decision to use transit. The responses related to frequency of bus use, factors influencing use, and benefits of use will be examined by income levels, gender, and zip code zones as part of the equity analysis.
- **Perceptions of the bus service on I-10 and I-110.** Riders will be asked questions about their perceptions of transit service (e.g., reliability, frequency of service, travel times) before and after the institution of tolls. Responses to these questions will be used in the congestion, tolling, and other analyses.

Although the on-board surveys will be conducted at multiple time points and include the possibility that a particular survey respondent may participate in multiple surveys, the national evaluation team assumes that this will not be tracked as part of the survey. The national evaluation team anticipates largely relying upon descriptive statistics, such as estimating means, percentages, ranges, etc. as well as associated tests such as t-tests, likelihood ratio F-tests, and Chi-Square tests to determine if there are significant differences among rider groups, time points, etc.

2.5 Schedule and Responsibilities

Metro Transit will be responsible for conducting the on-board transit rider surveys. The proposed survey schedule was discussed in Section 2.2. As stated above, it is recommended that Survey 1 (pre-CRD transit service and pre-tolling) be conducted in June 2011, Survey 2 (post-CRD transit service but pre-tolling) in September 2012, and Survey 3 (post-CRD transit service and post-tolling) in May 2013.

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3.0 VANPOOLER SURVEY

This chapter describes the purpose, approach, data analysis, and schedule and responsibilities associated with the vanpooler survey for vanpools that travel in the I-10 and I-110 corridors. The survey will be conducted by Metro, mirroring similar vanpooler surveys conducted in 2008, among all LAvanpoolers.

3.1 Purpose

The purpose of the vanpooler survey is to assess travel behavior changes (i.e., commuters switching to vanpools) and new vanpoolers' perceptions of the role of CRD projects, vanpool incentives, and employer promotional activities and their impact on commuting in the I-10 and I-110 corridors.

3.2 Approach

The vanpooler survey will be conducted among all vanpools traveling in the I-10 and I-110 corridors in Fall 2013. Since 2007, Metro has operated a county-wide vanpooling program, providing financial incentives ($400 per month per van) to encourage drivers to become vanpool riders. In exchange for these incentives, Metro requires all vanpoolers to register with the agency. For the purposes of the vanpooler survey, Metro will utilize registration information to identify which vanpools operate in the two corridors based on the home origin and work destination of each vanpool. Surveys will be sent (via email or US mail) to all vanpoolers in each van operating within the two corridors. Both pre-existing and new vanpools will be surveyed – Metro registration information will allow for the differentiation of the two subsamples.

Due to Metro's budget and staffing constraints, a pre-deployment survey will not be conducted among vanpoolers. Instead, Metro will survey vanpoolers in the two CRD corridors within the post-deployment period. Given that travel behavior changes can adequately be assessed using a retrospective survey among vanpoolers (it will be possible to identify new vanpoolers based on vanpooler registration and vanpool start-up operating data), a post-deployment survey will be adequate. Metro's most recent vanpooler survey conducted in 2008 will serve as a basis for the post-deployment survey.

3.3 Preliminary Vanpoolers Survey Questions

The 2008 Metro Vanpool survey included the following survey question topics:

1. How long in vanpool
2. Prior mode before vanpooling
3. Reason for vanpooling
4. Vanpool lease provider
5. Whether van has Metro identification on side
6. Rating of lease provider maintenance
7. Rating of lease provider communication
8. Obstacles for forming the vanpool

9. Whether open seats have existing during last year
10. How quickly empty seat filled
11. Methods for filling empty seat
12. How heard of Metro subsidy program
13. Role of subsidy in decision to vanpool
14. Whether employer supports vanpooling
15. Perception of vanpooling to reduce congestion and pollution
16. Desire to use on-line reporting for vanpool data (driver)
17. Average travel time savings
18. Average travel cost savings
19. Use of HOV lanes
20. Which HOV lane used
21. Availability of preferential parking for vanpool at worksite
22. Reduced parking fees at worksite
23. General use of other online services
24. Profession of vanpooler
25. Number of employees at vanpooler worksite
26. Importance of various benefits of vanpooling.

For comparison purposes, the 2013 vanpooler survey will utilize most of these questions. However, unlike the previous county-wide surveys, the 2013 survey questions will focus on the I-10 and I-110 corridors and the impact of CRD projects (i.e., HOT lanes) on vanpoolers' decisions to vanpool (aside from the Metro subsidy incentive). Additional questions and/or response categories will be incorporated to identify impact. Examples might include additional incentives such as free or discounted transponders and specialized promotions at employer worksites. Metro staff will draft a 2013 vanpooler survey instrument for review by the national evaluation team. Additional survey question topics should include, at a minimum:

27. Commute on I-10 or I-110 prior to vanpooling;
28. Influence of new tolling program in decision to vanpool;
29. Role of employer in informing commuters of tolling and commute alternatives; and
30. Perceived benefits and impacts of tolling.

3.4 Data Analysis

The primary measure of effectiveness of the vanpool program will be the number of newly-formed vanpools in the two corridors. This data will come from operating statistics assembled by Metro for registered vanpool and vanpoolers.

The vanpooler survey data will largely be used to explore why commuters switch to vanpooling and the perception of these new vanpoolers regarding the role of the CRD projects, vanpool incentives, and employer promotional activities. The vanpooler survey database will include responses from all vanpoolers in the two corridors who complete and return surveys. The returned survey database will be divided into two subsets – existing vanpoolers (participating in Metro's vanpool program before October 2011) and new vanpoolers (joining Metro's vanpool program after October 2011 but before October 2013). The database of new vanpoolers will be analyzed to assess the reason for vanpoolers switching 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.

Vanpooler survey data will also be used to calculate the specific impacts of new vanpool formation, in terms of trip and vehicle miles traveled (VMT) reduction by assessing prior mode (from the survey) and trip distance (from vanpool operating data). The national evaluation team anticipates largely relying upon descriptive statistics, such as estimating means, percentages, ranges, etc. as well as associated tests such as t-tests, likelihood ratio F-tests, and Chi-Square tests to determine if there are significant differences among rider groups, time points, etc. Survey weights will be calculated for each survey respondent that will take into account the sample design, non-response, and other appropriate factors. Final survey results will be weighted accordingly.

3.5 Schedule and Responsibilities

The vanpooler survey will be conducted in the fall of 2013. It will be fielded by Metro staff using contact information among vanpool and vanpooler registrant data. Vanpool lease providers will not be involved in the survey effort as the vanpooler database resides with Metro. Metro plans to use in-house staff to develop, field and collect the surveys. Basic survey frequencies and any summary information (e.g., trip and VMT reduction) will be transmitted to the national evaluation team. In addition, the raw data files, along with survey weights, will be provided to the national evaluation team by Metro so that more detailed analysis can be performed if necessary.

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4.0 LICENSE PLATE SURVEY

This chapter describes the purpose, approach, data analysis, and schedule and responsibilities associated with the License Plate Survey that will be conducted by Metro and its contractors. A similar mail survey was conducted in 2009, by Metro, among motorists utilizing the HOV and general-purpose lanes on the I-10 and I-110 Corridors.

4.1 Purpose

The purpose of this mail survey is to receive feedback from I-10 and I-110 HOV lane users (prior to ExpressLanes deployment), HOT lane users (post ExpressLanes deployment), and general purpose lane users (pre and post ExpressLanes deployment) on their travel behavior as well as their opinions and attitudes on traffic flow, carpooling, and HOT Lanes. From a national evaluation standpoint, the information on travel behavior (such as changes in trip duration, mode, and HOT Lane use and changes in attitudes regarding congestion and traffic patterns) is essential because it will provide a valuable direct source of data on the impact and perception of ExpressLanes among corridor users as well as a way to differentiate the impact of the CRD project from the influence of various exogenous factors.

Although the License Plate Survey will contribute to the national evaluation, there are certain limitations. For example, participants are identified through video equipment and matching license plates with DMV address information. This method does not account for changes in carpool behavior. Specifically, this survey cannot oversample for carpool users who alter their behavior (i.e., stop carpooling post-deployment or use alternate roadways) because they cannot be identified. In addition, because the survey is not a panel survey (meaning different people are surveyed pre- and post-ExpressLanes deployment) the survey will be unable to gather input from corridor users who chose to stop using the corridors after the CRD project began. However, the post-deployment survey will allow for the evaluation of travel behavior among travelers who (1) have remained in the two corridors (even if they have changed between the general purpose lanes and HOV/HOT lanes) and (2) have increased or reduced the number of occupants in their cars.

Although the absence of data from those who have left the corridor should be considered when drawing conclusions, the advantages of conducting a survey in which pre- and post-deployment corridor users are identified allows the national evaluation team to recognize motorists who have chosen to utilize the corridors because of the ExpressLanes. Additionally, because the survey identifies respondents with license plates, only drivers (and not carpool passengers or transit riders) are providing responses. However, non-drivers will be accounted for in the on-board transit rider survey and vanpooler surveys being conducted (Chapters 2 and 3 of this test plan, respectively).

The License Plate Survey will compare responses pre- and post-ExpressLanes project implementation. Since the survey will probe behavior and perceptions impacted by the ExpressLanes project, the baseline survey will be sent to participants prior to the deployment of each corridor. The post-deployment surveys will be sent to participants several months after the deployment of each corridor's HOT lanes. Discussion around these survey dates and license plate data collection is found in the following sections.

4.2 Survey Approach

This section describes the recommended approach for the License Plate Survey and includes material excerpted or paraphrased from the June 2009 License Plate Survey Report prepared by Metro. Although the question content will remain the same, separate surveys will be sent out to I-10 and I-110 Corridor users.

Population and Sample: The intended population to be sampled for this survey is I-110 Harbor Transitway and I-10 El Monte Busway Corridor users including: HOV users (pre-deployment); HOT users (post-deployment); and general purpose lane users (pre- and post-deployment). Motorists will be identified through video equipment placed in one HOV/HOT lane and one general purpose lane of the I-10 and I-110 corridors. The equipment will collect a full day (beginning at 5 AM and ending at 7 PM) of license plate information. Data collection will occur for one day. This day will be a regular travel day (e.g., Tuesday, Wednesday, or Thursday). The intent of this collection is to capture the population of both peak and off-peak users as well as general purpose and HOV/HOT lane users. It is assumed that the vehicles captured during the data collection represent the population of vehicles that travel the two corridors during a given weekday. Using the video, license plates from each observed vehicle will be matched to DMV mailing address information to obtain a sample frame for each corridor. Then, a random sample of vehicles will be taken to ensure a representative sample of actual users for each corridor.

Using the information collected, each corridor survey will be sent to potential respondents. The sample frame should be stratified and vehicles should be selected to achieve the following mix of vehicles:

- Lane Use: 50 percent to general purpose lane users, 50 percent to HOV/HOT lane users
- Peak/Off-Peak Use: 70 percent to peak-time travelers (defined as 5-9 AM and 4-7 PM), 30 percent to off-peak travelers (9 AM to 4 PM)

The total targeted sample size for each corridor will be 350 surveys. With this sample size, the overall precision for a population proportion is estimated to be within +/- 5.3 percent of its true value with 95 percent probability. Surveys will be distributed in both English and Spanish to each potential respondent. Both corridor questionnaires will include the same set of questions (with corridor names changed accordingly). The final number of administered surveys will also depend on the survey response rate. The evaluation team will work with the local partners to develop an assumed response rate based on past similar surveys. For example, assuming a response rate of 20 percent, 1,750 surveys (350/0.2) would need to be distributed.

The 2009 license plate survey included 1,075 respondents. The 2009 survey will be out-of-date for the purposes of the national evaluation. The new I-10 and I-110 pre-deployment surveys of corridor drivers should be conducted prior to the I-110 ExpressLane deployment in October 2012. It is recommended that post-deployment surveys be conducted in October 2013, several months after the I-10 ExpressLanes deployment.

Timing of the Surveys: The baseline license plate survey license plate capture was performed in May/June 2012. The baseline surveying will be done in September/October 2012, prior to the October 2012 HOT lane opening. The post-deployment survey will be conducted in October

2013. Metro and the national evaluation team have agreed that, ideally, both the license plate video capture and fielding and completion of the surveys would be accomplished before or after the summer, when traffic conditions and users may not be as representative of average conditions over the rest of the year. Metro has agreed to complete as much of the baseline surveying process before or after the summer as possible but it is understood that it may be necessary to survey during the summer. Although not ideal, this would not fundamentally compromise the survey effort.

4.3 Preliminary License Plate Survey Questions

Questions will include, but not be limited to mode, trip purpose, trip length, travel time, travel time reliability, reason for corridor and lane use, frequency of corridor use, origin-destination, and perceptions of the impact of the LA CRD (Metro ExpressLane) Program strategies on reducing congestion, safety, and equity of pricing. HOV lane users will be asked about their prior travel behavior while general purpose lane users will be asked why they chose not to use HOT lanes or transit.

The following questions are based on the 2009 License Plate Survey questionnaires and are recommended for inclusion in the pre- and post-deployment surveys to be conducted by Metro. The final wording of the questions and the survey sequencing and format will be determined by Metro and their contractors. To ensure comparability with socio-demographic categories used in other UPA/CRD surveys, the national evaluation team suggests that demographic categories replicate those used by Volpe when conducting survey's such as Seattle's Household Travel Survey and Atlanta's On-Board Transit Survey. Such categories have been approved by Metro for use in the LA CRD On-Board Transit Survey fielded in June 2011 (Chapter 2 of this document).

Recommended questions to be asked in the post-deployment survey are shown in italics. When wording within a question (asked during pre-deployment) should be altered in the post-deployment survey, those words are placed in parenthesis and italicized. All other questions should be asked in both the baseline and post-deployment surveys. Separate questionnaires (with the same set of questions) will be sent to I-10 and I-110 corridor users. For space purposes, the questions below address corridor use as "I-110/I-10," but questions should only include reference to the respective corridor used by the targeted survey recipient.

1. What is your home zip code? _____.
2. What is the main purpose of your trips on the I-110/I-10?
   - ☐ **Work**
   - ☐ **School**
   - ☐ **Other *(please specify):* _____.**
3. How many weekdays during rush hours (5-9AM and 4-7PM) do you generally travel on the I-110/I-10?
   - ☐ **Less than once per week**
   - ☐ **1 day per week**
   - ☐ **2 days per week**
   - ☐ **3 days per week**

- **4 days per week**
- **5 days per week**

4. *Before ExpressLanes, during weekday rush hours on the I-110/I-10 would you say you traveled…?*
   - **More Frequently**
   - **Less Frequently**
   - **About the Same Frequency**
   - **Did Not Travel**
5. *Would you say this change in frequency is due to ExpressLanes?*
   - **Yes**
   - **No**
   - **There was no change in frequency**
6. And how many days do you generally travel on I-110/I-10 on the weekend?
   - **1**
   - **2**
   - **None**
7. *Before ExpressLanes, on the I-110/I-10 on the weekend would you say you traveled…?*
   - **More Frequently**
   - **Less Frequently**
   - **About the Same Frequency**
   - **Did Not Travel**
8. *Would you say this change in frequency is due to ExpressLanes?*
   - **Yes**
   - **No**
   - **There was no change in frequency**
9. In which county does your trip normally begin?
   - **Los Angeles**
   - **Riverside**
   - **San Bernardino**
   - **Orange**
   - **Other *(please specify):* _____.**
10. When heading towards downtown Los Angeles, what entrance (or connecting freeway) do you normally use to get on the I-110/I-10 Freeway? _____.
11. When heading towards downtown Los Angeles, what exit (or connecting freeway) do you normally use to get off the I-110/I-10 Freeway? _____.
12. About how many minutes does your trip normally take from the time you get on the I-110/I-10 to the time you get off the I-110/I-10? _____.
13. *Before ExpressLanes, about many minutes did your trip normally take from the time you got on the I-110/I-10 to the time you got off the I-110/I-10?* _____.

14. How strongly would you agree or disagree that each time you make your commute your travel time remains about the same number of minutes?
    - **Strongly Agree**
    - **Agree**
    - **Disagree**
    - **Strongly Disagree**
    - **No Opinion**
15. *Would you say the consistency in your travel time commute has improved since ExpressLanes began?*
    - **Yes, it has improved**
    - **No, it has gotten worse**
    - **There was no change**
16. About how many miles is your trip from where you get on the I-110/I-10 to where you get off the I-110/I-10? _____.
17. During rush hours (5-9AM / 4-7PM), how would you rate the use of HOV/carpool lanes (*HOT lanes*) on I-110/I-10?
    - **Under-utilized**
    - **Over-utilized**
    - **About right**
    - **Don't know**
18. During non-rush hours (9AM-4PM and 7PM-5AM), how would you rate the use of HOV/carpool lanes (*HOT lanes*) on I-110/I-10?
    - **Under-utilized**
    - **Over-utilized**
    - **About right**
    - **Don't know**
19. How many weekdays during rush hours (5-9AM and/or 4-7PM) do you use the HOV/carpool lanes (*HOT lanes*) in a bus, motorcycle, vanpool or carpool? *If you use HOT lanes as a single occupant driver say "never".*
    - **Never**
    - **Less than once per month**
    - **Less than once per week**
    - **1 day per week**
    - **2 days per week**
    - **3 days per week**
    - **4 days per week**
    - **5 days per week**
20. *What is your main reason for choosing to use HOT lanes on the I-110/I-10?*
    - **None, I Do Not Use Hot Lanes (see question below)**
    - **Less Congestion / Time Savings**
    - **Carpool / Vanpool**
    - **Other (please specify): _____**

21. *What is your main reason for not using HOT lanes on the I-110/I-10?*
    - **None, I Use Hot Lanes (see question above)**
    - **Cost**
    - **Other (please specify): _____**

If you never use the HOV/carpool lanes (*HOT lanes*) skip to question 28

22. Do you carpool, vanpool, ride a bus, or drive a motorcycle when using HOV/carpool lanes (*HOT lanes*)? (check all that apply)
    - **Carpool**
    - **Vanpool**
    - **Bus**
    - **Motorcycle**
23. *Prior to HOT Lanes, did you mainly use the….?*
    - **General purpose lanes**
    - **HOV lanes**
    - **Did not ride on the I-10/I-110**
24. *During rush hour how often do you use the HOT Lanes?*
    - **Less than once per week**
    - **1 day per week**
    - **2 days per week**
    - **3 days per week**
    - **4 days per week**
    - **5 days per week**
25. *During non rush hours how often do you use the HOT Lanes?*
    - **Less than once per week**
    - **1 day per week**
    - **2 days per week**
    - **3 days per week**
    - **4 days per week**
    - **5 days per week**
26. Including you, how many people are normally in your carpool or vanpool? (Don't answer if you use public transit or drive a motorcycle *(or drive alone)*.) _____.
27. How many minutes do you save on a one-way trip by using the HOV/carpool lanes (*HOT lanes*) instead of the regular freeway lanes? _____.
28. During your typical commute, would you say the flow of traffic on the I-110/I-10 is . . .?
    - **Always bad**
    - **Mixed**
    - **Always good**
    - **More often bad**
    - **More often good**
    - **Don't know**

29. Comparing your trip to a year ago, would you say the flow of traffic on the I-110/I-10 is…?
    - **Worse**
    - **Better**
    - **The same**
    - **Don't know**
30. *Would you say changes to the flow of traffic on the I-110/I-10 are caused by ExpressLanes?*
    - **Yes**
    - **No**
    - **There was no change in the flow of traffic**

Please check the box indicating how strongly you agree or disagree with the following statements.

	Strongly Agree	Agree	Disagree	Strongly Disagree	No Opinion
31. During rush hours, vehicles with less than (3 passengers (I-10)/two passengers (I-110)) should be allowed to use the carpool lanes by paying a toll if the revenue is used to improve transit service, and speeds can be maintained at 45 MPH or better.					
32. Even if I don't want to pay to use the ExpressLanes on a regular basis, it is good to have it as an option when I need to get somewhere fast.					
33. ExpressLanes are a good value if when driving alone, I could reduce my commute time by paying a toll.					
34. It is very important to ensure that the carpool lanes continue to run smoothly to motivate people to rideshare.					
35. Changing the carpool lanes to HOT lanes will/*has* encourage/*encouraged* more people to use transit.					
36. The ExpressLanes reduce congestion by moving traffic out of the regular lanes and into the ExpressLanes when the carpool lanes are not being fully used.					
37. Changing carpool lanes to HOT lanes increases congestion in other lanes.					
38. The ExpressLanes benefit all travelers because the toll revenue is used to improve transit which provides a low cost travel alternative for everyone.					
39. ExpressLanes will/*has* reduce/*reduced* congestion on the I-110/I-10.					
40. If I choose to use ExpressLanes it will improve the reliability of my commute travel time on the I-110/ I-10.					
41. ExpressLanes will be an effective long term solution to traffic congestion as the population around the I-110/ I-10 continues to grow.					

42. Please indicate the category that best represents your employment status (pick one)
    - **Employed full-time**
    - **Employed part-time**
    - **Self employed (full or part-time)**
    - **Student, not employed or employed <25 hrs/week**
    - **Student, employed 25+ hrs/week**
    - **Homemaker**
    - **Retired**
    - **Not Currently Employed**
43. Please indicate the category that best represents your total household income (pick one)
    - **Less than $10,000**
    - **$10,000 - $24,999**
    - **$25,000 - $34,999**
    - **$35,000 - $49,999**
    - **$50,000 - $74,999**
    - **$75,000 - $99,999**
    - **$100,000 - $149,999**
    - **$150,000 - $199,999**
    - **$200,000 - $249,999**
    - **$250,000 or more**
    - **Prefer not to answer**
44. Please indicate the category that best represents your age (pick one)
    - **16-17**
    - **18-24**
    - **25-34**
    - **35-44**
    - **45-54**
    - **55-64**
    - **65-74**
    - **75-84**
    - **85 or older**
45. Are you of Hispanic or Latino Origin?
    - **Yes**
    - **No**
46. To which of the following ethnic groups do you belong?
    - **African American or Black**
    - **American Indian or Alaskan Native**
    - **Asian**
    - **White or Caucasian**
    - **Other**
47. Gender:
    - **Male**
    - **Female**

4.4 Data Analysis

The Metro survey analysis will compare I-10 and I-110 corridor user responses before and after the ExpressLanes implementation in order to understand how the CRD project impacted behaviors and attitudes. Metro's analysis will look at before and after comparisons of travel behavior including:

- Trip purpose
- Trip length
- Travel time
- Travel time reliability
- Origin-destination
- Lane choice
- Mode choice
- HOV and HOT lane use
- Transit use
- Carpooling
- Perception of impact of LAC CRD strategies on reducing congestion
- Differences in response to perceptions of HOT lanes based on:
    - Demographics (income, race, ethnicity, age, gender, employment)
    - Lane use (HOV/HOT lane vs. general purpose lane user)
    - Peak travel vs. off-peak travel
    - Mode use (carpool/vanpool, transit, motorcycle single occupant users)

Survey weights will be calculated for each survey respondent that will take into account the sample design, non-response, and other appropriate factors. Final survey results will be weighted accordingly.

The data and analysis being conducted by Metro correlates closely with survey data needed to test national evaluation hypotheses, as indicated in Table 1-3. As such, it is expected that, for the most part, the results provided by Metro will be used directly to test national evaluation hypotheses and answer questions. Additional analysis of the survey data by the national evaluation team may be warranted if the team determines that Metro's analysis does not fully address the evaluation hypotheses.

Data from Metro's License Plate Survey will play an important role in hypothesis testing and question answering in almost every national evaluation analysis, addressing the following major issues:

- Utilization of CRD projects including tolling, transit, travel demand management and technologies (algorithms to estimate HOT lane capacity, etc.);
- Perception of the appropriateness and effectiveness of CRD projects as traffic congestion reduction mechanisms;
- Changes in travel behavior (mode, route, origin and destination etc.) and the reason for those changes; and
- As part of the equity analysis, the distribution of impacts and differences in utilization and perception associated with various subpopulations.

4.5 Schedule and Responsibilities

The survey will be carried out by Metro or their survey consultants. The pre-deployment surveys should be conducted prior to the scheduled I-110 ExpressLanes implementation date of October 2012 and the post-deployment surveys should be conducted several months after the I-10 implementation with a suggested date of October 2013. It is recommended that license plate video collection occur simultaneously for both corridors for both the pre-deployment surveys and the post-deployment surveys.

Metro will perform the license plate video data collection and finalize survey questions (with help from the national evaluation team as needed). Metro will also administer the survey and conduct analysis. Members of the national evaluation team will review the results provided by Metro and incorporate them into the CRD national evaluation report. Metro will provide the raw survey data file, along with survey weights, to the evaluation team should further analysis by the team be warranted.

5.0 CARPOOLER SURVEY

This chapter describes the purpose, approach, data analysis and schedule and responsibilities associated with the survey of carpoolers (current and former) on the I-10 and I-110 CRD corridors.

5.1 Purpose

This survey is intended primarily as a means to address the evaluation question, "Will CRD HOT and transit improvements lead to unintended breakups of current carpools/vanpools?" That question will be addressed in the ridesharing analysis portion of the evaluation. As indicated in the question, there are two mechanisms by which the CRD deployment could contribute to the dissolution of some carpools. The first is that those travelers who are currently carpooling in order to gain access to the existing HOV lanes and the travel time savings associated with them (presumed to be a major if not primary motivation for most carpools) may find it more convenient to begin using the HOT lane as a paying SOV. The second is that the significantly improved transit services in the corridors could lure some carpoolers to switch to transit. The carpooler survey focuses on the first mechanism. It is possible that the transit on-board survey will provide some data pertaining to the second mechanism but given the likely low proportion of transit passengers who formerly carpooled it is not anticipated that the sample size will support statistically significant conclusions. The carpool survey results will be analyzed in conjunction with average vehicle occupancy data generated by the Traffic System Data Test Plan which should reveal any overall shift from HOV to SOV. The critical role played by the carpool survey is to investigate the "why" behind any HOV to SOV shifts or lack thereof (that is, to understand why carpools did not break up).

In addition to providing a primary means for understanding whether and why some carpoolers switched to SOV HOT lane use and/or to bus transit, the carpooler survey is intended to investigate the effectiveness of "carpool breakup mitigation incentives" under consideration by Metro. The specific incentives have not been identified yet but include weekly or monthly gift card drawings where every HOT lane reading of a transponder set to "HOV" would automatically enter the transponder account holder in the drawing. The final version of this test plan will reflect Metro's final decisions regarding carpool breakup mitigation incentives.

5.2 Survey Approach

The most robust but also the most resource-intensive approach to the carpooler survey would be a panel survey in which existing carpoolers would be surveyed prior to HOT lane implementation and those same individuals surveyed again after implementation of the HOT lanes. Such an approach would provide the richest, fullest understanding of carpooling issues but would be more expensive in that two surveys would need to be conducted (before and after), and it would be necessary to perform "panel maintenance" outreach between the before and after survey in order to keep the panel together. If the LA CRD local partners are willing and able to devote the resources necessary for a panel survey and place a premium on the fullest understanding of carpool breakups (at least those resulting in shifts to general purpose lane or HOT lane SOV) the evaluation team would endorse such an approach. However, such a panel

survey is not necessary to sufficiently answer the most fundamental carpooling questions and the evaluation team therefore recommends for consideration an "after-only" approach.

For surveys like the license plate survey where respondents will be asked a series of detailed questions about their travel behavior, the factors influencing their travel decisions and their perceptions of travel conditions, it is much preferred to perform both baseline and post-deployment surveys because respondents often cannot accurately recollect with precision what they did, why, and how they felt a year or more in the past. An after-only design for the carpooler survey would be acceptable, however, because respondents will not be asked detailed questions about what they used to and how they used to feel—the focus will be on what they are doing post-HOT lane implementation and why.

The proposed approach is to draw a sample of existing carpoolers using data from the Average Vehicle Ridership (AVR) survey. The AVR Survey is administered once per year by Los Angeles County's Employee Transportation Coordinators to businesses with more than 250 employees. The survey asks employees to provide their mode of commute for each day in a specified one week period. From the survey, a list of employees who carpooled during that week along with their home address, phone number, and email address can be obtained. No survey information is provided as to what route the carpooler took to work. Thus, in order to narrow this list of carpoolers to only those who would most likely travel on the I-110 and I-10 corridors, Metro will identify the five-digit ZIP Code of each carpooler whose license plate was captured on each corridor via the baseline License Plate Survey. Then, Metro will cross-reference this list of ZIP Codes with the AVR carpooler database to assemble a sampling frame of carpoolers for each corridor. The assumption here is that the five-digit ZIP Codes of drivers observed on the corridor through the license plate capture are the ZIP Codes of drivers most likely to be driving on the corridor. There will certainly be AVR-identified carpoolers from these ZIP Codes that carpool via a route other than the corridors of interest. Similarly, there will be AVR-identified carpoolers from ZIP Codes other than those that were observed in the License Plate Survey that will be missed. However, absent any further information on carpool routes taken, this is viable solution. A summary of the number of carpoolers by five-digit ZIP Code will be provided to the national evaluation team to assist with the survey sample design. No baseline survey would be administered to this pool of carpoolers; rather, they would be surveyed after HOT lane implementation. The focus would be in understanding how many of the pre-HOT lane carpoolers are still carpooling (and why) or are no longer carpooling but instead using the general purpose freeway lanes as SOVs or using the HOT lanes as SOVs (and why). The AVR survey does not distinguish whether the employee was a driver or passenger of a carpool, only that they participated in a carpool. Thus, surveys may be sent to the drivers of the carpool vehicles as well as carpool passengers.

One of the challenges of this approach is that over the year-plus period between the identification of carpoolers prior to the HOT lane deployment and the distribution of the post-HOT lane deployment surveys a number of the potential respondents can be expected to be unreachable because, for example, they moved out of the region or changed jobs and, therefore, no longer travel the corridor. However, this challenge can be addressed by having a sufficient number of AVR-identified carpoolers and sending out enough post-deployment surveys to ensure a sufficient sample size. Preliminary information provided by Metro from the AVR survey

indicates that there are about 36,000 carpoolers located in ZIP Codes observed on the I-110 corridor and roughly 38,000 located in ZIP Codes observed on the I-10 corridor.

There are a number of factors that will determine the necessary carpool driver sample size: the margin of error desired for the survey estimates, the confidence level associated with the margin of error, the percentage of current carpools hypothesized to break up, and the assumed survey response rate. The margin of error for the survey is defined to be +/- 10 percent and the confidence level is 95 percent. Thus, the overall precision for a population proportion is estimated to be within +/- 10 percent of its true value with 95 percent probability where the population is defined here is the main one of interest, namely the number of drivers who used to carpool pre-HOT but do not post-HOT. Smaller margins of errors would be realized on survey estimates calculated using all sampled carpool drivers, not just ones that decided to drive without a carpool.

The percentage of current carpools hypothesized to break up is important as the goal of the survey is to sample a sufficient number of drivers who carpooled prior to HOT lane deployment but who do not post-HOT deployment. If the percent of current carpools that break up is low (around 10 or 20 percent), more surveys would have to be administered to reach enough of these drivers. On the other hand, a break up percentage of 40 to 50 percent would mean less surveys would need to be sent out as these drivers would be easier to find through the sampling process. Finally, lower response rates require more administered surveys. Table 5-1 shows the required sample sizes (number of surveys to distribute) under varying assumptions for response rate and percentage of current carpool drivers that no longer carpool. As shown in Table 5-1, the number of distributed surveys varies greatly based on the response rate and percentage of carpool breakups. Under conservative assumptions (i.e., low response rate and low carpool breakup rate), the number of surveys needed is about 9,600 while under an optimistic set of assumptions (i.e., high response rate and higher percentage of carpool breakups), the number of administered surveys can be as low as 641. Using assumptions for both parameters more towards their middle values (i.e., 20 percent response rate and 30 percent of current carpool breakups), 1,601 administered surveys would be needed. The amount of surveys administered will be decided after discussions with the local partners and/or U.S. DOT regarding assumptions of response rate and rate of carpool breakups.

Table 5-1. Minimum Number of Surveys to Distribute to Pre-HOT Carpool Drivers in each Corridor in Order to Gather Information from those Drivers who no Longer Carpool

Survey Response Rate	Assumed Percentage of Pre-HOT Lane Carpool Drivers that No Longer Participate in a Carpool				
	10%	20%	30%	40%	50%
10%	9604	4802	3202	2401	1921
15%	6403	3202	2135	1601	1281
20%	4802	2401	1601	1201	961
25%	3842	1921	1281	961	769
30%	3202	1601	1068	801	641

Source: Battelle, September 2012.

As with the proposed License Plate Survey, it is recommended that two separate carpooler surveys be conducted, one for each corridor. It is recommended (as with the License Plate Survey) that the surveys be conducted in October 2013, several months after the last HOT lane deployment.

5.3 Preliminary Carpooler Survey Questions

The following are proposed questions for inclusion in the carpooler survey. To ensure comparability with socio-demographic categories used in other UPA/CRD surveys, the national evaluation team suggests that demographic categories replicate those used by Volpe when conducting surveys such as Seattle's Household Travel Survey and Atlanta's On-Board Transit Survey. Such categories have been approved by Metro for use in the LA CRD On-Board Transit Survey fielded in June 2011 (Chapter 2 of this document).

1. Prior to the implementation of the HOT lanes on the I-10/I-110 freeway, did you carpool?
2. About how many days per week did you usually carpool?
3. What was the primary reason that you carpooled?
4. Do you currently carpool? (If not, skip to question #9)
5. About how many days per week do you currently carpool?
6. What is the primary reason that you chose to continue carpooling?
7. Are there other, secondary, reasons that you decided to continue carpooling?
8. How big of a role did the _____ (fill in Metro carpool breakup mitigation incentive) play in your decision to continue carpooling—a major role, a minor role, or no role?
9. In the absence of the _____ (fill in Metro carpool breakup mitigation incentive) would you have stopped carpooling?
10. So, instead of carpooling, how do you currently make your trip?
11. What is the primary reason you decided to stop carpooling and switch to your current mode of travel?
12. Are there other, secondary, reasons that you decided to stop carpooling and if so, what are they?

5.4 Data Analysis

The analysis of the carpool survey data will focus squarely on addressing the evaluation question noted in Section 5.1 pertaining to whether and why the CRD deployment contributed to the breakup of carpools. The analysis will also investigate the impact of the Metro carpool breakup mitigation incentives.

The analysis of survey data will begin with standard checking and cleaning of the raw data. Survey weights will be calculated that take into account the sample design, non-response, and other appropriate factors and the final survey results will be weighted accordingly. The analysis

will include standard survey statistics and cross-tabulations according to demographic and other factors.

The data analysis of the carpooler survey results will occur within the ridesharing analysis. In conjunction with the carpooler survey results, any results of the transit on-board surveys pertaining to travelers switching from carpooling to transit will also be considered. As noted previously, average vehicle occupancy data from the Traffic System Data Test Plan will also be examined as another source of data on overall HOV to SOV shifts. Vanpooler survey results will also be consulted.

5.5 Schedule and Responsibilities

As noted in Section 3.3, it is recommended that the surveys be conducted in October 2013, eight months following the last HOT lane implementation. The carpooler surveys, including identification of potential respondents using AVR survey information, will be carried out by Metro or their survey consultants. The national evaluation team will support Metro in finalizing the survey questionnaire. Metro will provide the evaluation team with coded survey data along with survey sample weights. The evaluation team will be responsible for analyzing the data and reporting results.

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6.0 GENERAL PUBLIC SURVEY

This chapter describes the purpose, approach, data analysis, and schedule and responsibilities associated with the I-10 and the I-110 General Public Surveys that will be conducted by Metro and its contractors. Metro recently conducted telephone and mail-back surveys for the I-10 and I-110 corridors (in October 2011). These surveys will be used as the baseline from which the post-deployment surveys described in this section will draw comparisons. These post-deployment surveys have also been modeled after telephone surveys conducted in Summer 2008, by Metro, among LA County residents, San Gabriel Valley residents, and 110 Corridor residents.

6.1 Purpose

The purpose of these telephone surveys is to receive feedback from I-10 and I-110 freeway users on their expectations and reactions to the LA CRD (Metro ExpressLanes) Program. CRD projects of focus include: expanded bus service, LA ExpressPark and ExpressLanes. As such, the surveys focus on: the impact of these CRD projects on reducing congestion, perceptions of CRD transit security and its impact on mode choice decisions, perceptions of equity in congestion pricing, and the environmental impact of the projects.

The surveys will compare responses after the deployment of expanded bus service (on the I-10 and I-110), LA ExpressPark and ExpressLanes to the recently completed I-10 and I-110 General Public Surveys conducted by Metro in October 2011. It is recommended that the surveys be conducted several months after the last project becomes operational.

6.2 Approach

This section describes the recommended approach for the general public surveys and includes material excerpted or paraphrased from both the March 2012 Pre-Implementation Survey Draft Report prepared for Metro and the July 2008 LA County, San Gabriel Valley, and I-110 Corridor General Public and Environmental Justice Survey Reports prepared by Metro. Although the question content will remain the same, separate surveys will be sent out to I-10 and I-110 freeway users. The section below provides additional information on general public survey participants.

Population and Sample: The intended populations to be surveyed include likely users of the I-10 and I-110 corridors. These users should include local residents and people who use the freeway for travel from further downtown Los Angeles. The sampling frame for the general public surveys will include all Los Angeles County zip codes that fall at least partially within a six-mile buffer around the I-10 freeway from downtown Los Angeles to the Los Angeles County-Riverside County boundary (for the I-10 General Public Survey) and a six-mile buffer around the entire length of the I-110 freeway (for the I-110 General Public Survey). In addition, the 2008 license plate data collected for the 2008 surveys (with associated addresses) in which ten or more records had the same zip code may be selected for inclusion in the surveys.

Potential general public survey respondents will be found through random digital dialing where the first seven digits of a telephone number are designated (i.e., the area code, prefix, and the

first number of the exchange) to ensure residents in area codes closest to the CRD projects are surveyed. In addition, mobile phone samples will be used to avoid missing the mobile-phone-only household demographic (which may include younger and lower income households). To avoid biases associated with telephone interviewing, Census data for the Census tracts that most closely match the zip codes to be included in the sample will be used along with referenced quotas established for the 2008 surveys.

The I-10 and I-110 General Public Surveys, conducted in October 2011, each included 600 completed surveys. A target sample size of 600 will also be used for the post-deployment general public surveys. The overall precision for this population proportion is estimated to be within +/- 4.0 percent of its true value with 95 percent probability. The final number of administered surveys will depend on the survey response rate. The evaluation team will work with the local partners to develop an assumed response rate based on past similar surveys. For example, assuming a response rate of 20 percent, 800 General Public surveys (160/0.2) would need to be distributed in each of corridor.

Timing of the Surveys: It is desirable that the surveys are conducted several months after the last LA ExpressPark, ExpressLanes and expanded bus service project is deployed. It is recommended that the surveys be conducted in September 2013. Although the result of this timeframe is that LA ExpressPark and expanded bus service will be deployed for some length of time, it is important that respondents are provided with enough time to acclimate to the HOT lanes. Therefore, the advantage of collecting the data with this timeframe, outweighs the disadvantage of having a lengthy post-deployment of LA ExpressPark and expanded bus service.

6.3 Preliminary Survey Questions

This section includes questions regarding users' expectations and reactions to the LA CRD (Metro ExpressLanes) Program projects (expanded bus service, LA ExpressPark, ExpressLanes) including the impact of these CRD projects on reducing congestion, perceptions of CRD transit security and its impact on mode choice decisions, perceptions of equity in congestion pricing, and the environmental impact of the projects.

The following questions are based on Metro's 2011 and 2008 General Public Survey questionnaires and are recommended for inclusion in the surveys to be conducted by Metro. The final wording of the questions and the survey sequencing and format will be determined by Metro and their contractors. To ensure comparability with socio-demographic categories used in other UPA/CRD surveys, the national evaluation team suggests that demographic categories replicate those used by Volpe when conducting surveys such as Seattle's Household Travel Survey and Atlanta's On-Board Transit Survey. Such categories have been approved by Metro for use in the LA CRD On-Board Transit Survey fielded in June 2011 (Chapter 2 of this document).

For space purposes, the I-10 and I-110 corridors are represented together as "the I-10 and I-110 corridors" in the list of proposed questions below. It is important to note, when finalizing the each corridors' survey questionnaire that only the corridor for which the survey represents should be included in the survey questions.

Recommended questions are as follows.

1. Do you travel regularly?
   - ☐ **Yes, work**
   - ☐ **Yes, social**
   - ☐ **Yes, medical**
   - ☐ **Yes, school**
   - ☐ **Yes, other (*please specify*): _____.**
   - ☐ **No**

   (if no, skip to question 9)

2. How many days per week do you travel?
   - ☐ **Less than once a month**
   - ☐ **Less than once per week**
   - ☐ **1 day per week**
   - ☐ **2 days per week**
   - ☐ **3 days per week**
   - ☐ **4 days per week**
   - ☐ **5 days per week**
   - ☐ **6 days per week**
   - ☐ **7 days per week**

3. How do you generally travel?
   - ☐ **Drive alone**
   - ☐ **Carpool**
   - ☐ **Vanpool**
   - ☐ **Bicycle**
   - ☐ **Bus**
   - ☐ **Motorcycle**
   - ☐ **Metrorail**
   - ☐ **Metrolink/Amtrak**
   - ☐ **Other (*please specify*):_____.**

4. When you travel on weekdays, what time do you normally leave in the morning?
   - ☐ **Before 6 AM**
   - ☐ **6-7 AM**
   - ☐ **7:01 – 8 AM**
   - ☐ **8:01 – 9 AM**
   - ☐ **9:01 – 10 AM**
   - ☐ **After 10 AM**

5. And when you travel back on weekday afternoons or evenings, what time do you generally leave?
   - **Before 2 PM**
   - **2:00 – 3 PM**
   - **3:01 – 4 PM**
   - **4:01 – 5 PM**
   - **5:01 – 6 PM**
   - **6:01 – 7 PM**
   - **After 7 PM**
6. Do you travel on a freeway when you go to your most frequent destination?
   - **Yes**
   - **No**

   (if no, skip to question 9).
7. Which ones?

2	**90**	**138**
5	**91**	**170**
10	**101**	**210**
14	**105**	**405**
18	**110**	**610**
57	**118**	**710**
60	**134**	**Other (please specify): ____.**

8. Do you use the HOT lanes when you travel on the freeway?
   - **Yes, generally**
   - **Yes, sometimes**
   - **Rarely**
   - **Never**
9. Now I am going to ask you about traffic conditions on LA County Freeways. Would you say that the level of congestion is….?
   - **Always bad**
   - **More often bad**
   - **Mixed**
   - **More often good, or**
   - **Always good**
   - **Don't know**
10. Compared to a year ago, would you say that congestion is…?
    - **Worse**
    - **The same, or**
    - **Better**
    - **Don't know**

11. Now I am going to ask you to rate your agreement with some statements on congestion reduction projects. For each statement please tell me if you strongly agree, agree are neutral, disagree, or strongly disagree with the statement.

    The variably-priced parking system recently implemented in downtown Los Angeles reduces congestion on the roadways.

    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know**

12. The next statement is: The variably-priced parking system reduces how often you drive into LA County.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know**

13. The next statement is: The increased transit service and reduced wait times along the I-10 and I-110 corridors encourages more transit use and reduces congestion on the roadway.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know**

14. The next statement is: The increased transit service and reduced wait times along the I-10 and I-110 corridors increases your use of transit.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know**

15. The next statement is: The recently implemented transit station security improvements including better lighting, new security cameras, bicycle lockers, and a new LA County Sheriff's substation encourage more people to use transit and reduce congestion on the roadway.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know**

16. The next statement is: These recent transit station improvements increases your use of transit.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know**

17. For the I-110 Harbor Transitway Corridor and the I-10 El Monte Busway Corridor where the speed has historically been low during peak periods, LA County recently implemented electronic High Occupancy Toll (HOT) lanes called ExpressLanes. Do you think that these toll lanes have helped to reduce the congestion level?
    - **Yes**
    - **No**
    - **Don't know/refused**

18. Now I am going to read you some statements about conversion of carpool lanes to High Occupancy Toll (HOT) lanes. For each statement please tell me if you strongly agree, agree, are neutral, somewhat disagree, or strongly disagree with the statement.

    The first statement is:

    Allowing vehicles with less than 3 passengers on the I-10 and 2 passengers on the I-110 to use the carpool lanes by paying a toll is acceptable because the revenue is used to improve transit service.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

19. The next statement is: Allowing vehicles with less than 3 passengers on the I-10 and 2 passengers on the I-110 to use the carpool lanes by paying a toll is acceptable because speeds can be maintained at 45 MPH or better.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

20. The next statement is: Changing the carpool lanes to HOT lanes reduces congestion on the I-10/I-110 corridors.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

21. The next statement is: Changing the carpool lanes to HOT lanes reduces congestion on the I-10/I-110 corridors by moving traffic out of the regular lanes and into the HOT lanes when the carpool lanes are not being full used.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

22. The next statement is: Changing the carpool lanes to HOT lanes on the I-10/I-110 corridors increases congestion in the other lanes.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

23. The next statement is: Changing the carpool lanes to HOT lanes on the I-10/I-110 corridors increases congestion on surface streets around the freeways.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

24. The next statement is: Because ExpressLanes reduces congestion, and that reduces pollution, ExpressLanes benefits all LA County Residents.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

25. The next statement is: ExpressLanes benefits the environment by reducing greenhouse gases.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

26. The next statement is: HOT lanes on the I-10/I-110 corridors are a good value, if when I drive alone, I can reduce my commute time by paying a toll costing between $0.25 and $1.40 per mile.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

27. The next statement is: Even if I don't want to pay to use HOT lanes on the I-10/I-110 corridors on a regular basis, it is good to have it as an option when I need to get someplace fast.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

28. The next statement is: HOT lanes on the I-10/I-110 corridors benefit all travelers because the toll revenue is used to improve transit which provides low cost travel alternatives to lower income travelers.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

29. The next statement is: When I choose to use HOT lanes on the I-10/I-110 corridors it improves the reliability of my commute/travel time.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

30. The next statement is: Changing the carpool lanes to HOT lanes on the I-10/I-110 corridors reduces carpooling.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

31. The next statement is: Changing the carpool lanes to HOT lanes on the I-10/I-110 corridors encourages more people to use transit.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

32. The next statement is: HOT lanes on the I-10/I-110 corridors are unfair because lower income people may not be able to afford to use them.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

33. The next statement is: HOT lanes on the I-10/I-110 corridors are an effective long term solution to traffic congestion as the LA County population continues to grow.
    - **Strongly agree**
    - **Agree**
    - **Neutral**
    - **Disagree**
    - **Strongly Disagree**
    - **Don't know/refused**

34. Now just a few questions to ensure we have a balanced group of respondents.

    Which of the following best describes your level of education?
    - **Less than high school**
    - **High school graduate**
    - **Some college**
    - **Vocational/technical training**
    - **Associates degree**
    - **Bachelors degree**
    - **Graduate/Post-Graduate Degree**

35. Which of the following best describes your employment status?
    - **Employed full-time**
    - **Employed part-time**
    - **Self employed (full or part-time)**
    - **Student, not employed or employed <25 hrs/week**
    - **Student, employed 25+ hrs/week**
    - **Homemaker**
    - **Retired**
    - **Not Currently Employed**

36. Is your combined total annual household income…?
    - **Less than $10,000**
    - **$10,000 - $24,999**
    - **$25,000 - $34,999**
    - **$35,000 - $49,999**
    - **$50,000 - $74,999**
    - **$75,000 - $99,999**
    - **$100,000 - $149,999**
    - **$150,000 - $199,999**
    - **$200,000 - $249,999**
    - **$250,000 or more**
    - **Prefer not to answer**

37. Are you….?
    - **16-17**
    - **18-24**
    - **25-34**
    - **35-44**
    - **45-54**
    - **55-64**
    - **65-74**
    - **75-84**
    - **85 or older**

38. Are you of Hispanic or Latino Origin?
    - **Yes**
    - **No**

39. To which of the following ethnic groups do you belong?
    - **African American or Black**
    - **American Indian or Alaskan Native**
    - **Asian**
    - **White or Caucasian**
    - **Other**

40. Record Gender.
    - **Male**
    - **Female**

6.4 Data Analysis

The Metro survey analysis will compare the I-10 and I-110 corridor user responses received after CRD project deployment with the March 2012 Pre-Implementation Survey to understand the users' perceptions of the projects and their impact on congestion, equity, and the environment. Metro's analysis will look at before and after comparisons of responses including:

- Trip frequency and purpose
- Freeway use
- Mode choice
- Travel time
- HOV and HOT lane use
- Perception of congestion and traffic conditions
    - Current levels of congestion
    - Impact of increased and variable parking prices on reducing congestion
    - Impact of increased transit service on reducing congestion
    - Impact of increased transit security on reducing congestion
    - Impact of HOT lanes on reducing congestion

- Impact of CRD projects on reducing pollution and greenhouse gas emissions
- Impact of CRD projects on increased travel time reliability
- Equitable/Inequitable Impact of CRD projects across different demographics of users
- Equity – differences in response to perceptions of CRD projects based on demographics.

Survey weights will be calculated for each survey respondent that will take into account the sample design, non-response, and other appropriate factors. Final survey results will be weighted accordingly.

The data and analysis being conducted by Metro correlates closely with survey data needed to test national evaluation hypotheses, as indicated in Table 1-3. As such, it is expected that, for the most part, the results provided by Metro will be used directly to test national evaluation hypotheses and answer questions. Additional analysis of the survey data by the national evaluation team may be warranted if the team determines that Metro's analysis does not fully address the evaluation hypotheses.

Data from Metro's General Public Surveys will play an important role in hypothesis testing and question answering in almost every national evaluation analysis, addressing the following major issues:

- Utilization of CRD projects including tolling, transit, travel demand management and technologies (algorithms to estimate HOT lane capacity, etc.);
- Perception of the appropriateness and effectiveness of CRD projects as traffic congestion reduction mechanisms;
- Changes in travel behavior (mode, route, origin and destination etc.) and the reason for those changes; and
- As part of the equity analysis, the distribution of impacts and differences in utilization and perception associated with various subpopulations.

6.5 Schedule and Responsibilities

The survey will be carried out by Metro or their survey consultants. It is suggested that the surveys be conducted September 2013, several months after the last project is deployed.

Metro and its contractors will finalize survey questions (with help from the national evaluation team as needed), administer the survey, and conduct analysis. Members of the national evaluation team will review the results provided by Metro and incorporate them into the CRD national evaluation report. Metro will provide the raw survey data file, along with survey weights, to the evaluation team should further analysis by the team be warranted.

7.0 STAKEHOLDER INTERVIEWS AND WORKSHOPS

7.1 Purpose

The purpose of the stakeholder interview is to gain additional insights into the institutional arrangements, partnerships, outreach methods, and other activities contributing to successfully planning, deploying, and operating the LACRD (Metro ExpressLanes) Program projects. The results of the interviews and workshops will be used in the non-technical success factor analysis. The results will be of benefit to other areas seeking to enhance existing or develop new multi-agency/multi-jurisdictional partnerships to promote innovative transportation solutions to address traffic congestion.

7.2 Approach

Two sets of interviews and workshops will be conducted. The first set of interviews will be conducted in August and September 2012, with the workshop to follow in October 2012. The second set of interviews and workshop will be conducted in the Fall/Winter of 2013 after deployment of all LA CRD elements.

Table 7-1 presents a list of 20 potential stakeholders targeted to be interviewed for the evaluation. As shown in Table 7-1, in some cases multiple individuals from the same agencies have been identified to be interviewed. The intent is to interview both the top officials – such as the chair or the commissioner – as well as the key senior staff involved in the CRD projects. It is realized that due to busy schedules it may not be possible to schedule interviews with all the top officials identified. It is anticipated that between 12 and 14 interviews will be completed for the CRD evaluation based on the availability of individuals and the ability to schedule interviews.

Based on previous experience, it is anticipated that each interview will take between one hour and one and one-half hour. The questions will be sent to the individuals in advance of the interviews to help facilitate discussion. Two members of the national evaluation team will participate in each interview. One individual will lead the interview, ask the questions, and take notes. The second individual will take notes using a laptop computer and record the session if the interviewee agrees.

Table 7-1. List of Stakeholders to Interview

Name	Organization
Mike Eng	California Assembly
Emad Gorgy	Caltrans
Mike Miles	Caltrans
Hilary Norton	FAST
Amir Sedadi	LADOT
Dan Mitchell	LADOT
Devon Deming	Los Angeles World Airports
Art Leahy	Metro
Conan Cheung	Metro
Doug Failing	Metro
Frank Quon	Metro
Henry Fuks	Metro
John Fasana	Metro Board Member
Kathy McCune	Metro
Mark Ridley-Thomas	Metro Board Member
Mary Lou Echternach	Metro
Roger Snoble	Former Metro CEO
Tim Lindholm	Metro
Annie Nam	SCAG
Hassan Ikhrata	SCAG

Source: Derived from discussions with local partners, September 2012.

7.3 Interview Questionnaires

Questionnaires will be used for both the pre-deployment and the post-deployment stakeholder interviews. Table 7-2 provides the questionnaire for the pre-deployment interviews. Table 7-3 provides the draft questionnaire for the post-deployment interviews. The post-deployment questionnaire may be revised based on the results of the pre-deployment interviews and workshop, as well as to address any issues or concerns that emerge during the implementation and operation of the LA CRD (Metro ExpressLanes) Program projects. Interviewers will also have a series of probes to use in drawing responses from interviewees if needed.

Table 7-2. Pre-Deployment Interview Questionnaire

Interviewee: _____ **Date:** _____ **Interviewer(s)**: _____	
Introduction	• Explain the National UPA/CRD Evaluation purpose, scope, and sponsors. • Describe the purpose and process for the stakeholder interviews. • Note that the interviews are confidential. Responses will not be attributed to specific individuals.
Role in CRD and Expectations	1. Please describe your agency's role and your personal role in planning, designing, and implementing the Los Angeles CRD projects. 2. What is your agency's objective(s) in participating in the CRD? What benefits did you expect to be realized when you decided to participate in the CRD? Have these expectations changed at all during the planning and pre-deployment process? If so, what has changed and why? 3. What would constitute success from the CRD projects for you and your agency? What about the CRD overall? Has your view of what constitutes success changed during the planning and pre-deployment process? If so, in what way and why?
Institutional Arrangements	4. Have you and your agency worked with the other partnership agencies, organizations, and individuals before? If so, what has been the focus of this work? How would you classify past working relationships – successful, unsuccessful, mixed? (Check for all partners, regional feds, legislators, and other local communities and advocacy groups). 5. What do you think were the keys to bringing all the agencies and jurisdictions together to develop the CRD partnership and to implement the CRD projects? What do you think will be the keys to maintaining the partnership throughout the deployment and operation process? 6. Have there been any changes in the partnership agencies and jurisdictions, including yours, that have influenced implementation of the CRD projects? If so, how have these changes been addressed? 7. Do you feel there have been any changes in the commitment to the CRD projects on the part of your agency/jurisdiction or other agencies/jurisdictions? If yes, please explain the nature and the potential causes of these changes. 8. What have been the biggest challenges during the implementation process? How have these challenges been addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 9. Were there any specific institutional issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 10. Were there any specific policy or political issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 11. How will (or has) the decision on how revenues will be allocated or reinvested be made (been made)? If the decision on how to allocate or reinvest revenues has not already been made, what do you think the plan should be for use of the revenues? 12. Were there any technical or technology-related issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome?
Outreach Activities	13. A variety of outreach activities have been used to engage policy makers, the public, and other groups in the implementation of the Los Angeles CRD projects. What do you feel have been the most successful activities? Have you been involved in any of these activities? If so, what has been your experience? Are there other outreach activities you feel would be of benefit? Do you anticipate any issues or concerns with public acceptance of the tolled lanes, the telecommuting programs, or other project elements?
Lessons Learned	14. Based on your experience to date, would you do anything differently if you were beginning to plan and implement the same projects in a different part of the city with the same funding? What if the project as a whole had twice the funding? What if the project as a whole had half the funding? 15. What do you feel are the key experiences or lessons learned so far to share with individuals in other areas? 16. Are there any other topics you would like to bring up related to the CRD?

Source: Battelle, September 2012.

Table 7-3. Post-Deployment Interview Questionnaire

Interviewee: _____ **Date:** _____ **Interviewer(s)**: _____	
Introduction	• Explain the National UPA/CRD Evaluation purpose, scope, and sponsors. • Describe the purpose and process for the stakeholder interviews. • Note that the interviews are confidential. Responses will not be attributed to specific individuals.
Role in CRD and Expectations	1. Please describe your agency's role, and your personal role in deploying and operating the Los Angeles CRD projects. 2. What is your agency's objective(s) in participating in the CRD? What benefits did you expect to be realized when you decided to participate in the CRD? Have these expectations changed at all during the deployment and operation of the various projects? If so, what has changed and why? Have your expectations been realized? 3. What would constitute success from the CRD projects for you and your agency? What about the CRD overall? Has your view of what constitutes success changed during the deployment and operation of the various projects? If so, in what way and why? (Since it is anticipated that most individuals will be re-interviewed, these questions may be modified to focus on any changes that occurred during the deployment).
Institutional Arrangements	4. How would you describe your working relationships with other CRD partners during the deployment and operation phases? Did your working relationship change during the deployment and operation of the CRD projects? If so, how did it change? (Check for all partners, Regional feds, legislators, and other local communities and advocacy groups). 5. What do you think have been the keys to maintaining the partnerships throughout the deployment and operation process? 6. Have there been any changes in the partnership agencies and jurisdictions, including yours, that have influenced the deployment and operation of the CRD projects? If so, how have these changes been addressed? 7. Do you feel there have been any changes in the commitment to the CRD projects on the part of your agency/jurisdiction or other agencies/jurisdictions? If yes, please explain the nature and the potential causes of these changes. 8. What have been the biggest challenges during the deployment and operation phases? How have these challenges been addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 9. Were there any specific institutional issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 10. Were there any specific policy or political issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome? 11. How was the decision on how to allocate or reinvest revenues made? Does the use match your ideas on how the revenues should be used? 12. Were there any technical or technology-related issues that had to be addressed? If so, how were they addressed by the partners, including your agency/jurisdiction? Have they been effectively overcome?
Outreach Activities	13. A variety of outreach activities have been used to engage policy makers, the public, and other groups in the implementation of the Los Angeles CRD projects. What do you feel have been the most successful activities? Have you been involved in any of these activities? If so, what has been your experience? Are there other outreach activities you feel would be of benefit? Do you anticipate any issues or concerns with public acceptance of the tolled lanes, the telecommuting programs, or other project elements?
Lessons Learned	14. Based on your experience to date, would you do anything differently if you were beginning to deploy and operate the same projects in a different part of the city with the same funding? What if the project as a whole had twice the funding? What if the project as a whole had half the funding? 15. What do you feel are the key experiences or lessons learned so far to share with individuals in other areas? 16. Are there any other topics you would like to bring up related to the CRD?

Source: Battelle, September 2012.

7.4 Workshop

A workshop will be conducted at the conclusion of each round of interviews. All of the individuals interviewed will be invited to participate in the workshop, which is anticipated to be approximately three hours in length. The purpose of the workshop is to foster additional dialog among the key stakeholders. The common themes identified during the interviews will be used to frame the group discussion, which will explore these and other topics in more detail. Table 7-4 presents the format for the pre-deployment workshop. It is anticipated that the post-deployment workshop will follow a similar format, although changes may be made based on the first workshop and interview results (e.g., discussion topics may be altered to better reflect the post deployment phase).

Table 7-4. Workshop Format

1. Welcome and Self Introductions (10 minutes)
2. Purpose of Workshop (5 minutes)
3. Summary of Key Point from Interviews and Additional Discussion (total of 80 minutes)
   - Expectations/Initial Conditions (20 minutes)
   - Institutional Arrangements (20 minutes)
   - Outreach Activities (20 minutes)
   - Lessons Learned (20 minutes)
4. Expectations for Operations (20 minutes)
5. Concluding Remarks (20 minutes)

Source: Battelle, September 2012.

7.5 Data Analysis

Immediately following each round of interviews, the interview notes and tape recordings will be reviewed and the major comments will be documented. The responses of each stakeholder to every question will be summarized. Researchers at the Humphrey Institute will use a qualitative research analysis software called NVivo to help organize, analyze, and summarize interviews. The categories for summarizing the results will be identified using both questionnaires. Subcategories will be used to provide more detail on the various topics covered in both sets of interviews.

A summary report will be prepared highlighting the common themes emerging from the interviews, as well as unique perspectives. The summary report will be organized by the interview questions, with a final section presenting overarching themes and tips for other areas.

The workshop discussion will be summarized immediately following each workshop. The workshop summary will highlight the discussion of the interview questions. Additional perspectives will be documented, as will reinforcement of the common themes from the interviews. The workshop summary will be of benefit to the LA CRD partnership agencies, other agencies in the metro area, and agencies throughout the country in providing insight

regarding what institutional arrangements, partnerships, outreach methods, and other activities contribute to the successful planning, deployment, and operation of CRD Program projects.

7.6 Schedule and Responsibilities

The first set of stakeholder interviews will be conducted in late summer 2012. The first workshop will be conducted in October 2012. The pre-deployment interviews and workshop will be completed prior to the deployment of ExpressLanes. The second set of stakeholder interviews and workshop will be conducted in Fall/Winter 2013, after the deployment of ExpressLanes and the other CRD projects. Members of the national evaluation team will conduct both the pre- and post-deployment interviews and facilitate the workshops. The results from the interviews and the workshops will be summarized after each round.

8.0 FOCUS GROUP AMONG MAJOR EMPLOYERS

The principal means of promoting incentives and activities related to vanpool formation is working though major employers in the two corridors. Almost 90 percent of the 2008 vanpool survey respondents cited their employers as promoting and assisting with vanpool formation. In order to gather information on the role of employers in facilitating the formation of new vanpoolers, one or more focus groups among employer worksite transportation coordinators will be held by Metro staff. Metro regularly conducts focus groups among employee transportation coordinators and will target one or more focus groups in the I-10 and I-110 corridors on the topic of vanpooling and the CRD project.

A focus group script will be developed by Metro for review by the national evaluation team. Possible focus group topics might include:

- Current employer activities to support vanpooling;
- Special efforts to promote alternatives to tolls;
- Relationship with Metro vanpool program;
- Perceived changes in vanpool interest since tolling initiated;
- Attitudes toward Metro vanpool incentives and promotional activities; and
- Attitudes toward the CRD project and perceptions as to its impact on employees.

The information gained from these focus group sessions will be qualitative in nature (e.g., statistical analysis will not be possible) and will allow for a richer understanding of (1) the role of employers in supporting vanpool formation, (2) perceptions of the Metro vanpool formation effort, and (3) comments on specific incentives or promotional activities.

The focus groups will be recorded (video or audio) for ease in summarization and assessment. The focus groups will be held in the fall of 2013 and will be conducted by Metro staff as part of the regular annual employer focus group activities. The national evaluation team will assess the focus group summary information for purposes of understanding the role and perceptions of employers in vanpool formation.

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9.0 FEEDBACK SESSIONS WITH CALIFORNIA HIGHWAY PATROL, FREEWAY SERVICE PATROL, AND BUS OPERATORS

This chapter describes the purpose, approach, data analysis, and schedule and responsibilities associated with the feedback sessions for highway patrol officers, freeway service patrol staff, and bus operators that will be conducted by Metro to support the national evaluation.

9.1 Purpose

The primary purpose of these sessions is to collect information from public agency personnel who are in a position to observe firsthand the potential safety impacts of the LA CRD (Metro ExpressLanes) Program projects. Specifically, these personnel will be questioned regarding any perceived changes in safety (increases or decreases in the risk of a crash or in the actual number of crashes, crash severity and the time required to clear incidents) and the relationship between any such changes and ExpressLanes. A secondary purpose of these sessions is to gather perceptions related to traffic operations in general, including traffic levels and traffic patterns resulting from ExpressLanes. These feedback sessions will be conducted on a monthly basis in a group atmosphere in which feedback is requested via a list of focused questions. Metro will be responsible for conducting these monthly meetings and providing the national evaluation team with finding reports summarizing the input from interviewees on a quarterly basis.

9.2 Approach

The California Highway Patrol, Southern Division Freeway Service Patrol, and the I-10/I-110 Bus Operators to be included in these sessions, will be invited by Metro to attend monthly meeings. It is Metro's responsibility to request participation, to plan each meeting, and to record findings. It is anticipated that approximately 4-6 highway patrol officers, 4-6 freeway service patrol staff, and 10 bus operators will participate. The state patrol and freeway service patrol personnel selected to be interviewed should be those assigned to the I-10 and I-110 freeways and state patrol should include personnel who are responsible for enforcing HOT lanes. The bus operators selected should be those using the I-10 and I-110 HOT lanes.

9.3 Feedback Session Questions

Suggested discussion questions are presented in Table 9-1 through Table 9-3. Table 9-1 contains the questions for California Highway Patrol officers. Table 9-2 presents the questions for Freeway Service Patrol staff. Table 9-3 outlines the questions for bus operators. The final wording of the questions, sequencing, and format will be determined by Metro (and their consultants) in coordination with the national evaluation team.

9.4 Data Analysis

After each monthly meeting, the interviewers (Metro or their consultant) will review interview notes and document major comments. Each quarter, a summary report will be prepared highlighting the common themes emerging from the meetings, as well as the unique perspectives. The summary report will be organized by the discussion questions, with a section presenting overlying themes and lessons learned and recommendations for areas of improvement.

9.5 Schedule and Responsibilities

Feedback sessions with California Highway Patrol officers, Freeway Service Patrol staff, and bus operators will focus on the completed ExpressLanes deployment. Sessions will be conducted on a monthly basis for a year following the deployment of both ExpressLanes (from March 2013 through March 2014).

The responsibilities for conducting and analyzing the feedback sessions are outlined below.

- Metro and/or their consultant will finalize the discussion questions; identify the individuals to be included from the California Highway Patrol, Freeway Service Patrol, and bus operators; schedule and conduct the feedback sessions; and document the results in a summary report each quarter.
- Members of the national evaluation team will review the final questions and the list of individuals to be included, review each quarterly summary report, and incorporate the feedback session results into the interim and final national evaluation reports.

Table 9-1. Preliminary Questions for California Highway Patrol Officers

Introduction	• Explain the National UPA/CRD Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of California Highway Patrol officers, including a brief description of ExpressLanes that will be discussed in the interview. • Note that the interviews are confidential. Responses will not be attributed to any individual.
General Responsibilities	1. How long have you been with the California State Highway Patrol? How long have you covered the I-10 and/or I-110 corridors? 2. Did you cover the I-10 and/or I-110 freeways before HOT Lanes were in place?
I-10/I-110 Operations	3. Based on your experience and observations, have you noticed any differences in the congestion levels on the I-10 and/or I-110 Freeways before and after the implementation of HOT lanes? If so, what differences have you noticed? On a scale of 1-5, indicate how better congestion levels are with (5) indicating significantly less congestion and (1) indicating significantly more congestion since HOT lanes have been implemented. 4. (*Ask only if changes were noted*) Do you feel that these changes are related to the HOT lanes? If so, how? If not, what do you think accounts for these changes? 5. Based on your experience and observations, have you noticed any differences in traffic patterns on the I-10 and/or I-110 Freeways before and after the implementation of HOT lanes? If so, what differences have you noticed? 6. (*Ask only if changes were noted*) Do you feel that these changes are related to the HOT lanes? If so, how? If not, what do you think accounts for these changes? 7. Based on your experience and observations, have you noticed any changes in the amount and/or severity of crashes or other incidents since the implementation of HOT Lanes? If so, which of these changes or others have you noticed? On a scale of 1-5, indicate changes in the severity of incidents with (5) indicating significantly safer conditions and (1) indicating significantly more dangerous conditions since HOT lanes have been implemented. 8. (*Ask only if changes were noted*) Do you feel that these changes are related to HOT Lanes? If so, how? If not, what do you think accounts for these changes? 9. Based on your experience and observations, have you noticed any changes in the Highway Patrol's traffic enforcement procedures? If so, what changes have you noticed? 10. (*Ask only if changes were noted*) Do you feel that these changes are related to HOT Lanes? If so, how? If not, what do you think accounts for these changes? 11. (*Ask only if changes related to HOT Lanes were noted*) Do you feel that these changes have altered the effect of traffic enforcement procedures? If so, how?
Closing	12. Do you have any other comments about traffic congestion, crashes, or enforcement with HOT Lanes?

Source: Battelle, September 2012.

Table 9-2. Preliminary Questions for Freeway Service Patrol Staff

Introduction	• Explain the National UPA/CRD Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of Freeway Service Patrol Staff, including a brief description of ExpressLanes that will be discussed in the interview. • Note that the interviews are confidential. Responses will not be attributed to any individual.
General Responsibilities	1. Please describe your responsibilities as member of the Freeway Service Patrol Staff. Are the I-10 and/or I-110 corridors a normal part of your assigned service area? 2. How long have you been a Freeway Service Patrol staff member? How long have you covered the I-10 and/or I-110 corridors? 3. Did you cover the I-10 and/or I-110 freeways before HOT Lanes were in place?
I-10/I-110 Operations	4. Please describe your experience as a freeway service patrol staff member since the implementation of HOT Lanes on I-10 and/or I-110. Have you noticed any changes on 10 or 110 regarding incidents and crashes, including: • Increases or decreases in the number of incidents and crashes? • Changes in the duration of incidents (that is, are they cleared any faster or slower than before)? • Changes in the type or severity of incidents and crashes? • Changes in the location of incidents and crashes? • On a scale of 1-5, indicate changes in the severity of incidents with (5) indicating significantly safer conditions and (1) indicating significantly more dangerous conditions since HOT lanes have been implemented. 5. (*Ask only if changes were noted*) Do you feel that these changes are related to the ExpressLanes? If so, how? If not, what do you think accounts for these changes? 6. Based on your experience and observations, have you noticed any differences in congestion levels or traffic patterns on the I-10 or I-110 corridors since the implementation of ExpressLanes? If so, please describe the changes you have noticed. On a scale of 1-5, indicate how better congestion levels are with (5) indicating significantly less congestion and (1) indicating significantly more congestion since HOT lanes have been implemented. 7. (*Ask only if changes were noted*) Do you feel that these changes are related to the HOT Lanes? If so, how? If not, what do you think accounts for these changes?
Closing	8. Do you have any other comments concerning the impact of HOT Lanes on I-10 and I-110?

Source: Battelle, September 2012.

Table 9-3. Preliminary Questions for Bus Operators

Introduction	• Explain the National UPA/CRD Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for the interviews of bus operators, including a brief description of ExpressLanes that will be discussed in the interview. • Note that the interviews are confidential. Responses will not be attributed to any individual.
I-10/I-110 Operations	1. Please describe your responsibilities related to operating buses in the I-10 and/or I-110 corridors. 2. How long have you been a bus operator? 3. How long have you driven routes in the I-10 and/or I-110 corridors? 4. What were the main challenges in operating a bus in the I-10 and/or I-110 before HOT Lanes were in place? 5. Compared to I-10 and/or I-110 prior to HOT Lanes, is driving a bus easier or more difficult? Please explain why. 6. Have you noticed an increase in ridership since HOT Lanes were implemented? 7. (*Ask only if changes were noted*) Do you feel this increase in ridership is in response to HOT Lanes? If so, why? If not, what do you think accounts for these changes? 8. Have you received any comments from riders concerning the HOT Lanes? If so, what type of comments have you received? 9. Have you noticed any changes in the number or severity of traffic crashes on I-10 and/or I-110 since HOT lanes were implemented? 10. (*Ask only if changes were noted*) Do you feel these changes are related to any changes in driver behavior in response to HOT Lanes? 11. Do you feel any more or less safe driving on I-10 and/or I-110 now that HOT lanes are implemented? Why or why not? 12. Based on your experience and observations, have you noticed any differences in the operation, including congestion levels or traffic patterns, of the I-10 and/or I-110 corridors since implementing HOT lanes? On a scale of 1-5, indicate how better congestion levels are with (5) indicating significantly less congestion and (1) indicating significantly more congestion since HOT lanes have been implemented. 13. (*Ask only if changes were noted*) Do you feel that these changes are related to HOT Lanes? If so, how? If not, what do you think accounts for these changes?
Closing	14. Do you have any other comments concerning the impact of HOT Lanes on I-10 and/or I-110?

Source: Battelle, September 2012.

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10.0 INTERVIEWS WITH LA PARKING MANAGEMENT PERSONNEL

This chapter describes the purpose, approach, data analysis, and schedule and responsibilities associated with Los Angeles LA ExpressPark management personnel interviews that will be conducted by Metro to support the national evaluation.

10.1 Purpose

The primary purpose of these interviews is to collect information from parking management personnel who are in a position to observe firsthand the operational impacts of the LA CRD LA ExpressPark project. Specifically, personnel will be questioned regarding their assessment of the technology (changes in space availability and turnover, operational problems, parking availability and cost messaging), their opinion on the benefits of the new technology, their view of changes in operational effectiveness, the perceived impact of LA ExpressPark on enforcing parking violations, and lessons learned. These interviews will be conducted post-deployment only. The National Evaluation team will be responsible for conducting the interviews as well as summarizing and assessing input from interviewees.

10.2 Approach and Interview Questions

The primary operator(s) of LA ExpressPark should be interviewed. This will likely include management from Meter Operations, Parking Enforcement, Meter Security and Adjudication. The interview(s) will be conducted by the national evaluation team. If there are multiple management personnel to be interviewed, one-on-one interviews are proposed so that interviewees can be candid in their responses.

The preliminary interview questions are presented in Table 10-1.

10.3 Data Analysis

The interviewers will review the interview notes and will document the comments. A summary report will be prepared highlighting the common themes emerging from the interviews, as well as the unique perspectives. The summary report will be organized by the interview questions, with a final section presenting overlying themes and lessons learned and recommendations for related projects.

10.4 Schedule and Responsibilities

The interview(s) with LA parking management personnel will be conducted focusing on the completed CRD LA ExpressPark deployment towards the end of the one-year post-deployment period. This will maximize the time for operators to gain experience with the system and all of its benefits and impacts. Interview(s) should occur between March and May 2013.

The responsibilities for conducting and analyzing the interviews are outlined below.

- Members of the national evaluation team will finalize the interview questions; identify the individual(s) to be interviewed; schedule and conduct the interview(s); and document the results in a summary report. They will also incorporate the interview results into the interim and final national evaluation reports.

Table 10-1. Preliminary Interview Questions for LA ExpressPark Management

Introduction	• Explain the National UPA/CRD Evaluation purpose, scope, local partners, and sponsors. • Describe the purpose and process for interviews of Los Angeles Parking Management Personnel, including a brief description of LA ExpressPark, which will be discussed in the interview. • Note that the interviews are confidential. Responses will not be attributed to any individual.
Assessment of Technology	1. Overall, what has been your general assessment of the LA ExpressPark system? In your opinion, has the system improved parking space availability, turn over, etc. in the parking management zones where it was deployed? 2. Could you please discuss or describe any operational problems or issues you may be having with the upgraded parking pay stations? How were (are) these issues being resolved? How have these experiences changed over time since the pay stations have been upgraded? (i.e., worse at the beginning but better now, etc.) 3. Could you please discuss or describe any operational problems or issues you may be having with the Card & Coin single space parking meters since their deployment? How were (are) these issues being resolved? How have these experiences changed over time since the meters were deployed? (i.e., worse at the beginning but better now, etc.) 4. Could you please describe how parking space availability is disseminated to travelers in each parking management zone? What do the messages look like? What information is disseminated? 5. How are parking rate changes communicated to the public? How does the public know what the current metering rate is? What is the process for notifying the public when the rates change?
Benefits of New Technology	6. In your opinion, has deploying the new parking management system resulted in improved space availability? If so, how? What kind of evidence do you have to support this opinion? 7. In your opinion, has deploying the new parking management system resulted in better and more accurate setting of time limits and hours of operations of parking? If so, how? What kind of evidence do you have to support this opinion? 8. In your opinion, has the new parking management system resulted in a reduction of "cruising" for parking spaces? What kind of evidence do you have to support this opinion? 9. What other benefits have you seen as a result of the new parking management system?
Changes in Operational Efficiencies	10. Since the time the technology (upgraded pay stations and Card & Coin single space parking meters) was deployed and became operational, how many times have the parking rates changed in each parking management zone? What is the average duration between parking rate changes in each zone? Compared to before the technology was implemented, is this an increase, a decrease, or about the same? 11. Can you describe for me the current process used for setting parking meter rates with the new technology? How has this process changed compared to before? In your opinion, does the new parking management system reduce the time needed to implement a change in parking rates? If so, how much staff time is needed to implement a change in the parking rates in a parking management zone? 12. How have your staffing needs changed after implementing the new technology compared to before? Has the skill set of your staff changed as a result of deploying the system? 13. Have you found the number of citizen complaints about parking space availability, hours of operations, time limits, etc. changed as a result of implementing the new technology? 14. Who maintains the parking space sensors? Is this done by in-house staff or contract maintenance? How has your maintenance cost changed as a result of using the technology? How do you expect it to change over time?

Table 10-1. Preliminary Interview Questions for LA ExpressPark Management (Continued)

Enforcement	15. What sort of impact has the new technology had on parking enforcement? Have your enforcement procedures changed compared to before the technology was deployed? If so, how? Do your enforcement personnel find it easier, harder, or about the same? 16. What is the adjudication process for parking violations? Have you found the number of parking fine appeals increased, decreased, or stayed the same after deploying the new parking management system? 17. Has implementing the new parking management system allowed you to generate any operational efficiencies from an enforcement perspective (e.g., reduced enforcement personnel, better coverage of enforcement, more frequency enforcement cycles, etc.)? If so, what are those efficiencies? 18. What happens when a sensor goes bad? How is enforcement handled with sensor goes bad? 19. Do you have any performance statistics (e.g., number of parking citation issues, revenue collected, etc.) can you provide that document how enforcement changed as a result of deploying this technology?
Lessons Learned	20. What kind of lessons have you learned associated with deploying this new parking management system? 21. What kind of institutional barriers did you encounter when deploying this new parking management system and how were they resolved? 22. What kind of technological or integration issues did you encounter and how were they resolved? 23. What kind of operational integration issues did you encounter and how were they resolved? 24. What other kinds of advice would you like to offer to others who may be considering deploying a similar type of system?

Source: Battelle, September 2012.

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11.0 LOCAL PARTNER SURVEYS OF INTEREST

This chapter describes other surveys of interest to the national evaluation. These surveys are being conducted by the local partners for their particular needs and purposes and are not driven by the evaluation of CRD project elements. Recognizing that the surveys below have specific local goals and objectives, the national evaluation team and the local partners will coordinate to the extent possible to ensure that no "piggy-backing" opportunities for the national evaluation team are missed. In some cases, the national evaluation team may recommend the addition of a few questions to the surveys for consideration. In other cases, the national evaluation team will need results from the survey for specific analysis. As the surveys below are planned and conducted, the local partners will work with the national evaluation team to identify opportunities and possible areas of interest to the national evaluation.

To date one local partner survey has been identified that is of interest to the national evaluation.

SCAG Regional Congestion Pricing Study (SCAG): SCAG, in conjunction with Metro, conducted a telephone survey of 704 residents within the Los Angeles Metropolitan area to better understand public awareness and attitudes toward congestion pricing in the Southern California region. The survey, conducted from March 15th through April 7th 2010 included zip codes with the highest proportion of residents using the I-10 and I-110 freeways and in the areas where Metro intends to initiate ExpressLanes demonstration projects.[7]

Results from this regional congestion pricing study, can provide the national evaluation team with useful baseline data on I-10 and I-110 corridor driver opinions on congestion pricing. As the survey focus is around messaging, Metro and its local partner support can utilize this information when developing and improving promotional communications for the ExpressLanes project.

[7] Southern California Association of Governments (SCAG). Regional Congestion Pricing Study, "Resident Telephone Survey (LA County Metro Oversample) Administrative Draft." June 23, 2010.

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APPENDIX A – HYPOTHESIS/QUESTIONS FROM THE LA 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[8] 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 HOT infrastructure changes affect the time needed to respond to or clear accidents?
	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?
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, September 2012.

[8] 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).

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APPENDIX B – DATA COLLECTION CHANGES RELATIVE TO LA CRD EVALUATION PLAN

Table B-1. Data Collection Changes Relative to LA CRD Evaluation Plan

Survey, Interview, and Workshop Needs Identified in LA CRD National Evaluation Plan		Data Collection Approach Reflected in LA CRD Surveys, Interviews, and Workshops Test Plan	
Data Element	**Description**	**Data Element**	**Description**

Corridor Drivers Survey	• Survey developed exclusively for national evaluation
	• Pre and post-deployment
	• Survey provides data on:
	  ○ Travel behavior in response to the CRD strategies
	  ○ Travelers' perception of the impact and value of the projects for addressing congestion issues
		License Plate Survey	• Survey conducted by Metro (suggested dates that correspond to pre- and post-deployment of ExpressLanes)
			• Mail survey (addresses matched to license plate video data collection)
			• Survey provides feedback from I-10 and I-110 HOV/HOT and general purpose lane users on their travel behavior; opinions and attitudes on traffic flow and HOT Lanes; and perception of CRD projects on reducing congestion and equity of pricing

		Carpooler Survey	• Survey conducted by Metro • Recommended to use post-deployment approach with sample frame sourced from zip codes cross-referenced in both the license plate survey and AVR database • Survey provides feedback on whether CRD projects led to unintended breakup of pre-deployment carpools and evaluates effectiveness of Metro's carpool breakup mitigation incentives

Unscheduled General Public Surveys	• Survey conducted for national evaluation purposes
	• Pre and post-deployment
	• Survey provides data on:
	  ○ Regional travelers' perceptions of HOT lanes and other CRD projects
		I-110 and I-10 General Public Surveys	• Three surveys conducted by Metro
			  ○ Summer 2008
			  ○ Pre-Deployment March 2012
			  ○ Post-Deployment suggested for September 2013
			• Telephone surveys
			• Surveys assess residents' expectations and reactions to LA CRD projects (expanded bus service, LA ExpressPark, ExpressLanes) including the impact of these projects on reducing congestion, improving environmental quality, and equity

Table B-1. Data Collection Changes Relative to LA CRD Evaluation Plan (Continued)

Survey, Interview, and Workshop Needs Identified in LA CRD National Evaluation Plan		Data Collection Approach Reflected in LA CRD Surveys, Interviews, and Workshops Test Plan	
Data Element	**Description**	**Data Element**	**Description**
Surveys of Ridesharers	• Survey conducted for national evaluation purposes • Pre and post-deployment	Survey of Vanpoolers	• Post-deployment survey of all vanpoolers in the I-10 and I-110 corridors • Assess vanpool formation behavior, role of CRD activities, prior mode and opinion of vanpool incentives and promotion activities
On-Board Transit Rider Survey	• Survey conducted by Metro • Two types of transit rider surveys: ○ Annual customer satisfaction survey ○ Five year, self-administered origin-destination survey	Stand-Alone On-Board Transit Rider Survey	• Three surveys developed by the national evaluation team and conducted by Metro ○ Survey 1 – pre-CRD transit service AND pre-tolling (June 2011); ○ Survey 2 – post-CRD transit service BUT pre-tolling (September 2012); and ○ Survey 3 – post-CRD transit service AND post-tolling (May 2013). • Stand-alone survey necessary due to insufficient sample size for riders on the CRD funded routes • Surveys provide understanding of how and why transit riders' attitudes and/or travel behavior are impacted and by which specific CRD projects
Pre- and Post-Deployment Interviews with Parking Management Personnel	• Conducted by national evaluation team • Information on perception of factors influencing the success of the LA partnership, project benefits, and lessons learned	Post-Deployment Interviews with Parking Management Personnel	• Conducted by local partners • Interviewing parking management personnel who observe first-hand the operational impacts of LA ExpressPark • Information collected includes type of operational efficiencies generated through LA ExpressPark technology
Major Employer Interviews	• Interviews with employers affected by CRD project and focus of outreach activities related to ridesharing	Post-Deployment Focus Group of Employers	• Focus group of selected employer representatives who are targeted for vanpool formation outreach

Source: Battelle, September 2012.

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